

Annual Report

2015-16



GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES,
RIVER DEVELOPMENT AND GANGA REJUVENATION
NEW DELHI

ANNUAL REPORT

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ABBREVIATIONS

ADB	Asian Development Bank	FBP	Farakka Barrage Project
AfDB	African Development Bank	FPARP	Farmers' Participatory Action Research Programme
AIBP	Accelerated Irrigation Benefits Programme	Fe	Iron
AR	Artificial Recharge	FMP	Flood Management Programme
BB	Brahmaputra Board	GFCC	Ganga Flood Control Committee
BCB	Bansagar Control Board	GHLSC	Gandak High Level Standing Committee
BIS	Bureau of Indian Standards	GRA	Grievances Redressal Authority
BRB	Betwa River Board	FR	Feasibility Report
CADWM	Command Area Development & Water Management	FRL	Full Reservoir Level
CCA	Culturable Command Area	GSI	Geological Survey of India
Cd	Cadmium	ha	Hectare
CEA	Central Electricity Authority	HAD	Hydrological Design Aid
CGWB	Central Ground Water Board	HE	Hydro-electric
Ch	Chainage	HIS	Hydrological Information System
CLA	Central Loan Assistance	HP	Hydrology Project
CMC	Cauvery Monitoring Committee	HPC	High Performance Concrete
CO	Cobalt	IBRD	International Bank of Reconstruction and Development
Cr	Chromium	IDS	Infrastructure Development Scheme
CRA	Cauvery River Authority	IEC	Information, Education and Communication
CSMRS	Central Soil & Materials Research Station	IGNTU	Indira Gandhi National Tribal University
Cu	Copper	IMD	India Meteorological Department
cumec	cubic metre per sec	IMTI	Irrigation Management Training Institute
cusec	cubic foot per sec	INCGECEM	Indian National Committee on Geotechnical Engineering and Construction Materials
CWC	Central Water Commission	INCGW	Indian National Committee on Ground Water
CWPRS	Central Water & Power Research Station	INCH	Indian National Committee on Hydraulic Research
CWDT	Cauvery Water Disputes Tribunal	INCID	Indian National Committee on Irrigation and Drainage
DBE	Design Basic Earthquake	INCOH	Indian National Committee on Hydrology
DPR	Detailed Project Report	ISRO	Indian Space Research Organisation
DRIP	Dam Rehabilitation and Improvement Project	ISRWD	Inter-State River Water Disputes
DSARP	Dam Safety Assurance and Rehabilitation Project	JBIC	Japan Bank for International Cooperation
DSS	Decision Support System		
EFC	Expenditure Finance Committee		
ERM	Extension, Renovation and Modernization		
EW	Exploratory Well		

JCWR	Joint Committee on Water Resources	NRLD	National Register of Large Dams
JET	Joint Expert Team	NWDT	Narmada Water Disputes Tribunal
JGE	Joint Group of Experts	NWM	National Water Mission
JRC	Joint Rivers Commission	NRSC	National Remote Sensing Centre
Kfw	Kreditanstalt fur Wiederaufbau	NWDA	National Water Development Authority
KHLC	Koshi High level Committee	OFD	On Farm Development
KWDT	Krishna Water Disputes Tribunal	ONGC	Oil and Natural Gas Corporation
m	Metre	OW	Observatory Well
M & M	Major and Medium	PAC	Project Advisory Committee
Mha	million hectares	PAF	Project Affected Families
MI	Minor Irrigation	Pb	Lead
Mn	Magnese	PDS	Purpose Driven Studies
MoU	Memorandum of Understanding	PIM	Participatory Irrigation Management
MoEF	Ministry of Enviroment & Forest	PMKSY	Pradhan Mantri Krishi Sinchai Yojana
MoWR	Ministry of Water Resources	PSC	Permanent Standing Committee
MPPGCL	Madhya Pradesh Power Generation Corporation Ltd.	PZ	Piezometer
NAPCC	National Action Plan on Climate Change	R&R	Rehabilitation and Resettlement
NASC	National Agriculture Science Centre	RFD	Results Framework Document
NCA	Narmada Control Authority	RMIS	Rationalisation of Minor Irrigation Statistics
NCMP	National Common Minimum Programme	ROS	Reservoir operation system
NCSDP	National Committee on Seismic Design Parameters	RRR	Repair, Renovation and Restoration
NEEPCO	North Eastern Electric Power Corporation Limited	RRSSC	Regional Remote Sensing Service Centre
NeGP	National e- Governance Plan	RTDAS	Real Time Data Acquisition System
NERIWALM	North Eastern Regional Institute of Water and Land Management	RTSF	Research Technology Support Facility
NGRI	National Geophysical Research Institute	SAC	Standing Advisory Committee
NHDC	Narmada Hydro-electric Development Corporation	SCEC	Sub Committee on Embankment Construction
Ni	Nickel	SFRC	Steel Fibre Reinforced concrete
NLC	Neyveli Lignite Corporation Limited	SS	State Sector
NLPMC	National Level Programme Monitoring Committee	SSCAC	Sardar Sarovar Construction Advisory Committee
NLSC	National Level Steering Committee	SSP	Sardar Sarovar Project
NPCC	National Projects Construction Corporation Ltd	SW	Surface Water
NPP	National Perspective Plan	TAC	Technical Advisory Committee
		TAMC	Technical Assistance and Management Consultancy
		TB	Tungbhadra Board
		Th.	Thousand

TOR	Terms of Reference		Authority
UYRB	Upper Yamuna River Board	WRIS	Water Resources Information
VWDT	Vansadhara Water Dispute Tribunal		System
WALMI	Water and Land Management Institute	WUA	Water User Association
WAPCOS	Water and Power Consultancy Services (India) Ltd.	WUE	Water Use Efficiency
WB	World Bank	Zn	Zinc
WEGWIS	Web Enabled Ground Water Information System		
WQAA	Water Quality Assessment		

LIST OF TABLES

TABLE NO.	HEADING	PAGE NO.
3.1	Targets for AIBP programmes during XII Plan	30
3.2	Targets for irrigation potential land creation from 2005-06 to 2012-13	32
3.3	Physical Progress for Construction of Field Channels in XI & XII Plan	36
3.4	Central Assistance Released under CAD&WM in XI & XII Plan	36
3.5	Sub-components of PMKSY	39
3.6	State-Wise Funds Released under "Flood Management Programme" during XI and XII Plans till 31.12.2015	42
3.7	State-wise Details of Works completed and Area Protected under Flood Management Programme during XIth Plan	43
4.1	Expenditure incurred by the Cauvery Water Disputes Tribunal	73
4.2	Expenditure incurred by the Krishna Water Disputes Tribunal	74
4.3	Expenditure incurred by the Vansadhara Water Disputes Tribunal	76
4.4	Expenditure incurred by the Mahadayi River Water Disputes Tribunal	77
4.5	Expenditure incurred by the Ravi & Beas Water Tribunal	77
5.1	Physical and Financial Achievements of JTG India-Bhutan co-operation	80
5.2	Physical and Financial Achievements of JTG India-China co-operation	82
6.1	World Bank Assisted Ongoing Projects in water sector	86
6.2	Key Outcome Indicators - Andhra Pradesh and Telangana Community Based Tank Management Project (APTCBTMP)	89
6.3	Status of Andhra Pradesh Water Resources Regulatory Commission (APWRRC)	90
6.4	Status of Odisha Community Tanks Management Project, Phase-I OCTMP-I	91
6.5	Outcome Indicators - Odisha Community Tanks Management Project, Phase-I (OCTMP-I)	92
6.6	Completion status of Tamil Nadu -Irrigated Agriculture Modernization and Water-Bodies Restoration and Management Project (TN-IAMWBRMP-I)	92
6.7	Key Performance Indicators of Tamil Nadu -Irrigated Agriculture Modernization and Water-Bodies Restoration and Management	93

Project (TN-IAMWBRMP-I)

6.8	Asian Development Bank Assisted Ongoing Projects in water sector	96
6.9	Physical progress of Odisha Integrated Irrigated Agriculture and Water Management Investment Program (OIIAWMIP-I)	98
6.10	JICA Assisted Ongoing Projects in water sector	101
6.11	Status of Andhra Pradesh Irrigation and Livelihood Improvement Project (APILIP-I) in Andhra Pradesh	102
6.12	Status of Andhra Pradesh Irrigation and Livelihood Improvement Project (APILIP-I) in Telangana	103
6.13	Status of medium sub-projects of APILIP-I	103
6.14	Status of Rajasthan Minor Irrigation Improvement Project (RAJAMIIP)	104
7.1	Important achievements of CSMRS during 2015-16	132
7.2	Dynamic Ground Water Resources of India 2011	140
7.3	Projects examined by CGWB during 2015-16	144
7.4	CWPRS - Expenditure status of works under R&D Plan as on 15th January 2016	145
7.5	CWPRS - Physical and Financial Achievement and new initiatives taken during (01.04.2015 to 31.12.2015) as on 15.01.2016	146
7.6	Physical and Financial likely/anticipated achievement from (01.01.2016 to 31.03.2016) as on 15.01.2016	149
7.7	Physical and Financial Achievement Plan M&E During 2015-16	150
7.8	Status of balance dues on undisputed booked share cost up to September 2015.	158
7.9	Overall progress of Main Dam (Unit-I) achieved up to June 2015	159
7.10	Progress of work of SSNNL as per monthly report of September 2015	160
7.11	Irrigation benefits of the project Bansagar Dam	163
7.12	Sub-head wise Cumulative Expenditure during the Financial Year 2015-16 (up to December, 2015)	164
7.13	Achievement of activities during 2015-16	186
7.14	Status of Projects as on date under National Ganga River Basin Authority (NGRBA).	191
7.15	Expenditure incurred by Brahmaputra Board for protection of Majuli Island from floods and erosion under Phase-II & Phase-III	195
7.16	Details of Phase-IV of scheme Avulsion of Brahmaputra at Dhola-Hatighuli (Measures for diversion of River Dibang to its original course) with ancillary anti-erosion measures	197

7.17	SARDAR SAROVAR PROJECT (SSP) PROGRESS OF R&R Up to 31st December, 2015	202
7.18	Indira Sagar Project, Progress of R&R up to 31st December, 2015	203
7.19	Details of reservoir filling	208
7.20	The financial position of Rajghat Dam Project	208
9.01	CGWB - Major Achievements of the North Eastern Region	252

CONTENTS

S. NO.	CHAPTER	PAGE NO.
	HIGHLIGHTS	
1.	AN OVERVIEW	1
2.	NATIONAL WATER POLICY	18
2.1	National Water Policy 2012	18
2.2	National Water Framework Law	19
2.3	Draft River Basin Management Bill	20
2.4	Jal Kranti Abhiyan 2015-16	22
3.	MAJOR PROGRAMMES	27
3.1	Major Programmes (State Sector)	29
3.1.1	Accelerated Irrigation Benefits Programme (AIBP)	29
3.1.2	National Projects	31
3.1.3	Bharat Nirman Irrigation Sector	32
3.1.4	Command Area Development and Water Management	32
3.1.5	Repair, Renovation and Restoration of Water Bodies	32
3.1.6	Flood Management Programme	41
3.2	Major Programmes (Central Sector)	44
3.2.1	Development of Water Resource Information System Rationalisation of Minor Irrigation Statistics (RMIS) Scheme	44
3.2.2	Flood Forecasting	46
3.2.3	Hydrology Project –II	47
3.2.4	Water Quality Assessment Authority (WQAA)	49
3.2.5	Research and Development	49
3.2.6	Information, Education & Communication	51
3.2.7	Infrastructure Development	56
3.2.8	River Management Activities and Works Related to Border Areas	58
3.2.9	Farakka Barrage Project	60
3.2.10	National Water Mission	62
3.2.11	Dam Rehabilitation & Improvement Project (DRIP)	68
4.	INTER-STATE RIVER ISSUES	70
4.1	Inter-State River Water Disputes Act	70

4.2	Inter-State Water Disputes Tribunals	70
4.2.1	Cauvery Water Disputes Tribunal	70
4.2.2	Krishna Water Disputes Tribunal	73
4.2.3	Vansadhara Water Disputes Tribunal	74
4.2.4	Mahadayi River Water Disputes	76
4.2.5	Ravi & Beas Water Tribunal	77
5.	CO-OPERATION WITH NEIGHBOURING COUNTRIES	78
5.1	India – Bangladesh Co-operation	78
5.2	India – Bhutan Co-operation	79
5.3	India – China Co-operation	81
5.4	India - Nepal Co-operation	82
5.5	India – Pakistan Co-operation	84
6.	EXTERNAL ASSISTANCE IN WATER RESOURCES SECTOR	85
7.	ORGANISATIONS AND INSTITUTIONS	106
7.1	Attached Offices	108
7.1.1	Central Water Commission (CWC)	108
7.1.2	Central Soil and Materials Research Station (CSMRS)	129
7.2	Sub-ordinate Offices	134
7.2.1	Central Ground Water Board	134
7.2.2	Central Water and Power Research Station (CWPRS)	145
7.2.3	Ganga Flood Control Commission	151
7.2.4	Sardar Sarovar Construction Advisory Committee	156
7.2.5	Bansagar Control Board	161
7.2.6	Upper Yamuna River Board	165
7.3	Registered Societies	166
7.3.1	National Water Development Agency (NWDA)	166
7.3.2	National Institute of Hydrology (NIH)	176
7.3.3	NERIWALM	185
7.3.4	National Ganga River Basin Authority (NGRBA)	187
7.4	Statutory Bodies	192
7.4.1	Brahmaputra Board	192
7.4.2	Narmada Control Authority	199
7.4.3	Betwa River Board	206

7.4.4	Tungabhadra Board	209
7.4.5	Polavaram Project Authority	211
7.5	Autonomous Bodies	212
7.5.1	Krishna and Godavari River Management Boards	212
7.6	Restructuring of various Boards/ Organizations and delegating more powers	215
8.	PUBLIC SECTOR ENTERPRISES	216
8.1	WAPCOS Limited	216
8.2	National Projects Construction Corporation Limited (NPCC)	242
9.	INITIATIVES IN NORTH- EAST	248
9.1	NIH	248
9.2	CSMRS	249
9.3	NPCC	250
9.4	CGWB	252
9.5	Brahmaputra Board	254
10.	TRAINING	255
10.1	Implementation of Training Policy of the Ministry of WR, RD & GR	255
10.2	Human Resource Development and Capacity Building	255
11.	TRANSPARENCY	261
12.	ROLE OF WOMEN IN WATER RESOURCES MANAGEMENT	262
13.	PROGRESSIVE USE OF HINDI	263
14.	STAFF WELFARE	265
15.	VIGILANCE	267
16.	APPOINTMENT OF PERSONS OF SPECIAL NEEDS	268
	ANNEXURES	269
I	Organisational Chart of Ministry of Water Resources	270
II	Staff Strength of Ministry of Water Resources	272
III	List of Addresses of Heads of Organisations under the Ministry of Water Resources, River Development and Ganga Rejuvenation Resources	273
IV	Outlay in respect of CSS and State Sector Schemes - XII th Plan	277
V	Budget at a Glance	279
VI	List of CPIOs and Appellate Authorities in the MoWR	289
VII	List of Postal Addresses of Public/ Staff Grievances Officers in the Ministry of Water Resources and its Organisations	297

HIGHLIGHTS 2015-16

- Cabinet approved the **Namami Gange program**, an Integrated Ganga Conservation Mission on 13th May, 2015 as a comprehensive approach to rejuvenate the river Ganga and all tributaries under one umbrella
- A two-day conference '**Jal Manthan**'-2 to address various issues related to water resources was organized from 22-23 February, 2016 at Vigyan Bhawan, New Delhi. Implementation of AIBP, simplified, based on the recommendations of Jal Manthan.
- Ministry of Water Resources, RD & GR, is celebrating "**Jal Kranti Abhiyan**" during the year 2015-16 in the country in order to consolidate water conservation and management in the country through a holistic and integrated approach involving all stakeholders, making it a mass movement
- **Pradhan Mantri Krishi Sinchai Yojana** launched in 2015 with the vision of extending the coverage of irrigation 'Har Khet ko pani' and improving water use efficiency 'More crop per drop' in a focused manner with end to end solution on source creation, distribution, management, field application and extension activities.

Special Committee on inter-linking of rivers met eight times to form one ILR. Ken Betwa link fast tracked. State wild life Board approval required for the projects.

- **India -WRIS ver. 4.1** containing all aspects of water resources and related data launched in July, 2015. The information system contains several GIS layers on water resources projects, thematic layers like major water bodies, land use/land cover, wastelands, land degradation etc., environmental layers as well as infrastructure and other administrative layers. The information system has all the basic map viewing and navigation capabilities like zoom, overview, bookmark, table of contents, etc.
- **National Hydrology Project (NHP)** envisaged with pan-India coverage, including the Ganga and Brahmaputra Basin States. After successful implementation of NHP-I & II, NHP being launched on a country-wide basis.
- **Signing of Implementation Plan (IP)** upon provision of hydrological information of the Langqen Zangbo/Sutlej River in Flood Season by China to India during 10th ELM meeting.
- **WAPCOS has been graded as "Excellent"** by the Department of Public Enterprises on the basis of compliance with Guidelines on Corporate Governance for the year 2013-14.

Chapter 1

An Overview

Our country is endowed with a rich and vast diversity of natural resources, water being the most precious of them. Water security, water management and its development is of immense importance in all walks of human life and also for all living beings. Integrated water management is essential for environmental sustenance, sustainable economic development of the country and for bettering human life through poverty reduction.

The Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India, is responsible for conservation, management and development of water as a national resource; overall national perspective of water planning and coordination in relation to diverse uses of water; general policy, technical assistance, research and development, training and matters relating to irrigation and multi-purpose projects, ground water management; conjunctive use of surface and ground water, command area development, flood management including drainage, flood-proofing, water logging, sea erosion and dam safety.

The Ministry has also been allocated the subject of regulation and development of inter-State rivers, implementation of awards of Tribunals, water quality assessment, bilateral and external assistance and co-operation programmes in the field of water resources and matters relating to rivers common to India and neighbouring countries.

The above-mentioned functions of the Ministry are performed through its two attached offices (Central Water Commission and Central Soil and Materials Research Station), seven sub-ordinate offices (Central Ground Water Board, Central Water and Power Research Station, Ganga Flood Control Commission, Farakka Barrage Project, Sardar Sarovar Construction Advisory Committee, Banasagar Control Board and Upper Yamuna River Board), six statutory bodies (Brahmaputra Board, Narmada Control Authority, Betwa River Board, Tungabhadra Board, Godavari River Management Board and Krishna River Management Board), four autonomous societies/body (National Water Development Agency, National Institute of Hydrology, North-Eastern Regional Institute of Water & Land Management) and National Ganga River Basin Authority (NGRBA); and two public sector enterprises (WAPCOS Limited and National Projects Construction Corporation Limited).

The Ministry is headed by Hon'ble Union Minister for Water Resources, River Development and Ganga Rejuvenation - Sushri Uma Bharti. Hon'ble Shri Ghulam Nabi Azad was the Minister-in-charge till 25th May, 2014. Sushri Uma Bharti took over the charge of the Ministry on 26th May, 2014. Shri Santosh Kumar Gangwar was Minister of State (MOS) for Water Resources, River Development and Ganga Rejuvenation from 26th May to 8th November, 2014. Prof. Sanwar Lal Jat took over the charge of MOS of the Ministry on 9th November, 2014. Shri Alok Rawat was Secretary till 20th October, 2014. Shri Anuj Kumar Bishnoi was Secretary of the Ministry till 15th June 2015. Shri Shashi Shekhar is Secretary of the Ministry w.e.f 5th June, 2015. Shri Dr. Amarjit Singh is Special Secretary in the Ministry, he took over as Additional Secretary w.e.f. 30th April, 2014. The organisational chart of the Ministry is at **Annexure-I**. The staff strength of the Ministry is at **Annexure-II**. A list of Heads of Organizations under the Ministry is at **Annexure-III**.

There are at present twelve wings in the Ministry, namely, Administration / GW, Brahmaputra & Barak, Economic Advisory, Flood Management, Finance, Ganga Rejuvenation, Indus, Minor Irrigation & Statistics, National Water Mission, Peninsular River, Policy & Planning, and State Projects.

MAJOR INITIATIVES

NATIONAL GANGA RIVER BASIN AUTHORITY (NGRBA)

As per the approval of the Cabinet Committee on Economic Affairs (CCEA), the mandate of NGRBA is being implemented by the National Mission for Clean Ganga (NMCG). At national level NMCG is the coordinating body and is being supported by States-Level Program Management Groups (SPMGs) of UP, Uttarakhand, Bihar and West Bengal which, are also registered as societies under Societies Registration Act, 1860 and a dedicated Nodal Cell in Jharkhand. As per the 306th amendment of the Government of India (Allocation of Business) Rules, 1961 both NGRBA and NMCG are allocated to the Ministry of Water Resources, River Development & Ganga Rejuvenation.

The function of National Ganga River Basin Authority include development of Ganga River Basin Management Plan, regulation of activities aimed at prevention, control and abatement of pollution, to maintain water quality and to take measures relevant to the river ecology in Ganga basin states.

The Union Budget 2014-15 provided for setting up an Integrated Ganga Conservation Mission namely “Namami Gange” with an allocation of Rs. 2037 crore (Rs 1500 crore for Namami Gange and Rs. 355 crore for on-going NGRBA projects, 100 crore for project in the tributaries including river Yamuna and Rs. 82 crore for National River Conservation Programme) for FY 2014-15. The work of rejuvenation of river Ganga and its tributaries has been transferred with effect from 01.08.2014 to the Ministry of Water Resources, River Development and Ganga Rejuvenation.

“Namami Gange”

Approaches Ganga Rejuvenation by consolidating the existing ongoing efforts. Namami Gange focuses on cleaning of river Ganga in short term as well as also has a comprehensive vision with

7 main thrust areas -



Cabinet approved the Namami Gange program on 13th May, 2015 as a comprehensive approach to rejuvenate the river Ganga and all tributaries under one umbrella.

A comprehensive action plan for future has been finalised by the NGRBA in its 4th meeting held on 27th October, 2014 based on the recommendations made by the Group of Secretaries (GoS) on 28th August, 2014. The EFC proposal for ‘Namami Gange’ was appraised by the EFC chaired by the Secretary (Expenditure) on 30.12.2014 and was recommended for an indicative cost of Rs. 20,000 crore. ‘Namami Gange’ would also be covering river Yamuna as a major tributary of river Ganga.

SPECIAL COMMITTEE ON “INTER-LINKING OF RIVERS”

The Ministry of Water Resources, RD and GR has constituted a committee, named Special Committee on Interlinking of Rivers (ILR) on 23rd September, 2014. The 8th meeting of the Special Committee, chaired by Sushri Uma Bharti, Hon’ble Union Minister (WR, RD & GR) was held on 8th February, 2016 in New Delhi. State Irrigation Ministers and Principal Secretaries / Secretaries of Irrigation/Water Resources Department of various States attend these meeting. After the first meeting itself it was decided to constitute four specific sub-committees; (i) Sub-committee for

comprehensive evaluation of various studies/reports (ii) Sub-committee for system studies for identifications of most appropriate alternate plan, (iii) Sub-committee for consensus building through negotiations and arriving at agreement between concerned States and (iv) Sub-committee for restructuring of National Water Development Agency.

In the meetings of these Sub-Committees, inter alia, broadly the Term of Reference and modalities of working of these Sub-Committees have also been given attention.

JAL MANTHAN -2

A two-day conference '*Jal Manthan*'-2 to address various issues related to water resources was organized from 22-23 February, 2016 at Vigyan Bhawan, New Delhi. Sushri Uma Bharti, Hon'ble Union Minister for WR, RD and GR, Prof. Sanwar Lal Jat, Hon'ble Union Minister of State for WR, RD and GR, Shri S.N. Poudyal, Hon'ble Minister for Irrigation and Flood Control, Government of Sikkim; Shri T. Harish Rao, Hon'ble Irrigation Minister, Government of Telengana; and Shri Surendra Singh Patel, Hon'ble Minister of State for Irrigation, Government of Uttar Pradesh were present during



function. Senior Officers from the Central and State Governments, eminent experts in the water sector, representatives of NGOs etc. also participated in the event and other dignitaries participated in the discussions and highlighted their views. The Hon'ble Union Minister of MoWR, RD & GR in her speech emphasized on the need of identification of issues resulting in delay in

implementation of the projects and to finalize strategies for removing the same. Hon'ble Union Minister of State Prof. Sanwar Lal Jat focused on outcome from pending projects. The State Ministers while speaking raised the subject of faster clearance of proposals by MoWR and streamlining of guidelines for Pradhan Mantri Krishi Sinchai Yojana (PMKSY).

MAJOR ACHIEVEMENTS UNDER STATE SECTOR SCHEMES

Under Accelerated Irrigation Benefits Programme, the State Governments have been provided an amount of Rs. 6811.156 crore as CLA/Grant under AIBP since its inception till December 2015 for 297 major/medium irrigation projects and 16769 surface minor irrigation schemes. After commencement of this Programme, 143 major/medium and 12083 surface minor irrigation schemes have so far been completed. The irrigation potential of 95.95 lakh hectare has been created up to March 2014.

Of the 65 major/medium projects initially included in the Prime Minister's relief package for agrarian distressed districts of Andhra Pradesh, Karnataka, Kerala and Maharashtra, 40 projects have been funded under AIBP so far. The grant released so far for these projects is Rs.7615.6688 crore.

CONTINUATION OF AIBP IN 12TH PLAN

The AIBP has been approved for implementation in 12th plan by Cabinet Committee on Economic Affairs in its meeting held on 12.09.2013. During the 12th plan, a total outlay of Rs.55200 crore has been proposed for continuation of CAD&WM programme and its pari-passu implementation with AIBP with a total outlay of Rs. 15000 crore has been proposed.

So far 16 projects have been included in the scheme of National Projects. Four projects, namely, Gosikhurd project of Maharashtra, Shahpurkandi project of Punjab, Teesta Barrage project of West Bengal and Saryu Nahar Pariyojana of Uttar Pradesh have been funded under the scheme of National Projects. Gosikhurd and Shahpurkandi projects have been provided grant amounting to **Rs.2987.94** crore and Rs.26.04 crore respectively up to March 2013. Teesta Barrage project started receiving funding under the scheme of National Projects during 2010-11 and grant amounting to Rs.178.20 crore has been provided for the project till March 2013. Saryu Nahar Pariyojana of Uttar Pradesh started funding under the scheme of National Projects during 2012-13 and an amount of **Rs.659.59** crore has been released till Jan-2015. The scheme of National Project has been approved for continuation and implementation in 12th Plan by Cabinet Committee on Economic Affairs on 12.09.2013 with proposed outlay of Rs.8150.00 crore under the ambit of AIBP.

MAIN POLICY CHANGES OF AIBP IN 12TH PLAN

The main **policy changes of AIBP in 12th Plan**, inter-alia, include (i) Pari-Passu implementation of AIBP & CAD&WM works, (ii) Enhancement of Central Assistance up to 50% for ongoing and new projects of General Areas subject to the States carrying out water sector reforms and satisfying the “Reform Friendliness” benchmarks, (iii) Central Assistance of 75% of the project (work component) for eligible irrigation projects for new projects in Special Areas of non-Special Category States and (iv) Central Assistance of 90% of the cost of the project (work component) for eligible irrigation projects for new projects in Special Category States.

Under the **CAD &WM programme**, initially, 60 major and medium irrigation projects were taken up under the CAD Programme, covering a Culturable Command Area (CCA) of about 15 million hectares. After inclusion of new projects, deletion of completed projects and clubbing of some projects, there are now 150 projects under implementation. The Programme was restructured and renamed as Command Area Development and Water Management 22(CAD&WM) Programme w.e.f. 1-4-2004. The Programme is being implemented as a State Sector Scheme from 2008-09 onwards and is being implemented pari-passu with Accelerated Irrigation Benefits Programme (AIBP) during the XIIth Five Year Plan.

The core components of physical works under CAD&WM relates to construction of field channels. Since its inception in 1974-75 up to March, 2014, CCA of about 20.8 Mha has been covered. Central Assistance of about Rs.5753 crore has been released to States under the CAD Programme since its inception in 1974-75 up to March, 2014. An amount of Rs 127.93 crore has been released during 2014-15 up to January, 2015.

Reclamation of Water Logged Areas

823 schemes of 9 States, namely, Bihar, Gujarat, Madhya Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Odisha and Uttar Pradesh have been approved for reclamation of 122.53 thousand hectare water logged area. Out of this, an area of 82.4 thousand hectare has been reported to be reclaimed by these States up to March, 2014.

Participatory Irrigation Management

Sixteen States viz. Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Nagaland, Odisha, Rajasthan, Sikkim, Tamil Nadu

and Uttar Pradesh have either enacted exclusive legislation or amended their Irrigation Acts for involvement of farmers in irrigation management. Other States are also taking steps in this direction. So far 84,779 Water Users' Associations have been formed in various States covering an area of 17.84 million hectare under various commands of irrigation projects.

REPAIR, RENOVATION & RESTORATION OF WATER BODIES (RRR)

Under the scheme with domestic support, a total of 3341 water bodies were taken up for restoration in 12 States, out of which 2145 water bodies have been completed till date. A total central grant amounting to Rs. 917.259 crore had been released to the States for completion of works on these water bodies.

The continuation of Repair, Renovation & Restoration of Water Bodies for XII Plan was approved on 20.9.2013. It is envisaged to provide Central Assistance for restoration of about 10,000 water bodies (9000 in rural areas and 1000 in urban areas) with an earmarked outlay of Rs. 6235 crore.

PRADHAN MANTRI KRISHI SINCHAI YOJANA (PMKSY)

PMKSY is introduced in 2015-16 with basic programme to focus on faster completion of ongoing Major and Medium irrigation including National Project with sub-components PMKSY (Har Khet ko Pani), PMKSY (Water shed) and PMKSY (Per Drop More Crop).

MAJOR ACHIEVEMENTS UNDER CENTRAL SECTOR SCHEMES

FLOOD FORECASTING

Through 176 flood forecasting stations (148 level forecasting and 28 inflow forecasting) on major dams/barrages, which covers 9 major river systems in the country including 71 river sub-basins and 15 States, on an average, over 6000 forecasts are being issued during flood season every year by the Central Water Commission. During the flood season 2015 (May to October), 4055 flood forecasts (3483 level forecast and 572 inflow forecasts) were issued out of which 3978 (98.10%) forecasts were found within accuracy limit of ± 0.15 m for level forecast and $\pm 20\%$ for inflow forecast.

FLOOD MANAGEMENT PROGRAMME

Under this Programme, a total of 420 works were approved for XII Five Year Plan, out of which 252 works were physically completed and the Central Assistance of Rs. 3566 crore was released during XI Plan. The completed works have restored 17.004 lakh ha of old flood prone area and provided reasonable protection to 2.589 lakh ha of new flood prone area. The Government of India has approved continuation of Flood Management Programme during XII Plan with an outlay of Rs. 10,000 crore. During XII Plan, the Central Assistance would also be provided for catchment area treatment projects having objectives of flood management. During XII Plan, the Central Assistance of Rs.991.39 crore has been released up to 3.12.2015.

Hydrology Project - Previous phases of Hydrology Project (HP) were implemented only in 13 States. This has resulted in a sectoral divide amongst the HP and non-HP States in terms of equipment, technology, applications and capacity building which have a direct impact on water resources planning, development and management. The National Hydrology Project (NHP) has been envisaged with pan-India coverage, including the Ganga and Brahmaputra Basin States which were not covered under previous phases of Hydrology Project and as a follow-up and extension of Hydrology Project Phase –I and Phase-II.

RESEARCH AND DEVELOPMENT

Under Indian National Committee on Surface Water (INCSW), there are 75 research schemes under implementation, funded by the Ministry. An amount of Rs. 81.32 Lakh has been released to these schemes during 2015-16 (Till December 2015).

INFORMATION, EDUCATION AND COMMUNICATION

A three tier Painting Competition is being organised since 2010 across the country for 6th, 7th and 8th standard students in three stages, namely, School, State and National Level to spread awareness on water conservation. This year, the painting competition on the themes ‘River Pollution’, ‘Clean River’ and ‘Climate Change Impact on Water’ will be organised in all States/UTs of the country. The State Level Competition will be held alongside the rivers as far as possible.

INFRASTRUCTURE DEVELOPMENT

During the XII plan period of 2012-17, a total of Rs.246.26 crore for the ID Scheme has been approved. The funding of the scheme has been approved by the Expenditure Finance Committee (EFC). Out of Rs.246.26 crore, Rs.216.26 crore is earmarked for L&B component and the balance

Rs.30 crore for the IT component. The Scheme aims at providing better working environment in the offices, creation of assets and savings on payment of monthly rent. To achieve this, construction of offices at various locations, provision for construction of staff quarters as well as modernization of existing offices of the Ministry (Proper), CWC and CGWB have been achieved under the ambit of the Scheme. Modernisation of CWC (Hqrs) and construction works of office-cum-residential complex at Patna and Guwahati are in progress. Construction of office-cum-residential complex at Burla has been completed, construction works in other places are going on for CWC and CGWB. Ministry is strengthening e governance as well.

FARAKKA BARRAGE PROJECT

Farakka Barrage Project Authority have completed the anti-erosion works on left bank at Chakbahadurpur in 1390 m length including blocking of channel by placing RCC porcupine, at Kulidiara in 650 m length and on right bank at Jessop Colony in 300 m length (porcupine), at Raghunathpur in 70 m length, at Dipchandpur Mosque in 60 m length, at Khodabandpur in 320 m length, at Mithipur in 450 m length (porcupine), at Islampur in 400 m length (porcupine). Further, filling up of bed scour pockets by HDPE bags filled nylon crates and an armored layer of crated boulders was also carried out near to 0.00 RD in the Feeder Canal.

The work of replacement of 33 gates is in progress, out of that 28 nos. damaged gates of Farakka Barrage have been replaced with the new gates and remaining five gates are at different stages of erection. Repair and servicing of electro-mechanical components over hoist bridge of Farakka barrage is also in progress. The works of repair of settled apron in downstream of Farakka Barrage in front of Pier No. 15 to Bay No. 18 and repair of settled apron in downstream of Farakka Barrage in front of Bay No. 69 to 70 were also carried out.

NATIONAL WATER MISSION

As a follow up of the National Convention of Water Users Associations (WUA) held in November 2014 at New Delhi, the first Regional Convention covering WUAs from States of J&K, HP, Uttarakhand, Punjab, Rajasthan and Haryana was organized at Punjab Agricultural University, Ludhiana, on 25-26 August 2015. Another Regional Convention of Water Users Associations was organised during 8th and 9th January, 2016 at WALMI, Aurangabad. WUA's from 5 Western States i.e. Maharashtra, Madhya Pradesh, Gujarat, Chhatisgarh and Goa participated in the convention.

New initial projections of the impact of climate change on water resources, including the likely change in water availability across time and space and Reassessment of river basin wise water situation

DAM REHABILITATION AND IMPROVEMENT PROJECT (DRIP)

Dam Rehabilitation and Improvement Project (DRIP) aims at rehabilitation and improvement of about 223 large dams in four States (Madhya Pradesh-50, Odisha-38, Kerala-31 and Tamil Nadu-104) with World Bank funding. The total project cost is about Rs.2100 crore and has become effective from 18th April, 2012 and will be implemented over a period of six-years.

ORGANIZATIONS AND INSTITUTIONS

Attached Offices

CENTRAL WATER COMMISSION

At present, CWC is carrying out design consultancy in respect of 41 projects out of which 32 projects (including 9 from North Eastern region) are at construction stage, while the remaining 9 projects (including 2 from North Eastern region) are at DPR stage. Technical examinations for 52 projects were also carried out during the year. In addition, special studies have been carried out and special problems handled in respect of 7 projects during the year.

Technical examinations for 70 projects were also carried out in the year. In addition, 8 special studies have been carried out and special problems handled in respect of 11 projects during the year.

Glacial Lake Outburst Flood

GLOF Studies are carried out to account for the flood, resulting from the breach of moraine dams, in the design of the projects. During the year, GLOF study in respect of two projects, namely, Nakthan HE Project, Himachal Pradesh and Alkananda HEP, Uttarakhand has been examined in CWC. The study for Alkananda HEP has been cleared.

CENTRAL SOIL AND MATERIALS RESEARCH STATION (CSMRS)

Thirty seven projects, including six abroad and nine in North- East region of India, were investigated. The investigations comprised field and laboratory investigations in the areas of Soil, Rock, Rockfill, Geosynthetics, Concrete and its constituents.

The self-sponsored research schemes by **CSMRS** currently in progress relate to: 1. Evaluation of strength characteristics of clayey soils by adding additives, 2. Stabilization of expansive soil using fly ash, 3. Effect of acidic environment on Geosynthetics and on coatings, 4. Effect of fines on liquefaction potential of soils, 5. Study on flyash based geopolymers as construction material, 6. Compilation and interpretation of properties and parameters of 10 variants of Basalt, 7. Compilation and interpretation of properties and parameters of 10 variants of Gneiss and 8. Correlation between UCS and indirect tensile strength (Brazilian).

Sub-Ordinate Offices

CENTRAL GROUND WATER BOARD

During financial year 2015-16 (up to 31.12.2015), the Central Ground Water Board has constructed 475 wells (EW-303, OW-130, PZ-42) including 31 high yielding wells to assess the ground water potential in different hydrogeological set up. Out of the target of 700 exploratory wells, a sum of 650 exploratory wells is likely to be completed by March, 2016.

Water Quality analysis of 21496 nos of water samples were conducted for the basic constituents, heavy metals (such as Cu, Zn, Fe, Mn, CO, Cd, Cr, Ni, Pb etc.), organic and specific constituents during the year 2015-16 up to 31st December, 2015.

Central Ground Water Authority (CGWA): CGWA carried out technical appraisal of Industrial, Mining, Power, Infrastructural development proposals seeking ground water withdrawal. During the period, 130 projects were accorded NOC for ground water withdrawal and 24 projects were issued letter for exemption for ground water withdrawal. In addition 25 projects were accorded renewal of NOC for ground water withdrawal.

CGWB has implemented demonstrative projects on artificial recharge to Groundwater and Rain Water Harvesting in the states of Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Delhi, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Nagaland, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal and UT Chandigarh, (21 States/UT) during XI Plan. A total of

133 projects amounting to Rs. 99.87 Crore envisaging construction of 1661 recharge structures were approved and funds of Rs. 85.03 Crore were released till March 31, 2014. During 2013-14, spillover balance funds of Rs. 7.34 Crore (31 March 2014) has been released as second installment for the ongoing projects. 310 Artificial recharge structures were constructed during 2013-14 and total structures constructed under the scheme are 1343 (as on 31 March 2014).

CENTRAL WATER AND POWER RESEARCH STATION (CWPRS)

CWPRS undertook studies on a no-loss no-profit basis in the major sectors of water resources, river engineering, power sector and coastal development during 2015-16.

GANGA FLOOD CONTROL COMMISSION (GFCC)

GFCC is monitoring about 138 flood management schemes.

- a. 114 flood management schemes were supported under “Flood Management Programme” of Ministry of Water Resources;
- b. 2 schemes of maintenance of flood protection works of Kosi and Gandak Projects in Nepal was carried out;
- c. 3 schemes viz., extension of embankment along Lalbakeya, Kamla and Bagmati rivers in Nepal were also handled; and
- d. 19 schemes on common/ border rivers in West Bengal along India-Bangladesh border under the Central Sector Scheme “River Management Activities and Works related to Border Areas” were taken up.

Out of 57 flood management schemes received in GFCC from Ganga Basin States during 2015-16, 17 schemes were accorded techno-economic clearance.

SARDAR SAROVAR CONSTRUCTION ADVISORY COMMITTEE

Total 36044.511 million units (MU) energy was generated from both the power houses till *June 2015*, out of which 541.666 MU generated in the Financial Year 2015-16 (*01.04.2015 to 30.06.2015*). The dam over flowed this year for about 18 days and maximum water level attained on *06.08.2015* was 124.31 m i.e. about 2.39 m above the crest level.

BANSAGAR CONTROL BOARD

Bansagar Dam was raised to its full height along with erection of 18 Radial Crest Gates in June 2006. This year i.e. 2014-15, due to deficit rains in the catchment, the reservoir got filled up to

340.62m appox. - 1m below full Reservoir Level (FRL) i.e. RL 341.64m. The live capacity at this level is 86.78% of live capacity at FRL which is 4,00 million acre feet (MAF), the planned live capacity at FRL. The Dam at Full Reservoir Level will provide irrigation in an area of 5.00 lakh hectare in the three States of Madhya Pradesh (MP), Uttar Pradesh (UP) and Bihar besides hydropower generation of 425 MW in addition to providing domestic and industrial water supply to a number of villages and cities. The Project has been completed and revised cost finalized which is to be shared by the three States of M.P., U.P. and Bihar in the agreed ratio.

UPPER YAMUNA RIVER BOARD

“Upper Yamuna” refers to the reach of Yamuna from its origin at Yamunotri to Okhla Barrage at Delhi. A Memorandum of Understanding (MoU) was signed on 12th May, 1994 amongst the basin States of Himachal Pradesh, Uttar Pradesh, Haryana, Rajasthan and Delhi, for sharing the utilizable surface flows of river Yamuna up to Okhla. The MoU also provided for creation of “Upper Yamuna River Board” to implement the said agreement. After creation of Uttaranchal State in 2000, this State has also been included in Upper Yamuna River Board.

Registered Societies

NATIONAL WATER DEVELOPMENT AUTHORITY (NWDA)

NWDA has identified 16 water transfer links under Peninsular Component for Surveys and Investigations and preparation of Feasibility Reports (FRs). So far, FRs of 14 links under Peninsular Component have been completed. Detailed Project Reports (DPRs) of Ken-Betwa Link Project, Phase-I, Ken-Betwa Link Project Phase-II and Damanganga–Pinjal Link Project have been completed. Under the Himalayan Rivers Development Component, NWDA has completed water balance studies of all the 19 diversion points, toposheet studies of 16 storage reservoirs & 19 water transfer links and pre-feasibility report of 14 links. Based on these studies, NWDA has identified 14 water transfer links under Himalayan Component for Surveys and Investigations and preparation of FRs. So far FRs of 2 links (Indian Portion) in the Himalayan Component have been completed.

Inter Basin Water Transfer Link Schemes The benefits from the scheme relate to 25 million hectare of irrigation from surface waters, 10 million hectare by increased use of ground waters, raising the ultimate irrigation potential from 140 million hectare to 175 million hectare and generation of 34,000 MW of power, apart from the incidental benefits of

flood control, navigation, water supply, fisheries, salinity and pollution control in various States.

NATIONAL INSTITUTE OF HYDROLOGY (NIH)

NIH conducted an International Conference on “Natural Treatment Systems for Safe and Sustainable Water Supply in India” (Saph Pani Project) in September 2014. NIH published 130 papers in reputed international and national journals and proceedings of international and national conferences and symposia during 2014-15. The Institute also organized 14 training courses/workshops for field engineers, scientists, researchers, etc.

NORTH EASTERN REGIONAL INSTITUTE OF WATER AND LAND MANAGEMENT (NERIWALM)

During 2015-16 (till December 2015), the Institute conducted 16 training programmes on various aspects of Water and Land Management. Central Water Commission is undertaking Water Use Efficiency studies of completed major/medium irrigation projects in the country with the objective of having assessment of water use efficiency of irrigation projects. The studies cover the following aspects of irrigation projects:

- i) Reservoir Filling Efficiencies (Inflow and Release Pattern)
- ii) Delivery System/Conveyance Efficiency
- iii) On farm Application Efficiency
- iv) Drainage Efficiency
- v) Irrigation Potential Created and Utilized

Statutory Bodies

NARMADA CONTROL AUTHORITY

The Sardar Sarovar Project envisages the development of irrigation potential of 20.32 lakh hectares in total broken up to 17.92 lakh hectares and 2.46 lakh hectares in the States of Gujarat and Rajasthan, respectively. Out of this, an irrigation potential of 14.43 lakh hectares have been created with a break-up of 12.03 lakh hectares in Gujarat and 2.40 lakh hectares in Rajasthan.

BETWA RIVER BOARD

The project envisaged creation of an irrigation potential of 1.39 lakh hectares in Uttar Pradesh and 1.22 lakh hectares in Madhya Pradesh. The above irrigation potential has already been created by the party States.

TUNGABHADRA BOARD

The Tungabhadra Reservoir filled up to the full reservoir level 495.73 (1626.40 ft.) in this year. The inflow in to the reservoir from April 2015 to December 2015 was 3412.37 Million Cubic Meters (Mcum) (120.508 TMC). The utilization by the Karnataka State, Andhra Pradesh & Telangana till end of December 2015 was 1710.58 MCum (60.409 TMC), 814.58 MCum (28.767TMC) and 26.79 Mcum (0.946 TMC) respectively as against the likely abstraction of 3114.82 MCum (110 TMC) for the water year 2015-16. Evaporation losses from April 2015 to December 2015 were 143.62 MCum (5.072 TMC) to be shared equally by the State of Karnataka on left side and the half share of the right side in the Reservoir evaporation loss shall be shared by the State of Karnataka and Andhra Pradesh in the ratio of 3.5 : 5.5. There is no surplus over spillway in this water year 2015-2016.

CO-OPERATION WITH NEIGHBOING COUNTRIES

INDIA-CHINA COOPERATION

In accordance with the provisions contained in the MoU, Chinese side provided hydrological information of three stations, namely Nugesha, Yangcun and Nuxia located on River Yaluzangbu/Brahmaputra of the period from 1st June to 15th October every year, which is utilized by the Central Water Commission (CWC) in the formulation of flood forecasts. This MoU was further renewed in June, 2008 & May, 2013 with a validity of further five years.

During the visit of Hon'ble Prime Minister's of India to China in October, 2013, both side signed a separate "Memorandum of Understanding on Strengthening Cooperation on Trans-Border Rivers" on 23.10.2013, therein mutually agreed upon start date of hydrological information of three stations on Yaluzangbu/Brahmaputra River from Year 2014 will be 15th May instead of 1st June upto 15th October of every year as per MoU signed in May, 2013. During the visit of Hon'ble Vice President of India to China in June, 2014, Implementation Plan (IP) was signed by both the countries on 30.06.2014. The hydrological information in flood season provided by China to India in accordance with the signed implementation plan (IP)

INDIA-PAKISTAN COOPERATION

During the year 2015-16, the Permanent Indus Commission held one meeting (112Th) at New Delhi (during 30.05.2015 to 31.05.2015) to finalize annual report of Permanent Indus Commission and minutes of 111th meeting of PIC.

PUBLIC SECTOR ENTERPRISES

WAPCOS Ltd.

WAPCOS has been graded as “**Excellent**” by the Department of Public Enterprises on the basis of compliance with Guidelines on Corporate Governance for the year 2013-14, which was conveyed vide the Department of Public Enterprises OM dated 26.09.2014. WAPCOS was involved with Environmental Impact Assessment (EIA) Study of the Lower Orr Dam and installation of telemetry system at the distribution points of Upper Yamuna River Board

The Company achieved turnover of Rs. 183.37 crore (unaudited) for the year (up to September, 2015) as against the previous figure of Rs. 180.25 crore for the corresponding period.

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED (NPCC)

At present, the Corporation is working on more than 140 projects spread all over the country. The authorized capital of the Corporation is Rs. 700 crore and its paid-up capital is Rs. 94.53 crore. The Corporation achieved a turnover of Rs. 1174.69 crore during 2013-14 compared to previous year's turnover of Rs 1155 crore. The turnover during the year 2014-15 is Rs. 1145.25 crore, The turnover during the year 2015-16 is anticipated to be Rs.1250 crore, whereas the turnover of Rs. 496 crore has been achieved up to November, 2015.

INDIA-WRIS website

The first full version of website of INDIA-WRIS (www.india-wris.nrsc.gov.in) was launched by Hon'ble Minister of Water Resources on 07 December, 2010 in New Delhi. The information system contains several GIS layers on water resources projects, thematic layers like major water bodies, land use/land cover, wastelands, land degradation etc., environmental layers as well as infrastructure and other administrative layers. The version (ver 4.0) has been launched in March, 2014. To

maintain and update such a large volume of water resources data at national level, it has been planned to establish a new organization as National Water Resource Informatics Centre (NWRIC).

Chapter 2

National Water Policy



KEY ACHIEVEMENTS

- Ministry of Water Resources, RD & GR is celebrating “**Jal Kranti Abhiyan**” during the year 2015-16 in order to consolidate water conservation and management in the country through a holistic and integrated approach involving all stakeholders, making it a mass movement.
- Ongoing consultations with State Governments for implementation of National Water Policy, 2012 and for formulation of State Water Policy.
- Draft National Water Framework Bill circulated among all States, Union Territories and related Union Ministries.
- Draft River Basin Management Bill circulated among all States, Union Territories and related Union Ministries.

2.1 NATIONAL WATER POLICY, 2012

The National Water Policy (NWP), 2012 serves as a policy guideline for development and management of water resources in the country. The objective of the National Water Policy, 2012 is to take cognizance of the existing situation, to propose a framework for creation of a system of laws and institutions and for a plan of action with a unified national perspective. In addition to prescribing policy recommendations, the National Water Policy, 2012 has emphasized on their implementation through the National Water Board by preparing a plan of action.

Copies of the National Water Policy, 2012 have been forwarded to all States/UTs and concerned Central Ministries for necessary action. The Ministry of Water Resources, River Development and Ganga Rejuvenation has also got prepared a road map for implementation of the National Water Policy, 2012 through an Expert Committee headed by Dr. S.R. Hashim. This report has also been forwarded to all States/UTs for necessary action. Consultations are ongoing with the State Governments for implementation of National Water Policy, 2012 and for formulation of State Water Policies.

2.2 DRAFT NATIONAL WATER FRAMEWORK LAW

The National Water Policy, 2012, inter-alia, recommends that there is a need to evolve a National Framework Law as an umbrella statement of general principles governing the exercise of legislative and/or executive (or devolved) powers by the Centre, the States and the local governing bodies. This should lead the way for essential legislation on water governance in every State of the Union and devolution of necessary authority to the lower tiers of government to deal with the local water situation. In pursuance, the Ministry had constituted an Expert Committee under the Chairmanship of Dr. Y.K. Alagh to prepare Draft National Water Bill. The Committee submitted its Report in May, 2013. The draft National Water Framework Bill has been circulated among all States, Union Territories and related Union Ministries and also hosted on the Website of Ministry of Water Resources, River Development & Ganga Rejuvenation.

A committee under the Chairmanship of Dr. Mihir Shah has been constituted to examine the report of Dr. Y.K. Alagh committee on National Water Framework Law.

SALIENT FEATURES

The salient features of the draft National Water Framework Bill are as under:-

- (1) The draft National Water Framework Bill proposes to establish an umbrella statement of general principles governing the exercise of legislative and/or executive (or devolved) powers by the Centre, the States and the local governing bodies, which should lead the way for essential legislation on water governance in every State of the Union and devolution of necessary authority to the lower tiers of government to deal with the local water situation.
- (2) It proposes eighteen basic principles for Water Management to bring different State legal interventions within a framework of governing principles and alignment of existing 15 legislations both at the Central as well as State level to conform to the principles and provisions of this Bill.
- (3) It proposes that every individual should have a right to a minimum quantity of potable water (not less than 25 litres per capita per day) for essential health and hygiene and within easy reach of the household, which may be provided free of cost to eligible households, being part of pre-emptive need.

- (4) It proposes establishment of an independent statutory Water Regulatory Authority by every State for ensuring equitable access to water for all and its fair pricing on volumetric basis, for drinking and other uses such as sanitation, agricultural and industrial.
- (5) It proposes that water resource projects conform to the River Basin Master Plan to be prepared, applicable efficiency benchmarks and take into account all social and environmental aspects in addition to techno-economic considerations.
- (6) It proposes that the groundwater be protected, conserved and regulated through appropriate laws and by adequate and efficient measures using precautionary approach, with active participation of community based institutions.
- (7) It proposes conformance to the Service Level Benchmarks for water supply, sanitation, solid waste management and storm water drainage, as may be prescribed.
- (8) It proposes that industries either withdraw only the make up water or have an obligation to return treated effluent to a specified standard back to the hydrologic system and to file annual 'Water returns'.
- (9) It proposes that the appropriate levels of Government take all possible measures to synergize and integrate different development schemes including schemes for water conservation, sanitation and improvement of water quality at Panchayat or Municipality level, as the case may be, and further at sub-basin and basin level.
- (10) It proposes that a High Powered Committee be set up at the Centre and in each State for coordination and policy support mechanism between different agencies dealing with water etc.

2.3 DRAFT RIVER BASIN MANAGEMENT BILL

The National Water Policy, 2012, inter-alia, recommends that there is a need for a comprehensive legislation for optimum development of inter-State rivers and river valleys to facilitate inter-State coordination ensuring scientific planning of land and water resources taking basin/sub-basin as unit with unified perspectives of water in all its forms (including precipitation, soil moisture, ground and surface water) and ensuring holistic and balanced development of both the catchment and the command areas. Such legislation needs, inter alia, to deal with and enable establishment of basin authorities, comprising the States concerned, with appropriate powers to plan, manage and regulate

utilization of water resource in the basins. In pursuance, Ministry of Water Resources, River Development and Ganga Rejuvenation had constituted a Committee under the Chairmanship of Justice (Retd.) T.S. Doabia to study the activities that are required for optimum development of river basin and 16 changes required in the existing River Board Act, 1956 for achievement of the same.

The Committee submitted its Report in November, 2012. The draft River Basin Management Bill prepared by the Committee has been circulated among all States, Union Territories and related Union Ministries and also hosted on the Website of Ministry of Water Resources, River Development & Ganga Rejuvenation.

A committee under the Chairmanship of Dr. Mihir Shah has been constituted to examine the report of Justice T.S. Doabia (Retd.) committee on River Basin Management Bill.

SALIENT FEATURES

The Salient Features of the draft River Basin Management Bill are as under:-

- (1) The Draft River Basin Management Bill proposes establishment of separate River Basin Authorities for regulation and development of waters for twelve major inter-State river basins in the country.
- (2) It proposes principles of participation, cooperation, equitable and sustainable management, conjunctive use, integrated management, public trust doctrine and demand management for governing river basin development, management and regulation.
- (3) It proposes a two-tier structure for a River Basin Authority, consisting of a Governing Council comprising, inter-alia, of Chief Ministers of riparian States and an Executive Board comprising, inter-alia, of Secretaries of riparian States, charged with the technical and implementation powers for the Governing Council decisions.
- (4) It proposes each River Basin Authority should prepare a River Basin Master Plan for the inter-State river basin under its jurisdiction on the principles of Integrated Water Resources Management.
- (5) It proposes that the Governing Council follow persuasion, conciliation and mediation as means to resolve disputes, whenever any dispute or difference arises between two or more State Governments with respect to any recommendation given by the River Basin Authority

or the refusal or neglect of any State Government to undertake any measures in pursuance of the River Basin Master Plan or Schemes.

(6) It provides for referral of dispute(s) for resolution under the Inter State River Water Disputes Act, 1956, when the Governing Council fails to determine the issue(s) or resolve the water dispute(s) or where the State Governments disagree with the decision tendered by such Governing Council.

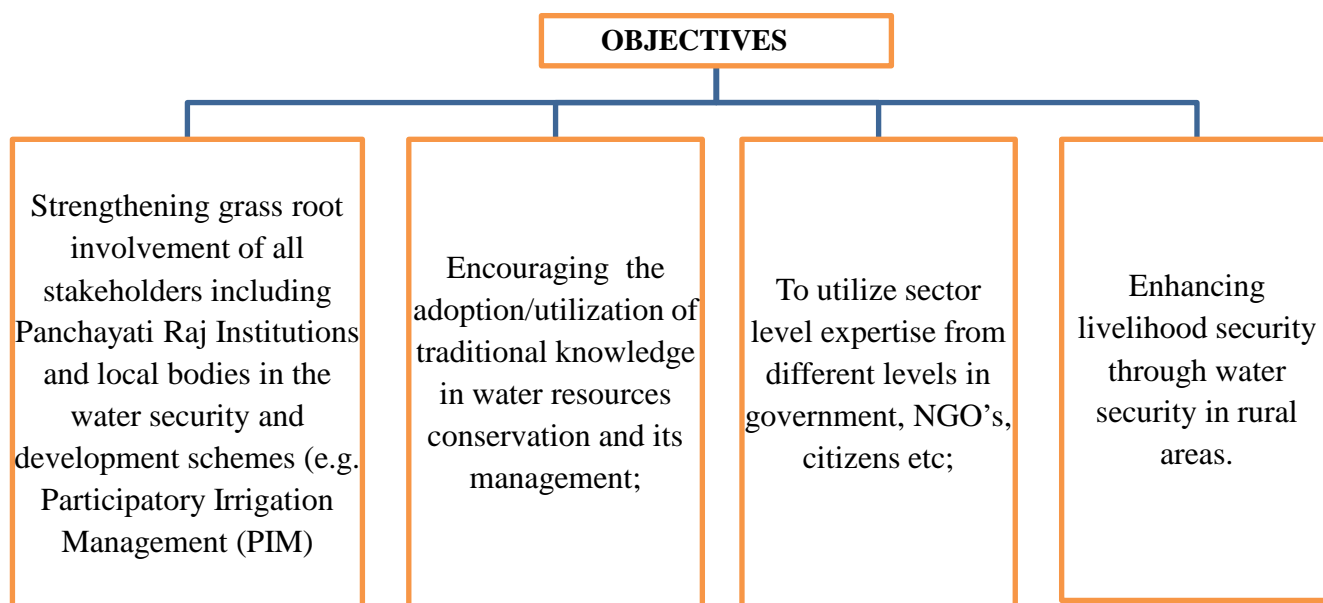
(7) It proposes that the River Basin Authority be empowered to have its own funds and requires them to prepare Annual Report to be laid before both Houses of Parliament.

It proposes that the Central Government may give directions and make Rules for effective implementation of the provisions of the Bill. It also proposes that every River Basin Authority be empowered to make regulations for discharging its powers and functions etc.

2.4 JAL KRANTI ABHIYAN, 2015-16

Introduction

Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India, New Delhi is celebrating “**Jal Kranti Abhiyan**” during the year 2015-16 in the country in order to consolidate water conservation and management in the country through a holistic and integrated approach involving all stakeholders, making it a mass movement. The Abhiyan has been launched throughout the country on 05th June, 2015. To make this occasion special inauguration functions were held at Jaipur, Shimla and Jhansi.



Strategies

The broad strategies to be adopted for successful achievement of objectives of the Jal Kranti Abhiyan are as follows:

- a. Use of modern techniques coupled with traditional wisdom for devising area/region specific innovative measures for increasing water security;
- b. Revival of traditional knowledge and sources for water conservation and utilization;
- c. Encouraging conjunctive use of surface and groundwater;
- d. Promotion of appropriate technologies for efficient and sustainable use of rainwater; Old and new ground water schemes, Creation of additional facilities for water conservation through construction of water harvesting structures;
- e. Rainwater harvesting for recharge to be made mandatory for residential, commercial and industrial buildings/premises;
- f. Selected interventions for maintaining the specified water quality standards;
- g. Convergence of efforts of various departments in water resources development and management;
- h. Promotion of social regulation for meeting the demand as well as for optimizing the use-efficiency of water for various purposes especially industry, agriculture and domestic;

- i. Institutionalization of village participation in water related schemes and projects and cost sharing for O&M by the community to instill a sense of belongingness, accountability and responsible partnership.
- j. Provision for incentivizing / honouring PRIs for devising innovative/unique ways to create water security in their areas for amelioration in water related issues.
- k. A logo for Jal Kranti Abhiyan shall be used to connect positively with all stakeholders.

Activities being undertaken under Jal Kranti Abhiyan

- (i) Jal Gram Yojana
- (ii) Development of Model Command Area
- (iii) Pollution abatement
- (iv) Mass Awareness Programme
- (v) Other Activities

Various activities under Jal Kranti Abhiyan e.g. Jal Gram Yojana, Model Command Area, workshops etc are underway.



Inauguration of 'Jal Kranti Abhiyan' by Sushri Uma Bharti, Hon'ble Minister of Water Resources, River Development & Ganga Rejuvenation on 5th June, 2015 at Jaipur.



Inauguration of 'Jal Kranti Abhiyan' by Sushri Uma Bharti, Hon'ble Minister of Water Resources, River Development & Ganga Rejuvenation on 5th June, 2015 at Jaipur.



Inauguration of 'Jal Kranti Abhiyan' by Prof. Sanwar Lal Jat, Hon'ble Minister of State for Water Resources, River Development & Ganga Rejuvenation on 5th June, 2015 at Shimla.



Inauguration of 'Jal Kranti Abhiyan' by Shri B.N.Navalawala, Chief Advisor, Ministry of Water Resources, River Development & Ganga Rejuvenation on 5th June, 2015 at Jhansi.

Chapter 3

Major Programmes (State Sector & Central Sector)



KEY ACHIEVEMENTS

- Under AIBP 46 projects prioritized, targeted to be completed by 2019 by providing adequate funds to these projects. 23 priority projects have been further shortlisted for completing by March, 2017 along-with CADWM projects. Additional fund of Rs2500 crore has been allocated to MOWR, RD&GR for the same.
- 16 projects included in the scheme of National Projects with central assistance of 90% of the cost of the project as grant.
- 84,779 Water Users' Associations (WUAs) formed in various States covering an area of 17.84 million hectare under various commands of irrigation projects.
- Financial assistance to the states is provided for development of infrastructure for micro-irrigation to promote water use efficiency in irrigation.
- Guidelines for providing central assistance to WALMIs have been finalized for strengthening WALMIs with a view to improve infrastructure development to facilitate WALMIs to become hubs for capacity building for WUAs.
- It is envisaged to provide central assistance for restoration of about 10,000 water bodies with an earmarked outlay of Rs. 6235 crore for the Repair, Renovation and Restoration (RRR) Scheme under XII Plan. Out of 10000 water bodies, 9000 water bodies in rural areas and balance 1000 water bodies in urban areas would be covered. Restoration of 2030 water bodies completed till date under the Scheme.
- A DPR for emergent flood management measures on river Jhelum submitted by J&K Govt. under a special package to the State had been accepted by Advisory Committee of MoWR, RD & GR for Rs. 399.29 crore in its 125th meeting held on 25.5.2015.

- Pradhan Mantri Krishi Sinchai Yojana (PMKSY) launched in 2015. This plan envisages supply of water to each farm, augmentation of water availability through water shed systems such as by creating check dams, nala bund, farm ponds, tanks etc., improving water use efficiency by increasing crop production per unit of water use, recycling of used water for irrigation purposes and industrial use, minimizing the gap between irrigation potential created and irrigation potential utilized.
- India -WRIS ver. 4.1 launched in July, 2015
- National Hydrology Project (NHP) envisaged with pan-India coverage, including the Ganga and Brahmaputra Basin States.
- Additional funds were allocated to R&D scheme to undertake more R&D activities on climate change, eco-hydrology / publishing research papers by CSMRS / CWPRS / NIH.
- E-Governance / online activities / Social Media Platform in the Ministry have been operationalised which includes e-procurement, e-leave, facebook / twitter, etc.
- Preparation of state specific Basin level action plan under National Water Mission (NWM) has been initiated in consultation with State Governments for Water Resources. Further, baseline studies are being undertaken for assessing the present level of water user efficiency in irrigation projects. In agriculture sector 20% improvement in water use efficiency is targeted by the NWM.

3.1 MAJOR PROGRAMMES (STATE SECTOR)

3.1.1 ACCELERATED IRRIGATION BENEFITS PROGRAMME

The Accelerated Irrigation Benefits Programme (AIBP) was launched during 1996-97 to give loan assistance to the States to help them complete some of the incomplete major/medium irrigation projects which were in an advanced stage of completion and create additional irrigation potential in the country. The surface minor irrigation schemes of North-Eastern States, Hilly States of Sikkim, Uttarakhand, Jammu and Kashmir, Himachal Pradesh and Koraput, Bolangir and Kalahandi districts of Odisha have also been provided Central Loan Assistance (CLA) under this programme since 1999-2000. Grant component has been introduced in the Programme from April, 2004 like other Central Sector Schemes.

The State Governments have been provided an amount of Rs. 6811.156 crore as CLA/Grant under AIBP since its inception till December 2015 for 297 major/medium irrigation projects and 16769 surface minor irrigation schemes. After commencement of this Programme, 143 major/medium and 12083 surface minor irrigation schemes have so far been completed. The irrigation potential of 95.95 lakh hectare has been created up to March 2014.

Of the 65 major/medium projects initially included in the Prime Minister's relief package for agrarian distressed districts of Andhra Pradesh, Karnataka, Kerala and Maharashtra, 40 projects have been funded under AIBP so far. The grant released so far for these projects is Rs. 7615.6688 crore.

Continuation of AIBP in 12th plan

The AIBP has been approved for implementation in 12th plan by Cabinet Committee on Economic Affairs in its meeting held on 12.09.2013. During the 12th plan, a total outlay of Rs. 55200 crore has been proposed for continuation of CAD&WM programme and its pari-passu implementation with AIBP with a total outlay of Rs. 15000 crore has been proposed. Considering the allocation of funds by the Planning Commission, the following targets have been adopted and indicated in Table-3.1.

Table-3.1: Targets for AIBP programmes during XII Plan

Sl. No.	Activities	Proposed Target (lakh hectare)
1	Creation of new irrigation potential (IP) through completion of ongoing MMI projects and new MMI projects and restoration of lost irrigation potential through ERM of old MMI projects	24
2	Creation of new irrigation potential (IP) through completion of new and ongoing surface minor irrigation projects	10
3	Closing the gap of irrigation potential created and irrigation potential utilized	36

46 projects prioritized, targeted to be completed by 2019 by providing adequate funds to these projects. 23 priority projects have been further shortlisted for completing by March, 2017 along-with CADWM projects. Additional fund of Rs2500 crore has been allocated to MOWR, RD&GR for the same.

AIBP in 12th Plan- Policy Changes

Some of the main policy changes include

1. Pari-Passu implementation of AIBP & CAD&WM works.
2. Ongoing and new projects of General Areas continue to get Central Assistance of 25% of the cost. It may be enhanced up to 50% subject to the condition that States actually carryout water sector reforms and satisfy the “Reform Friendliness” benchmarks.
3. For new projects in Special Areas of non-Special Category States, the Central Assistance under AIBP will be 75% of the project (work component) for eligible irrigation projects.
4. Ongoing projects and surface minor irrigation schemes benefiting Special Category States (including MI schemes of KBK region of Odisha may continue to be eligible for 90% Central Assistance.

5. For new projects in Special States, the Central Assistance under AIBP will be 90% of the cost of the project (work component) for eligible irrigation projects.
6. For surface minor irrigation (MI) schemes (both new as well as on-going) of Special Category States, individual schemes having Culturable Command Area (CCA) of 10 hectare and cluster of MI schemes with in radius of 5 km having CCA of 20 hectare.
7. Advance stage of construction of the projects specified.

3.1.2 NATIONAL PROJECTS

The Union Cabinet in its meeting held on 7th February 2008 gave its consent to the proposal of the Ministry of Water Resources on implementation of National Projects with Central Assistance of 90% of the cost of the project as grant falling in the following selection criteria:

- (i) International projects where usage of water in India is required by a treaty or where planning and early completion of the project is necessary in the interest of the country.
- (ii) Inter-State projects which are dragging on due to non-resolution of interState issues relating to sharing of costs, rehabilitation, aspects of power production, etc., including river inter-linking projects.
- (iii) Intra-State projects with additional potential of more than 2 lakh hectare and with no dispute regarding sharing of water and where hydrology is established.
- (iv) As per the modification in the guidelines of National Projects in September 2012, Extension, Renovation and Modernization (ERM) projects, envisaging restoration of lost irrigation potential of 2.0 lakh hectare or more would now be eligible for inclusion as a National Project with certain conditions

So far 16 projects have been included in the scheme of National Projects. Four projects, namely, Gosikhurd project of Maharashtra, Shahpurkandi project of Punjab, Teesta Barrage project of West Bengal and Saryu Nahar Pariyojana of Uttar Pradesh have been funded under the scheme of National Projects. Gosikhurd and Shahpurkandi projects have been provided grant amounting to **Rs.2987.94** crore and Rs.26.04 crore respectively up to March 2013. Teesta Barrage project started receiving funding under the scheme of National Project during 2010-11 and grant amounting to Rs.178.20 crore has been provided for the project till March 2013. Saryu Nahar Pariyojana of Uttar Pradesh started funding under the scheme of National Project during 2012-13 and an amount of **Rs.659.59** crore has been released till Jan-2015. The scheme of National Project has been approved for

continuation and implementation in 12th Plan by Cabinet Committee on Economic Affairs on 12.09.2013 with proposed outlay of Rs.8150.00 crore under the ambit of AIBP.

3.1.3 BHARAT NIRMAN - IRRIGATION SECTOR

Irrigation was one of the six components for development of rural infrastructure under Bharat Nirman. The irrigation component of Bharat Nirman aimed at creation of 21 irrigation potential of 10 million hectare (Mha) during four years i.e. from 2005-06 to 2008-09. The targets of irrigation potential and its creation from 2005-06 to 2012-13 are given in Table-3.2.

Table-3.2: Targets for irrigation potential land creation from 2005-06 to 2012-13 (Million hectare)

Year	Target	Irrigation Potential Created
2005-06	1.90	1.69
2006-07	2.40	1.96
2007-08	2.85	1.73
2008-09	2.85	1.93
2009-10	1.75	1.85
2010-11	1.75	1.22
2011-12	Not fixed	1.21
2012-13	Not fixed	1.51

3.1.4 COMMAND AREA DEVELOPMENT AND WATER MANAGEMENT (CAD&WM)

Objective

The Centrally Sponsored Command Area Development (CAD) Programme was launched in 1974-75 for development of adequate delivery system of irrigation water up to farmers' field with an objective to enhance water use efficiency and production and productivity of crops per unit of land and water for improving socio-economic condition of farmers. The Programme envisages integration of all activities relating to irrigated agriculture in a coordinated manner with multi-disciplinary team under a Command Area Development Authority.

Coverage

Initially, 60 major and medium irrigation projects were taken up under the CAD Programme, covering a Culturable Command Area (CCA) of about 15 million hectare. After inclusion of new projects, deletion of completed projects and clubbing of some projects, there are now 150 projects under implementation. The Programme was restructured and renamed as Command Area Development and Water Management 22 (CAD&WM) Programme w.e.f. 1-4-2004. The Programme is being implemented as a State Sector Scheme from 2008-09 onwards and is being implemented pari-passu with Accelerated Irrigation Benefits Programme (AIBP) during the XIIth Five Year Plan.

Programme Components

The components of the CAD&WM Programme are as follows:

- a) Survey, planning and designing of On-Farm Developments (OFD) works;
- b) On Farm Development (OFD) works comprising construction of field channels, land leveling and micro-irrigation;
- c) Construction of field, intermediate and link drains for letting out surplus water;
- d) Correction of system deficiencies above the outlet up to distributaries of 4.25 cumec (150 cusec) capacity;
- e) Reclamation of waterlogged area including use of location specific biodrainage techniques to supplement conventional techniques for reclamation of waterlogged area;
- f) One time functional and infrastructure grants to Water Users' Associations;
- g) Trainings/ adaptive trials/ demonstrations through Water and Land Management Institutes (WALMIs)/ Irrigation Management and Training Institutes (IMTIs) and other Central/State institutions and monitoring & evaluation of the Programme with 75% funding from Government of India;
- h) One time infrastructure grants to WALMIs/IMTIs; and
- i) Establishment cost - 10% of the total Central Assistance on items (b), (c), (d) and (e).

The following broad provisions have been made in the Programme during XII Five Year Plan:

- i. To promote water use efficiency in irrigation, financial assistance is provided to the States for development of infrastructure for micro-irrigation to facilitate use of sprinkler / drip irrigation as an alternative to construction of field channels. At least 10% CCA of each

project is to be covered under micro-irrigation. The assistance under this item is not admissible for sprinkler and drip irrigation systems (assistance for drip and sprinkler irrigation systems is available under the schemes of Ministry of Agriculture) but limited to construction of stilling tank, pump house and laying conveyance pipes up to farmer's fields.

- ii. A brainstorming session was held on 13.10.2015 to discuss measures to strengthen WALMIs/IMTIs by providing central assistance. Guidelines for funding have been finalized. WALMIs would be provided with funds for faculty and infrastructure development so that they can become hub for capacity building for WUAs.
- iii. Any new project having investment clearance by the Planning Commission on CAD&WM component of the project and having provision in the State budget will be eligible for inclusion under the Programme. However, selection of projects from the bunch of projects received from the States will be carried out subject to availability of funds under the scheme.

Under the Programme, there is a thrust on Participatory Irrigation Management (PIM) and, therefore, following features have been made mandatory for its implementation:

- i) Central Assistance to States has been linked to enactment of PIM legislation. Till this is done, alternative arrangements have to be in place for formation and empowerment of Water Users' Associations (WUAs);
- ii) WUAs have to be in position before Project Components are taken up so that beneficiaries are involved in the implementation of Programme activities since inception;
- iii) Central Assistance for correction of system deficiencies up to distributaries of 4.25 cumec (150 cusec) capacity has been linked to formation of Distributaries Committees and handing over of the distributaries to such Committees for maintenance in future.
- iv) Inclusion of Panchayat Representative in WUAs /District Level Implementation Monitoring Committee/ State Level Monitoring Committee shall be considered by the State Government for prioritizing the CAD works, management, operation and maintenance of the projects after handing over.

Programme Implementation

The Command Area Development and Water Management wing of the Ministry of Water Resources coordinate and monitor the implementation of the Command Area Development Programme at the national level. Proposals received from the States for inclusion of new projects under the Programme

are examined and, if found techno-economically feasible, are included under the Programme. Progress of the projects is monitored through physical and financial progress reports of the Programme received from the States and six monthly monitoring by field units of Central Water Commission. The quality of works is ensured through monitoring, including field visits. Technical guidelines and manuals have been circulated to the States in this regard. Functionaries are trained on specific subjects from time to time, besides holding various meetings, workshops and seminars on different technical and managerial aspects.

Financing Pattern

The funding pattern for all the programme components is on 50:50 sharing basis between the Centre and the State except for State sponsored software components such as training of farmers and field functionaries and officials, adaptive trials and demonstrations, seminars/conferences/ workshops, monitoring & evaluation of the programme, etc. and one time financial assistance to WALMIs/IMTIs for strengthening & up gradation of infrastructure and infrastructure grant to WUAs for which the funding pattern is 75:25 basis between the Centre and the States. There is also provision of one time functional grants at the rate of Rs. 1200/- per hectare (45:45:10 as Centre: State: Farmers) to the registered Water Users' Associations. The interest accrued from this fund is utilized to upgrade the irrigation system and infrastructure developed under this Programme.

Progress under Command Area Development and Water Management Programme

The approved outlay for Command Area Development and Water Management Programme during the XI Five Year Plan (2008-09 to 2011-12) was Rs.1600 crore and physical target was 1.32 Mha. The outlay for the XII Five Year Plan is Rs.15000 crore and physical target is 7.6 Mha. In the mid-term appraisal, the total target has been reduced to 3.6 Mha.

Physical Achievements

The core components of physical works are construction of field channels. Since its inception in 1974-75 up to March, 2014, CCA of about 20.8 Mha has been covered. The progress of works on this component under State Sector Scheme during XI and XII Plan is given in Table-3.3.

Table-3.3: Physical Progress for Construction of Field Channels in XI & XII Plan (Million hectare)

Duration	Targets	Achievements
XI Plan		
2008-09 to 2011-12	1.32	1.686
XII Plan		
2012-13	0.35	0.361
2013-14	0.50	0.308*
2014-15	0.50	0.033*

*As per reports received from the States till December, 2014.

Delay in approval of Cabinet for continuation of the scheme and subsequent delay in issuance of guidelines have adversely affected the progress.

Financial Achievements

Central Assistance of about Rs.5753 crore has been released to States under the CAD Programme since its inception in 1974-75 up to March, 2014. An amount of Rs.127.93 crore has been released during 2014-15 (upto January, 2015). The continuation of CAD&WM Programme has been approved as State Sector Scheme since the year 2008-09. The details of Central Assistance released under State Sector Scheme during XI and XII Plan are as in Table- 3.4.

Table-3.4: Central Assistance Released under CAD&WM in XI & XII Plan (Rs. crore)

Period	XI Plan Outlay by Planning Commission	BE Allocation	Release	% Releases w.r.t. BE Allocation
XI Plan				
2008-09 to 2011- 12	1833	1833	1680.12	92%

XII Plan				
2012-13	811	811	365.18	45%
2013-14	1766	1766	179.98	10%
2014-15	1077	1077	127.93*	12%

*Central assistance released upto January, 2015 as per reduced allocation of fund in RE.

Reclamation of Water Logged Areas

Although development of irrigation has increased agriculture production, it has also caused adverse effect in the form of water logging and associated problem of soil salinity/alkalinity in many irrigation commands. The problem of water logging can be mitigated to a large extent by efficient water management and by adopting suitable preventive measures. However, in spite of best efforts, the problem of water logging has surfaced in many irrigation commands and thus, it is essential to reclaim such areas so as to have optimum agricultural production from them. Ministry of Water Resources, Government of India introduced a component of Reclamation of Water Logged Areas under the Centrally Sponsored Command Area Development Programme w.e.f. 1.4.1996. So far 823 schemes of 9 States, namely, Bihar, Gujarat, Madhya Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Odisha and Uttar Pradesh have been approved for reclamation of 122.53 thousand hectare (th. ha) water logged area. Out of this, an area of 82.4 thousand hectare has been reported to be reclaimed by these States up to March, 2014.

Participatory Irrigation Management (Pim)

National Water Policy stresses participatory approach in water resources management. It has been recognized that participation of beneficiaries will help greatly in the optimal upkeep of irrigation system and effective utilization of irrigation water. The participation of farmers in the management of irrigation would include transfer responsibility for operation & maintenance and also collection of water charges to the Water Users' Association in their respective jurisdiction with effect from 2008-09. One time functional grant @Rs.1200/- per hectare to be shared by the Centre, State and Farmers in the ratio of 45:45:10 respectively is being paid to outlet level Water Users Associations' as incentive, the interest from which is to be used for maintenance.

16 States viz. Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Nagaland, Odisha, Rajasthan, Sikkim, Tamil Nadu and Uttar Pradesh have either enacted exclusive legislation or amended their Irrigation Acts for involvement of farmers in irrigation management. Other States are also taking steps in this direction. So far 84,779 Water Users' Associations have been formed in various States covering an area of 17.84 million hectare under various commands of irrigation projects.

Under the restructured “Command Area Development & Water Management” Programme, more emphasis is being given to participatory approach. Under this Programme, payment of Central Assistance to State is linked with the formation of Water Users' Associations.

3.1.5 REPAIR, RENOVATION & RESTORATION (RRR) OF WATER BODIES

Two schemes of RRR, one with domestic support with an outlay of Rs. 1250 crore and other with external assistance with an outlay of Rs. 1500 crore were launched during XI Plan. Under the scheme of domestic support, a total of 3341 water bodies were taken up for restoration in 12 states out of which 2030 water bodies have been completed till date. A total central grant amounting to Rs. 917.259 crore had been released to the states for completion of works on these water bodies upto 6.2.2015. Out of 3341, the works on 2145 water bodies have been completed and an irrigation potential of 0.993 lakh ha has been restored. Under the scheme of external assistance, 10887 water bodies were taken up for restoration in the states of Andhra Pradesh (3000), Karnataka (1224), Orissa (900) and Tamil Nadu (5763).

The scheme for Repair, Renovation & Restoration of Water Bodies for XII Plan was approved by the Union Government on 20.9.2013 and guidelines were issued in October, 2013. It is envisaged to provide central assistance for restoration of about 10,000 water bodies with an earmarked outlay of Rs. 6235 crore for the scheme. Out of 10000 water bodies, 9000 water bodies in rural areas and balance 1000 water bodies in urban areas would be covered. The proposal of water bodies where the Integrated Water Management Programme (IWMP) is implemented would be considered for inclusion under the scheme of RRR of water bodies. The central assistance is provided in the form of grant which is 90% of the project cost only in special category states (NE states, Himachal Pradesh, J&K, Uttarakhand and undivided KBK districts of Odisha) as well as projects lying in drought prone area, tribal area, desert prone area and naxal affected areas and 25% of the project cost in case of non-special category States/areas.

The Empowered Committee of MoWR, RD&GR has approved 1057 water bodies at an estimated cost of Rs. 830.6659 crore of 8 states for inclusion under RRR during 2014-15 till date. A total grant amounting to Rs. 120.12 crore has been released to the states for completion of 1321 ongoing water bodies of Odisha spill over from XI Plan and taking up works on 894 water bodies in 3 states namely Odisha (760 water bodies), Meghalaya (9 water bodies) and Madhya Pradesh (125 water bodies) under RRR during 2014-15 upto 4.3.2015.

CWC prepared the inventory and submitted to MoWR, RD & GR. CWC also made a presentation on all water bodies along Ganga and Yamuna to Hon'ble Minister (WR, RD & GR). Some of these water bodies are being proposed to be taken under RRR Scheme.

Pradhan Mantri Krishi Sinchai Yojana (PMKSY)

PMKSY is a program started in 2015. Sub-components of PMKSY are listed in the Table-3.5 below:

Table 3.5: Sub-components of PMKSY

BP	To focus on faster completion of ongoing Major and Medium irrigation including National Project
PMKSY(Har Khet ko Pani)	Creation of new water resources through minor irrigation (both surface and ground water). Repair, restoration and renovation of eater bodies; strengthening carrying capacity of traditional water resources, construction rain water harvesting structures (Jal Sanchay). Command area development, strengthening and creation of distribution network from source to the farm. Improvement in water management and distribution system for water bodies to take advantage of the available sources which is not tapped to its fullest capacity driving benefits from low hanging fruits).At least 10% of the command area to be covered under micro/precision irrigation. Diversion of water from source of different location where it is plenty to nearby water scarce areas ,lift irrigation from water bodies /rivers from low elevation to supplement requirement beyond IWMP and MGNREGS irrespective of irrigation command. Creation and rejuvenation of traditional water storage systems like Jal Mandir (Gujarat); Khatri, Khul (H.P.); Zabo (Nagaland)

	Eri,Oranis (Tamil Nadu); Dongs (Assam) Katas, Bandhas(Orissa and M.P.)etc at feasible location.
PMKSY(Water shed)	Water harvesting structures such as check dams, nala bund farm ponds tanks etc. Capacity building entry point activities, ridge area treatment ,drainage line treatment, soil and moisture conservation, nursery raising, afforestation, horticulture, pasture development, livelihood activities for the asset –less persons and production system & micro-enterprises for small and marginal farmers etc. Effective rainfall management like field building, contour building/trenching, staggered trenching, land leveling, mulching etc.
PMKSY (Per Drop More Crop)	<p>Programme management, preparation of state/district irrigation plan, approval of annual action plan, monitoring etc. Promoting efficient water conveyance and precision water application devices like DRIPs, sprinklers, pivots, rain-guns in the farm (Jal Sanchan). Topping up of input cost particularly under civil construction beyond permissible limits (40%), under MGNREGS for activities like lining inlet, outlet, silt traps’ distribution system etc. Construction of micro irrigation structures to supplement sources creation activities including tube wells and dug wells(in areas where ground water is available and not under semi critical/critical/over exploited category of development) which is not supported under PMKSY(WR), PMKSY(Watershed) and MGNREGS. Secondary storage structures at tail end of the canal system to store water when available in abundance(rainy season) or from perennial sources like streams for use during dry periods through effective on farm water management, water lifting devices like diesel/electric/solar pump sets including water carriage pipes.</p> <p>Extension activities for promotion of scientific moisture conservation and agronomic measures including crop alignment to maximise use to available water including rainfall and minimise irrigation requirement (Jal Sarankchan). Capacity building, training for encouraging potential use water sources through technological, agronomic and management practices including community irrigation. Awareness campaign on water saving technologies, practices</p>

	programmes etc. Organisation of workshops, conferences, publication of booklets, pamphlets, success stories, documentary, advertisements etc. Improve/innovative distribution system like pipe and box outlet system with control outlet and other activities of enhancing water use efficiency.
PMKSY (Recycling of used water)	<p>The proposal included in PMKSY and being implemented by converging with other schemes such as MNREGA etc. D.O. letter from Special Secretary, WR has been sent to the state governments to include proposal in District Irrigation Plan (DIP)</p> <p>The programme will help in sorting out the problems of water scarcity in the big cities and reutilize the waste water for irrigation, Ground Water recharge, etc.</p>
PMKSY (Reducing IPC & IPU gaps)	A combined team of CWC and NITI Ayog visited states to inspect 23 priority projects so that release of funds can be expedited. Space technology being used by CWC to verify the data {Irrigation Potential Created (IPC) and Irrigation Potential Utilized (IPU)}. Matter regularly pursued with NITI Ayog for more investment under PMKSY

3.1.6 FLOOD MANAGEMENT PROGRAMME – A STATE SECTOR SCHEME

During XI plan, the Government of India launched “Flood Management Programme” for providing central assistance to the State Governments for undertaking the works related to river management, flood control, anti-erosion, drainage development, flood proofing including flood prone area development programme, restoration of damaged flood management works and anti-sea erosion works. Under this Programme, a total of 420 works were approved out of which 252 works were physically completed and the central assistance of Rs. 3566 crore was released during XI Plan. The completed works have restored 17.004 lakh ha of old flood prone area and provided reasonable protection to 2.589 lakh ha of new flood prone area. The details of works approved, funds released so far and area protected are given in Table-3.6 & 3.7 respectively.

Table-3.6: State-Wise Funds Released under "Flood Management Programme" during XI and XII Plans till 31.12.2015 (Rs. in crore)

Sl. No.	State	Funds Released during XIth Plan	Funds Released During XIIth Plan					Total Funds Released
			2012-13	2013-14	2014-15	2015-16	Total (XIIthPlan)	
1	Arunachal Pradesh	78.77		16.83		30.00	46.83	125.60
2	Assam	744.90	2.51		15.25	19.91	37.67	782.56
3	Bihar	680.79	54.48	88.57	24.92	16.67	184.64	865.43
4	Chattisgarh	15.57		3.75			3.75	19.32
5	Goa	9.98	2.00				2.00	11.98
6	Gujarat	2.00					0.00	2.00
7	Haryana	46.91					0.00	46.91
8	Himachal Pradesh	165.31	19.92	9.75	115.20	10.00	154.87	320.18
9	Jammu & Kashmir	243.50	39.36	28.29	15.16		82.81	326.31
10	Jharkhand	17.07	4.27				4.27	21.34
11	Karnataka	20.00					0.00	20.00
12	Kerala	63.68			55.22		55.22	118.90
13	Manipur	65.03	0.95	16.96	6.45		24.36	89.39
14	Mizoram	3.40			1.46		1.46	4.86
15	Nagaland	28.96	15.45		13.08	2.51	31.04	60.00
16	Orissa	95.64					0.00	95.64
17	Puducherry	7.50					0.00	7.50
18	Punjab	40.43					0.00	40.43
19	Sikkim	82.86		2.43		5.72	8.15	91.01

20	Tamilnadu	59.82					0.00	59.82
21	Tripura	20.91					0.00	20.91
22	Uttar Pradesh	290.69	45.42	30.48	21.83	13.50	111.22	401.91
23	Uttrankhand	49.63		53.14	43.82		96.95	146.58
24	West Bengal	642.87	9.49	128.81	7.84		146.14	789.01
	Total	3476.21	193.85	379.00	320.23	98.31	991.39	4467.60
Spilled over works of Xth Plan		89.79					0.00	89.79
Grand Total		3566.00					991.39	4557.39

Table-3.7: State-wise Details of Works completed and Area Protected Under Flood Management Programme during XIth Plan

Sl. No	State	Total Schemes Completed(As on date)				
		Area protected in lakh ha				Population benefited in Lakh
		Nos.	Old Area restored	New Area Protected	Total	
1	Arunachal Pradesh	11	0.000	0.566	0.566	0.697
2	Assam	77	3.864	1.007	4.871	97.848
3	Bihar	26	10.237	0.285	10.522	70.920
4	Goa	1	0.000	0.002	0.002	0.150
5	J&K	8	0.900	0.000	0.900	0.000
6	Manipur	19	0.000	0.280	0.280	1.582
7	Nagaland	9	0.000	0.004	0.004	0.600
8	Orissa	60	1.474	0.082	1.556	7.202
9	Sikkim	21	0.000	0.201	0.201	2.397
10	Uttar Pradesh	6	0.442	0.096	0.538	4.005
11	Uttrankhand	3	0.000	0.001	0.001	0.053
12	West Bengal	7	0.087	0.063	0.150	11.810
13	Tripura	4	0.000	0.002	0.002	0.013
	Total	252	17.004	2.589	19.593	197.277

In view of demands by States and also recommendations of XII Plan Working Group on Flood Management and Region Specific Issues, the Government of India has approved continuation of Flood Management Programme during XII Plan with an outlay of Rs. 10,000 crore. During XII Plan, the central assistance would also be provided for catchment area treatment projects having objectives of flood management. During XII Plan, the Central Assistance of **Rs. 991.39** crore has been released up to 31.12.2015.

A DPR for emergent flood management measures on riven Jhelum submitted by J&K Govt. and the same had been accepted by Advisory Committee of MoWR for Rs. 399.29 crore in its 125th meeting held on 25.5.2015. The project has been included under special package of J&K being prepared by MHA.

3.2 MAJOR PROGRAMMES (CENTRAL SECTOR)

3.2.1 DEVELOPMENT OF WATER RESOURCE INFORMATION SYSTEM (India-WRIS)

CWC & ISRO has jointly undertaken the work of development of Water Resources Information System (India-WRIS) during 11th Plan. The first full version of the website of India-WRIS (www.india-wris.nrsc.gov.in) was launched by Hon'ble Minister of Water Resources on 7th December, 2010 in New Delhi. Subsequently, four more versions of the website of India-WRIS have been launched. The ver. 4.1 was launched in July, 2015 and is available in public domain at 1:250000 scale.

The information system contains several GIS layers on water resources projects, thematic layers like major water bodies, land use/land cover, wastelands, land degradation etc., environmental layers as well as infrastructure and other administrative layers. The information system has all the basic map viewing and navigation capabilities like zoom, overview, bookmark, table of contents, etc. As per provision of Hydro-Meteorological Data Dissemination Policy 2013 (MoWR), all unclassified data of CWC G&D stations has been made available on India-WRIS website.

The centre for maintenance and further development of the India-WRIS portal is functioning at Central Water Commission Headquarter at New Delhi since February 2015. The centre has taken up following activities during 2015-16:

1. The work related to updation and refinement of canal network and command boundary of major and medium irrigation projects in respect of 19 States have been completed. The work in respect of remaining States is under progress.
2. Reservoir Module for real time data entry of reservoir data with users and administrator access control and automatic report generation has been created. Testing and operationalization of the module is under progress.
3. PMP Module with Probable Maximum Precipitation at grid points and patterns of key storms, temporal distribution patterns of rainfall etc. is under development. This module will be helpful for direct assessment of applicable PMP value for a catchment.
4. A “Near Real-time Hydrological Observation Data Entry Using SMS” module for entry of Gauge/Discharge data is under development.
5. A “Web Based Water Quality Data Entry” module for entry of water quality parameters is under development.
6. Ground Water related data like Ground water Aquifer, Industrial Cluster and ground water resources maintained by CGWB has been included in the India-WRIS portal.
7. Canal re-alignment mapping for “Sankosh – Mahanadi Inter-Basin Link Project” showing canals, the existing/ proposed structures and alternate links has been completed.

In order to maintain and update such a large volume of water resources data at national level, it has been planned to establish a new setup “National Water Resources Information Centre (NWRIC)” under the Ministry.

Rationalisation of Minor Irrigation Statistics(RMIS) Scheme

A Centrally Sponsored Plan Scheme, “Rationalisation of Minor Irrigation Statistics (RMIS)” was launched in 1987-88 in the Ministry of Water Resources with 100% assistance to the States/UTs. During Eleventh Five Year Plan, the RMIS scheme was converted as one of the components of the Central Sector Scheme - Development of Water Resources Information System (DWRIS) of the Ministry of Water Resources, River Development & Ganga Rejuvenation. The main objective of the RMIS scheme is to build up a comprehensive and reliable database in the Minor Irrigation (MI) sector for effective planning and policymaking.

Under RMIS scheme, each State/UT has identified a Nodal Department for compilation of minor irrigation statistics for the entire State/UT. A Statistical Cell consisting of suitable number of

officers/staff has been set up in the nodal department for taking up the Statistical work relating to the MI sector. These cells are responsible for collection, compilation and reporting of data on development of minor irrigation relating to their State/UT on a regular basis. For this purpose, they coordinate with Departments of Rural Development, Agriculture and Irrigation etc. at the State level. These cells are also responsible for conducting census of MI schemes on quinquennial basis with the help of staff of State/UT Governments posted at district/block/village levels.

In the MI census, detailed information on irrigation sources, namely, Dug well, Shallow Tube well, Deep Tube well, Surface Flow and Surface Lift schemes including the irrigation potential created (IPC) and potential utilized (PU) is collected and compiled on systematic basis throughout the country. Besides this, information on their ownership, the social class and holding size of the owner, number of electrical/diesel devices used for lifting water is also collected. Information in respect of adoption of water and energy conserving devices such as sprinkler and drip irrigation, use of non-conventional energy sources such as solar pumps, wind mills is also collected in the MI Census. The National Informatics Centre unit in the MoWR, RD&GR is associated with development of software, processing of data and generation of tables. Detailed data base on minor irrigation works in the country has been generated through four censuses carried out under the scheme so far with reference years 1986-87, 1993-94, 2000-01 & 2006-07 respectively. The census reports are available on the website of the Ministry of Water Resources, River Development & Ganga Rejuvenation (www.wrmin.nic.in).

The 5th Minor Irrigation Census is being conducted with Reference Year 2013-14 in 34 States/UTs. Field work of 5th Minor Irrigation Census is in progress in States/UTs during 2015-16. Simultaneously software for processing the Census data has been developed at the Central level and four Regional Data Processing Workshops have been organized for imparting training on software to officials from States/UTs. Funds to 21 States/UTs for conduct of Census and to 22 States/UTs for Continuation of Statistical Cells have been sanctioned during 2015-16.

Under the RMIS scheme, an expenditure of Rs. 7.21 crores upto 31st December, 2015 has been incurred against a Budget Estimate (BE) of Rs.12.70 crore for the financial year 2015-16.

3.2.2 FLOOD FORECASTING

The Ministry of Water Resources through its apex technical arm, Central Water Commission performs the activity of flood forecasting on major rivers and their tributaries in the country. For this

purpose, CWC maintains a network of 176 flood forecasting stations which consists of 148 level forecast stations and 28 inflow forecast stations. The level forecasts issued by CWC help the local administration in drawing programmes for evacuation of people from flood affected areas to safer places. The Inflow forecasts help the Dam authorities in optimum regulation of reservoirs.

In order to meet the requirement of expeditious flood forecasting, CWC has been making continuous endeavour for modernization of its flood forecasting network. By the end of 2012-13, a satellite based telemetry system comprising of automatic data collection, satellite based data transmission, mathematical model based flood forecast formulation has been installed at 445 stations. Besides, there are additional 64 telemetry stations have been installed and one (1) modelling centre has been established in Chennai during FY: 2015-16. The process of establishment of remaining stations is going on. Besides, three Earth Receiving Stations (ERS) at Jaipur (Rajasthan), Burla(Odisha) and New Delhi have been set up. The works of modernization and establishment of computer based system have also been completed at 21 Modelling Centres.

CWC has planned modernization of its remaining network and further expansion of its network during XII Plan and an outlay for the ongoing scheme “Flood Forecasting” has been approved as Rs. 281 crore.

3.2.3 HYDROLOGY PROJECT

National Hydrology Project Unit

Previous phases of Hydrology Project (HP) were implemented only in 13 States. This has resulted in a sectoral divide amongst the HP and non-HP States in terms of equipment, technology, applications and capacity building which have a direct impact on water resources planning, development and management. The National Hydrology Project (NHP) has been envisaged with pan-India coverage, including the Ganga and Brahmaputra Basin States which were not covered under previous phases of Hydrology Project and as a follow-up and extension of Hydrology Project Phase –I and Phase-II.

The components of NHP are summarized as follows:

Component	Name	Objectives
A	In-Situ Hydro-met Monitoring System	Expand and upgrade water resources monitoring systems
B	National Water Information System	Develop centralized spatial data sets, including remotely sensed data and support National Water Informatics Centre (NWIC).
C	Water Resources Operation & Management Systems	Develop Decision Support Systems (DSS) for selected river basin planning, assessments, flood forecasting etc.
D	Water Resources Institutions and Capacity Building.	Capacity building through trainings, providing etc.

Nature of Scheme: Central Scheme

Expected Outcomes

- Data storage, exchange, analysis and dissemination through National Water Information Centre.
- Lead time in flood forecast from 1 day to atleast 3 days
- Mapping of flood inundation areas for use by the disaster management authorities
- Assessment of surface and ground water resources in a river basin for better planning & allocation for PMKSY and other schemes of Govt. of India.
- Reservoir operation through seasonal yield forecast, drought management, SCADA systems, etc.
- Design of SW & GW structures, hydropower units, interlinking of rivers, Smart Cities
- Fulfilling the objectives of Digital India.

The final outcome will be (i) reduction of flood and drought losses in the country, especially in the agricultural sector of the economy, and (ii) improved preparedness to reduce impacts and losses from hazardous events with respect to life, livelihood, and all sectors of national economy.

The EFC of National Hydrology Project has now been approved from the DEA, Ministry of Finance on 16.10.2015 and Cabinet Note has been circulated to different Ministries for seeking their comments.

3.2.4 WATER QUALITY ASSESSMENT AUTHORITY (WQAA)

Water Quality Assessment Authority (WQAA), an Inter-Ministerial Authority, was constituted under Environment (Protection) Act, 1986. Secretary, Ministry of Environment, Forests & Climate Change is the Chairman of WQAA and Joint Secretary (A), Ministry of Water Resources, RD & GR is its Member Secretary. Water Quality Cell in MoWR, RD & GR is providing secretariat services to WQAA. The Authority deals with issues related to water quality assessment and management. The Authority held its 12th meeting on 15.06.2015, wherein it approved the revised notification of WQAA for further official process. The Authority is thriving for the standardization of water quality laboratories. As a part of rationalization and optimization of water quality monitoring, CWC, CGWB and CPCB are attempting to remove duplication of monitoring. The Authority has decided “India-WRIS WebGIS” as a single web based platform to host water quality data of various Central/State agencies for utilization. The Officials of WQAA inspected to evaluate the performance of Real Time Water Quality Monitoring System (RTWQMS) at various locations and suggested remedial measures to CWC and CPCB. The Panel Discussion on Water Contaminations for Mass Awareness is being organized with All India Radio, as decided in the meeting. The report entitled “Status of Ground Water Quality in Coastal Aquifers of India” prepared by CGWB, was circulated to various organizations for valuable comments. The report on “Status report on ground water quality of NCR region” is to be submitted by CGWB by end of December, 2015. Two training programmes on water quality monitoring & assessment issues for capacity building of personnel associated with water quality monitoring & assessment activities are being organized at NWA, Pune and NIH, Roorkee in the months of December, 2015 to January, 2016.

3.2.5 RESEARCH AND DEVELOPMENT

Research & Development Programme in Water Sector is a plan scheme under the Ministry of WR, RD & GR. Three organizations of ministry viz. Central Water and Power Research Station (CWPRS), Central Soil and Material Research Station (CSMRS) and National Institute of Hydrology (NIH) are fully devoted to Research & Development in water sector. CWPRS is the premier national institute for research in the area of hydraulics of water resources structure related to irrigation, hydropower, navigation, coastal works and related instrumentation. CSMRS is involved in the research related to construction materials, concrete technology, geophysics, rock mechanics,

soil mechanics and rockfill testing technology. NIH is devoted to systematic and scientific studies in all aspects of Hydrology. The objective of these organizations is to improve the present practices in planning, design and operation of water resources projects.

Promotion of Research in Water Sector

Under the Scheme, the Ministry of WR, RD & GR provides financial assistance to promote research work in the field of water resources sector. The assistance is provided by way of grants to academicians / experts in the Universities, IITs, recognized R&D laboratories / institutes, Water Resources / Irrigation Departments of the Central and State Governments in the country and NGOs for carrying out research and studies related to water resources sector. Research proposals of applied nature as well as basic research are considered for financial assistance.

The coordination of the Programme for providing financial assistance for research and development is done by Research & Development Division under the Policy & Planning Wing of the Ministry.

Progress of R & D activities

Additional funds were allocated to R&D scheme to undertake more R&D activities on climate change, eco-hydrology / publishing research papers by CSMRS / CWPRS / NIH. Expenditure till December, 2015 was Rs. 26 crore against allocation of Rs. 55.50 crore.

Physical achievement for the year 2015-16 (upto 31.12.2015) is preparation of technical reports / studies (15), publication of research papers (138), organization of Training course / workshops / seminars / symposia (17) and training of personnel (30).

Indian National Committee on Surface Water (INCSW)

The existing four Indian National Committees (INCs) i.e. INCH (Hydraulics), INCOH (Hydrology), INCID (Irrigation & Drainage) and INCGECM (Geo-Technical Engineering and Construction Materials) have been merged and reconstituted as Indian National Committee on Surface Water (INCSW) with a mandate to deal with the issues related to irrigation & drainage, hydrology, hydraulics and geo-technical engineering & construction materials. The research scheme pertaining to hydrology, hydraulics and geo-technical engineering & construction materials which so far were being dealt by INCOH, INCH and INCGECM have been brought under INCSW with its Secretariat at CWC Sewa Bhawan, R.K.Puram, New Delhi.

There are a number of research schemes presently under progress in various organisations in the country with funding from the MoWR, RD&GR under the R&D Programme

Indian National Committee on Ground Water (INCGW)

Considering the importance of various issues related to ground water, a new committee viz; Indian National Committee on Ground Water (INCGW) with responsibility of coordinating various research activities in the relevant field has been constituted in September 2008. After reconstitution of INCs in June, 2012, the mandate for INCGW remained unchanged. The secretariat of INCGW is located at CGWB, Jam Nagar House.

3.2.6 INFORMATION, EDUCATION & COMMUNICATION (IEC)

Major activities undertaken by IEC Section during the FY 2015-16 up to 31st December, 2015 are as follows :-

Participation in Fairs/Exhibitions

Ministry of Water Resources, River Development and Ganga Rejuvenation had erected a pavilion in Hall No.7-E in the 35th Edition of **India International Trade Fair** organized by ITPO in Pragati maidan from 14th to 27th November, 2015. The pavilion was carrying different exhibitory materials viz. Physical models of various projects/activities, banners, posters etc. depicting various activities, programmes and Projects undertaken by the ten organizations under MoWR, RD and GR. A quiz and pantomime show was organized in the pavilion to make the masses aware regarding water conservation and various aspects of water. The theme of the pavilion for the year was: “**JAL KRANTI ABHIYAN**” with focus on Water Conservation, Water Use Efficiency, Stop River Pollution and Ganga Cleaning.

Various organizations under Ministry of Water Resources, River Development and Ganga Rejuvenation exhibited their models. A central Three Dimensional model of “Ganga Rejuvenation” was prepared and exhibited by CWC to show layout of river Ganga and its tributaries from origin to end covering 2500km. The current status of the river at various critical locations & future efforts to rejuvenate the Ganga by not discharging effluent to the river, by using sewage treatment plant and river development programme and with the help of interlinking river across the river Ganga were depicted with model.



Shri Shashi Shekhar, Secretary (MoWR, RD&GR) inaugurated the Ministry's pavilion at India International Trade Fair- 2015 on 14th November, 2015.

The other highlights of the pavilion were Hydrologic cycle model and electronic display board on impact of climate change by NIH, display of river linking project by NWDA, two tier spillway model and Yamuna river model by CWPRS, river ghat development programme by WAPCOS and the various programme and action plan to clean river Ganga by NMCG.

JAL KRANTI ABHIYAN

i) Organisation of Workshops/Seminars/ Conferences

‘JAL KRANTI ABHIYAN’ was launched on 05.06.2015 simultaneously at Jaipur, Shimla and Jhansi. Jal Kranti Abhiyan is being observed during 2015-16 to spread awareness on water conservation and management in the country through a holistic and integrated approach involving all stakeholders and making it a mass movement. Various activities include Jal Gram Yojana, Development of Model Command Area, pollution Abatement and Mass Awareness Programme.



Sushri Uma Bharti, Hon'ble Minister of Water Resources, River Development and Ganga Rejuvenation inaugurating the Jal Kranti Abhiyan by releasing bunch of balloons at Jaipur on 05.6.2015.

ii) BHUJAL MANTHAN

As a part of Jal Kranti Abhiyan the Ministry through CGWB organized one day “Bhujal Manthan” at Kurukshetra University, Kurukshetra, Haryana on 21.08.2015. Public Representatives, Ground Water Experts, Representatives of Central & State Governments, Farmers, Students, and NGO etc. from across the country participated in this program for discussion and deliberation during various technical sessions. A book containing selected articles was also released during this program.



Hon'ble Minister, MoWR, RD&GR, GoI lights the ceremonial lamp to inaugurate the seminar on Bhujal Manthan along with Hon'ble Minister (Agriculture, Irrigation Development and Panchayats) Govt. of Haryana.

Address by Hon'ble Minister at Bhujal Manthan

Publicity through Print media i.e. newspapers/magazines

Half page coloured advertisement on climate change, in leading newspapers of Hindi, English and regional languages, was issued on 18th October, 2015 to highlight the direct/indirect effects of Climate Change on Water Resources, the contributory factors and the recommended practices to conserve water by adopting efficient/ better Water Management Practices to meet the challenges of Climate change in connection with 21st Conference of Parties held at Paris during 30th November, 2015 to 11th December, 2015.

Activities likely/ anticipated to be undertaken from 1st January, 2016 to 31st March, 2016

i) Painting Competition on Water Conservation

A three tier Painting Competition is being organised since 2010 across the country for 6th, 7th and 8th standard students in three stages, namely, School, State and National Level to spread awareness on water conservation. This year, the painting competition on the themes 'River Pollution', 'Clean River' and 'Climate Change Impact on Water' will be organised in all States/UTs of the country. The State Level Competition will be held alongside the rivers as far as possible.

ii) Mass Awareness activities under Tribal Sub Plan

The Ministry will organise Drawing and Essay competition for School children and other Special Awareness Programmes on Water conservation in, Arunachal Pradesh, Mizoram, Nagaland, Meghalaya, Lakshadweep and Dadra and Nagar Haveli under Tribal Sub-Plan in the last quarter of the FY 2015-16.

iii) Publicity through Print media i.e. newspapers/magazines

- i. Half page coloured advertisements are to be issued by CWC in all leading newspapers including vernaculars on water related theme.
- ii. Printing of booklets/ reading materials/ pamphlets on 'Jal Kranti Abhiyan' and related topics are to be issued by CWC and CGWB.

iv) Organisation of Training Programmes

Ten workshops/training programmes at different locations were approved by the Ministry wherein, from each Jal Gram one elected representative from Panchayat and one representative of the Water User Association shall be identified as "Jal Mitra/ Neer Nari" and training shall be imparted to them.

v) E-Governance / online activities / Social Media Platform

The Ministry of Water Resources, RD & GR has operationalized e-Procurement w.e.f. 15.04.2015. Besides, some Attached / Subordinate Offices under the Ministry viz. Central Water Commission, Central Ground Water Board, CSMRS, NIH, NMCG and Farakka Barrage Project have also implemented e-Procurement, completely.

The comprehensive Website is being updated regularly for sharing Citizen-centric achievements, policies, initiatives etc. of the Ministry.

E-Leave management system has been operationalized w.e.f. 01.01.2016.

Online Stationery Request monitoring system, Vigilance cases monitoring system and Court Cases monitoring system has been operationalized in the Ministry w.e.f. June, 2015.

Executive Records Sheets of 6046 (approx) number of Officers/ Officials under the Attached Offices/ Subordinate Organizations have been uploaded.

Also, Facebook/Twitter page of the Ministry has been started. The Social Media/ Facebook page is being regularly utilized for sharing the achievements and new initiatives of the Ministry.

3.2.7 Infrastructure Development

Infrastructure Development (ID) Scheme has been approved by the Government by merging four continuing schemes viz. (i) Land & Building & Information Technology Plan of Central Ground Water Board (CGWB), (ii) Land & Building of Central Water Commission (CWC). (iii) Information Technology Development Plan of Ministry of Water Resources, River Development and Ganga Rejuvenation and (iv) e-Governance of the Ministry of Water Resources, River Development and Ganga Rejuvenation.

During the XII Plan period of 2012-17, a total of Rs.246.26 crore for the ID Scheme has been approved. The funding of the Scheme has been approved by the Expenditure Finance Committee (EFC). Out of Rs.246.26 crore, Rs.216.26 crore is earmarked for Land & Building component and the balance of Rs.30 crore for the IT component.

The Scheme aims at providing better working environment in the offices, creation of assets and savings on payment of monthly rent. To achieve this, construction of offices at various locations, provision for construction of staff quarters as well as modernization of existing offices of the Ministry (Proper), CWC and CGWB have been included under the ambit of the Scheme.

CWC – Land & Building:-

Modernisation of CWC (Hqrs) and construction works of office-cum-residential complex at Patna, Guwahati and construction of boundary wall at CWC complex at Itanagar are in progress. The Construction works of office-cum-residential complex at Burla have been completed. The Construction works of office-cum-residential complex at Silchar, Swarnrekha-Sub-Division at Balasore, staff quarters at Kolkata, procurement of land for sub-division at Mangluru would be taken

up. The Construction of Hutments (new activity) at various sites is also proposed under this Scheme. Acquisition of land and construction of hutments at various locations is being continued. Various proposals are at various stages like preparation of estimates and its administrative approval and expenditure sanction, possession of land in favour of CWC etc.

CGWB – Land & Building:-

Under the ID Scheme of CGWB (L&B), Out of the ten, three projects are ongoing and likely to be completed in 12th Five Year Plan. The three buildings at Bhopal, Guwahati & Bangalore have been mostly completed. Some of the work of seven new projects will be completed in XIIth Five Year Plan and some will be floating in 13th FYP. The objective of the scheme is to provide better working environment in the offices, creation of assets and savings on payment of monthly rent.

CGWB – IT:-

Under IT Plan of CGWB, it is envisaged to establish an enterprise wide, unified, single window web based System where in a centralised repository of data, documents, work flow and knowledge would be created using Internet and Warehousing Technologies/ tools and applications. A unified/ standardized web based environment would translate the capabilities of the IT into e-Governance. Unified/ Consolidated and centralized repository along with associated applications would realize the concept of the “less-paper” office. Easy access to information would facilitate collaborative processing and team-work. For the senior level officers, the information would be available in the form of ‘Dash Boards’.

During 2015-16, 216 number of MS Office Professional Software have been proposed to be procured for installation on Personal Computers in Regional Offices, Divisional Offices, State Unit Offices and Central Head Quarters Office for e-Governance activities in Central Ground water Board. Design & Development of Web based Applications for e-Governance applications in association with NIC would be initiated.

e-Governance:-

The Ministry has taken following new initiatives for strengthening e-Governance.

- a. The Ministry of Water Resources, RD & GR has operationalized e-Procurement. Its first online tender had been uploaded on the e-Procurement module of Central Public Procurement Portal on 15.04.2015. Besides, some Attached / Subordinate Offices under the Ministry viz.

Central Water Commission, Central Ground Water Board and Farakka Barrage Project have also implemented e-Procurement, completely.

- b. Online Stationery Request monitoring system, Vigilance cases monitoring system and Court Cases monitoring system has been operationalized in the Ministry w.e.f. June, 2015.
- c. The comprehensive Website and Social Media Platform/ Facebook page of the Ministry are being used regularly for sharing Citizen-centric achievements, policies, initiatives etc. of the Ministry.
- d. The Ministry has taken steps for acquiring a separate website of all its Regional Offices bearing Gov.in domain. This will facilitate self-control on their content and more engagement with the citizens effectively.
- e. Ministry has decided to revive e-Office in a time bound and phased manner. Training on e-Leave management system has been imparted in the Ministry which has been operationalized w.e.f. 01.01.2016.

3.2.8 RIVER MANAGEMENT ACTIVITIES AND WORKS RELATED TO BORDER AREAS

The above central sector scheme has been **approved in December 2014** for Rs. 740 crore to cover the following works/ schemes during XII Plan. The scheme has following components:

Hydrological observations and flood forecasting on common border rivers with neighbouring countries

As mutually agreed, the hydrological observations and establishment of equipment for confirmation of hydrological and seismic parameters considered at the time of preparation of DPR, are continuing.

As per Indo-Bangladesh Treaty of 1996, during lean season (From 1st January to 31st May) the waters of Ganga River are shared at Farakka and for this purpose joint hydrological observation at Farakka (on Indian side) and at Harding Bridge (on Bangladesh side) are carried out by joint teams deputed by both the countries. During the year, **2014-15** also, these observations were conducted in the lean season during 1st April **2014** to 31st May **2014** and again started in the next lean season from 1st January **2015**.

The hydro-meteorological data of 54 sites located in Nepal was received in India as per Indo-Nepal bilateral arrangements.

Investigations of Water Resources projects in Neighboring countries

Nepal has a vast potential for hydropower generation and continuous dialogues are held with Nepal on construction of large storage projects. Under bilateral agreements with Nepal, the Pancheshwar Multipurpose Project, Sapta High Dam and Sun Kosi storage cum diversion have already been identified.

The field investigations for preparation of Detailed Project Report (DPR) of Pancheshwar Multipurpose Project on river Mahakali (known as Sarda in India) were completed by the Joint Project Office and draft DPRs prepared by India and Nepal. Subsequently, Pancheshwar Development Authority (PDA) for implementation of the Project has been constituted. The Terms of Reference of PDA, inter-alia, includes execution, operation and maintenance of the Pancheshwar Project including finalisation of the DPR and as also to resolve the outstanding bilateral issues between India and Nepal related to the project.

The field investigations and preparation of DPR of SaptaKosi High Dam and Sun Kosi Storage cum diversion project, are in progress. Besides, feasibility study of Kamla dam project and preliminary study of Bagmati Multipurpose Project have also been undertaken and are targeted to be completed alongwith DPRs of SaptaKosi High Dam and Sun Kosi Project. The field investigations suffered some delay due to security aspects on Nepal Side but the issues have been taken up with the Government of Nepal and works have been resumed and are in progress.

Pre-construction activities of Pancheshwar, Naumure and activities of Pancheshwar Development Authority

A provision for undertaking preconstruction activities by PDA has been kept under the above scheme. An amount of Rs. 10 Crore has been released to PDA during 2015-16.

Grant-in-aid to States and Union Territories for flood management / anti-sea erosion works

The scheme provides for 100% grant to States and UTs for river management works.

Ganga Flood Control Commission

The expenditure on activities of Ganga Flood Control Commission is met from the above Plan Scheme.

3.2.9 FARAKKA BARRAGE PROJECT

The Farakka Barrage Project (FBP) was commissioned in 1975 for preservation & maintenance of the Calcutta Port and for increasing the navigational depth of the Bhagirathi – Hooghly waterway. The Farakka Barrage Project comprises of a 2245 m long barrage across river Ganga at Farakka in Murshidabad district of West Bengal, a canal head regulator at Farakka for diverting water to Feeder Canal, a 38.38 km long Feeder Canal and Jangipur Barrage at river Bhagirathi-Hooghly system, besides the road cum rail bridge across Ganga at Farakka, Navigation Locks at Farakka, Jangipur and Kalindri (Nurpur/ Malda), a road cum rail bridge across the Feeder Canal, Townships at Farakka, Ahiron and Khejuriaghat having 4000 dwelling units. Its appurtenant structures include flood embankments, marginal bunds, afflux/guide bunds, etc.



Farakka Barrage Project, Farakka, Distt. Murshidabad, India

FBP authority has been assigned following major responsibilities:

- Operation & Maintenance of Main Barrage
 - (a) 112 gates (in 109 bays) on main Barrage
 - (b) 11 gates on Head-Regulator
 - (c) 15 gates of Jangipur Barrage

(d) Navigational lock Gate / Regulator

(e) Protective measures of apron and river bed in u/s and d/s of Barrage

- Maintenance and protective measures of Feeder Canal (38.38 Km. in length), structures across Feeder Canal, Culverts, Inlets, Ferry Services, Inspection Road (both banks), Syphon, Buildings etc.
- Maintenance & protective anti-erosion works in the extended jurisdiction of 120 km (40 km upstream and 80 km downstream of Barrage); alongwith its allied structures like marginal bundh, afflux bundh, inspection road, regulator, navigation locks, culverts, guide bund etc. for the safety of Barrage.
- Maintenance of Farakka Township, Khejuriaghat Township, Jangipur Barrage colony, colony at Kalindri lock including maintenance of all civil, mechanical and electrical structures.
- Operation & Maintenance of all equipments, vehicles and machineries etc.

Since the Gates of FBP have outlived their economic life and serviceability, phase wise replacement of all the gates of main barrage and Head Regulator, remote control system, etc. have been undertaken by FBP. So far 36 gates of the Farakka Barrage have been replaced and the work of replacement of other gates is going on.

Further, with the successful accomplishment of time specific anti-erosion and bank protection works in critical reaches on river Ganga / Padma, FBP authority has been able to ensure the safety of Farakka Barrage beside providing reasonable protection from floods to lives and livelihood of local people in the region.

Apart from above, Farakka Barrage Project is facilitating implementation of India-Bangladesh Ganga Water Treaty -1996 on sharing of Ganga water between India and Bangladesh.

Treaty on Sharing of Ganga/Ganges Waters at Farakka

A treaty was signed by the Prime Ministers of India and Bangladesh on 12th December, 1996 for the sharing of Ganga/Ganges waters at Farakka during the lean season. As per the Treaty, the Ganga/Ganges waters is being shared at Farakka (which is the last control point of river Ganga in India) during lean period, from 1st January to 31st May every year, on 10-daily basis as per the formula provided in the Treaty. The validity of Treaty is 30 years.

The sharing of water as per the Treaty is being monitored by a Joint Committee headed by Members, JRC from both sides. 59th and 60th meeting of Joint Committee were held at Kolkata and Pakshey, Pabna (Bangladesh) in Jan 2015 & April 2015 respectively. The 61st meeting of the Joint Committee was held in Sept. 2015 in Chandigarh, India. The Treaty is being implemented to the satisfaction of both the countries since 1997.

3.2.10 NATIONAL WATER MISSION

The Government of India launched National Action Plan on Climate Change (NAPCC) which inter-alia identified the approach to be adopted to meet the challenges of impact of climate change through eight National Missions including National Water Mission with the main objective of “conservation of water, minimizing wastage and ensuring its more equitable distribution both across and within States through integrated water resources development and management”.

The National Water Mission (NWM) document, approved by the Union Cabinet on 6th April 2011, has identified five goals for the mission.

New initiatives taken during the current financial year (From 1st April to 31st December, 2015):

The goals, respective strategies and the key achievements are as follows:

Goal 1: Comprehensive water data base in public domain and assessment of the impact of climate change on water resources.

Strategies

- Review and establishment of network for collection of additional necessary data
- Development of water resources information system
- Development / implementation of modern technology for measurement of various data
- Developing inventory of wetland
- Research and studies on all aspects related to impact of climate change on water resources including quality aspects of water resources with active collaboration of all research organizations working in the area of climate change
- Reassessment of basin-wise water situation
- Projection of the impact of climate change on water resources

New Initiatives & Key Achievements

1.1 Initial projections of the impact of climate change on water resources, including the likely change in water availability across time and space: Eight R&D proposals to study

the impact of climate change on water resources covering in Tapi, Luni, Mahanadi, Mahi, Sabarmati, Subarnrekha and Sutlej River basins are under active consideration for providing funding.

1.2 Reassessment of river basin wise water situation: CWC in collaboration with NRSC has started the work on the reassessment of water situation in 19 river basins of the country. Training programmes for CWC officials have been conducted by NRSC and more training programmes are planned for regional offices. Procurement of hardware/ software, data collection and initiation of study in CWC field offices has been initiated. The study is expected to be completed by October 2016.

1.3 Establishment of network for collection of additional necessary data: For collection of necessary hydro-meteorological data, CWC has upgraded existing 103 hydrological observation (H.O) sites and 217 new H.O. sites have also been opened. In addition to existing 878 HO stations and it has been proposed to setup 1917 new stations during 12th & 13th Plan period (including snow and meteorological stations) out of which 800 are planned in 12th plan period.

1.4 Uploading the water data in public domain:

a) Central Water Commission (CWC) has launched web based Water Resources Information System (IndiaWRIS) in association with National Remote Sensing Centre (NRSC). The Version 4.1 has been initiated in July 2015. More GIS layers are being added in the new Version and now GIS based data is available in public domain at 1:2,50,000 scale.

b) As per Hydrological Data Dissemination Policy, the unclassified hydrological data of CWC has been uploaded on the IndiaWRIS portal. The data include Gauge, Discharge, Silt and Water Quality parameters as recorded by CWC Hydro Meteorological Stations since 1965. The data has been updated up to 2014 in Version 4.1 IndiaWRIS.

1.5 The ground water level and water quality data of Central Ground Water Board (CGWB) for the period 1996 to 2015 has been made available on IndiaWRIS (<http://www.india-wris.nrsc.gov.in>). In addition, last five years ground water data of water level and quality have also been placed on the website of CGWB (www.cgwb.gov.in) to be in public domain. eGEMS web based data portal is being developed by CGWB. Aquifer Atlas and Litholog

details of 6 states (Punjab, Madhya Pradesh, West Bengal, Kerala and Tamil Nadu) prepared by CGWB have been updated on IndiaWRIS.

- 1.6 WebPortal & MIS for NWM:** National Water Mission Web Portal development is in progress and shall be available at <http://www.nationalwatermission.gov.in> shortly. Management Information System (MIS) is also being developed and will be available in the Web Portal.

Goal 2: Promotion of citizen and state actions for water conservation, augmentation and preservation

Strategies

- Empowerment and involvement of Panchayati Raj Institutions, urban local bodies, Water Users' Associations and primary stake holders in management of water resources with focus on water conservation, augmentation and preservation
- Promote participatory irrigation management
- Sensitization of elected representatives of overexploited areas on dimensions of the problems and to orient investment under MNREGP towards water conservation
- Provide incentives for water neutral and water positive technologies in industry
- Encourage participation of NGOs in various activities related to water resources management, particularly in planning, capacity building and mass awareness
- Involve and encourage corporate sector / industries to take up, support and promote water conservation, augmentation and preservation within the industry and as part of corporate social responsibility

New Initiatives and Key Achievements

- 2.1 Regional Conventions of Water Users Associations (WUA):**As a follow up of the National Convention of Water Users Associations (WUA) held in November 2014 at New Delhi, the first Regional Convention covering WUAs from States of J&K, HP, Uttarakhand, Punjab, Rajasthan and Haryana was organized at Punjab Agricultural University, Ludhiana, on 25-26 August 2015. Another Regional Convention of Water Users Associations was organised during 8th and 9th January, 2016 at WALMI, Aurangabad. WUA's from 5 Western States i.e. Maharashtra, Madhya Pradesh, Gujarat, Chhatisgarh and Goa participated in the convention.
- 2.2** Documentation of existing good practices and literature on water conservation (covering agriculture, domestic and industrial use), water augmentation (through recycling of industrial waste water and municipal sewerage, drip irrigation, sprinkler irrigation, PIM, etc.) and water

preservation (through water efficient mechanism in domestic use, redesign of hand pumps to store water in small tanks, etc.) has been drafted under NWM-TISS programme.

- 2.3 'Draft guidelines for supporting HRD /Training/Capacity Building/Mass Awareness programmes under NWM' have been developed and are under finalization

Goal 3: Focused attention to vulnerable areas including over-exploited areas

Strategies

- Expeditious implementation of water resources projects particularly the multipurpose projects with carry over storages benefitting drought prone and rain deficit areas
- Promotion of traditional system of water conservation
- Physical sustainability of groundwater resources
- Intensive programme for ground water recharge in over-exploited, critical and semi-critical areas
- Conservation and preservation of wetland
- Intensive programme for addressing the quality aspects of drinking water particularly in rural area
- Promotion of water purification and desalination
- Systematic approach for coping with floods

New Initiatives and Key Achievements

- 3.1 Intensive Programme for Ground Water Recharge for Over Exploited, Critical and Semi Critical Areas:** All the 18 States/UTs having over exploited blocks have been requested to prepare State wise implementation plans for rain water harvesting and artificial recharge to ground water based on the Master Plan of CGWB for both rural and urban areas in consultation with Central Ground Water Board and State Ground Water Departments. For implementation of intensive recharge in the over exploited blocks in nine States (Tamil Nadu, Andhra Pradesh, Karnataka, Uttar Pradesh, Haryana, Telangana, Maharashtra, Rajasthan, Punjab), the concerned States have been requested to prepare DPR for at least two over exploited blocks identified by CGWB for implementation. For implementation of intensive programme for ground water recharge, coordination is being promoted amongst MNREGA, Watershed development, Concerned State Govt Departments, CGWB and NWM.
- 3.2 Mainstreaming Integrated Flood Management under Climate Change:** The Asian Development Bank has submitted Draft Final Report on "Operational Research to Support Mainstreaming of Integrated Flood Management under Climate Change". The findings of the

report were presented in the meeting of the Project Overview-cum-Steering Panel (POCSP) held under the Chairmanship of the Secretary, WR, RD& GR on 04/11/2015. The recommendations encompass the combination of structural and non-structural measures as well as increasing the resilience of the communities in flood prone areas of Burhi-Gandak and Bramhani-Baitarani river basins. Based on the feedback received from the POCSP members a Sub-Committee has been constituted under the Chairmanship of Member (RM), CWC to analyze all the technical aspects of integrated flood management and finalization of the recommendations by 7th December, 2015. The recommendations will be circulated to all the flood prone States of the Country for adoption.

- 3.3 Promotion of Water Purification and Desalination:** In coastal areas of the country, ground water has become brackish/saline due to over-exploitation. For providing drinking water supply to such affected habitations, it is proposed to install desalination plants based on the innovative technology developed by CSIR-Central Salt and Marine Chemicals Research Institute in the States of Gujarat, Tamil Nadu and Andhra Pradesh. The matter is being coordinated with Ministry of Drinking Water and Sanitation (MoDWS) for identification of habitations for installation of the desalination plants by the CSMCRI. Three sites have been identified in the State of Gujarat, and the CSIR-CSMCRI has submitted a proposal for installation of demonstrative desalination plants based on innovative technologies. On successful commissioning and performance evaluation of desalination plants, replication of technology in other areas of the Country having Brackish/saline ground water will be considered.

Goal 4: Increasing water use efficiency by 20%

Strategies

- Research in area of increasing water use efficiency and maintaining its quality in agriculture, industry and domestic sector
- Incentivize recycling of water including wastewater
- Development of Eco-friendly sanitation system
- Improve efficiency of urban water supply system
- Efficiency labelling of water appliances and fixtures
- Promotion of water efficient techniques and technologies
- Undertake Pilot projects for improvement in water use efficiency in collaboration with States
- Promote Water Regulatory Authorities for ensuring equitable water distribution and rational charges for water facilities

- Promote mandatory water audit including those for drinking water purposes
- Adequate provision for operation & maintenance of water resources projects
- Incentive through award for water conservation & efficient use of water
- Incentivize use of efficient irrigation practices and fully utilize the created facilities

New Initiatives and Key Achievements

4.1 Base Line studies for Improving WUE in Irrigation Sector: Work on Five Major-Medium Irrigation projects (Pahumara in Assam, Loktak in Manipur, Rallapadu in Andhra Pradesh, Peddavagu in Telangana and Arunavati in Maharashtra) for carrying out the Baseline studies in Phase-I is in progress. Sixteen more studies under Phase-II have been approved by the Ministry.

4.2 Setting up of National Bureau of Water Use Efficiency (NBWUE) has been proposed. The draft cabinet note has been circulated for inter-ministerial consultations and responses have been received. The clarifications sought by NITI Ayog, MoEF & CC and PMO are under consideration of the Ministry.

Goal 5: Promotion of basin level integrated water resources management

Strategies

- Review of National Water Policy
- Review of State Water Policy
- Guidelines for different uses of water e.g., irrigation, drinking, industrial etc particularly in context of basin wise situations
- Planning on the principle of integrated water resources development and management
- Expeditious formulation of the projects for utilization of surplus flood water for beneficial use of the society and implementation of projects after evaluating costs and land acquisition problems
- Ensuring convergence among various water resources programmes

New Initiatives and Key Achievements

- 21 baseline studies have been initiated for irrigation projects in association with WALAMTARI, Hyderabad, WALMI, Aurangabad and NERIWALM, Tezpur, for looking into the modalities of improving water use efficiency in irrigation projects.

- ii. An MoU has been signed with Tata Institute of Social Sciences, Mumbai to develop modalities for promotion of citizen and State action for water conservation, augmentation and preservation.
- iii. Action has been initiated in consultation with 12 State Governments to prepare State Specific Action Plan for Water Resources.
- iv. An Indo-European Union Water Forum organised on 23-24 November, 2015 at New Delhi to discuss modalities of cooperation in the field of water framework law river basin management, waste water treatment, quality aspects of water and water audit.
- v. NWM (National Water Mission) has initiated actions to prepare State Specific Action Plans (SSAP) for water sector linking with State Action Plans for Climate Change formulated by States/UT's with support increasing water use efficiency by 20%. Baseline studies being undertaken. Further baseline studies are being undertaken for assessing the present level of water use efficiency in irrigation projects.

3.2.11 DAM REHABILITATION AND IMPROVEMENT PROJECT (DRIP)

Dam Rehabilitation and Improvement Project (DRIP) has been taken up with World Bank assistance. About 225 dam projects in 7 states i.e. Madhya Pradesh, Odisha, Kerala, Tamil Nadu, Karnataka, Uttarakhand and Jharkhand would be rehabilitated under this project. DRIP is a six-year project. Apart from structural and non-structural measures for rehabilitation and improvement of identified dams, the scope of project includes the development of appropriate institutional mechanisms for the safe operation and maintenance of all large dams in participating states. In addition, strengthening of the institutional set up for national level dam safety surveillance and guidance would be taken up in Central Water Commission.

The total project cost is estimated at Rs 2100 Crore, out of which 80% cost will be financed by World Bank while balance 20% will be financed by respective State Government and Ministry of Water Resources, RD & GR. DRIP has become effective from 18th April, 2012.

Design flood reviews of 199 DRIP dams have been completed. Inspection of 212 dams has been carried out by the Dam Safety Review Panel (DSRP). 150 dams have also been visited by the Central Project Management Unit. Project Screening Template (in line with DPR) in respect of 206

DRIP dams have been approved by the World Bank. Works have been awarded for 79 dams. 44 trainings have been conducted by the CPMU, wherein about 1500 officials have been trained on different aspects of DRIP implementation. Website on DRIP (<http://damsafety.in/>) for dissemination of information to general public for promoting cross learning of implementing agencies with sharing of all DRIP implementation related documents; capturing status of work flows; and uploading of final key documents along with capturing of meta data for analysis has been prepared. Work on the preparation of initial two modules of dam asset management tool (Dam Health and Rehabilitation Monitoring Application) has been started. The activity linked to ISO certification of Central Dam Safety Organization has been completed with the award of certificate in the month of September, 2015. Thirteen meetings of Technical Committee for DRIP have been held for guiding and expediting the pace of project implementation. World Bank has also carried out its 7th Review Mission, wherein road blocks as well as way forward in project implementation have been discussed.

A National Level Steering Committee (NLSC) under the Chairmanship of Secretary (WR, RD & GR) has also been constituted vide order dated 09.05.2012 to review physical and financial progress and to give policy direction in formulation and implementation of the project. So far two meeting of the NLSC have been held on 01.05.2015 and 29.7.2015.

Rs. 16 Crore has been kept under RE 2015-16 for DRIP, out of which expenditure of Rs. 8.86 Crore has been booked. Further, expenditure of Rs. 7.14 Crore is anticipated to be incurred by 31st March, 2016.

Chapter 4

Inter-State River Issues



KEY ACIEVEMENTS

- Vansadhara Water Dispute Tribunal - recording of evidence of concerned states is progressing and after completing the recording of evidence, the argument on the issues will begin.
- The Mahadayi / Mandovi Water Disputes Tribunal has already framed issues for determination and recording of witnesses of the party States is to be taken up next.
- Ravi & Beas Waters Tribunal report was submitted and period for forwarding of further report has been fixed to 5th August, 2016.

4.1 INTER-STATE WATER DISPUTES ACT, 1956

Inter-State Water Disputes (ISRWD) Act, 1956 was originally enacted by the Parliament in 1956 for adjudication of disputes relating to waters of Inter-State rivers and river valleys. In view of the Sarkaria Commission recommendations, the said Act has been amended and came into force from 6th August, 2002. The amendments include time frame for constitution of the Inter-State Water Disputes Tribunals and time limit for the Tribunals to give their awards. As per the amendment, Central Government will have to constitute a Tribunal within a period of one year from the date of receipt of a request from any State Government. Also, the award of the Tribunal shall have the same force as an order or decree of Supreme Court.

4.2 INTER-STATE WATER DISPUTES TRIBUNALS

4.2.1 Cauvery Water Disputes Tribunal (CWDT)

The Cauvery Water Disputes Tribunal (CWDT) was constituted by the Government of India on 2nd June, 1990 to adjudicate the water dispute regarding inter-state river Cauvery and the river valleys

thereof. The term of CWDT has been extended by the Government upto **02.11.2016** as per provisions of ISRWD Act, 1956.

Progress in Adjudication of the Dispute before CWDT

The Cauvery Water Dispute Tribunal has submitted its reports and decision under section 5 (2) of Inter-State River Water Dispute Act, 1956 to Government on 5th February, 2007. Under Section 5(3) of the said Act, the Central Government as well as party States sought further clarification/guidance in this regard.

The Tribunal took up the petitions of the party States for consideration on 10th July, 2007. In its order, the Tribunal, inter-alia, observed as under:-

“It appears that the State of Karnataka, the State of Tamil Nadu and the State of Kerala filed Special Leave Petitions against the aforesaid decision of this Tribunal dated 5th February, 2007 before the Supreme Court. The Supreme Court has granted Special Leave. The appeals are pending. According to us, in this background, these applications under Section 5(3) of the said Act should be listed for orders after disposal of the appeals by the Supreme Court”.

Civil Appeal No.2453 of 2007 of the State of Karnataka versus State of Tamil Nadu and other alongwith Civil Appeal No.2454 of 2007 and Civil Appeal No.2456 of 2007 of the State of Kerala and State of Tamil Nadu respectively came up for preliminary hearing before the Hon’ble Supreme Court of India on 28.07.2008, 12.05.2009, 06.05.2010 but decision could not be arrived at. The matter was again listed before the three judge’s bench on 22nd September, 2011 wherein it was ordered to list along with civil appeal in the third week of October, 2011. The appeal, that was listed on 18.10. 2011, the Hon’ble Court mentioned that the Sr. Counsel appearing for the parties submit that oral arguments in these appeals are likely to take more than six regular hearing days. In view of the submission, subject to orders of the Hon’ble Chief Justice of India, let the appeal be listed for final disposal before the appropriate bench in the month of February 2012. In the meantime, the Supreme Court heard Cauvery issues in IA I of 2013, IA 5 & 6 of 2012 under OS 3 of 2002 on 04.1.2013, 04.02.2013, 07.2.2013 and finally on 25.2.2013 and directed Central Government to publish final award of CWDT dated 05.2.2007 as early as possible, and disposed of IA I of 2013, IA 5 & 6 of 2012 in OS 3 of 2002 alongwith contempt petition 6I of 2013 in IA No. I of 2013. Further, it is directed to list 2453 of 2007 alongwith connected matter and OS 3 of 2001 and OS 3 of 2002 for

final hearing on AUGUST 6, 2013. Accordingly, Central Government has published final award of CWDT dated 05.2.2007 vide its notification dated 19.02.2013 in official Gazette”.

IA No.6 in civil appeal No. 2456 of 2007 was taken up in the Hon’ble Supreme Court on 1.7.2013 and ordered for listing for consideration on 5th July, 2013 by giving time up to 4th July, 2013 for putting up response by the rejoinder. The case was again taken up on 5th July, 2013, and it was ordered the rejoinder-Affidavit may be filed by the state of Tamil Nadu within three weeks and list the same on 5th August, 2013.

The case was taken up on 5.8. 2013 wherein it was ordered that having regard to good rains, learned Senior Council for the state of Tamil Nadu is not desirous of pressing IA No. 6 of 2013 and accordingly it was ordered to list the appeal on 15.1. 2014.

The original suit 3 of 2002 was taken up by the Hon’ble Supreme Court on 3.12.2013 and it was ordered that the case is connected to original suit 03/2001 and in the next date of hearing the case on 15.1.2014 the Hon’ble Court has directed to list the group of matters ‘For Directions’ on 12.3.2014 and further for listing of case on 25.11.2014, which was further listed for 20.01.2015 and then again listed for 12.1.2016 after which no listing date has been updated till date.

Chairman, Tribunal Mr. Justice N.P. Singh resigned on 9th April, 2012. In the meantime Ministry of Water Resources, RD & GR requested to Hon’ble Chief Justice of India for appointment of Chairman of CWDT. Hon’ble Chief Justice of India nominated Dr.Justice B.S.Chauhan sitting Judge of Supreme Court of India to function as Chairman of CWDT, same was notified vide Notification No.1271 (E) dated 13th May, 2014, Hon’ble Dr. Justice B.S. Chauhan has joined the Tribunal on 21.5. 2014.

On joining of the Hon’ble Chairman on 21.5.2014, the CMP No. 01/2012 was taken up on 15th July, 2014 in the Tribunal, wherein the Tribunal vide order dated 15.07.2014 desired that the State of Tamil Nadu may file a fresh application or press I.A. No. 11 filed by it in the Hon’ble Supreme Court in Civil Appeal No. 2453 of 2007 and get an appropriate direction that this Tribunal may proceed with the application under Section 5(3) of the Act 1956.

The Expenditure incurred by the Tribunal is given in Table-4.1

Table-4.1: Expenditure incurred by the Tribunal: -

Sl.No.	Specification	Rs. inLakhs
i)	Budget Allocation for 2015-16	289.00
ii)	<u>Expenditure from 04/15 to 12/15</u>	160.89
iii)	<u>Cumulative Expenditure upto 31/12/15</u>	2626.76

4.2.2 Krishna Water Disputes Tribunal (KWDT)

The Krishna Water Disputes Tribunal (KWDT) was constituted on 02.04.2004 for adjudication of the dispute relating to sharing of waters of Inter-State river Krishna and river valleys thereof. In the Writ Petition No. 408 of 2008, Hon'ble Supreme Court has ordered that the effective date of constitution of the Tribunal will be 01.02.2006. Consequently, the term of the Tribunal was extended up to 31.12.2010 as per provisions of ISRWD Act, 1956. The report and the decision by the Tribunal under Section 5(2) of the Act were forwarded to the Ministry of Water Resources on 30th December, 2010. Further, the tenure of the Tribunal has been extended from time to time.

The Report and Decision was pronounced on 30.12.2010 by the KWDT-II under Section 5(2) of the Act. Thereafter the Party States i.e. Andhra Pradesh, Karnataka, Maharashtra and also the Central Government had filed their Reference Applications u/s 5(3) of the Act to the Tribunal. Subsequently, replies and rejoinders were filed by the Party States and the Central Govt. Arguments were advanced on behalf of the Party States and Central Govt. on the dates hearing before the Hon'ble Tribunal. The Tribunal concluded the hearing of the arguments vide order dated 30.08.2013. The order on References was pronounced by the Tribunal on 29.11.2013 by way of Further Report and same was forwarded to the Central Govt. and the respective Party States under Sec. 5(3) of the Act for their information and implementation.

Meanwhile, as per Andhra Pradesh Re-organization Act, 2014 the term of the Tribunal has been extended for two years w.e.f. 1st August, 2014 for submission of further report by the Tribunal so as to address the terms of reference specified in clauses (a) and (b) of the Section 89 of the Andhra Pradesh Re-organization Act, 2014 (6 of 2014).

The Tribunal has framed preliminary issues on the above reference and three hearings were conducted on the preliminary issues on 25th Feb., 26th Feb., and 27th Feb., 2015. Next date of hearing was fixed as 30.03.2015. Due to fire in the Tribunal building, the Tribunal work could not be carried out as envisaged earlier and the work was to be started after the renovation work in February, 2016. The expenditure incurred by the Tribunal is in Table 4.2

Table-4.2: Expenditure incurred by the Tribunal:

Sl. No.	Specification	Rs. in Lakhs.
i)	Budget Allocation for 2015-16	220.00
ii)	<u>Expenditure incurred by the Tribunal during 2015-16 (up to December, 2015)</u>	171.0
iii)	<u>Cumulative Expenditure upto to 31st December, 2015</u>	1660.60

4.2.3 VANSADHARA WATER DISPUTE TRIBUNAL

The Hon'ble Supreme Court had directed Central Government to constitute the Vansadhara Tribunal before February 2010. The Tribunal was notified on 24.02.2010 under the Chairmanship of Mr. Justice B.N. Agrawal with Justice Nirmal Singh and Justice B.N. Chaturvedi as its Members. However, Hon'ble Justice B.N. Agrawal resigned from the post of Chairman on 09.12.2010 and Justice Nirmal Singh, Member, resigned from the post of Member with effect from 02.01.12. The Central Government has since nominated Hon'ble Dr. Justice Mukundakam Sharma as Chairman of the Tribunal who took over charge of the post on 17.09.2011 and Justice Shri Ghulam Mohammad as Member of the Tribunal who took over charge of the post on 08.04.12.

The Ministry of vide letter No.1 (1)/ 87-GA dated 31.10.2011 has allotted office space for VWDT at 5th floor, Mohan Singh Place, New Delhi. The Tribunal has held 20 sittings so far.

In the meantime, the State of Odisha had filed IA Nos.7 & 8 in Writ Petition (Civil) No.443/2006 pertaining to the effective date of functioning of the Tribunal as well as providing Government residential accommodation to the Hon'ble Chairman and Members of the Tribunal respectively. The Hon'ble Supreme Court vide its order dated 11.11.2013 in IA No.8 in Writ Petition(Civil)

No.443/2006 directed that Bungalow No.105, New Moti Bagh, New Delhi be allocated to the Chairman of the Vansadhara Water Disputes Tribunal and further two Type VI houses in R.K. Puram, New Delhi to the Members of the said Tribunal.

Further, the Hon'ble Supreme Court vide its order dated 13.12.2013 in I.A. No.7 in Writ Petition (Civil) No.443/2006 has observed as under:

“It is common ground that Vansadhara Water Disputes Tribunal started functioning with effect from 17.9.2012. We are of the view that this date be considered as the effective date of the Constitution of the said Tribunal for the purpose of calculating the period of three years as provided under Section 5(2) of the Inter State River Water Disputes Act, 1956.”

In pursuance of the order of the Hon'ble Supreme Court dated 13th December, 2013, the Central Government vide S.O. 778(E) dated 14th March, 2014 has decided that the effective date of constitution of said Tribunal shall be 17th September, 2012, and accordingly, under the provisions of sub-section (2) of section 5 of the said act, the period of three years of submission of report and decision by the Vansadhara Water Disputes Tribunal shall commence from the 17th September, 2012.

The Tribunal delivered its order in I.A.No.1/2010 on 17th December, 2013 allowing the Government of Andhra Pradesh to construct a side weir along with the ancillary works as proposed and has, inter alia, directed for constitution of a three member Supervisory Flow Management and Regulation Committee of river Vansadhara. The State of Odisha has filed a Special Leave Petition against the said order before the Hon'ble Supreme Court and the matter is sub-judice.

The Tribunal has already framed the issues of the dispute. It started recording of evidence of the witnesses on behalf of the State of Odisha and examinations have been recorded. After completing the evidence of State of Odisha the recording of evidence of the witness of the State of Andhra Pradesh will commence. Thereafter, the arguments on the issues before the Tribunal will be taken up. The expenditure incurred by the Tribunal is in Table 4.3

Table-4.3: Expenditure incurred by the Tribunal

Sl.No.	Specification	Rs. in Lakhs.
i)	Budget allocation for 2015-16	438.00
ii)	<u>Expenditure incurred by the Tribunal during 01-04-15 to 31.12.15</u>	329.00
iii)	<u>Cumulative Expenditure upto December, 2015</u>	1320.77

4.2.4 MAHADAYI /MANDOVI WATER DISPUTES TRIBUNAL

The Central Government issued a Notification No. S.O. 2786 (E) dated 16th November, 2010 consisting a Tribunal called as “the Mahadayi Water Disputes Tribunal” for adjudication of water disputes relating Inter-State river Mahadayi and the river valley thereof, consisting of (1) Hon’ble Mr. Justice J.M. Panchal, Judge, Supreme Court of India as Chairman, (2) Hon’ble Mr. Justice Viney Mittal, Judge, High Court of Madhya Pradesh as Member and (3) Hon’ble Mr. Justice P.S. Narayana, former Judge, High Court of Andhra Pradesh as Member.

The office accommodation for MWDT has been allotted at 5th Floor, A-Wing, Janpath Bhavan, New Delhi. The Tribunal held its first sitting in its own office premises on 21st August, 2013 and having regard to the pleadings by the parties, framed 44 issues for determination and directed the parties to submit list of witnesses to be examined.

In the sitting of the Tribunal held on 03.09.2014, the Tribunal while observing that many of the informations provided by the States through various documents are inconsistent and/or incomplete, gave a number of directions to the party States to produce data, undertake detailed analysis, produce reports, inspect documents etc., on or before 02.12.2014. The Tribunal also directed the Central Water Commission to furnish all available data / information relating to planning and development of water resources of Mahadayi River Basin and to undertake a detailed analysis with a view to checking consistency of data and file report on or before 02.12.2014. The matter was directed to be listed on 09.12.2014. The requisite documents as directed have now been filed before the office of the Tribunal and the same were taken up by the Tribunal for hearing on 11.02.2015.

The Central Government vide Notification dated 13th November, 2014 has decided that the effective date of constitution of MWDT shall be 21st August, 2013 instead of 16th November, 2010.

Accordingly the Tribunal shall forward its report under Sub-Section (2) of Section 5 of the said Act to the Central Government within a period of 3 years therefrom, i.e. on or before 20th August, 2016. The Tribunal has already framed issues for determination and recording of witnesses of the party States is to be taken up next. The expenditure incurred by the Tribunal is in Table 4.4

Table-4.4:Expenditure incurred by the Tribunal

Sl.No.	Specification	Rupees in Lakhs.
i)	Budget allocation for 2015-16	280.00
ii)	<u>Expenditure from 04/15 to 12/15</u>	210.27
iii)	<u>Cumulative Expenditure upto 31/12/15</u>	818.25

4.2.5 RAVI & BEASWATER TRIBUNAL

The Ravi and Beas Waters Tribunal which was constituted on 2nd April, 1986 submitted its report on 30th January, 1987. The report was circulated in May, 1987. A reference was made to the Tribunal in August, 1987 comprising reference received from the Central Government and references received from Governments of Punjab, Haryana, and Rajasthan, seeking explanation/guidance on certain points in the report.

The period for forwarding of further report by the Tribunal has been extended upto 5th August, 2016. The Tribunal hearings have become dependent on the outcome of a Presidential Reference related to Punjab Termination of Agreement Act, 2004. The expenditure incurred by the Tribunal is in Table 4.5

Table-4.5: Expenditure incurred by the Tribunal

Sl.No.	Specification	Rupees in Lakhs.
i)	Budget allocation for 2015-16	44.00
ii)	<u>Expenditure incurred by the Tribunal in 2015-16 upto 31-12-2015</u>	29.29

Chapter 5

Cooperation with Neighbouring Countries



KEY ACHIEVEMENTS

- 59th, 60th and 61st meeting of Joint Committee of Indo-Bangladesh Joint Rivers Commission were held at Kolkata, Pakshey Pabna (Bangladesh) and Chandigarh respectively.
- 31st Joint Expert Meeting (JET) between India and Bhutan was held on 18th & 19th December, 2015 at Paro (Bhutan) for Comprehensive Scheme for Establishment of Hydro-meteorological and Flood Forecasting Network on rivers common to India and Bhutan.
- Signing of Implementation Plan (IP) upon provision of hydrological information of the Langqen Zangbo/Sutlej River in Flood Season by China to India during 10th ELM meeting.
- Under the Indus Water Treaty, daily G&D data of hydrological sites on six basins, The Indus, The Jhelum, The Chenab, The Ravi, The Beas and The Sutlej of Indus system sent to Pakistan every month.

5.1 India-Bangladesh Cooperation

Indo-Bangladesh Joint Rivers Commission

An Indo-Bangladesh Joint Rivers Commission (JRC) is functioning since 1972 with a view to maintain liaison in order to ensure the most effective joint efforts in maximizing the benefits from common river systems. It is headed by Water Resources Ministers of both the countries. So far, 37 meetings have been held. The last meeting was held in March, 2010. Next meeting is due to be held at Dhaka.

Treaty on Sharing of Ganga/ Ganges Waters at Farakka

A Treaty was signed by the Prime Ministers of India and Bangladesh on 12th December 1996 for the sharing of Ganga/Ganges waters at Farakka during the lean season. As per the Treaty, the Ganga/Ganges waters is being shared at Farakka (which is the last control point on river Ganga in India) during lean period, from 1st January to 31st May every year, on 10-daily basis as per the formula provided in the Treaty. The validity of Treaty is 30 years.

The sharing of water as per the Treaty is being monitored by a Joint Committee headed by Members, JRC from both sides. 59th and 60th meeting of Joint Committee were held at Kolkata and Pakshey Pabna (Bangladesh) in Jan 2015 & April 2015 respectively. The 61st meeting of the Joint Committee was held in Sept 2015 in Chandigarh, India. The Treaty is being implemented to the satisfaction of both the countries since 1997.

Cooperation in Flood Forecasting

India is providing the flood data of Farakka and Sahibganj for Ganga (from 15th June to 15th October), and the flood data of Pandu, Goalpara and Dhubri for Brahmaputra and of Silchar for Barak besides the data of river Teesta, Manu, Gumti, Jaladhaka and Torsa, etc. during monsoon period (from 15th May to 15th October) to Bangladesh for use of their flood forecasting and warning arrangements. The transmission of flood forecasting information from India during the monsoon which is being supplied free of cost has enabled the Civil and Military authorities in Bangladesh to take precautionary measures and shift the population affected by flood to safer places. Flood data of above sites was communicated to Bangladesh on continuous basis during the Monsoon of the year 2014.

5.2 INDIA-BHUTAN COOPERATION

A scheme titled “Comprehensive Scheme for Establishment of Hydro-meteorological and Flood Forecasting Network on rivers Common to India and Bhutan” consists of hydro-meteorological/meteorological stations network located in Bhutan and Operation & Maintenance (O&M) carried out by the Royal Government of Bhutan (RGoB) with funding from Government of India (GoI). The data received from these stations are utilised by the Central Water Commission (CWC) for formulating flood forecasts. A Joint Expert Team (JET) consisting of officials from the Government of India (GoI) and the Royal Government of Bhutan (RGoB) meets twice in year to review the progress and other requirements of the scheme. The latest (31st) meeting of JET was held at Paro (Bhutan) during 18th & 19th December, 2015.

The matter related to problem of floods created by the Rivers originating from Bhutan and coming to India was taken up bilaterally with the Royal Government of Bhutan (RGoB). A Joint Group of Expert (JGE) on Flood Management has been constituted between India and Bhutan to discuss and assess the probable causes and effects of the recurring floods and erosion in the southern foothills of Bhutan and adjoining plains in India and recommend to both Governments appropriate and mutually

acceptable remedial measures. Total five meetings of JGE have been held so far. The latest (5th) meeting of JGE was held during 13th & 15th November, 2013 at Phuentsholing (Bhutan).

In accordance with the decision taken during the first meeting of JGE, a Joint Technical Team (JTT) between the two countries was constituted to provide technical support to JGE on flood management. Total three meetings of the reconstituted JTT have been held so far. The latest 3rd meeting of JTT was held at Phuentsholing (Bhutan) during 5th & 6th February, 2013.

In the 5th meeting of JGE, Joint Group of Expert (JGE) directed Joint Technical Team (JTT) to constitute a Joint Task Group (JTG) comprising members of both the countries especially experts from the fields of environment, geology, mines etc. to study issues related to adverse impact of recurring floods, erosion, mining, etc. in the southern foothills of Bhutan and adjoining plains of India. JTG visited the areas in the southern foothills of Bhutan and adjoining plains of India prone to floods, erosion, etc. on 2nd September, 2015 and has submitted the report on 03.09.2015. Physical and Financial Achievements of JTG India-Bhutan co-operation is given in Table 5.1.

Table -5.1: Physical and Financial Achievements of JTG India-Bhutan co-operation

<p>Physical and Financial achievements (From 01.04.2015 to 31.12.2015)</p>	<p>Joint Task Group (JTG) on 02.09.2015 conducted the site visit to study issues related to adverse impact of recurring floods, erosion, mining, etc. in the southern foothills of Bhutan and adjoining plains of India and submitted the report on 03.09.2015.</p> <p>31st Joint Expert Meeting (JET) between both the countries was held on 18th & 19th December, 2015 at Paro (Bhutan) for Comprehensive Scheme for Establishment of Hydro-meteorological and Flood Forecasting Network on rivers Common to India and Bhutan.</p>
<p>Likely/anticipated achievements (From 01.01.2016 to 31.03.2016)</p>	<p>4th Joint Technical Team (JTT) meeting during 6th & 7th January, 2016 to discuss on report/findings submitted by the Joint Task Group (JTG) on issues related to adverse impact of recurring floods, erosion, mining, etc. in the southern foothills of Bhutan and adjoining plains of India.</p> <p>6th Joint Group of Experts (JGE) meeting after the meeting of Joint Technical Team (JTT).</p>

5.3 India – China Cooperation

In the year 2002, the Government of India inked a MoU with People's Republic of China upon provision of hydrological information of the Yaluzangbu/Brahmaputra River in Flood Season by China to India. In accordance with the provisions contained in the MoU, Chinese side provided hydrological information of three stations, namely Nugesha, Yangcun and Nuxia located on River Yaluzangbu/Brahmaputra of the period from 1st June to 15th October every year, which is utilized by the Central Water Commission (CWC) in the formulation of flood forecasts. This MoU was further renewed in June, 2008 & May, 2013 with a validity of further five years.

During the visit of Hon'ble Prime Minister's of India to China in October, 2013, both side signed a separate "Memorandum of Understanding on Strengthening Cooperation on Trans-Border Rivers" on 23.10.2013, therein mutually agreed upon start date of hydrological information of three stations on Yaluzangbu/Brahmaputra River from Year 2014 will be 15th May instead of 1st June upto 15th October of every year as per MoU signed in May, 2013. During the visit of Hon'ble Vice President of India to China in June, 2014, Implementation Plan (IP) was signed by both the countries on 30.06.2014. The hydrological information in flood season provided by China to India in accordance with the signed implementation plan (IP).

Similarly, a separate MoU with People's Republic of China signed on 11.04.2005 upon provision of hydrological information of the Langqen Zangbo/Sutlej River in Flood Season by China to India. Chinese side provided Hydrological information of Tsada station from 2007. The MoU was renewed in Dec, 2010 for further five year and was set to expire in Dec, 2015. During the recent visit of Hon'ble Vice President of China to India in November, 2015, the MoU was renewed again on 06.11.2015 for further five years.

During the visit of Hon'ble President of the People's Republic of China in November, 2006, it was mutually agreed upon to set up an Expert Level Mechanism (ELM) to discuss interaction and co-operation upon provision of hydrological data in flood season, emergency management and other issues regarding trans-border Rivers as agreed between them. The ELM meeting is held yearly alternatively in both the countries. Nine meetings of ELM have been held so far. Last meeting (9th) was held during 5-8 May, 2015 at Beijing (China). Physical and Financial Achievements of JTG India-China co-operation in Table 5.2

Table 5.2: Physical and Financial Achievements of JTG India-China co-operation

Physical and Financial achievements (From 01.04.2015 to 31.12.2015)	MoU was renewed with China on 06.11.2015 upon provision of hydrological information of the Langqen Zangbo/Sutlej River in Flood Season by China to India for another five year.
Likely/anticipated achievement (From 01.01.2016 to 31.03.2016)	Signing of Implementation Plan (IP) upon provision of hydrological information of the Langqen Zangbo/Sutlej River in Flood Season by China to India during 10 th ELM meeting.

5.4 India – Nepal Cooperation

Pancheshwar Multipurpose Project

Pancheshwar Multipurpose Project is the centerpiece of the Mahakali (Sarda) Treaty of 1996 signed between India and Nepal. The Project envisages construction of Pancheshwar dam having 2 Power Houses with installed capacity of 4800 MW as peaking station and re-regulation them at Rupaligad having installed capacity of 240 MW. The Project will also provide irrigation to an area of 4.3 lakh ha (2.6 lakh ha in India and 1.7 lakh ha in Nepal)

Pursuant to Article 10 of the Mahakali Treaty, Pancheshwar Development Authority (PDA) for implementation of the Project has been constituted. The Terms of Reference of PDA, inter-alia, includes execution, operation and maintenance of the Pancheshwar Project including finalisation of the DPR and as also to resolve the outstanding bilateral issues between India and Nepal related to the project. Two meetings of the Governing Body (GB) of the PDA have been held, the Statute of the authority signed and allocation of posts of Members of the Executive Committee agreed. The DPR of the Pancheshwar Project is under preparation.

SaptaKosi High Dam Multipurpose Project & Sunkosi cum Diversion Scheme

For undertaking the Joint Investigations of SaptaKosi High Dam Multipurpose Project and Sun Kosi Storage-cum-Diversion Scheme, a Joint Project Office (JPO-SKSKI) was set up in Nepal in August, 2004 to take up field investigations and preparation of Joint DPR. The field investigations have been delayed because of political instability and frequent strikes/ bandhs in Nepal. The tenure of JPO-SKSKI has now been extended upto 28th February, 2017.

India-Nepal Joint Ministerial Level Commission on Water Resources (JMCWR)

India-Nepal Joint Committee on Water Resources (JCWR) during its 3rd meeting held from 29th September, 2008 to 1st October, 2008 at Kathmandu (Nepal) recommended constitution of Joint Ministerial Level Committee on Water Resources (JMCWR) to be headed by Ministers of Water Resources of India and Nepal. The composition of the MCWR was also decided by JCWR. The first meeting of JMCWR was held on 15th February, 2012 at New Delhi.

India-Nepal Joint Committee on Water Resources (JCWR)

Seventh meeting of India- Nepal Joint Committee on Water Resources (JCWR) was held on 24-25 January, 2013 at Kathmandu, Nepal. During the meeting, all issues related to cooperation in water resources including Mahakali treaty were discussed. Progress of investigation of Sapta Kosi High Dam Project and Sun Kosi Storage-cum-Diversion Scheme was also reviewed. All other issues concerning floods and irrigation on common border areas were discussed and it was agreed to resolve them mutually.

India-Nepal Joint Standing Technical Committee (JSTC)

Fourth meeting of India- Nepal Joint Standing Technical Committee (JSTC) was held on 12-13 September, 2013 at Kathmandu in which all outstanding technical issues between the two countries were discussed.

India-Nepal Joint Team of Experts (JTE)

Fourteenth meeting of Joint Team of Experts (JTE) was held in January, 2015 at New Delhi, Nepal and progress of the works was reviewed. The JTE recommended extension of JPO-SKSKI for a further period of 2 years in order to accomplish preparation of DPRs of Sapta Kosi High Dam, Sun Kosi Storage-cum- Diversion Project, prefeasibility report of Kamla Dam and preliminary report of Bagmati Dam Projects. The tenure of JPO-SKSKI has been extended upto 28th February, 2017.

5.5 India-Pakistan Cooperation

Under the Indus Waters Treaty 1960, India and Pakistan each have created a permanent post of Commissioner for Indus Waters. Each Commissioner is the representative of his Government and serves as a regular channel of communication on all matters relating to implementation of the Treaty. The two Commissioners together form the Permanent Indus Commission (PIC).

During the year 2015-16, the Commission held one meeting (112Th) at New Delhi (during 30.05.2015 to 31.05.2015) to finalize annual report of Permanent Indus Commission and minutes of 111th meeting of PIC.

In fulfilment of the requirement of Indus Water treaty the daily G&D data of hydrological sites on six basins, The Indus, The Jhelum, The Chenab, The Ravi, The Beas and The Sutlej of Indus system was sent to Pakistan every month.

Irrigated Cropped Area statistics for the crop year 2014-2015 for the Indus, the Jhelum & the Chenab basin have been sent to Pakistan as per the provisions of Indus Waters Treaty during November, 2015.

Flood flow data for agreed sites on the river Ravi, Sutlej, Tawi and Chenab was also communicated by India to Pakistan as a gesture of goodwill and friendship for their benefit through telephone during 1st July to 10th October, 2015 to undertake advance flood relief measures.

Information regarding upcoming Hydro-Electric Power Stations in Indus basin is communicated to PCIW under the relevant provisions of Indus Waters Treaty 1960 during this period as required.

Clearance of projects from Indus Waters Treaty Angle issued for 2 MW (2X1 MW) Khari-1 small hydro plant on sub-tributary of river Chenab in J&K.

Chapter 6

External Assistance in Water Resources Sector



KEY ACHIEVEMENTS

- Third meeting of JWG held in New Delhi to discuss future course of action on Indo-Australia bilateral cooperation in the field of Water Resources Management signed on 10th November, 2009 for Brahmani-Baitarni River Basins in Odisha, Jharkhand and Chhatisgarh. Trainings for preparing IWRM plan were imparted to the concerned personnel.
- A JWG was constituted in March, 2015 to monitor the implementation of the MoU with Fiji for bilateral cooperation in water resources development and management.
- A JWG was constituted in October, 2015 to monitor the implementation of the MoU with Bahrain for bilateral cooperation in water resources development and management.
- MoUs with Israel, European Union, Hungary, Slovak Republic, Morocco and Tanzania are in pipeline.

The Ministry of Water Resources, River Development and Ganga Rejuvenation assists the State Governments in availing external assistance from different funding agencies to fill up the resource gap and state of the art technology for water resources development and management in the country. There are 16 ongoing externally aided projects in various States with the assistance from different funding agencies, viz. World Bank (8), Asian Development Bank (4) and Japan International Cooperation Agency (JICA) (4).

Out of 8 ongoing externally aided projects assisted by World Bank, 2 relate to water sector restructuring in the States of Madhya Pradesh and Uttar Pradesh; 2 relate to community based tank management in the States of Andhra Pradesh & Telangana and Odisha; 1 relates to water sector improvement in Andhra Pradesh; 1 relates to irrigated agriculture modernization and water bodies restoration and management in Tamil Nadu; 1 relates to accelerated development of minor irrigation

in West Bengal; and 1 relates to Dam Rehabilitation and Improvement Project, which covers 4 States, namely, Madhya Pradesh, Odisha, Kerala and Tamil Nadu.

EXTERNALLY AIDED PROJECTS BY WORLD BANK

A brief status of World Bank assisted ongoing externally aided projects is given in Table 6.1.

Table 6.1: World Bank Assisted Ongoing Projects in water sector

No	State	Name of Project	Original Agreement date/ Terminal date of disbursement	Original approved closing date/ Extended closing date	Total Project Cost (US \$ million)/INR in crore	Amt of assistance (US \$ / XDR in million)	State Govt. Share/ other source of funding (US \$ million)	Cum. Disbursement upto 30.09.15 (US \$ / XDR in million)
1	2	3	4	5	6	7	8	9
1	Madhya Pradesh	Madhya Pradesh Water Sector Restructuring Project 4750-IN	30.11.2004/ 30.06.2015	31.03.2011/ 30.06.2015	412.50 (USD)	387.40 (IBRD)	25.10	378.40
2	Andhra Pradesh & Telangana	Andhra Pradesh and Telangana Community Based Tank Management Project 4857-IN	08.06.2007/ 31.07.2016	31.12.2012/ 31.07.2016	217.80 (USD)	87.00 (IBRD)		72.13
		Andhra Pradesh and Telangana	08.06.2007/ 31.07.2016			58.14 (XDR)		47.04

		Community Based Tank Management Project 4291-IN						
3	Andhra Pradesh & Telangana	Andhra Pradesh and Telangana Water Sector Improvement Project 7897-IN	10.09.2010/ 28.07.2018	31.07.2016/ 28.07.2018	988.97 (USD)	450.60 (IBRD)	505.40	160.50
4	Odisha	Orissa Community Tanks Management Project, Phase-I 7576-IN	27.01.2009/ 30.06.2016	31.08.2014/ 30.06.2016	87.80 (USD)	38.47 (IBRD)		13.69
		Orissa Community Tanks Management Project, Phase-I 4499-IN	27.01.2009/ 30.06.2016			16.98 (XDR)		16.68
5	Tamil Nadu	Irrigated Agriculture Modernization and Water Bodies Restoration & Management Project-I (4846-IN)	12.2.2007/ 30.06.2015	31.03.2013/ 30.06.2015	566.00 (USD)	335.00 (IBRD)	50.20	288.63
						150.00 (XDR)		

6	West Bengal	West Bengal Accelerated Development of Minor Irrigation Project 8090-IN	21.12.2011/ 31.12.2017	31.12.2017	1143 (INR)	125.00 (IBRD)	50.00	1.22
		West Bengal Accelerated Development of Minor Irrigation Project 5014-IN	21.12.2011/ 31.12.2017			78.20 (XDR)		14.35
7	Multi-States **	Dam Rehabilitation and Improvement Project 7943-IN	21.12.2011/ 30.06.2018	30.06.2018	437.50 (USD)	139.65 (IBRD)	72.73	0.44
		Dam Rehabilitation and Improvement Project 4787-IN	21.12.2011/ 30.06.2018			93.02 (XDR)		14.68
8	Uttar Pradesh	Uttar Pradesh Water Sector Restructuring Project, Phase-II 5298 IN	24.10.2013/ 31.10.2020	31.10.2020	515.00 (USD)	239.40 (XDR)	155.00	25.75

*** Madhya Pradesh, Odisha, Kerala and Tamil Nadu.*

1. Madhya Pradesh Water Sector Restructuring Project (MPWSRP) [Credit No. 4750-IN (IBRD)]

The objective envisage improving the productivity of water for sustainable growth and poverty reduction in selected river basins of Chambal, Betwa, Ken, Sindh, Tons and Wainganga of Madhya Pradesh.

Status:

Impact assessment of Harsi, Dahod, Karmodia & Doraha and Bhind area of Chambal Canal schemes comprising CCA of 1.15 lac ha out of project coverage area of 4.95 lac ha is completed. Water Users Associations (WUAs) training and capacity building programmes continues. Under rehabilitation works, 55 packages and 91 schemes involving CCA of 1.18 lac ha have been completed in Dhasan-Ken, Chambal-Betwa, Yamuna, Narmada-Tapti, Ganga and Wainganga basins. Works in 139 packages and 114 schemes in above six basins involving CCA of 4,09.951 ha are being taken up.

2. Andhra Pradesh and Telangana Community Based Tank Management Project (APTCBTMP) [Credit No. 4857-IN (IBRD) and 4291-IN (IDA)]

The main objective of the project is to improve minor irrigation system, agriculture livelihood support services and project management including institutional strengthening. Under the project, 2157 water bodies with Culturable Command Area (CCA) of 2.5 lac ha will be covered.

The project envisages renovating 2157 minor irrigation tanks with an ayacut of 2.55 lac ha covering 21 districts of erstwhile Andhra Pradesh. Out of 2157 tanks, 975 tanks falls in Andhra Pradesh and 1182 tanks falls in Telangana.

Status:

In Andhra Pradesh, 715 tanks have been taken up for repair and restoration and completed, remaining 260 are ongoing. In Telangana, out of 1182 tanks, 1004 tanks have been completed and remaining 178 tanks are ongoing. Key outcome indicators are in Table-6.2

Table-6.2: Key Outcome Indicators

Crop Productivity: Paddy (rice)	35.3 quintal/ha
Maize	48.5 quintal/ha
Groundnut	13.9 quintal/ha
Vegetable	340 quintal/ha

Fish Productivity	4.3 quintal/ha
Milk Productivity	4.5 litre/day/cattle
Percent of WUAs (water user associations) in rehabilitated tank syst with O&M plan and expnd	69 %
Percent of water users in rehabilitated tank systems satisfied with WUA O&M	88%
Percent of tank command area irrigated	98%
Increase in value of crop output per unit of groundwater for User Groups	Rs.83,257 per Ha.Mt
Increase in value of crop output per unit of land in command area of rehabilitated tanks	Rs.36,219 per Ha
Percent farmers in tank command area adopting improved cultural practices	55%

3. Andhra Pradesh and Telangana Water Sector Improvement Project (APTWSIP) [Credit No. 7897-IN (IBRD)]

The project envisages modernization and rehabilitating the Nagarjunasagar Scheme. The objective is

- (i) to improve irrigation service delivery on a sustainable basis to increase the productivity of irrigated agriculture in the Nagarjuna Sagar Scheme Command
- (ii) to strengthen State's institutional capacity for multi-sectoral planning, development and management of water resources.

Status:

The Andhra Pradesh Water Resources Regulatory Commission (APWRRC) Act has come into force on 1.8.2010 is in Table-6.3.

Table-6.3: Status of APWRRC

Description	No. of packages	Status
Main canal	8 packages	2 packages completed & balance are in progress
Branch canal	9 packages	Work in progress
Distributaries canal	62 packages	Work in progress
WUAs	164 packages (501 WUAs)	Contracts awarded for 140 packages (418 WUAs)
Buildings & Bridges	5 packages	Work in progress
Dam	6 packages	Work in progress

- Most of the large works will be completed by end of July 2016.
- 12 against 93 PPPs (Public Private Partnership) are in place.
- 180 fertility camps organized.
- 21,510 demonstrations held on field crops, 2954 on horticulture and 125 on fodder and 216 on adaptive research
- Training conducted for 10,198 farmers under field crops and 5225 farmers on horticulture
- The consultants M/s WAPCOS Ltd. hired for implementation of the Pilot in Guntur District are carrying out their activities by creating awareness on conjunctive use of surface and groundwater management.

4. Odisha Community Tanks Management Project, Phase-I (OCTMP-I) [Credit No. 7576-IN (IBRD) & 4499-IN (IDA)]

The objective of the project is to improve the agricultural productivity and strengthen Water User Associations (WUAs) to manage tank systems effectively. The project aims at repairing and rehabilitating 324 Minor Irrigation Tanks having a command area of 40 ha to 2000 ha and covering around 60,033 ha (total ayacut) in 12 districts. Status of OCTMP-I is given in Table-6.4 and outcome indicators in Table-6.5.

Table-6.4: Status of OCTMP-I

Key activities	Proj target	Achieved	Percent
Completion of civil works	324	183	56%
CCA/Irrig Potential stabilized (Ha)	60,000	25,055	42%
MIPs taken over by WUAs	324	132	41%
Training – module I&II	375	364	97%
Training – module III	375	350	93
Training – module IV	375	350	93

Table-6.5: Outcome Indicators

Crop Productivity	Baseline value 2010	Survey % increased over baseline	End target in %
Paddy	5.85 ton/hectare	50%	25%
Mustard	0.38 ton/Ha	82%	30%
Groundnut	0.8 ton/ha	100%	20%
Vegetable	4.56 ton/ha	125%	50%
Cropping intensity	1.21%	17%	20%
% of water users in rehabilitated tank system satisfied with O&M	34.2%	55%	85%

5. Tamil Nadu -Irrigated Agriculture Modernization and Water-Bodies Restoration and Management Project Phase-I (TN-IAMWBRMP-I) [Credit No.4846 IN (IBRD) and 4255- IN (IDA)]

The objective of the project is to increase the productivity of irrigated agriculture for sub-basin stakeholders in a sustainable water resources management framework.

Status:

The Project has been successful in increasing yields for crops and in diversifying to high value crops away from paddy. Under component A - Modernization of irrigation systems in a sub-basin framework, all original 325 civil works packages have been completed. This marks an achievement of 97% progress in financial terms. The details are given in Table -6.6 and Table -6.7

Table-6.6: Completion status of TN-IAMWBRMP-I

Phase-I & II	120 packages completed
Phase-III	136 packages completed
Phase-IV	69 packages completed
Total sub-basin civil works	325

Under component-B: Agriculture Intensification and diversification, utilization of funds stands at 94%. Under component-C: Modernization for irrigated agriculture, Participatory Irrigation

Management (PIM) capacity building program is completed. Key Performance Indicators are given in Table - 6.7

Table-6.7: Key Performance Indicators of TN-IAMWBRMP-I

Outcome indicators (<i>Increase in prod</i>)	Current status	Target
Yield of paddy (%)	19%	30%
Yield of maize (%)	23%	30%
Yield of pulses (%)	23%	25%
Yield of fish (tons)	10,830	22,500
Yield of milk (tons)	637,000	590,000
Increase in area under micro-irri (hect)	43,359 ha	40,000 ha
Incr in area under high-value crops (%)	13%	30%
Increase in targeted farmers' inc (%)	20%	50%

6. West Bengal Accelerated Development of Minor Irrigation Project (WBADMIP) [Credit No. 8090 - IN (IBRD) and 5014 IN (IDA)]

The project aims to enhance agricultural production of small and marginal farmers in the area through accelerated development of irrigation services.

Status:

The project envisages implementing 1600 schemes; out of this 575 schemes are under implementation and 613 schemes will be implemented during the current financial year 2015-16. As per the revised results framework, the project would be able to develop around 1600 schemes to provide irrigation to 40,000 hectares and benefits to 1,00,000 farmers that will be operated and maintained by 1200 Water Users Associations (WUAs).

The project has accomplished 65% of scheme implementation during this FY. The number of water users receiving improved irrigation services has jumped from 5712 to 17399 farmers. The progress of works is very slow resulting in overall disbursement of only about 6.2% after 3 years. In the current financial year some progress has been made by still it is unsatisfactory when compared with the original target objectives set earlier. Due to this reason the World Bank and State authorities have proposed to restructure the project and make some partial cancellation.

7. Dam Rehabilitation & Improvement Project (DRIP) [Credit No.7943-IN (IBRD) & Credit No.4787-IN (IDA)]

Dam Rehabilitation and Improvement Project (DRIP) is being implemented with assistance from World Bank for rehabilitation of about 223 large dams in four States namely Madhya Pradesh, Odisha, Kerala and Tamil Nadu. In addition, DRIP also involves institutional strengthening (for dam safety) of all participating states as well as at the central level in Central Water Commission.

Status:

The project envisages improving the safety and performance of selected existing dams and associated appurtenances in a sustainable manner. The project has completed about 38 months of implementation and activities are gaining momentum. The project preparatory works for the rehabilitation of dams have largely been completed now, and award of works are being expedited so as to complete rehabilitation of dams within the project period.

The progress till date is highlighted below:

- CWC has hired the services of an Engineering and Management Consultant for DRIP and contract has been signed with M/s EGIS Eau, France in 2013. Consultants have been mobilized.
- Design Flood Reviews of 198 DRIP dams have been completed.
- Dam Safety Review Panels have inspected 207 DRIP dams.
- Project Screening Template in respect of 175 DRIP dams have been approved by the World Bank.
- Works awarded for 47 dams, 37 more dams are under tender.
- 36 trainings conducted by the CPMU where more than 1200 officials trained.
- Website on DRIP has been launched.
- ISO 9001 certification granted to the Central Dam Safety Organization of CWC for the quality management system.
- Works of the development of initial two modules of “Dam Health and Rehabilitation Monitoring Application (DHARMA) software has been initiated.

8. Uttar Pradesh Water Sector Restructuring Project, Phase-II (UPWSRP-II) [Credit No. 5298 IN]

The objective of the project is (a) strengthen the institutional and policy framework for integrated water resources management for the entire State and (b) increase agricultural productivity and water productivity by supporting farmers in targeted irrigation areas. Total CCA of project is 12.50 lac ha. and it is being implemented in 16 districts of the state.

Project coverage-

- Sarda Sahayak Command (Haidergarh Branch System km.22.98 to tail
- Bundelkhand Region (Rohini, Jamini and Sajnam Dam Canal System)
- Lower Ganga Canal System

Status:

Sarda Sahayak Command (Haidergarh Branch System) -

- Work in progress for rehabilitation work of Haidergarh Branch System at the cost of Rs.134.66 crore. The work is started in October 2014 and will be completed in 18 months.
- Agreement for construction of Supplementary Head Regulator to the left bank of Haidergarh Branch finalized and water released.
- Tender invited for Automation of Sharda Sahayak feeder canal regulators upto km 171.50 in Oct'2015 including mechanical and electrical works.

Bundelkhand region -

- An agreement has been signed for Rs.165.11 crore to be completed in 2015 for modernization and rehabilitation works of Rohini, Jamini and Sajnam Dam canal systems in Lalitpur district. Work is in progress.

Lower Ganga Canal Command System -

- Bids for 10 lots of lining work of PLGC (Parallel Lower Ganga Canal) invited, and contract signed for 9 lots, rebidding restarted for one.
- Work in progress for construction of Machhua Distributory feeder lined channel under LGC System (Lower Ganga Canal)

- Work in progress for earth work in removal of silt depositions on right bank of river Ganga on upstream of Narora Barrage.

EXTERNALLY AIDED PROJECTS BY ASIAN DEVELOPMENT BANK

Out of 4 ongoing externally aided project assisted by **ADB**, 1 relates to integrated irrigated agriculture and water management in Odisha; 1 relates to coastal protection and management in Maharashtra and Karnataka; 1 relates to flood and erosion management in Assam and 1 relates to water resources management in Karnataka. A brief status of ADB assisted ongoing externally aided projects is given in Table-6.8

Table -6.8: Asian Development Bank Assisted Ongoing Projects in water sector

No	State	Name of Project	Agreement Date / Terminal Date of Disbursement	Original closing date/ Extended closing date	Total Project Cost US \$ mill	Amt of assistance US \$ mill	State Govt. share/ other source of funding US \$ mill	Cumulative disbursement upto 30.9.15 US \$ mill
	2	3	4	5	6	7	8	9
1	Odisha	2444-IND: Orissa Integrated Irrigated Agriculture and Water Management Investment Program Tranche-I	25.02.2009/ 31.03.2015	30.09.2013 / 31.03.2015 / 30.09.2015	66.40	16.50	30.00 (OFID) 18.10 (State)	15.55
2	Maharashtra & Karnataka	2679-IND: Sustainable Coastal	17.08.2011/ 30.06.2017	31.12.2014 /	62.70	51.56	11.10	13.61

		Protection and Management Investment Program Tranche-I		30.06.2017				
3	Assam	2684-IND: Assam Integrated Flood and River-bank Erosion Risk Management Investment Program Tranche-I	10.05.2011/ 31.07.2016	30.09.2014 / 31.07.2016	120.00	49.90	30.00	24.15
4	Karnataka	3172-IND: Karnataka Integrated and Sustainable Water Resources Management Investment Program Tranche-I	07.05.2015/ 31.03.2019	31.03.2019	48.00	31.00	17.00	0

1. Odisha Integrated Irrigated Agriculture and Water Management Investment Program Tranche -1 (OIIAWMIP-I):

The objective of the project is (i) to enhance the productivity, water use efficiency and sustainability of the existing Major and Medium Irrigation Systems; (ii) to include water user associations (WUA)

empowerment, renovation and extension of irrigation and associated infrastructure, field channels, agriculture and related support services; (iii) to strengthen the institutional basis for Participatory Irrigation Management (PIM) with management reforms and capacity strengthening of relevant institutions.

The project envisage enhancing the productivity and sustainability of one major, three medium and 650 minor lift irrigation sub-projects.

Status:

The physical progress of the project is given below:

- (a) Taladanda Major Irrigation Sub-project: Contracts for 9 packages of Main Canal & Minor Canal system have been signed and works are underway with over all physical progress of 77%.
- (b) Gohira Medium Irrigation Sub-project: Contracts of 6 Main Canal packages and 1 Minor Canal are under progress with over all progress of 95%.
- (c) Sunei Medium Irrigation Sub-project: 1 package of Main Canal and 3 packages of Minor Canal are in progress with over all progress of 100%.
- (d) Remal Medium Irrigation Sub-project: 1 Main Canal package and 1 Minor Canal package is under progress with physical progress of 82% & 77%.
- (e) Minor Lift Irrigation Sub-projects: There is a provision for improvement of 650 numbers of Minor Lift Irrigation sub-projects under tranche-I being implemented in 3 batches.

Physical progress of OIIAWMIP-I is given in Table -6.9

Table -6.9: Physical progress of OIIAWMIP-I

Phase	No. of projects taken up	Status of progress
Phase-I	201	179 MLIPs completed
Phase-II	200	Civil works completed for 183 MLIPs
Phase-III	249	Full Appr Reports (FAR) prepared for 249 MLIPs

2. Sustainable Coastal Protection and Management Investment Program Tranche-1 (SCPMIP-I):

The project aims at

- i. sustainable and appropriate planning and design (strategies, participatory shoreline planning, etc);
- ii. investments for coastal protection and management (physical and non-physical) to address immediate coastal protection needs and coastal instability using environmentally and socially appropriate solutions, with a focus on softer options such as artificial reefs, beach nourishments, and dune management; and
- iii. effective institutions (professional capacity development of government and private sector organization).

The program focuses on developing institutional capacities to meet long term needs of sustainable coastal protection and management, and supports initiatives to encourage community and private sector participation. The state executing agencies are Karnataka Public Works, Ports and Inland Water Transport Department and Maharashtra Maritime Board.

Status: Progress of implementation of the project as per TPRM held in Feb'15 is given below:

Karnataka: Contract for rehabilitation of breakwaters and offshore reefs were awarded during 2014 and works for 3 major civil work packages are under progress. For construction of berms, about 60m length of one berm has been completed and target is to complete two berms until June 2015. Both for reefs and breakwaters site preparation, collection of rocks and casting of tetrapods are under progress.

Maharashtra: There is a proposal to recruit a new PMDC (Project Management and Design Consultant) for the project after settling outstanding issues of old PMDC by March 2015. Mirya Bay offshore submerged reef contractor has re-mobilized and works will be completed by June 2015. Bidding process for beach nourishment contract is being taken up, contract can be awarded by May 2015. There is concern over PMU staffing as various numbers of posts are still vacant in PMU especially of design and site engineers. They suggested to revise disbursement target of US\$ 1.5 million as target is not achievable.

3. Assam Integrated Flood and River Bank Erosion Risk Management Investment Program Tranche-1 (AIFRERMIP-I):

The project aims to enhance sustainable and inclusive economic growth in flood prone areas along the Brahmaputra River in Assam. The project covers three sub-projects sites at Dibrugarh, Palasbari-Gumi and Kaziranga. The project will benefit 110,000 hectares with population of about one million of the four selected areas.

Status: The physical progress of the project is given below:

- The physical works in Dibrugarh and Palasbari-Gumi sub-projects are making visible progress. With the awarding of the two major packages for embankment rehabilitation/restoration, the procurement of all major civil works packages for the Tranche-I in the two sub-projects has been completed.
- Kaziranga sub-project is yet to take off due to delayed environmental clearance from the MoEF and clearance of the DPR from CWC.
- As regards the progress of soft components like strengthening policy, institutional and knowledge bases, nothing much is visible.

4. Karnataka Integrated and Sustainable Water Resources Management Investment Program Tranche-I (KISWRMIP-I):

The tranche-I of the project envisage modernization of Gondi Canal System and taking up Integrated Water Resources Management components in K8 sub basin of Krishna Basin. Gondi Irrigation System which has a total command area of about 4,600 ha.

The tranche-I will support actions to introduce integrated water resources management (IWRM) by (i) commencing the strengthening of relevant institutions specifically the AC-IWRM for advancing policy reviews, river basin management, water resources information systems establishment, and (ii) modernization of irrigation system infrastructure and management in the Gondi sub-project.

Status: The project is newly implemented and the civil works has started recently.

EXTERNALLY AIDED PROJECTS BY JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

Out of 8 ongoing externally aided projects assisted by **JICA** (Japan International Cooperation Agency), 2 relate to irrigation and livelihood improvement in Andhra Pradesh and Rajasthan and 2

relate to irrigation project is Odisha. A brief status of JICA assisted ongoing externally aided projects is given in Table-6.10

Table-6.10: JICA Assisted Ongoing Projects in water sector

No	State	Name of Project	Agreement date / Terminal date of disbursement	Original closing date/ Last extended closing date	Total Project Cost <i>INR in crore</i>	Amt of assistance <i>JPY mill</i>	State Govt. share/ other source of funding <i>INR in cr</i>	Cumulative disbursement upto 30.09.15 <i>JPY mill</i>
	2	3	4	5	6	7	8	9
1	Andhra Pradesh	IDP-181: Andhra Pradesh Irrigation & Livelihood Improvement Project, Phase-I	30.03.2007/ 11.07.2016	Mar 2013/ 11.07.2016	1137	23974	186	12071.29
2	Odisha	IDP-210: Rengali Irrigation Project LBC-II, Phase-I	31.03.2010/ 24.11.2015	24.11.2015	1074	3047	138	3047.00
		IDP-210A: Rengali Irrigation Project LBC-II, Phase-I				25		20.75
3	Odisha	IDP-244: Rengali Irrigation Project LBC-	30.03.2015/ 14.07.2026	30.03.2026		32378		0

		II Phase-2						
		IDP-244A: Rengali Irrigation Project LBC- II Phase-2				1581		0
4	Rajasthan	IDP-161: Rajasthan Minor Irrigation Improvement Project	31.03.2005/ 28.07.2015	31.03.2013/ 28.07.2015	612	5351.30 Revised	-	5351.30

1. Andhra Pradesh Irrigation and Livelihood Improvement Project Phase-I (APILIP-I):

In Andhra Pradesh and Telengana status of medium irrigation sub-projects is given in Table 6.11 and Table 6.12 respectively:

Table -6.11: Status of APILIP-I

Sl. No.	Sub-projects	Administrative approval (in Rs cr)	Progress in Percentage
1	Swarnamukhi	24.43	69%
2	Lower Sagileru	26.23	90%
3	Gajuladinne	52.42	91%
4	Gandipalem	28.08	53%
5	Cumbum Lake	10.24	57%
6	P.B. Anicut	17.97	63%
7	Rallupadu	23.00	76%
8	Thatipudi	26.71	50%
9	Bharavanithippa	17.90	45%

In Telangana, for the **minor irrigation** sub-projects civil works have been completed in 24 out of 49 sub-projects. Out of the remaining 25 sub-projects, 19 sub-projects are targeted to be completed by December 2015. Details of these 19 sub-projects are given Table 6.11:

Table -6.12: Status of APILIP-I

S.No	Name of minor sub-projects & Percentage of physical progress	No of projects
1	Dahegaon (95%), Chakipalli (90%), Lambadi Tanda (81%), Itikial (98%)	4
2	Mamidiguda (85%), Dignoor (83%), Kondampeta (90%)	3
3	Pendalwada (75%), Malkapur (85%), Pevata (57%), Penchikala (93%), Tangelapalli (60%), Neemgaon (65%)	6
4	Mankapur (90%), Sonapur (92%), Kalegaon (94%), Chowpanguda (77%), Rechini (60%), Nagulapally (40%)	6
Total sub-projects in progress		19

For medium irrigation rehabilitation projects, works have been completed in 6 out of 11 sub-projects and that works are in advanced stage in 4 sub-projects. The status of progress of medium sub-projects is given in Table -6.13

Table -6.13: Status of medium sub-projects of APILIP-I

No	Name of medium sub-projects	No. of project	Status
1	Wyra, Lankasagar, Dindi, Pakhal lake, Boggulavagu & 6 Malluruvagu		Completed
2	Sathnala, Taliperu, Swarna, Asifnagar & Chanpur Anicut	5	In progress

1. Rengali Irrigation Sub-project LBC-II Phase-II:

The primary goal of the project is development and expansion of irrigation infrastructure for economic growth to provide food securities. The objective is to increase agricultural production and to improve the living standard of farmers in the project area.

Status: The project is recently implemented in March 2015. The process for preparation of tender documents, structuring of Project Management Unit (PMU), and short listing of Consultants are under progress.

4. Rajasthan Minor Irrigation Improvement Project (RAJAMIIP):

The project was sanctioned in 2005 and closing date was due on 28.7.2015. The cost of project is Rs.612.29 crore, out of this Rs.481.45 crore is loan from JICA and balance of Rs.130.84 crore is State Government share.

Status: The project was completed on 28.7.2015 as well as all disbursements under the loan agreement. Total cumulative disbursement amount as on closing date is 5351.30 million JPY. The status of RAJAMIIP is given in Table 6.14

Table -6.14: Status of RAJAMIIP

No.	Status of civil works	Remarks
1	Total sub-projects	353
2	Sub-projects completed in all respects	287
3	Sub-projects to be completed by closing date	32
4	Water User Association (WUA) office building already completed	297

Water course rehabilitation was completed after execution of minor works in 122 sub-projects and after execution of earth work in 99 subprojects. Earthworks could be taken only in 2,487 km as against the planned of 4,518 km (55% achievement). Handover of management responsibilities to WUA has been completed for 327 out of 353 sub-projects.

BILATERAL COOPERATION

Memorandum of Understanding with Australia

A Memorandum of Understanding on cooperation in the field of Water Resources Management between the Governments of India and Australia were signed on 10th November, 2009 for a period of five years. Pursuant to signing of this MoU, a Joint Working Group (JWG) having equal members from each side was formed. During first meeting of the JWG, an Action Plan charting out various activities for cooperation on Water Resources Management between the two countries was signed on 19th November, 2010. Both the sides are preparing for Integrated Water Resource Management (IWRM) Plan for Brahmani-Baitarni River Basins in Odisha, Jharkhand and Chhatisgarh.

Third meeting of the Joint Working Group was held on 19th November, 2015 at New Delhi to discuss future course of action of bilateral cooperation to be taken by both the countries. Trainings for preparing IWRM plan were organized by the Australian side for engineers of Central Water Commission and the participating three States in India at National Water Academy, Pune.

Memorandum of Understanding with Iraq

During the visit of Hon'ble Prime Minister of Iraq to India in August 2013, a Memorandum of Understanding on mutual cooperation in Water Resources Development and Management between the Governments of India and Iraq was signed on 23rd August, 2013 at New Delhi for a period of five years. The areas of cooperation, *inter-alia*, include project hydrology, practising hydrology and hydrological modelling; applications of remote sensing & GIS in hydrology and water resources; integrated water resources development and management; flood and drought management; irrigation and drainage; surface and groundwater management and development; minor irrigation; modernization/renovation of old irrigation schemes; hydrometeorology; watershed, lakes and wetlands development; dam safety and surveillance; reservoir regulation; training and capacity building and micro irrigation. To take follow-up action on the MoU, India-Iraq Joint Working Group has been constituted in September 2014.

Memorandum of Understanding with Fiji

During the visit of Finance Minister of Fiji to India, a Memorandum of Understanding with Fiji for bilateral cooperation in water resources development and management was signed on 12th February 2014 at New Delhi for a period of five years. Joint Working Group to monitor the implementation of the MoU has been constituted in March 2015.

Memorandum of Understanding with Bahrain

A Memorandum of Understanding with Bahrain for bilateral cooperation in the field of water resources development and management, both surface and ground water through sharing of technical expertise and experiences was signed on 22nd February, 2015 at New Delhi for a period of five years. A Joint Working Group (JWG) has been formed in October, 2015 to monitor the implementation.

MoUs in pipeline

For Cooperation at the national, regional and international levels in the field of Water Resources Development and Management by collaborating and sharing experience and expertise in the areas mutually agreed upon, including waste water management, integrated water resources development and management, water use efficiency, groundwater, hydrology, aquifer management and cleaning of rivers, the Ministry has taken up the proposals of MoU with Israel, European Union, Hungary, Slovak Republic, Morocco and Tanzania.

Chapter 7

Organisations and Institutions



KEY ACHIEVEMENTS

- At present, CWC is carrying out design consultancy in respect of 41 projects out of which 32 projects (including 9 from North Eastern region) are at construction stage, while the remaining 9 projects (including 2 from North Eastern region) are at DPR stage. Technical examinations for 52 projects were also carried out during the year. In addition, special studies have been carried out and special problems handled in respect of 7 projects during the year.
- SOP for flood alarm/ forecast/ release of water by Dams published by NDMA to help in advance warning to the citizens about flood / release of water from Dams.
- CWC has done a pilot study for diverting the flood water of river Ganga near Kanpur city and storing it in chain of tanks during the flood period.
- Thirty Seven projects, including six abroad and nine in North-East region of India were investigated by CSMRS.
- Central Ground Water Board has constructed 475 wells including 31 high yielding wells to assess the ground water potential in different hydrogeological set up.
- For the first time an interactive session on Ground Water, named Bhujal Manthan was organized on August 21, 2015 at Kurukshetra University, Haryana for awakening the need for people's participation for reducing wastage of precious water and replenishing groundwater through rainwater harvesting.
- CGWB launched a web-based system for streamlining the receipt of application and issuance of NOC to extract Ground Water through their web site cgwa-noc.gov.in in 2015.
- CGWB constituted a High Level Committee for study of water channel in arid area including paleo channel.
- CGWB has prepared a roadmap for state-wise area specific requirements along with quarterly and monthly time lines for data generation, preparation of aquifer maps and development of ground water management plans.

KEY ACHIEVEMENTS (Contd.)

- CWPRS undertook studies on a no-loss no-profit basis in the major sectors of water resources, river engineering, power sector and coastal development during 2015-16.
- NWDA has identified 16 water transfer links under Peninsular Component for Surveys and Investigations and preparation of Feasibility Reports (FRs). So far, FRs of 14 links under Peninsular Component have been completed.
- Interlinking of River (ILR) programme under National Perspective Plan (NPP) has been taken up on a high Priority. 4 interlinking projects i.e.(i) Ken-Betwa Link (ii) Daman Ganga – Pinjal Link (iii) Par-Tapi Narmada Link and (iv) Mahanadi - Godavari identified. A Special Committee has been constituted under Hon'ble Minister (WR, RD&GR) and 8 meetings of the Special Committee have been held. Substantial progress on the Ken-Betwa project has been made.
- NIH published 138 papers in reputed international and national journals and proceedings of international and national conferences and symposia during 2015-16. The Institute also organized 17 training programmes.
- Two conferences were organized by NIH on Ganga cleaning in 2015. One conference was exclusively in Hindi.
- Tikamgarh project found to be a good project and after review, WEP-DSS model of the project was appreciated and it was decided to link it with Jal Kranti Abhiyan by involving all stakeholders.
- NERIWALM conducted 16 training programmes on various aspects of Water and Land Management.
- Integrated Ganga Conservation Mission is being implemented for which the main thrust is controlling pollution of the river. Initiated comprehensive measures aimed at immediate results for condition assessment in all 118 cities / towns on bank of Ganga.
- Four battalions of Eco Task Force under Territorial Army with Ex-Servicemen have been deputed by Ministry of Defence. Training to these battalion is being given. The eco task force will keep a check on industrial pollution in Ganga, guard plantation across Ganga and also will generate awareness.

KEY ACHIEVEMENTS (Contd.)

- Setting up of North East Brahmaputra River Rejuvenation Authority (NEBRRA) by restructuring Brahmaputra Board is in advance stage of approval. Matter referred to Ministry of Corporate Affairs and Ministry of Law & Justice for their comments. The new structure would be able to address emerging issues.
- A sum of Rs. 650 crore has been released since 2014 for Polavaram Project. A full time CEO was placed for further action.
- A committee under the Chairmanship of Shri Mihir Shah was constituted to examine the issue of restructuring of CWC and CGWB. Seven meetings have already been held till 8.2.2016. The Committee's Report is expected in April, 2016.

7.1 ATTACHED OFFICES

7.1.1 CENTRAL WATER COMMISSION

Introduction

Central Water Commission with its headquarters at New Delhi is a premier technical organisation in the field of Water Resources in the country since 1945. The Commission has been entrusted with the general responsibility of initiating, coordinating and furthering, in consultation with the State Governments concerned, schemes for control, conservation and utilization of water resources throughout the country for the purpose of Irrigation, Flood Control, Drinking Water Supply and Water Power Development.

Central Water Commission is headed by a Chairman with status of an Ex-officio Secretary to the Government of India. The Commission has three technical wings, namely:

- Designs and Research Wing
- Water Planning and Projects Wing
- River Management Wing

Each wing is headed by a Member with the status of an Ex-officio Additional Secretary to the Government of India. The activities of the wings are carried out by 18 functional units at the headquarters, each headed by a Chief Engineer. The National Water Academy, Pune headed by a Chief Engineer is also a part of the Commission. Besides this, the Commission also has 13 Regional Organizations, each headed by a Chief Engineer.

Activities

The main activities of CWC may be summarized as follows:

- Flood Forecasting and Assistance to State Governments in Flood Management
- Collection and Analysis of Hydrological Data
- Techno-Economic Appraisal of Projects
- Monitoring of Selected Projects including those receiving Central Assistance
- Planning & Design of Projects
- Surveys, Investigations and Preparation of Detailed Project Report (DPR)
- Studies on Environmental and Socio-Economic issues
- Studies Related to Irrigation Planning and Water Management
- Basin Planning and Management
- National Water Resources Assessment
- Assistance in Resolution of Inter-State Water Disputes
- Construction Equipment Planning
- Studies on Dam Safety
- Research and Development
- Standardization of Engineering Practices
- Operation of Reservoirs
- Training and Capacity Building
- International Co-operation in Water Sector

Major Activities

(i) Hydrological Observations

Central Water Commission is operating a network of 954 hydro-meteorological observation stations throughout the country on all major river basins to observe (i) water level (gauge), (ii) discharge, (iii) water quality, (iv) silt besides (v) selected meteorological parameters including snow observations at key stations. The hydrological data collected from sites is scrutinized, validated and published in the form of Water Year Book, Water Quality Year Book and Sediment Year Book, etc. The data so collected is utilized for planning and development of water resources projects, climate change studies, water availability studies, flood / inflow forecasting, examination of international & inter-State issues, river morphological studies, inland waterway development, Reservoir Siltation studies and research related activities, etc.

(ii) Water Quality Monitoring

Central Water Commission is monitoring water quality at 396 key locations covering all the major river basins of India. CWC is maintaining a three tier laboratory system for analysis of the physico-chemical parameters of the water. The level- I laboratories are located at 370 field water quality monitoring stations on major rivers of India where physical parameters such as temperature, colour, odour specific conductivity, electrical conductivity, total dissolved solids, pH and dissolved oxygen of river water are observed. There are 18 level-II laboratories located at selected division offices throughout India to analyze 25 nos. physico-chemical characteristics and bacteriological parameters of water. 5 level-III / II+ laboratories are functioning at Varanasi, Delhi, Hyderabad, Coimbatore and Guwahati where 41 parameters including heavy metals / toxic parameters and pesticides are analyzed. The water quality data generated is computerized in Data Base system and disseminated in the form of Water Quality Year Books, Status Reports and Bulletins. The water quality data is used by different agencies for planning of water resources project, research purposes etc. The water quality data being so collected are put in various uses related to planning and development of water resources projects.

(iii) Online Water Quality Monitoring Systems

Online Water Quality Monitoring System at three sites, namely, Agra (Jawahar Bridge) on river Yamuna, Lucknow on river Gomti and Moradabad on river Ramganga has been installed for

measurement of pH, conductivity, temperature, dissolved oxygen, bio-chemical oxygen demand (BOD), Chemical Oxygen Demand (COD). The real time water quality data is available for above sites from 18th July, 2013 on web site <http://cwc.rtwqms.com>.

(iv) Flood Forecasting

There are 176 flood forecasting stations, of which 148 are level forecasting and 28 are inflow forecasting stations on major dams/barrages. It covers 10 major river systems in the country including 72 river sub-basins and 17 States viz., Andhra Pradesh, Assam, Bihar, Chattisgarh, Gujarat, Haryana, Jharkhand, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Telengana, Tripura, Uttaranchal, Uttar Pradesh & West Bengal and two Union Territories Dadra & Nagar Haveli and National Capital Territory of Delhi.

On an average, about 6000 forecasts are being issued during flood season every year by the Central Water Commission. Normally, these forecasts are issued 12 to 48 hours in advance, depending upon the river terrain, the locations of the flood forecasting sites and base stations. For the purpose of flood forecasting, hydrological data is being observed at more than 878 gauge and discharge sites and 76 exclusive rain gauge stations and communicated through a network of about 544 wireless stations. Synoptic weather situations, weather forecast/ heavy rainfall warnings etc. are also being collected from Flood Meteorological Offices of IMD.

During the flood season 2015 (May to October), 4055 flood forecasts (3483 level forecast and 572 inflow forecasts) were issued out of which 3978 (98.10%) forecasts were found within accuracy limit of ± 0.15 m for level forecast and $\pm 20\%$ for inflow forecast. During the flood season, the real time hourly data of about 600 stations were collected, compiled, analyzed and used to generate flood reports of the regions. Hourly hydrological data is being entered by all divisions of CWC in web-based software “e-SWIS” since 2014 monsoon to monitor the current status of the river. The e-SWIS flood forecast module has inbuilt programme for generation of email / sms for flood alert which can be sent to various users using bulk sms facility. This service was started by CWC in 2014 and was fully utilized by Divisions of CWC as well as CWC HQ during 2015.

During the year 2015, 184 daily bulletins (once daily), 17 Orange Bulletins for High Flood Situation (Twice daily) and 12 Red Bulletins (every 3 hours) were issued by CWC as per Standard Operating Procedure (SOP). The forecasts, water level and rainfall information were uploaded on website “<http://india-water.gov.in/ffs>” during monsoon season.

During the flood season of 2015, out of 148 level forecasting sites, Unprecedented Flood Situation, where the HFL (Highest Flood level) attained during the flood season exceeded their respective previous HFL, was witnessed in one flood forecasting station viz., Chenimari on River Buridehing in Dibrugarh District of Assam in the country.

High Flood situations, where peak level had attained within 0.5m of previous HFL, were experienced at 4 forecasting stations viz., NT Road Crossing on River Jia-bharali in Sonitpur district, Beki Road Bridge on River Beki in Barpeta district, Matizuri on River Katakhal in Hailakandi district and Dibrugarh on River Brahmaputra in Dibrugarh district of Assam in the country.

Hydrological Observation Stations in Chambal basin in the States of Madhya Pradesh and Rajasthan witnessed unprecedented floods during July 2015. Hydrological Observation Stations in Palar, Varahanadi and Kalingi basins in Tamilnadu, Puducherry and Andhra Pradesh also witnessed unprecedented flood situation during November and December 2015.

(v) Modernization of Flood Forecasting Services

The Central Water Commission is making constant endeavour in updating and modernizing the forecasting services. The forecasting of flood involves a number of steps, namely, data observation, collection, transmission, compilation and analysis, formulation of forecasts and their dissemination. To make the flood forecasts more accurate, effective and timely, the modernization activities are being taken up on a continuous basis.

During 9th Plan, telemetry system was installed at 55 stations in Chambal and Upper Mahanadi basins for real time data collection and transmission to forecast formulation centres under The World Bank aided Dam Safety Assurance and Rehabilitation Project (DSARP) scheme. During 10th Plan, telemetry system was installed at 168 stations in six river basins namely, Godavari (63), Krishna (41), Brahmaputra (21), Damodar (20), Yamuna (15) and Mahanadi (8). Further, during 11th Plan, telemetry system was installed at 222 stations in seven river basins namely, Indus (4), Ganga (63), Yamuna (25), Narmada & Tapi (76), Mahanadi (36), Brahmaputra (14) and Godavari (4).

In order to receive and analyse data collected by the telemetry stations, Earth Receiving Station and Modelling Centres have been installed in various parts of the country during different plan period. As on date, there are 3 Earth Receiving Stations in the country at New Delhi, Jaipur and Burla. A total of 22 Modelling Centre has been installed in the country till the end of XI Plan. These

Modelling Centres are located at Agra, Asansol, Bhubaneswar, Bhusaval, Burla, Dehradun, Dibrugarh, Gandhinagar, Guwahati, Hyderabad (two stations one each for Krishna and Godavari basins), Jaipur, Jalpaiguri, Kurnool, Lucknow, Maithon, New Delhi (one at Headquarter and one for Yamuna Basin), Patna, Shimla, Surat and Varanasi. The data reception from all the sites modernised is being monitored from CWC Headquarter at New Delhi.

During XII Plan, A plan scheme with provision for installation of telemetry system at 219 existing stations and 410 new stations for 100 new forecasting stations with total estimated cost of Rs. 281 Crore has been approved in December, 2015. Out of proposed telemetry system at 219 existing stations, work for installation of system at 206 stations has been taken up so far. Out of this, installation of system at 64 stations has been completed so far. Installation of 6 Modelling Centres (Bhopal, Lucknow, Bengaluru, Gangtok, Chennai and Jammu) have also been proposed under the above plan scheme. Out of this, one Modelling Centre has been installed at Chennai.

In order to improve the flood forecast activity in CWC, the methodology based on mathematical model using windows based Mike-11 software is progressively being used. The progress of use of mathematical model for flood forecasting is as under:

- a. Inflow Forecasting for Gandhi Sagar Dam in Chambal River is under operation.
- b. Rainfall based modelling in Mahanadi upto Naraj and Inflow Forecast at Hirakund Dam is under operation.
- c. Hydrodynamic (HD) based model for Brahmaputra has been developed. The model for the reach from Tejpur to Dhubari has been calibrated and operationalised. Further extension of the model is under progress.
- d. Rainfall based model for Hathnikund Barrage on river Yamuna is in calibration stage. The Hydrodynamic (HD) based model for Yamuna in downstream reach is operational upto Delhi. Further extension of the model is under progress.
- e. Rainfall based model for Alaknanda upto Srinagar; inflow forecast model for Bhagirathi at Tehri Dam and model for Ganga for Rishikesh and Haridwar has been developed.
- f. Rainfall based modelling in Jhelum upto Ram Munshi Bagh has been developed. Advisory Flood forecast using above model and QPF inputs from IMD were issued in 2015.
- g. Models for Inflow forecasting of Hathnur & Ukai Reservoir in Tapi River and Madhuban Reservoir in Damanganga River in Tapi basin have been developed.

- h. Rainfall based Runoff Modelling in Sharda (upto Sharda barrage), Sutlej (upto Rampur) and Ghagra (upto B K Ghat). The model for Sharda (upto Sharda barrage) has been calibrated for the year 2012-14, while model for Satlej (upto Rampur) has been calibrated for year 2013-14 and Ghagra (upto B K Ghat) initially calibrated for the year 2015. These models will be further calibrated and validated in next monsoon.

CWC has partnered with Google's Public Alert platform based on Common Alerting Protocol (CAP). This service is launched in November 2015 and it would be used from monsoon season 2016. It aims to disseminate emergency messages such as likely flood situation with current water level and forecasted water level, recommended action for affected people and website address for current water level information etc. These official alerts would be seen when a person falling in the affected area searches on Google Search, Google Maps and when one activates Google Now on Android device. This service would provide the public with information it needs to make informed decisions in times of crisis.

(vi) Survey and Investigation

CWC is carrying out surveys and investigations for preparation of Detailed Project Reports (DPRs) in the NE region, Sikkim, Uttarakhand, Bihar and J&K on the request of the respective States for development of water resources potential for irrigation, hydropower and other uses.

The investigations for various projects were continued during 2015-16 namely, Ujh MP Project (J&K), Kirthai HE Project (J&K), Suntaley HE Project (Sikkim), Kalez Khola HE Project (Sikkim), Rukni Irrigation Project (Assam), Sonai Irrigation Project (Assam), preparation of DPRs of HE projects in Tawang chu sub Basin (Arunachal Pradesh). DPRs of Ujh MP Project, Suntaley HEP & Kirthai Stage-II HE Project were submitted. The investigation works for new projects Taramchu, Kali Khola & Berinium HEP has also been started.

A Joint Project Office, Sapta Kosi, Sun Kosi Investigations (JPO-SKSKI) based in Biratnagar (Nepal) is carrying out surveys and investigations for preparation of DPR of Sapta Kosi high dam and Sun Kosi storage-cum-diversion project jointly with Nepal for mutual benefit of both the countries. The JPO-SKSKI was set up in August, 2004 for completion of investigation work within

a period of 30 months. However, the project investigation works has been delayed due to local law and order problem and the current target for completion of work is February, 2017.

(vii) Project Appraisal

During the year 2014-15 (up to Dec, 2014), technical examinations of 20 water resources projects (10 irrigation and 10 flood protection) were completed and accepted by the Advisory Committee of Ministry of Water Resources. The irrigation projects accepted by the Advisory Committee would provide irrigation to 7,77,194 hectare area and flood protection projects will provide protection to 1,54,38,017 persons, 2000 houses and 7,75,169 hectare area land. As of now, 34 new irrigation projects (25 Major & 9 Medium) as well as 9 revised cost estimates (7 Major & 2 Medium) are under different stages of appraisal.

Apart from the appraisal of Irrigation and Flood Control projects, civil components of hydroelectric projects are also appraised by Central Water Commission and coordinated by Project Appraisal Organization (PAO). The appraisal of Civil aspects including appraisal of cost estimates for 8 hydroelectric projects have been completed during the current year (upto December 2014). Other components of hydro-electric projects are appraised in CEA and TEC to the project is also accorded by the CEA. During the year 2014-15 (upto December, 2014), CEA has accorded TEC to hydro-electric projects having total installed capacity of 546 MW.

(viii) Project Monitoring

A three tier system of monitoring at Centre, State and Project level was introduced in 1975. At Central level, this work was entrusted to CWC. The main objective of monitoring is to ensure the achievement of physical and financial targets and achieve the targets of creation of irrigation potential. Monitoring system is also expected to contribute in identification of the inputs required, analysis of the reasons for any shortfalls/bottlenecks and suggest remedial measures etc., with a view to complete the projects in a time bound manner.

During 2014-15, a total of 47 (20 Major and 27 medium) projects under General monitoring and 149 (76 Major, 54 Medium and 19 ERM) on-going projects under AIBP are targeted by CWC field units.

Central Grants totalling to Rs. 361.20 Crores have been released to 13 Major & Medium Irrigation Projects under AIBP during 2015-16 (till December 2015). The cumulative total Central Loan Assistance / Grant provided to States is Rs. 53,481.68 Crores under AIBP since its inception of the

programme till 31.12.2015 to 297 projects. The number of States benefited from the programme is 25 till 31.12.2015. Out of 297 projects, 143 projects have been completed and 5 projects were deferred up to 31.12.2015.

To supplement the existing monitoring mechanism by providing authentic and objective data base on existing irrigation infrastructure, it was felt necessary to utilize remote sensing technique for the assessment of irrigation potential creation in AIBP assisted projects. At the instance of Planning Commission, pilot studies of two projects i.e. Upper Krishna in Karnataka and Teesta Barrage in West Bengal were carried out successfully using Satellite Data by NRSA Hyderabad. The study results of the assessment were found satisfactory and compared well with ground realities.

Subsequently, it was decided to take up the projects on a National Scale covering about **10 Million Ha** of Irrigation Potential spread across different states in India. In first phase, the assessment of Irrigation Potential Creation through mapping of irrigation infrastructures to monitor the progress was assigned to NRSC, Hyderabad in respect of 53 on-going AIBP assisted projects covering area of 5447.743 Th. ha during 2007-08. The study has been completed during 2009-10. In the second phase, the assessment of irrigation potential of 50 AIBP projects using Cartosat satellite data covering an area of 851.428 Th Ha has been completed by NRSC, Hyderabad during 2013-14. All the 50 reports have been submitted by NRSC, Hyderabad.

In order to supplement the existing monitoring mechanism, it was decided to develop in-house capacity for carry out above study on regular basis. Accordingly, 13 projects on pilot basis were identified for the in house practice. Processed Cartosat imageries of all the 13 projects were hosted by NRSC for satellite based online monitoring of AIBP projects using BHUVAN web services (SatAIBP). Four of the pilot projects were fully digitized for their executed project networks. The remaining projects are partially digitized, under progress and persuasion for want of minor/ sub-minor-wise design lengths and corresponding designed irrigation potentials (IPs) as well as IPs through direct outlets (Dos) from main/branch/distributaries from the project authorities/State Governments.

CWC has now decided to extend Cartosat satellite based information in implementing online monitoring of more on-going AIBP Projects using BHUVAN-AIBP portal developed exclusively for online monitoring by signing formal MoU with NRSC. Accordingly, an MoU with NRSC is being

finalised to enable CWC to process for the procurement of more imagery required for the ongoing projects and new time windows for the pilot projects with more facilities in the Bhuvan portal.

A portal has been developed which will facilitate monitoring of progress in respect of processing of cases for releases of Central Assistance to irrigation projects under AIBP.

(ix) Morphological Studies

The study of river morphology and implementation of suitable river training works as appropriate have become imperative for our nation as large areas of the country are affected by floods every year causing severe damage to life and property in spite of existing flood control measures taken both by Central and State Governments. Problems are aggregating mainly due to large quantity of silt/sediment being carried and deposited in its downstream reaches. The special behaviour of the river needs to be thoroughly understood for evolving effective strategies to overcome the problem posed by it.

Morphological study of three rivers namely, Ghaghra, Sutluj and Gandak have been completed till the end of 11th Plan period. The study of Ghaghra and Satluj have been conducted by NIH, Roorkee and the study of river Gandak has been conducted by CWPRS, Pune.

During the 12th Plan period, a provision of Rs 15.60 Crores has been allocated under the Plan Scheme 'R&D Programme in Water Sector' for the works related to morphological studies. So far, consultancy works for morphological studies of 15 rivers (Ganga, Sharda, Rapti, Kosi, Bagmati, Yamuna, Bramhaputra, Subansiri, Pagladiya, Krishna, Tungbhadra, Mahananda, Mahanadi, Hoogli, & Tapti) by using Remote Sensing technology have been awarded to IITs /NITs on nomination basis. The scheduled time for completion of these studies are two years. The studies are under progress.

(x) National Water Mission and Climate Change Issues

The "National Water Mission" was formulated by Ministry of Water Resources with main objective of "conservation of water, minimizing wastage and ensuring its more equitable distribution both across and within States through integrated water resources development and management". The Mission, duly approved by the Government, has set five goals to achieve the above objective, which are:

1. Comprehensive water data base in public domain and assessment of the impact of climate change on water resource.
2. Promotion of citizen and state actions for water conservation, augmentation and preservation.
3. Focused attention on vulnerable areas including over-exploited areas
4. Increasing water use efficiency by 20%
5. Promotion of basin level integrated water resources management.

Climate Change cell was created in CWC in August, 2007 to deal with all the studies, works and reports on the subject regarding impact of climate change on water resources being referred to CWC.

MoWR, RD&GR has established six Chairs in Academic institutes - IIT Kanpur, IIT Kharagpur, IIT Guwahati, IIT Roorkee, NIT Patna and NIT Srinagar with the objective of carrying out studies and research on “Impact of climate change on Water Resources”. Management Committees have been constituted under the Chairman, CWC for each of the Institute separately which has to meet once in a year.

CWC has prepared “Inventory of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins” in cooperation with NRSC, Hyderabad and started monitoring of these glacial lake water bodies on monthly basis during monsoon season from 2011 onwards. This monitoring has been continued in XIIth Five Year Plan period. As per the monitoring report of October, 2015, cloud free data of 437 GL/WBs was available. Amongst these, 234 GL/ WBs have shown decrease in water spread area, 55 have shown increase, 145 have not shown any significant change (+/-5%) while one glacial lake and two water bodies have dried up. 9 out of 234 have decreased by more than 30% and 6 out of 55 water bodies have shown increase in area by more than 30%.

The work “Snowmelt Runoff Forecasting in Himalayan River Basin” has been taken up by CWC in association with NRSC, Hyderabad. The model development for the study has been completed and experimental forecasts were formulated by NRSC. Refinement of models is under progress as per validated data received from field offices of CWC.

MOWR/CWC have entered into an agreement to undertake a study on “Operational Research to Support Mainstreaming of Integrated Flood Management under Climate Change” through Technical Assistance (TA) with the Asian Development Bank (ADB) in order to meet the objective of strengthening the protection and resilience of flood-prone areas in India. The Budhi- Gandak Basin and Brahmani- Baitrani Basin was selected as study area. The CWC was involved in flood

modelling in these basins. Models were setup using Deltares SOBEK 1D/ 2D software. The flood inundation maps corresponding to different return period (2, 10, 25, and 50, 100, 125, 150) of rainfall were generated. The results of the models have been incorporated in the study and the Draft Final Report has been submitted.

(xi) Hydrological Studies

Hydrological studies form the backbone of a water resources project. The success of a project is largely governed by the hydrological inputs. The inputs at Detailed Project Report (DPR) or Pre-Feasibility (PFR) stage are made available in the form of:

- (i) Water availability/Yield Studies.
- (ii) Design flood estimation.
- (iii) Sedimentation studies.
- (iv) Diversion flood studies.

In addition to above, special studies in respect of review of flood hydrology for existing projects as per dam safety guidelines is also carried out.

During the year 2015-16 (up to December, 2015), hydrological studies in respect of 98 projects have been appraised in HSO out of 33 projects have been cleared. The observations in respect of remaining projects were communicated to the concerned project authority. Their response is awaited. In addition, Review of design flood studies in respect 11 projects under DRIP has also been completed.

CWC also provides support in the field of Hydrology related to capacity building and training, modernization, BIS standardization, development of computer software as well as technical coordination with National and International organizations. One Training Program on "Project Hydrology - Hydrological Aspects in Project Planning and preparation of DPR" was organised during 16th to 20th November, 2015 at New Delhi. 32 participants from different States were trained during the training program.

Estimation of design storm depths has been found to be a major bottleneck in design flood studies since necessary data and expertise is available with only a few organisations like IMD and CWC. To overcome this, it was decided to publish generalized PMP Atlases covering the whole country, to give a first-hand estimate of design storm depths. The work for preparation of new PMP Atlases and

upgradation of existing PMP Atlases has been taken up in the XIth Plan. The work has been completed in June 2015.

(xii) Design Consultancy

Central water Commission is actively associated with design of majority of the mega water resources projects in India and neighbouring countries viz. Nepal, Bhutan, Afghanistan, Myanmar, Srilanka and African countries by way of design consultancy or in the technical appraisal of the projects. Four design units are functioning to cater to specific requirements and to attend to special design related problems of different regions. These units have specialized directorates for Hydel Civil Design, Concrete & Masonry Dam Design, Embankment Design, Gates Design and Barrage & Canal Design.

At present CWC is carrying out design consultancy in respect of 44 projects out of which 32 projects (including 09 from North Eastern region) are at construction stage while the remaining 12 projects (including 02 from North Eastern region) are at DPR stage.

Technical examinations for 70 projects were also carried out in the year. In addition, 8 special studies have been carried out and special problems handled in respect of 11 projects during the year.

(xiii) Dam Rehabilitation & Improvement Project (DRIP)

Dam Rehabilitation and Improvement Project (DRIP) is The World Bank assisted project with the provision of rehabilitation of about 225 large dams in the seven participating States (namely Jharkhand, Karnataka, Kerala, Madhya Pradesh, Orissa, Tamil Nadu and Uttarakhand) alongwith institutional strengthening component for participating states and Central Water Commission. It has become effective from 18th April 2012 for implementation over a period of six-years.

Under the project, Project Screening Templates in respect of 207 DRIP dams have been approved by the World Bank. Tender Documents in respect of 177 dams have also been approved and works in respect of 83 Dams have been awarded. Work on the preparation of Asset Management Tool (Dam Health and Rehabilitation Monitoring Application) is in advanced stage.

Forty Four (44) trainings have been conducted by the Centralm, Project Management Unit for DRIP Project, wherein about 1500 officials have been trained on different aspects of DRIP implementation. Two National Dam Safety Conference have also been organized, first at IIT Madras (24-25th March, 2015) and Second at IISc, Bangalore (12-13th Jan, 2016) under DRIP project.

The Dam Safety Organisation, CWC has received ISO 9001: 2008 certification for its Quality Management Systems from the Bureau of Indian Standards during the year 2015. Central Water Commission also received “Central Board of Irrigation and Power (CBIP) Award 2016” for promoting Health and Safety of Large Dams under DRIP.

(xiv) National Register of Large Dams

As per the latest information compiled under the National Register of Large Dams (NRLD) maintained by CWC, there are 5174 large dams in the country. Out of this, 4861 large dams have been completed and 313 large dams are under construction. The NRLD is available on CWC Website.

(xv) Standard Operating Procedure (SOP) for flood warning / forecast / release of water by Dams:

SOP for flood alarm / forecast / release of water by Dams published by NDMA to help in damage control by flood water. This SOP is expected to help in advance warning to the citizens about flood / release of water from Dams. Emergency action plan has been prepared by the project and released on 18.02.2016 by Hon’ble Minister.

(xv) National Committee on Seismic Design Parameters

The National Committee on Seismic Design Parameters (NCSDP) was constituted through MoWR Order dated 21st October 1991 with the objective to recommend the Seismic Design Parameters for the proposals received from the dam owners. Two meetings of the Committee was held during 2015-16. The 29th meeting of NCSDP was held on 19th May, 2015 to discuss the aftermath of Nepal Earthquake. Expected seismic intensity mapping in the immediate aftermath of the earthquake event is under process in consultation with IMD. The 30th meeting of NCSDP was held on 15th September, 2015 wherein 11 projects were discussed and cleared.

(xvi) National Committee on Dam Safety (NCDS)

Ministry of Irrigation, Government of India constituted a Standing Committee under the Chairmanship of Chairman, Central Water Commission in 1982 to review the existing practices and to evolve unified procedures of dam safety for all dams in India. Subsequently, Ministry of Water Resources, RD & GR reconstituted the Standing Committee in 1987 as the National Committee on Dam Safety to:

- ❖ Monitor the follow-up action on the report on Dam Safety procedures both at the Centre and at the State level,
- ❖ Oversee dam safety activities in various States and suggest improvements to bring dam safety practices in line with state-of the art practices consistent with Indian conditions, and
- ❖ Act as a forum for exchange of views on techniques adopted for remedial measures to relieve distress in dams.

The National Committee has been again reconstituted in October, 2015 and members from States like Himachal Pradesh, Meghalaya and Telangana have been included. The Committee now consists of 31 members drawn from 18 States, 5 Dam Safety Organisations and various other organizations viz. MoWR, CWC, GSI, IMD, and BBMB. During 2014-15, two meetings of NCDS have been held on 28.9.2015 (35th) and 11.1.2016 (36th).

(xvii) Dam Break and Glacial Lake Outburst Flood (GLOF) Studies

Dam break analysis is carried out to prepare the inundation map and disaster management plan in the unlikely event of dam failure. It estimates the maximum water level at the downstream locations of the dam in the event of a hypothetical failure of the dam. During the year 2014-15, Dam Break Analysis in respect of Subansiri Lower Project (SLP), Arunachal Pradesh has been completed.

Further, GLOF Studies are carried out to account for the flood, resulting from the breach of moraine dams, in the design of the projects. During the year, GLOF study in respect of two projects, namely, Nakthan HE Project, Himachal Pradesh and Alkananda HEP, Uttarakhand has been examined in CWC. The study for Alkananda HEP has been cleared.

(xviii) Environmental Management and Rehabilitation & Resettlement

CWC is compiling data relating to salient features of Rehabilitation & Resettlement aspects of Major/Medium, existing / on-going water resources projects based on the information received from various State Governments. Till now, the information received from State Governments related to 490 Major and Medium Irrigation Projects have been compiled. CWC is also compiling data relating to Submergence, R&R Issues of Major & Medium Projects monitored by field organizations of CWC and also information received from various State Governments. Till now, the information received in respect of 92 Major and Medium Irrigation Projects have been compiled

A National Environmental Monitoring Committee for River Valley Projects (NEMCRVP) has been set up by the Ministry of Water Resources to monitor implementation of Environment Management Plan and observance of environmental clearance. Member (Water Planning & Projects) is the Chairman of this inter-ministerial multi-disciplinary Committee. National Environmental Monitoring Committee for River Valley projects (NEMCRVP) has representatives of Ministries of Environment & Forests, Agriculture & Co-operation, Tribal Affairs and Water Resources, besides Planning Commission / Niti Ayog.

The latest status of the implementation of the environmental safeguards of the projects have been sought from the Chairman of the State Level Environmental Monitoring Committees for consideration of National Environmental Monitoring Committee for appropriate action in the matter. The Information received in respect of 12 projects has been compiled.

(xix) Environmental Impact Assessment

Central Water Commission (CWC) has taken up Environmental Evaluation / Impact Assessment Study of selected river valley projects in the country. The studies in respect of 7 projects namely, Jayakawadi Stage-I (Maharashtra), Barna Project (Madhya Pradesh), Salandi Project, Mahi Bajaj Sagar Project (Rajasthan), Mahanadi Delta Project (Odisha), Ramganga Project (Uttar Pradesh) and Singur Project (Andhra Pradesh) has been completed so far. It is now proposed to carry out the study for 6 more completed irrigation projects, namely, Ukai Project, Durgawati Irrigation Project, Eastern Koshi Canal project, Paralkot Dam Project, Sutyapat Paroject and Tawa Project.

Based on the recommendation of an Inter- Ministerial Group, Central Water Commission (CWC) had undertaken Cumulative Impact and Carrying Capacity (CI&CC) studies of various sub-basin in Brahmaputra basin through consultancy. The study of Subansiri and Siang sub basin of Arunachal Pradesh has been completed. Further, study of Kameng and Dibang sub-basin were initiated, but in view of decision taken by MoEF&CC, the work has been transferred to MoEF&CC in April, 2015.

(xx) Application of Remote Sensing Techniques in Water Resources Sector

(i) During the Year 2014-15, CWC has completed in-house studies of Satellite Monitoring of AIBP funded project in respect of two projects namely, (i) Dudhganga Irrigation project (June 2015) and (ii) Bawanthadi Irrigation Project (October 2015). The high resolution (2.5 m) satellite data of Cartosat-1 were used in these studies.

(ii) Satellite Remote Sensing based Reservoir Sedimentation Assessment Study (In-house) of Gandhisagar Reservoir (Madhya Pradesh) was completed in December, 2015. Another similar study in respect of Ghatprabha Reservoir (Karnataka) is under progress.

(iii) The work for Sedimentation Assessment of 30 reservoirs using Remote Sensing Technique has been awarded to MERI Nashik. Out of this, work in respect of 9 reservoirs is in progress.

(xxi) Development of Water Resource Information System (DWRIS)

DWRIS is a planned scheme started with an outlay of Rs 1370 crore for the 12th Five Year Plan to be implemented by MoWR, RD&GR. Web enabled water resource information system (India-WRIS) functions under DWRIS and is being managed by CWC. CWC & ISRO has jointly undertaken the work of development of Water Resources Information System (India-WRIS) during 11th Plan. The first full version of the website of India-WRIS (www.india-wris.nrsc.gov.in) was launched by Hon'ble Minister of Water Resources on 7th December, 2010 in New Delhi. Subsequently, four more versions of the website of India-WRIS have been launched. The ver. 4.1 was launched in July, 2015 and is available in public domain at 1:250000 scale.

The information system contains several GIS layers on water resources projects, thematic layers like major water bodies, land use/land cover, wastelands, land degradation etc., environmental layers as well as infrastructure and other administrative layers. The information system has all the basic map viewing and navigation capabilities like zoom, overview, bookmark, table of contents, etc. As per provision of Hydro-Meteorological Data Dissemination Policy 2013 (MoWR), all unclassified data of CWC G&D stations has been made available on India-WRIS website.

The centre for maintenance and further development of the India-WRIS portal is functioning at Central Water Commission Headquarter at New Delhi since February 2015. The centre has taken up following activities during 2015-16:

1. The work related to updation and refinement of canal network and command boundary of major and medium irrigation projects in respect of 19 States have been completed. The work in respect of remaining States is under progress.
2. Reservoir Module for real time data entry of reservoir data with users and administrator access control and automatic report generation has been created. Testing and operationalization of the module is under progress.

3. PMP Module with Probable Maximum Precipitation at grid points and patterns of key storms, temporal distribution patterns of rainfall etc. is under development. This module will be helpful for direct assessment of applicable PMP value for a catchment.
4. A “Near Real-time Hydrological Observation Data Entry Using SMS” module for entry of Gauge/Discharge data is under development.
5. A “Web Based Water Quality Data Entry” module for entry of water quality parameters is under development.
6. Ground Water related data like Ground water Aquifer, Industrial Cluster and ground water resources maintained by CGWB has been included in the India-WRIS portal.
7. Canal re-alignment mapping for “Sankosh – Mahanadi Inter-Basin Link Project” showing canals, the existing/ proposed structures and alternate links has been completed.

In order to maintain and update such a large volume of water resources data at national level, it has been planned to establish a new setup “National Water Resources Information Centre (NWRIC)” under the Ministry.

(xxii) Performance Overview of Irrigation Projects

Large investment has been made for creating irrigation facilities in the country which has contributed in achieving the food security of the country. Evaluation of performance of completed irrigation projects periodically provides an opportunity to assess the actual performance of projects vis-a vis envisaged objectives and targeted benefits, identify problematic area and corrective measures to address them. This has also been emphasized by Planning Commission as well as in the reports of Working Group of Ministry of Water Resources, RD&GR.

Keeping in view these aspects, Central Water Commission is carrying out various studies and dealing with other related issues of completed major/ medium irrigation projects in the country. The details are given below:

Performance Evaluation of Completed Irrigation Projects

Central Water Commission is carrying out Post Project Performance Evaluation Studies of completed major/medium irrigation projects in the country. Studies include evaluation of system performance and agro-economic, socio-economic and environmental impacts of project including economic analysis. Identifying deficiencies and recommending corrective

measures for improving the performance of project for achieving the envisaged objectives and targeted benefits is part of the studies. A Technical Advisory Committee (TAC) under the Chairmanship of Member (WP&P), CWC has been constituted for guiding, supervising and approving above studies.

During 2015-16, the Post Project Performance Evaluation Studies of following six irrigation projects are on-going.

- (i) Krishnagiri Medium Irrigation Project, Tamil Nadu
- (ii) Giri Medium Irrigation Project, Himachal Pradesh
- (iii) Jayakwadi Stage-I Irrigation Project, Maharashtra
- (iv) Salandi Irrigation Project, Odisha
- (v) Bhimsager Irrigation Project, Rajasthan
- (vi) Som-Kamla-Amba Irrigation Project, Rajasthan

In addition, following five new studies are under consideration.

- (i) GuntaNala Dam Project, Uttar Pradesh
- (ii) Maudha Dam Project, Uttar Pradesh
- (iii) Mayurakshi Reservoir Project, West Bengal
- (iv) Kumari Irrigation Scheme, West Bengal
- (v) Saharajori irrigation Scheme, West Bengal

(xxiii) Water Use Efficiency Studies of Completed Major/Medium Irrigation Projects

Irrigation sector is the biggest consumer of fresh water and its share in the overall demand of water is about 80%. However, water use efficiency in irrigation sector is relatively low. Central Water Commission is undertaking Water Use Efficiency studies of completed major/medium irrigation projects in the country with the objective of having assessment of water use efficiency of irrigation projects. The studies cover the following aspects of irrigation projects:

- i) Reservoir Filling Efficiencies (Inflow and Release Pattern)
- ii) Delivery System/Conveyance Efficiency
- iii) On farm Application Efficiency

- iv) Drainage Efficiency
- v) Irrigation Potential Created and Utilized

A Technical Advisory Committee under the Chairmanship of Member (WP&P), CWC has been constituted for guiding, supervising and approving the studies.

During 2015-16, the Water Use Efficiency studies of following four major/medium irrigation projects are ongoing.

- (i) Mahanadi Delta Stage-I Irrigation Project, Odisha.
- (ii) Baitarani Irrigation System, Odisha.
- (iii) Bahuda Irrigation Project, Odisha.
- (iv) Baghua Stage-I Irrigation System, Odisha.

(xxiv) Capacity Survey of Important Reservoirs in the Country

Capacity survey of reservoirs, hitherto known as hydrographical survey of major reservoirs, was initiated by CWC in the VIII Plan. Till date, the capacity survey of 36 reservoirs has been completed. During XII Plan, The capacity survey work of 25 reservoirs has been targeted. Process for taking up Capacity Survey of 8 reservoirs out of these 25 reservoirs has been initiated.

A “Compendium on Silting of Reservoirs in India” was published by CWC in April 2015. The compendium is based on data on 243 reservoirs in the country as provided by the dam owners including data of 36 reservoir capacity survey carried out by CWC.

(xxv) Pilot study Tapping of monsoon flow in small Minor Irrigation (MI) Tanks: CWC has done a pilot study for diverting the flood water of river Ganga near Kanpur city and storing it in a single / inter-connected chain of tanks during the flood period. Such stored water can be utilized for MI and Ganga rejuvenating as well. Diversion of flood water can also provide flood protection in downstream areas.

In the study it has been proposed to construct a diversion structure upstream of Kanpur city and storing the flood water in a single / chain reservoirs and releasing the same into Ganga at Shazadpur around 170 km downstream of proposed Barrage at Kanpur.

(xxv) Indian National Committee on Surface Water (INCSW)

The Indian National Committee on Surface Water (INCSW) has been constituted by MoWR, RD&GR with an objective to promote research work in the field of Water Resources Engineering (Surface Water aspect) by providing financial assistance by way of grants to academicians/experts in the Universities, IITs, recognized R&D laboratories, Water Resources/Irrigation departments of the Central and State Governments and NGOs under R&D Programme of the Ministry. INCSW is headed by Chairman, CWC and comprises of members representing MoWR/CWC, CSMRS, CWPRS, NIH, DST, Min. of Agr., WALMIs, IIT, NGOs etc.

There are 75 research schemes presently under progress in various organisations in the country with funding from the MoWR, RD&GR under the R&D Programme. An amount of Rs. 81.32 Lakh has been released to these schemes during 2015-16 (Till December 2015). A proposal for establishment of Research Chair on Water Sector Conflicts and Governance at Center for Policy Research (CPR), New Delhi is under consideration. During 2014-15, one meeting of INCSW was held on 16.9.2015. The website of INCSW “<http://cwc.gov.in/INCSW/index.html>” was also launched.

(xxvi) Training & Capacity Building

Central Water Commission offers training to water sector professionals every year. These training are organised at National Water Academy (NWA), CWC Headquarter and field offices of CWC.

The National Water Academy, CWC is a centre of excellence for imparting training on all facets of Water Resources Development and Management covering the different areas of planning, design, evaluation, construction, operation and monitoring of water resources projects, and also the application of high-end technology in water sector. The programs at NWA are open to all stakeholders of water sector including those from NGOs, Media, Private Sector Organisations, academic institutions, PSUs, individuals and foreign nationals also. During 2015-16 (upto December, 2015) NWA conducted 27 training programs. Some of the notable program organised by NWA are as under:

- (i) Training of officials of Flood Warning Section, Royal Government of Bhutan in April 2015.
- (ii) Training on “District Irrigation Plan” for IAS / IFS officers under Pradhan Mantri Krishi Sinchai Yojana (PMKSY) during 24-28 August 2015. 18 IAS/ IFS officers of various States participated in this program.

- (iii) As Regional Training Centre of WMO, one Distance Learning Programs on Basic Hydrological Sciences for Asian Region Countries was conducted in which 40 officers have been trained.

During 2015-16 (upto December, 2015), CWC-HQ / Field Office also conducted 17 programs in which 439 in-service officers participated.

In order to ensure capacity building of its officers, CWC also sends officers to training programs / workshops/ seminars organised by other organisation, both in India and abroad. During the year 2015-16 (upto December 2015) CWC has sent 173 officers to 46 programs / workshops/ seminars. This includes 4 programs conducted abroad in which 6 officers participated.

7.1.2 CENTRAL SOIL AND MATERIALS RESEARCH STATION

Central Soil and Materials Research Station (CSMRS), New Delhi, is a premier organization in the country dealing with the field and laboratory investigations, and research in the areas of geotechnical engineering and civil engineering materials, particularly for construction of river valley projects and safety evaluation of existing dams. The Research Station is also involved in quality control of construction for various river valley projects. The Research Station primarily functions as an adviser and consultant to the various Departments of Government of India, State Governments and Government of India Undertakings. The Research Station has been constantly updating its facilities and training its staff for the last three decades and has acquired some unique capabilities in the country in the field of geotechnical engineering and construction materials' characterisation. The sphere of activities of the Research Station is covered under the following main areas:

- Soil Mechanics including studies on expansive soils, studies on dispersive soils, hydraulic fracturing of core materials, soil chemistry and quality control
- Rockfill, Soil Dynamics including Geosynthetics, Numerical Modelling and Quality Control
- Concrete Technology including construction materials survey and characterisation, design of concrete mixes, roller compacted concrete, substitution of sand with bottom ash, thermal studies and quality control

- Concrete Diagnostics and Chemistry including diagnostic investigation/ health monitoring, material for repair and rehabilitation, petrography, chemical investigation, durability of concrete, chemistry and mineralogy, water quality, alkali aggregate reaction, new material such as polymer, grout etc. SSC/SFRC/HPC/HSC/CFRD and quality control
- Rock Mechanics (I) including foundation rock characterisation, in- situ measurements such as stress & deformability, geophysical investigations, numerical modelling
- Rock Mechanics (II) including rock mechanics laboratory investigations, workshop & instrumentation and electronics

Investigations for projects

Thirty seven projects, including six abroad and nine in North- East region of India, were investigated. The investigations comprised field and laboratory investigations in the areas of Soil, Rock, Rockfill, Geosynthetics, Concrete and its constituents.

International Projects

1. Pancheshwar Multipurpose Project, India/Nepal
2. Punatsangchhu –I H.E. Project, Bhutan
3. Punatsangchhu –II H.E. Project, Bhutan
4. Rupaligarh HE Project, India/Nepal
5. Sapta Kosi Hydroelectric Project, Nepal
6. Sun Kosi (Kamla) Hydroelectric Project, Nepal.

Indian Projects

Projects in North-East India

7. Dhakuakhana Water Resources Division, Dhakuakhana, Assam
8. Dibang Multipurpose Project, Arunachal Pradesh
9. Ganol H. E. Project, Meghalaya
10. Lower Kopili HE Project, Assam
11. Majuli Division from Brahmaputra Board, Jorhat Circle, Jorhat, Assam
12. North Lakhimpur Water Resources Division, North Lakhimpur, Assam

13. Protection of Tezpur University and its adjoining areas for Tezpur Water Resources Division, Assam
14. Umangot H. E. Project , Meghalaya

Other Projects

15. Farakka Barrage Project, West Bengal
16. Coastal erosion protection at Pentha in Rajnagar of Kendrapara District, Odisha
17. Gararda Dam Project, Bundi, Rajasthan
18. Jelam -Tamak HE Project, Uttarakhand
19. Kanhar Irrigation Project, Irrigation Department, Uttar Pradesh,
20. Konar Dam, Jharkhand
21. Koteswar Dam Project, Uttarakhand
22. Parichha Thermal Power Project, Parichha, Jhansi, Uttar Pradesh
23. Ponnaiyar (Nedungal Anicut) – Palar Intra State Link Canal Project, Tamil Nadu,
24. Renukaji Dam Project, Sirmour District, Himachal Pradesh
25. Rihand Dam Project, UP
26. Sardar Sarovar Project, Gujarat
27. Sawalkot H E Project, J & K
28. Subarnarekha Irrigation Project, Odisha
29. Swan River Phase-4 (Katour Khad), Flood Protection Division, I & P.H. Department, H.P.
30. Swan River Phase-4 (Kuneran Khad), Flood Protection Division, I & P.H. Department, H.P.
31. Tehri Dam Project, Uttarakhand
32. Tehri Pumped Storage Scheme, Tehri Garhwal, Uttarakhand
33. Turga Pumped Storage Project, West Bengal
34. Wain Ganga- Nal Ganga Intra State Link Canal Project, NWDA, Maharashtra

Governing Council for CSMRS

The Governing Council (GC) is a principal policy formulating advisory body to the Government on all matters relating to Research Station. This committee is headed by Secretary (WR), Ministry of Water Resources, RD & GR, New Delhi, and has a total strength of 15 members.

Standing Technical Advisory Committee

The STAC of CSMRS was reconstituted by the Ministry of Water Resources in 2013, for a period of 3 years. This committee is headed by Member (D&R), Central Water Commission, New Delhi, and has a total strength of 15 members (including Director, CSMRS). The 31st meeting of STAC was held on 17th April, 2015.

Self- Sponsored Research Schemes

The self-sponsored research schemes currently in progress are as follows:

1. Evaluation of strength characteristics of clayey soils by adding additives
2. Stabilization of expansive soil using fly ash
3. Effect of acidic environment on Geosynthetics and on coatings
4. Effect of fines on liquefaction potential of soils
5. Study on flyash based geopolymers as construction material
6. Compilation and interpretation of properties and parameters of 10 variants of Basalt
7. Compilation and interpretation of properties and parameters of 10 variants of Gneiss
8. Correlation between UCS and indirect tensile strength (Brazilian)

The details are furnished below in Table – 7.1

Table – 7.1: Important achievements during 2015-16

Success Indicators	Achievements during April 2015 to December 2015
Technical reports brought out / published	74 Nos.
Publication of research papers in International journals	12 Nos.
Publication of research papers in National and International level conferences seminars/ Symposium	17 Nos.
No. of Detailed Project Reports (DPRs) cleared	07 Nos.
Training programme organized	16 Nos.

Training Programmes Organized

Training programmes of CSMRS are given in Chapter 10.



Inaugural address by Director, CSMRS



Discussion with members of water user associations

Financial Achievements

Financial outlays

a) Under Plan

- Outlays for the F. Y. 2015-16 : Rs.8.6 +2.0Crores
- Expenditure incurred : Rs.7.65Crores
- Revised Estimate :

b) Under Non Plan

- Outlays for the F. Y. 2015-16 : Rs.11.85 Crores
- Expenditure incurred : Rs.09.58Crores
- Revised Estimate :

New Initiatives taken during 2015-16 :

- Investigations for Water resources projects : 5 Nos.
- Publication of research review papers/ documents : 1 Nos.
- Completion of self sponsored research schemes : 3 Nos.
- Evaluation of Detailed Project Reports : 7 Nos.

7.2 SUB-ORDINATE OFFICES

7.2.1 CENTRAL GROUND WATER BOARD (CGWB)

Mandate:

Central Ground Water Board (CGWB), under the Ministry of Water Resources, RD & GR is a multidisciplinary Scientific Organization with a mandate to:

"Develop and disseminate technologies, monitor and implement national policies for the Scientific and Sustainable development and management of India's Ground Water Resources, including their exploration, assessment, conservation, augmentation, protection from pollution and distribution, based on principles of economic and ecological efficiency and equity."

The Board is headed by the Chairman and has four wings namely, (i) Sustainable Management & Liaison (ii) Survey, Assessment & Monitoring (iii) Exploratory Drilling & Materials Management (iv) Technology Transfer & Water Quality and (v) Finance Wing. Each wing is headed by a Member. The Rajiv Gandhi National Ground Water Training and Research Institute is located at

Raipur which is headed by Director (RGI). The administrative & financial matters of the CGWB are dealt with by the Director (Administration) and Finance & Accounts Officer (FAO) respectively. The Board has 18 Regional offices, each headed by a Regional Director, supported by 17 Engineering Divisions and 11 State Unit Offices for undertaking various field activities.

Main Activities of Central Ground Water Board:-

1. Pilot Project on Aquifer Mapping
2. National Aquifer Mapping.
3. Monitoring of Ground Water Regime in the Country with enhanced density of wells.
4. Estimation of Ground Water Resource.
5. Rajiv Gandhi National Ground Water Training and Research Institute.

Website of CGWB: CGWB has prepared a portal and put on their various activities/achievements etc. at www.cgwb.gov.in. The portal contains publications, downloads of manual/guides/reports, state ground water profiles, district brochures, Ground Water Information System (GWIS) and RTI etc.

Achievements of CGWB during the year 2015-16 as on 31st December, 2015:

1. Finalization and uploading the reports of Pilot Project on Aquifer Mapping in CGWB website.:

CGWB under Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR,RD&GR), Government of India, with assistance from the World Bank has completed Pilot Aquifer Mapping Project in Six different Hydrogeological terrains covering parts of states of Bihar, Rajasthan, Maharashtra, Karnataka and Tamil Nadu. During the project, to achieve aquifer characterization, advanced geophysical techniques including heliborne survey were attempted in various Hydrogeological terrains. The project reports are finalized, issued and uploaded in the website of CGWB during 2015-16.

2. Aquifer Mapping:

Aquifer Mapping is a multidisciplinary scientific process wherein a combination of geologic, geophysical, hydro geological, hydrological and water quality data are integrated to characterize the quantity, quality and distribution of ground water in aquifers. Aquifer mapping at the appropriate

scale has to be devised and sustainable management plan to be prepared and implemented for this common pool resource. This will help achieving drinking water security, improved irrigational facility sustainability in ground water resources development in large part of rural India and many parts of urban India. Aquifer mapping has to be taken in priority areas on 1:50,000 scale.

The major activities envisaged under Aquifer mapping and preparation of Aquifer Management Plans are Compilation of existing data, Data Gap Analysis, Generation of additional data and Preparation of Aquifer Plan. Each activity has number of sub-activities and tasks and is carried out as per detail protocol for implementation.

- i. ***Collection and Compilation of Existing Data:*** Collection and compilation of existing data in respect of data base on exploration wells; delineation of principal aquifers; information of geology, geophysics, hydrogeology, geochemical, hydrology; aquifer wise water level data and aquifer wise draft data from CGWB/State agencies etc have been completed for the entire area of 8.89 lakh sq.km.
- ii. ***Identification of data gap analysis:*** Identification of data gap analysis in respect of delineation of aquifers by exploration; Information on Geology, Geophysics, Hydrogeology, Geochemical, Hydrology; aquifer wise water level data and aquifer wise draft data etc have been completed for the entire area of 8.89 lakh sq.km.
- iii. ***Generation of Geological & Geomorphological layers:*** Preparation of geological layers and other associated layers like subsurface geology, geomorphology and land use pattern are completed for an area of 1.063 lakh sq.km., 1.417 lakh sq.km., 1.280 lakh sq.km. and 1.067 lakh sq.km. respectively.
- iv. ***Hydrological information & parameters on ground water recharge*** has been attempted in the target area through preparation of drainage map, demarcation of water bodies, rainfall data analysis achieved for an area of 1.605 lakh sq.km, 1.518 lakh sq.km and 1.144 lakh sq.km. respectively.
- v. ***Field Activities for Aquifer Mapping:***
 - **Aquifer mapping has been completed in NCR area** in states of Uttar Pradesh, Haryana and Delhi encompassing an area of 25000 sq.km and ground water Management Plan have been prepared.

- **Generation of additional data:** In matter of data generation the field activities were taken up for through in-house resources in 1.30 lakh Sq Km priority areas during 2015-16. *Activities of ground water management studies viz; exploratory drilling, geophysical surveys, chemical quality studies and micro-level hydrogeological surveys are taken up during the year for value addition to aquifer maps. The individual achievement of data generation activities are as follows:*

2.1 Ground Water Exploration: The exploration is aimed at generation of precise demarcation of aquifer disposition and characteristics of hydrological parameters of sub-surface ground water data in the area. It is being carried out by the Board through a fleet of 84 drilling rigs (28 Direct Rotary, 48 Down the Hole and 8 Percussion Combination types).

During financial year 2015-16 (up to 31.12.2015), the Central Ground Water Board has constructed 475 wells (EW-303, OW-130, PZ-42) including 31 high yielding wells to assess the ground water potential in different hydrogeological set up. Out of the target of 700 exploratory wells, a sum of 650 exploratory wells are likely to be completed by March, 2016.

2.2 Constituting high level committee for study of water channel in arid area including paleo channel: CGWB has made an effort to assess the ground water resources available and artificial recharge potential of the palaeo channels in arid areas and an Expert Committee has been constituted for investigation.

2.2 Geophysical Studies: Geophysical studies are undertaken as an integral part of aquifer mapping and short-term water supply investigations. During 2015-16 up to 31st December, 2015. Central Ground water Board has carried out 2013 Vertical Electrical Soundings, 65.38 line kilometer resistivity profiling and geophysical logging of 89 bore holes in various parts of the country. 105 of bore holes is likely to be completed by March, 2016.

2.3 Water Quality Analysis: 21496 nos of water samples were analysed for the basic constituents, heavy metals (such as Cu, Zn, Fe, Mn, CO, Cd, Cr, Ni, Pb etc.), organic and specific constituents during the year 2015-16 up to 31st December, 2015.



High Yielding Exploratory Well at
Sawargaon, Niphad Taluka, Nasik



High Yielding Exploratory Well at **Dorlewadi,**
Baramati Taluka, Pune



High Yielding Exploratory Well at **Khangaon,**
Katol Taluka, Nagpur District



High Yielding Observation Well at
Khangaon, Katol Taluka, Nagpur



**High Yielding Exploratory Well at Rawala,
Soygaon Taluka, Aurangabad**



**High Yielding Exploratory Well at
Kurha Hardo, Tal. Bodvad, Dist. Jalgaon**

3. Water Supply Investigations

The Board carries out short-term water supply investigations for Government Agencies and helps them in augmenting their water supply. Normally minimum financial implications are charged from all other departments except Defense. The Board has carried out a total of 170 investigations during this year up to 31st December, 2015.

4. Ground Water Regime Monitoring

The Board has monitored the ground water levels in the country through a network of about 27000 Ground Water Observation Wells for month of April/May, August 2015, November 2015 in all Regions. Additional 509 observation wells have been established to enhance the density of existing observation wells. Water Quality of the wells is monitored during pre-monsoon period.

5. Estimation of Ground Water Resource of the Country

The Dynamic Ground Water Resource of the country have been assessed jointly by respective state ground water departments and Central Ground Water Board under the supervision of the State Level Committees. The Dynamic Ground Water Resources assessment with reference to the base year 2011 has been computed while the assessment of “Dynamic Ground Water Resources of India” (as on 31st March, 2013) is under preparation. Brief details of “Dynamic Ground Water Resources of India” (as on 31st March, 2011) are given in Table -7.2

Table – 7.2: Dynamic Ground Water Resources of India 2011

i.	Annual Replenishable Ground Water Resources	433 (bcm/yr)
ii.	Net Annual Ground Water Availability	398 (bcm/yr)
iii.	Annual ground water draft for irrigation, Domestic & Industrial uses	245 (bcm/yr)
iv.	Stage of Ground Water Development	62%
v.	Categorization of Blocks/Mandals/Talukas	
	Total Assessment Units	6607
	Safe	4530
	Semi-critical	697
	Critical	217
	Over-exploited	1071
	Saline	92

6. Initiatives taken for promotion of Rain Water Harvesting and Artificial Recharge of Ground Water

A. Scheme on Artificial Recharge to Ground Water through dug wells.

The Ministry of Water Resources, RD & GR had implemented a scheme on “Artificial Recharge to Groundwater through Dug wells” in 7 states namely Andhra Pradesh, Maharashtra, Karnataka, Rajasthan, Tamil Nadu, Gujarat and Madhya Pradesh with the objective to recharge rain runoff generated in agriculture fields through existing dug wells in areas underlain by hard rock terrain and having majority of Over-exploited, Critical and Semi-critical assessment units.

B. Demonstrative Projects on “Artificial Recharge to Groundwater & Rainwater Harvesting.

CGWB has implemented demonstrative projects on artificial recharge to Groundwater and Rain Water Harvesting in the states of Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Delhi, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Nagaland, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal and UT Chandigarh, (22 States/UT) during XI Plan. A total of 133 projects amounting to Rs. 99.87 Crore envisaging construction of 1661 recharge structures were approved and funds of Rs. 92.69 Crore were released till March 31, 2015. During 2015-16, no spillover balance funds was released as second installment for the ongoing projects. (as on 31stDecember, 2015). A total of 41 Artificial recharge structures were constructed during 2015-16 and total structures constructed under the scheme are 1432 (as on 31stDecember, 2015).



Sh. Vijay Kedia, Varsh-Jal explaining the Kedia Farm Pattern (KFP) structure at Bajaj Auto Ltd, Waluj, Aurangabad, Maharashtra



Recharge Shaft, PWS well and Under Ground Bundhara(UGB) (submerged in water) at Menkhat(Maharashtra)

7. Third Meeting of National Inter-departmental Steering Committee(NISC)

Third meeting of National Inter-departmental Steering Committee(NISC) for monitoring the National Project on Aquifer Mapping and Management(NAQUIM) held under the Chairmanship of Secretary of Ministry of Water Resources, RD&GR at Shram Shakti Bhawan, New Delhi on 11th May, 2015. The agenda items like Achievements under NAQUIM, Action Plan for implementation of NAQUIM during 2015-16, Status of coordination and participation of State & Central Agencies, Extension of Tenure of NISC and inclusion of Members etc. Additional Secretary(WR, RD & GR), Chairman CGWB, Joint Secretary and Financial Advisor(WR, RD & GR), Commissioner(SP),

Additional Advisor, PHE (MoDW&S), Assistant Commissioner (MoRD), Assistant Advisor PHE(MoUD), Supdtg. Surveyer(SOI), Member(WP&P) CWC, Chief Engineer(IMO) CWC, Director(GW), Director(Finance), Scientist,F(MoES), Under Secretary (GW),Members of CGWB and Senior Officers of Ministry of Water Resources, RD & GR and Central Ground Water Board have attended the meeting.

8. Preparation of roadmap along with timelines for NAQUIM:

Aquifer mapping and Management Programme is an ambitious programme of XII Plan prioritizing the area for addressing problem of overexploitation, water quality in the State of Haryana, Punjab, Rajasthan, Gujarat, Andhra Pradesh, Telangana, Karnataka, Tamil Nadu and Bundelkhand Region of Uttar Pradesh and Madhya Pradesh.

An area of 5.25 lakh sq. km in 8 states has been prioritized for aquifer mapping and preparation of aquifer-wise ground water management plans. CGWB has prepared a roadmap for state-wise area specific requirements along with quarterly and monthly time lines for data generation, preparation of aquifer maps and development of ground water management plans. During 2015-16 an area of around 2 lakh sq. km has been targeted for preparation of aquifer maps and management plans against which aquifer maps for 1.038 lakh sq. km and Management Plans for 0.82 lakh sq. km has been completed by December, 2015.

9. Scrutiny of major/medium irrigation projects

As per the directives of Planning Commission, the CGWB is scrutinizing the Major and Medium Irrigation project reports/proposals sent by the State Government / Central Water Commission/ Command Area Development & Water Management Wing of Ministry of Water Resources, RD & GR from the point of view of their impact on groundwater regime. Specific recommendations are being made on the projects and submitted to the concerned for compliance. 11 projects were examined during 2015-16 as on 31.12. 2015 and are listed in Table -7.3

Table -7.3: Projects examined during 2015-16

Sr. No	Project
1	Mewat Feeder Canal, Haryana
2	Rarhu Reservoir Scheme, Jharkhand
3	Burhi Gandak-None-Baya-Gandak Link Project, Bihar
4	Baksoti Barrage scheme on river Sakri, Bihar
5	Burhai Reservoir Project, Jharkhand
6	Nizamsagar Project-canals and Distributaries including CM & CD works of NS Project, Telangana
7	Upper Bhadra Project, Karnataka
8	Sanjay Sarovar (Upper Wainganga) project, Dist.Balaghat, Madhya Pradesh
9	Mohanpura Major Multipurpose Project, Madhya Pradesh.
10	ERM of Surface Irrigation Schemes in Haryana
11	Lower Tapi Major project in Tapi Basin of Maharashtra

10. One day seminar - Bhujal Manthan organised by CGWB under MoWR, RD & GR

Ministry of Water Resources, River Development and Ganga Rejuvenation organized one day Seminar- Bhujal Manthan on 21st August, 2015 at Srimad Bhagwad Geeta Auditorium, Kurukshetra University, Kurukshetra, Haryana. The Seminar was inaugurated by Sushri Uma Bharti, Hon'ble Cabinet Minister, WR, RD & GR and Sh. O. P. Dhankad, Hon'ble Minister of Agriculture, Irrigation, Development and Panchayat, Government of Haryana was the Guest of Honour. The campaign was for awakening the need for people's participation for reducing wastage of precious water and replenishing groundwater through rainwater harvesting.

11. On-line NOC for Ground Water Extraction

A web-based system for receipt of application and issuance of NOC to extract Ground Water (cgwa-noc.gov.in) was launched.

Online Registration, online submission of application for issue of NOC and its renewal for all Industrial, Infrastructure and Mining projects has been put in place. Through this, the process of issuing NOC has become more transparent, easier, time effective, cost effective, and helps in effective monitoring of processes.

7.2.2 CENTRAL WATER AND POWER RESEARCH STATION

Introduction

The Central Water and Power Research Station (CWPRS) established in 1916, is the premier hydraulic research institute offering comprehensive R&D support to a variety of projects dealing with water, energy resources development and water-borne transport; disseminating expertise and research findings amongst hydraulic research fraternity; and aiding and promoting research activities, besides training of research manpower. CWPRS is recognized as the regional laboratory for Economic and Social Commission for Asia Pacific (ESCAP) since 1971. The institution, within inter-disciplinary approach to its activities, provides unique R&D services to national and international clientele. The website address of CWPRS is www.cwprs.gov.in. The expenditure status of works under R&D Plan as on 15th January, 2016, Physical and Financial Achievement and new initiatives taken during (01.04.2015 to 31.12.2015) as on 15.01.2016, Physical and Financial likely/anticipated achievement from (01.01.2016 to 31.03.2016) as on 15.01.2016 are given in the tables 7.4, Physical 7.5 and 7.6 :

Table – 7.4

Expenditure status of works under R&D Plan as on 15th January 2016

All amount in Rs. Lakhs						
Sr No	Subhead	BE 2015-16	RE 2015-16	Expenditure up to Dec 2015	Projected Expenditure from Jan 2016 to 31st March 2016	Projected Commulative Expenditure till 31st March 2016
1	DTE	15	17	10.59	6.41	17
2	FTE	7	7	0	0	0
4	OAE*	5	87	2.43	2.57	5

5	Minor	90	121	89.9	31.1	121
6	M&E	130	130	110	20	130
7	Major	905	905	633.28	271.72	905
	Total	1165	1282	858.13	334.87	1193

Note*: 82 Lakhs demanded for centenary celebration which may not be incurred as we are still awaiting for the funds.

Table – 7.5: Physical and Financial Achievement and new initiatives taken during (01.04.2015 to 31.12.2015) as on 15.01.2016

Plan (Major)					
Sr. No.	Name of Activities	Allocation Rs. in Lakh	Physical Progress	Financial Progress (Rs. in Lakh)	Remarks
1	Centralized facility for River Engineering Studies				
(a)	Construction of hangar and civil works		Progress is 90%. Foundation and RCC works completed. Roofing is nearing to completion	214.72	Work entrusted to CPWD. Tender amount is Rs.303.58 Lakh and expected date of completion is 31.03.2016
2	Development of multipurpose facility for estuarine and tidal hydrodynamics				
(a)	Construction of RCC sump and pump house		Progress is 100%. Work completed	62.60	Work entrusted to CPWD. Tender amount is Rs.107.33 Lakh and expenditure during 2014-15 is Rs.66.64 Lakh
3	Development of facility for Thermal Dispersion studies for coastal power project				

(a)	Construction of hangar		Progress is 90%. Foundation and RCC works completed. Roofing is nearing to completion	120.96	Work entrusted to CPWD. Tender amount is Rs.173.67 Lakh and expected date of completion is 31.03.2016
4	Construction of flumes for 2-D sectional models of spillways		Progress is 90%. Major works completed.	17.02	completed
5	Renovation of Seismological Laboratory including filling of Khaswa sand, electrification etc.		Progress is 100%. Work completed	3.56	completed
6	Renovation of CDC hall including flooring, painting, audio visual facility, arrangement of chairs etc.		Progress is 100%. Work completed	10.29	completed
7	Repair works to 120 cusec return channel and 100 cusec leading channel near RH division and octagonal chamber near FC division in water re-circulating system		Progress is 70%. Repairs in Octagonal chamber is in progress	2.59	separate work order for octagonal chamber is awarded with amount of Rs.3.60 Lakh
8	Renovation of CWPRS employees Co-operative Society canteen and PCC along road side behind OCL building		Progress is 100%. Work completed	10.35	completed
9	Renovation of Inspection Bungalow		Progress is 80%. Furniture installation is in process.	14.43	Work entrusted to CPWD. Tender for civil work is 15 lakh and expenditures are Rs.2.43 Lakh and rs.14.46 Lakh during 14-15 and 15-16 respectively

10	Renovation of existing quarters including final bill of D-type, painting of C-type (phase - II & III), aluminum windows of C-type (phase - II & III), electrical wiring of C-type (phase - II), aluminum windows of B-type (Phase - II & III) and special repairs of A-type (phase - II)		D-type 100% completed. C-type 50% and B-type 10% completed	36.94	D-type was entrusted to CPWD. Painting of C-type is in progress. Aluminium window of C-type completed and B-type is in progress. NIT of special repairs of A-type is in process.
11	Construction and raising of boundary wall for office campus and residential complex		Progress is 100%. Work completed	13.64	
12	Re-carpeting and widening of existing roads of office campus and residential complex		Progress is 100%. Work completed	73.51	
13	Shifting of entrance gate including footpath for residential complex		Progress is 100%. Work completed	22.72	
14	Horticulture development near Gate No.2 and maintenance of garden/lawn near guest house and office areas		Progress is 75%.	20.78	
15	Misc. Works viz. water proofing over the roof of workshop and EE(Civil) wing, fascia of lift for OCL building, repairs in departmental canteen, vehicle parking etc.		Progress is 75%.	5.79	
16	Internal and external painting of OCL building		Progress is 25%.	0	
17	Electrical infrastructure viz. electrical cabling from CERC to sub-stn. No.10 (DOHI), Conversion of OH to UG for SED		Progress is 25%.	3.38	
			Total	633.28	

Table – 7.6

Physical and Financial likely/anticipated achievement from (01.01.2016 to 31.03.2016) as on 15.01.2016

Sr. No.	Activities	Anticipated expenditure Rs. In Lakh	Remarks
1	Construction of hangar and civil works for Centralized facility for River Engineering Studies	88.86	Work is going on through CPWD
2	Construction of hangar for Development of facility for Thermal Dispersion studies for coastal power project	52.71	Work is going on through CPWD
3	Renovation of Inspection Bungalow	10	Work is going on through CPWD
4	Renovation of existing quarters including final bill of D-type, painting of C-type (phase - II & III), aluminum windows of C-type (phase - II & III), electrical wiring of C-type (phase - II), aluminum windows of B- type (Phase - II & III) and special repairs of A-type(phase - II)	75	Work awarded
5	Horticulture development near Gate No.2 and maintenance of garden/lawn near guest house and office areas	5	Work is going on through CPWD
6	Internal and external painting of OCL building	20	Work awarded
7	Miscl. Works viz. water proofing over the roof of workshop and EE(Civil) wing, etc.	15	Work is going on
8	Electrical infrastructure viz. electrical cabling from CERC to sub-stn. No.10 (DOHI), Conversion of OH to UG for SED	15	Work is going on
9	Tidal Chamber of Thermal Dispersion studies	45	PE sanctioned and NIT is under process through CPWD
10	Realignment of DG set room of HHS-spillway hangar	5	PE sanctioned and NIT is under process through CPWD
	Total	331.57	

Table – 7.7

Physical And Financial Achievement Plan M&E During 2015-16

Plan (M&E)

Sr No	Name of Work	Estimated Cost (Lakh)	Present Physical Status as on 15th January 2016	Present Financial Status
1	Digital Micro Earthquake Recorder	46	Procurement completed and expenditure booked amounting to Rs.22.27 Lakh (actual cost)	22.27
2	Forced Transducers	6.27	Procurement completed and the bill Passed.	6.27
3	Water Quality Monitor (WQM)	13	Procurement completed and the bill Passed.	9.24
4	Compound Microscope	6	Materials received and bill under settlement	4.38
5	Clamp on Ulrta Sonic Flow Meter	7.2	Procurement completed and the bill Passed.	7.20
6	Job work of Supply/Inst/Testing of Passenger Lift	20	Work executed and bill passed	20.10
7	Up-gradation of PLC-CPU Rating trolley	8.25	Procurement completed and the bill Passed.	8.25
8	Auto Cad	13	Procurement completed and the bill is under process	
9	Borehole Deviation Probe	15	Tender to be refloated	
10	Ship Mooring Analysis Software	10.8	Bid evaluation is under process and estimated to Rs.19.76 Lakh	
11	Mike-11	14.4	Materials received and bill passed. But	10.04

			training to be done	
12	HD Camcorder Video Camera	9.7	Material received and bill passed	3.95
13	Computer peripherals	10	Some are procured and some are in process	18.30
14	Geotextile Tensile Testing Machine (GE-II, Soil)	32	PDC approval obtained and NIT is under process	
15	AMC for Flow -3D software(SED)	13	Still the software is under warrenty period	
16	Procurement of equipment & software for Isotope Hydrology. (Laboratory Fluorometer, Well Logging Unit, Well Logginh Software)	175	Estimate recast with 176.50 lakh and sanctioned awaited from TC	
17	Procurement of cyclic triaxial soil test system.	50.0	PE sent to TC for sanction	
18	Direct shear test apparatus	19.9	Bid evaluation is under process. Two cases of Estimated cost Rs.12 Lakh and Rs.5.5 Lakh	
19	Procurement of 2D/3D FEM software	9.5	NIT is under process	
	Total			110.00

7.2.3 GANGA FLOOD CONTROL COMMISSION

Introduction

Ganga Flood Control Commission was established in 1972 with its Headquarters at Patna.

Organisation and its Functions

The Commission is headed by a Chairman with two full time Members and other supporting officers and staff. The representatives of concerned central ministries and departments as well as the Engineer-in-Chief/ Chief Engineers of the Ganga basin States are part time Members/ permanent invitees.

The Commission has been assigned the following tasks:

- Preparation and Updation of comprehensive plans for flood management of the river systems in the Ganga basin;
- Phasing/ sequencing of programme of implementation of works included in the basin-wise plans;
- Providing technical guidance to the Ganga basin States, namely, West Bengal, Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Chhattisgarh, Madhya Pradesh, Delhi, Haryana, Himachal Pradesh and Rajasthan on flood management;
- According techno-economic appraisal and clearance to flood management schemes of the Ganga basin States with estimated cost of more than Rs. 12.5 crore and up to Rs. 25.0 crore except for schemes of the States of Haryana, Uttar Pradesh and Delhi on the river Yamuna in the reach from Tajewala to Okhla Barrage. The schemes with estimated cost of more than Rs. 25.0 crore are appraised by GFCC and their techno-economic clearance is accorded by TAC-MoWR.
- Monitoring the execution of the important flood control schemes particularly those receiving Central Assistance under Flood Management Programme or being executed under Central Sector;
- Assessment of adequacy of the existing waterways under the road and rail bridges and additional waterways required to be provided for reducing the drainage congestion to reasonable limits;
- Performance evaluation of major flood control measures executed by the States including the Inter-State Flood Control Schemes;

Achievements during 2015-16

(i) Maintenance of Flood Protection Works of Kosi and Gandak Projects

The Flood Protection Works on river Kosi and Gandak are being carried out based on site inspection after every flood season and on the recommendations of Kosi High Level Committee (KHLC) and Gandak High Level Standing Committee (GHLSC) respectively. The reimbursement of expenditure incurred on maintenance of the flood protection works executed in Nepal portion is made by Government of India after utilization certificate of the same is received from the State Government of Bihar for Kosi and Government of Uttar Pradesh for Gandak respectively.

Like previous years, this year also, the KHLC/GHLSC inspected the flood protection works on river Kosi and Gandak during 30th October-2nd November 2015 and 19th -22nd November, 2015 respectively, held meetings and finalized the recommendations for flood protection works on these rivers to be taken up and completed in time bound manner.

(ii) Updating of Comprehensive Plan for Flood Management

Comprehensive plans for flood management for all the 23 river systems of the Ganga basin were prepared between 1975 and 1990. The work of updating these comprehensive plans was taken up due to changes, additional information/ data on hydro- meteorology and morphology in the basin in the subsequent years. All comprehensive plans except comprehensive plan for Flood Management for Kosi river system have been updated once. Second updating of 5 plans have also been completed. During the year the first updation of the comprehensive plan of Kosi river system and second updation of Rupnarayan-Haldi-Rusulpur are under progress which are likely to be completed during the year 2015-16.

(iii) Monitoring of Important Flood Management Schemes

GFCC is monitoring about 138 flood management schemes which, inter-alia, include:

- (a) 114 flood management schemes supported under “Flood Management Programme” of Ministry of Water Resources, RD & GR;
- (b) 2 schemes of maintenance of flood protection works of Kosi and Gandak Projects in Nepal;
- (c) 3 schemes viz., extension of embankment along Lalbakeya, Kamla and Bagmati rivers in Nepal; and

- (d) 19 schemes on common/ border rivers in West Bengal along India-Bangladesh border under the Central Sector Scheme “River Management Activities and Works related to Border Areas”.

(iv) Techno-economic Appraisal of Flood Management Schemes

Techno-economic appraisal of flood management schemes of Ganga Basin States is a continuing activity of GFCC. 57 number of flood management schemes were received in GFCC from Ganga Basin States during 2015-16 (up to 31st December,2015) including spillover projects from previous years, out of which 17 schemes were accorded techno-economic clearance and 34 schemes compliance were issued and 6 schemes are under examination in GFCC.

Committees

(i) India-Nepal Joint Committee on Water Resources (JCWR)

An India-Nepal Joint Committee on Water Resources (JCWR) headed by the Water Resources Secretaries of both the countries is functioning with the mandate to act as umbrella committee for all other sub-committees and groups under it. Chairman, GFCC is a member of the JCWR. Seven meetings of JCWR have been held so far. The last meeting was held in Kathmandu on 24-25 January 2013.

(ii) Joint Standing Technical Committee (JSTC)

This committee was constituted during the 3rd meeting of India-Nepal Joint Committee on Water Resources (JCWR) held from 29.09.08 to 01.10.08 in Kathmandu (Nepal). Chairman, GFCC is the Team Leader of the Indian Side of the Committee. The main function of JSTC is to coordinate with existing committees and sub-committees under the JCWR. Four meetings of JSTC have been held so far. The last meeting was held in Kathmandu on 12-13 September 2013 in which various issues were discussed and decisions taken for follow up action in the matter.

(iii) Joint Committee on Inundation and Flood Management (JCIFM) between India and Nepal

During the 4th meeting of Joint Committee on Water Resources held in March, 2009 at New Delhi, a committee for flood management known as Joint Committee on Inundation & Flood Management (JCIFM) was constituted after merging various other committees namely SCIP, HLTC, JCFM, SCEC and SCFF into a single committee. The terms of reference of JCIFM are

1. The JCIFM shall be an umbrella Committee to implement the decisions of JSTC in inundation and flood management issues.
2. The JCIFM shall address the issues related to flood management and inundation and can form Task Group(s), if required.
3. The JCIFM shall monitor the progress of works and provide guidance to task group(s) and report to JSTC.

Since then ten meetings of JCIFM have been held.

The 10th meeting of the Committee was held during 6th -10th December, 2015 at Kathmandu. In the meeting various issues relating to flood inundation and Flood Management were discussed and decision taken.

(iv) Ganga Flood Control Board Meeting (GFCB)

The 17th meeting of Ganga Flood Control Board (GFCB), chaired by Hon'ble Minister, Water Resources was held on 28th May, 2015 at Patna, in which various issues related to Ganga Basin States were discussed and necessary action on the decisions of said meeting are being taken by GFCC.

(v) Ganga Flood Control Commission (GFCC)

The 48th meeting of Ganga Flood Control Commission (GFCC) was held on 9th November, 2015 at New Delhi under the chairmanship of Shri G.S. Jha, Chairman, GFCC during which the problems faced by the States in implementing recommendations given in the Comprehensive Plans and other relevant issues were discussed.

Expert Committee for formulation of guidelines for use of geo-textile/ geo-bags/ geo-tubes in construction of flood management works

The 4th meeting of the “Expert Committee for formulation of guidelines for use of geo-textile/ geo-bags/ geo-tubes in construction of flood management works” was held on 19.10.2015 at Sewa Bhawan, New Delhi, in which certain important modifications/corrections in the draft guidelines was made by the members of the committee.

(vi) Farakka Barrage Project

About Farakka Barrage, details are given in Chapter 3.

7.2.4 SARDAR SAROVAR CONSTRUCTION ADVISORY COMMITTEE

Composition and Functions

The Sardar Sarovar Construction Advisory Committee (SSCAC) was constituted in 1980 by the Government of India in accordance with the directives of the Narmada Water Disputes Tribunal (NWDT) with a view to ensure efficient, economical and early execution of Unit – I (Dam and Appurtenant works) and Unit – III (Hydro – power works) of the Sardar Sarovar Project. The Secretary, Ministry of Water Resources, RD & GR, is the Chairman of the SSCAC. The officers of the departments like Water Resources, RD & GR, Irrigation, Power, Finance and Revenue etc. concerned with the construction of the project, of the four party states viz Gujarat, Maharashtra, Rajasthan and Madhya Pradesh along with concerned officers from the Government of India and the Narmada Control Authority are members of the committee. The secretariat of the Committee is located at Vadodara and it has a full time secretary of the rank of Joint Secretary belonging to the Central Water Engineering (Group – A) service.

Sardar Sarovar Construction Advisory Committee (SSCAC) Meeting

The 83rd meeting of the SSCAC was held on 26th June 2015 at New Delhi. The major issues discussed are as follows:

- Insurance Coverage for Sardar Sarovar Power Houses.
- Real Time Data Acquisition System (RTDAS) and commissioning of Water Management System.
- Share Cost of SSCAC Secretariat
- Payment of Share Cost of SSP by the Party States.
- Brief report on the proceedings of the 108th, 109th and 110th meeting of PSC of SSCAC.
- Annual Development Plan 2015-16 for Unit-I and Unit-III works of SSP
- Claim put forth by M/S. Jaiprakash Associates (JPA) on account of Shortfall in Concrete Progress during the various seasons from 1993-94 to 1997-98 due to the restrictions imposed in raising the spillway of Sardar Sarovar Dam.
- Meeting of Dam Safety Panel for Sardar Sarovar Project

- Review of the progress of Unit-I and Unit-III works of Sardar Sarovar Project: Raising the height of Sardar Sarovar Dam above Crest level (i.e. 121.92m).
- Audit of SSCAC
- Time extension and revision of rates for the civil works of underground River Bed Power House and main Dam works of SSP”.

Permanent Standing Committee (PSC) Meetings

The Sardar Sarovar Construction Advisory Committee has a Sub- committee ,named as Permanent Standing Committee (PSC), with the Executive Member, Narmada Control Authority as the Chairman and representatives from the Ministry of Water Resources, Central Water Commission, Central Electricity Authority and all the four party states as Members. The Secretary SSCAC is the Member Secretary of the PSC.

110th meeting of PSC of SSCAC were held on 09th April 2015 at New Delhi. The major issues discussed are as follows:

- Closure of contract with M/s. BHEL for work package-I & II of EMC
- Insurance Coverage for Sardar Sarovar Project Power Houses.
- Review of the progress of work of Unit-I and Unit-III of Sardar Sarovar Project.
- Raising the height of Sardar Sarovar Dam above Crest Level (i.e. EL 121.92m)
- Meeting of Dam Safety Panel for Sardar Sarovar Project.
- Construction of Garudeshwar Weir of SSP.
- Payment of share cost of SSCAC Secretariat.
- Refurbishing and restoring of Radial Gates & its appurtenant parts along with its handling for Sardar Sarovar Project.
- Annual Development Plan for 2015-2016 of unit-I (Dam & Appurtenant works) & unit-III (Hydro Power works) of Sardar Sarovar Project.
- Payment of Share Cost of Sardar Sarovar Project by the Party States.
- Closure of contract awarded to M/s Intrax for work package IV of EMC of NCA.

Physical Achievements

SSCAC, as recommendatory and advisory Committee, recommended the proposal; “Refurbishing and restoring of Radial Gates & its appurtenant parts along with its handling for Sardar Sarovar Project” as discussed in the meeting.

Financial Achievements

SSCAC has continuously made efforts to minimize the outstanding share cost of SSP payable by the party States. Total Undisputed Share of expenditure as on September 2015 amounting to Rs. 30973.84 Crore has been resolved amongst the party States. Balance Undisputed Share Cost Dues remaining is Rs. 1032.21 crore.

Revised Cost Estimate for SSP and Expenditure

Revised cost estimate of Sardar Sarovar Project amounting to Rs 39240.45 crore (at 2008-09 price level) has been accepted by Planning Commission for investment in the state plan in May 2010. An expenditure of Rs 47512.42 crore has been incurred on the Sardar Sarovar Project up to end of September 2015. The cost of the project is shared by all four party states viz. Gujarat, Madhya Pradesh, Maharashtra and Rajasthan. SSCAC is regularly making efforts to reduce the dues payable by other party States to Gujarat for the project. Overall position of disputed cost, undisputed share cost and balance of undisputed dues payable by the party States to the Government of Gujarat and the disputed cost is given in Table 7.8 below:

Table 7.8: Status of balance dues on undisputed booked share cost up to September 2015.

Particulars	(Amount in Rs. Crore)				
	Gujarat	Madhya Pradesh	Maharashtra	Rajasthan	Total
Undisputed Share of expenditure	25564.97	3144.78	1489.63	774.46	30973.84
Share Cost Paid	25564.97	2185.69	1470.24	720.73	29941.63
Balance Undisputed Share Cost Dues	00.00	959.09#	19.39#	53.73	1032.21
Disputed expenditure incurred by GoG	(on interest on market borrowing, R&R expenditure & Rockfill dykes & Link Channel)				16526.47

Note: Figures are based on information supplied by SSNNL.

This does not include expenditure of M.P. on ISP component & R&R expenditure chargeable to SSP by GoMP & GoM.

Progress of Main Dam Works

The work of raising blocks No.30 to 46 to 121.92 m commenced on 9th March 2006 and was completed on 31st December 2006. The balance works remaining to be carried out are raising of piers and installation of Radial Gates in the spillway portion of the dam. As per Court's directions, the permission for further raising of dam is now to be given by the NCA. Now, the NCA in its 86th (Emergency) meeting held on 12.06.2014 permitted SSNNL to carry out Phase-I proposal comprising construction of piers, overhead bridge and installation of gates in open or raised position of SSP. Accordingly, related construction activities have started.

The overall progress of Main Dam (Unit-I) achieved up to June 2015 is given in Table 7.9 below:

Table 7.9: Overall progress of Main Dam (Unit-I) achieved up to June 2015

Items	Est. Qty.	Cumulative Progress up to June 2015	Percentage Progress up to June 2015
Excavation (Lakh Cu.m)	64.00	63.607	99.39%
Concreting (Lakh Cu.m)	68.20	68.89	98.08%
Drilling& Grouting (Lakh RM)	2.82	2.5045	88.81%

Progress of Canal Head Power House (CHPH):

The Civil and Electrical works of Canal Head Power House were completed in all respect in January 1998; however, power could only be generated after the dam had attained the height of EL 110.64 m (Minimum Draw Down Level). All the five Units of CHPH (5x50 MW) have since been commissioned successfully during August 2004 to December 2004.

Progress of River Bed Power House (RBPH)

All the civil and electrical works of RBPH are complete and all the 6 Units of RBPH have been commissioned. Computerized Control System (CCS) has been established and put in operation from 14.06.2010.

Garudeshwar Weir:

The work of Garudeshwar Weir which is part of Unit-III works has been approved by SSCAC on 16.03.2012 in its 79th meeting. The estimated cost of Garudeshwar Weir is Rs.438.18 crore and work awarded to lowest bidder on 4th May 2012 for Rs.2,99,43,36,391.50 to be completed in 48 months.

The work of construction of Garudeshwar Weir has been started by the agency from 08.02.2013. The works related to approach roads, diversion structure, excavation and coffer dam of Garudeshwar Weir are in progress. The progress of work as per monthly report of September 2015 sent by SSNNL is as follows in the table 7.10

Table 7.10: Progress of work of SSNNL as per monthly report of September 2015

Sl. No.	Particulars	Unit	Total revised Qty.	Progress upto March 2015	Progress during 2015-16	Progress upto Sept. 2015	% of Progress
1	Excavation	LCM	16.15	2.85	1.98	4.65	28.67 %
2	Concreting	LCM	7.63	00.00	00.00	00.00	0.00 %
3	Steel	MT	4220	00.00	0000	0000	0.00 %

Power Generation

Total 36044.511 million units (MU) energy was generated from both the power houses till June 2015, out of which 541.666 MU generated in the Financial Year 2015-16 (01.04.2015 to 30.06.2015).

Progress of the irrigation Bye-Pass Tunnels (IBPT):

The irrigation Bye-Pass Tunnels (IBPT) arrangement comprises of two circular tunnels of 5.5 m finished diameter across the right bank hill connecting the main reservoir with the first irrigation pond. The twin IBPTs, with invert level of EL 88.39 m at the inlet, will have a discharge capacity of about 283.12 cumecs (10,000 cusecs) at reservoir level of 97.53 m and 424.81 cumecs (15,000 Cusecs) at reservoir level of 110.64m. IBPT works completed in May 2008.

The dam over flowed this year for about 18 days and maximum water level attained on 06.08.2015 was 124.31 m i.e. about 2.39 m above the crest level.

7.2.5 Banasagar Control Board

Highlights

Bansagar Dam was raised to its full height along with erection of 18 nos. Radial Crest Gates in June, 2006. This year i.e., in 2014-15, due to deficit rains in the catchment, the reservoir got filled up to 340.62 m, approximately 1 m below Full Reservoir Level (FRL) i.e. RL 341.64 m. The dam at Full Reservoir Level will provide irrigation in an area of 5.00 lakh hectares in the three States of Madhya Pradesh, Uttar Pradesh and Bihar besides hydropower generation of 425 MW in addition to providing domestic and industrial water supply to a number of villages and cities. The updated revised cost of Rs. 1582.94 crore (PL 2009) of the Bansagar Dam (Unit-I) has been finalized which is to be shared by the three States of M.P., U.P. and Bihar in the agreed ratio.

Organisation and Composition

Bansagar Control Board was set up vide Government of India, Ministry of Agriculture and Irrigation Resolution No.8/17/74-DW-II dated 30th January, 1976. It was amended vide Resolution No. 8/17/74-DW-II dated 28th March, 1978. This Resolution was in accordance with an agreement reached between the Governments of Madhya Pradesh, Uttar Pradesh and Bihar on 16th September, 1973 for sharing the waters of River Sone and the cost of the Bansagar Dam. After amendment, the main features of the resolution are as below: -

“In consultation with the Governments of Madhya Pradesh, Bihar and Uttar Pradesh, it has been decided to set up the Bansagar Control Board with a view to ensuring the efficient, economical and early execution of Bansagar Dam including all connected works in Madhya Pradesh, but excluding the canal systems which will be executed by respective States namely, Madhya Pradesh, Uttar Pradesh and Bihar. The Control Board will be in overall charge of the project including its technical and financial aspects. The actual work of construction will be carried out under the direction of the Control Board by the Chief Engineer concerned of the Madhya Pradesh Government.”

“The Three State Governments agree to delegate powers to the Chief Engineer, Madhya Pradesh, to contract for works, supplies and services under the direction of the Control Board. The contract in respect of all works will, however, be executed in the name of the Governor of Madhya Pradesh.”

The Union Minister of Water Resources, River Development and Ganga Rejuvenation is the Chairman of the Board and Union Minister of Power, Chief Ministers, Minister-in-charge of

Irrigation and Finance of the three States and Minister-in-charge of Electricity of Madhya Pradesh are its members. The Executive Committee set up under the Chairmanship of the Chairman, Central Water Commission, manages the day to-day affairs of the Board. The expenditure on the office of the Board is met out of budget grant of Union Ministry of Water Resources and subsequently reimbursed by the three States of Madhya Pradesh, Uttar Pradesh and Bihar.

Bansagar Dam Project

Bansagar is a multipurpose river valley project on river Sone in Madhya Pradesh envisaging both irrigation and hydroelectric power generation. The Bansagar Project is being executed by the Water Resource Department, Government of Madhya Pradesh under direction of Bansagar Control Board. The party States are carrying out the execution of the canals and power system independently under their jurisdiction.

The benefit and cost of the dam, including land acquisition and rehabilitation are shared by Madhya Pradesh, Uttar Pradesh and Bihar in the ratio of 2:1:1. The Project was originally estimated to cost Rs. 91.30 crore (PL: 1978). The revised cost of the project at 1991 price level was Rs. 936.00 crore [Civil Works Rs. 300.00 crores and Land Acquisition & Rehabilitation (LA&R) Works Rs. 636.00 crores]. The cost estimate based on Madhya Pradesh Unified Civil Schedule of Rates (UCSR) 1998 was Rs. 1054.96 crores (Civil Works Rs. 391.30 crore and LA&R Works Rs. 636.66 crores). The estimated cost of the project has been further revised at 2009 price level for Rs. 1582.94 crore (PL 2009) with B.C. Ratio of 1.63. The project with the updated revised cost estimate of Rs. 1582.94 crore (PL 2009) has been accepted by the Advisory Committee of M/o Water Resources in its 102nd meeting held on 28th January, 2010 and subsequently approved by the Planning Commission.

Components of Bansagar Dam

The Bansagar Dam envisages construction of:-

- i) 67.5 m high masonry dam including rockfill flanks across the Sone river just downstream of the gorge at Kusumah (Deoland). Length of masonry dam, left rockfill dam and right rockfill dam are 670.00 m, 161.00 m and 185.00 m respectively.
- ii) Six low earth dykes, four on the left bank of Sone river and two on its right bank with a total length of 6.95 km.
- iii) Kuteshwar Lime Stone Deposits Protection works.

Benefit from the Project

Irrigation Benefits

Irrigation benefits of the project is given in the table below at 7.11

Table 7.11: Irrigation benefits of the project Bansagar Dam

(i) Annual Irrigation in M.P. (in the districts of Rewa, Sidhi, Satna and Shahdol)	2.49 lakh hectare
(ii) Annual Irrigation in U.P. (in the districts of Mirjapur and Allahabad)	1.5 lakh hectare
(iii) Annual Irrigation in Bihar	0.94 lakh hectare towards stabilizing irrigation through old Sone Canal system

Power Benefits

(i) Power generation in Madhya Pradesh **425 MW**

Progress of Works

The left and right rock fill dam have been completed up to top level i.e. RL 347.00 m. All masonry non-overflow blocks and both the key blocks on either sides have been completed up to top elevation at RL 347.00 m. Spillway blocks have been raised up to crest level (RL 326.40 m) and spillway Piers & Bridge have been completed. Fabrication and erection of 18 Nos. Radial Crest Gates and Stop-Log Gates have also been fully completed by June, 2006. All construction sluices have been plugged and gates lowered. Works on installation of Irrigation Sluice Gates have been fully completed. Work on all the six Saddles has also been fully completed.

The dam at its full height has submerged 336 villages. Approximately 1.5 lakh PAP's of 54,686 families have been affected. Total 58,753.40 hectare land is coming under submergence, out of which 37,090.40 hectare is private land; 17,185 hectare is revenue land and 4,478 hectare of forestland. The Private land of 37090.40 hectare has been fully acquired along with the property compensation. Development of residential plots in required numbers in model villages have already been done and handed over to the PAP's. R&R Programme has been implemented based on norms approved by the Executive Committee and orders issued by Government of Madhya Pradesh. Comprehensive R&R Policy for the project has been finalized and implemented.

Status of release of water to the Beneficiary States from the Bansagar Dam (2014-15)

As per the information provided by the Engineer-in-Chief, Water Resource Department, Government of Madhya Pradesh, the total water released to the States of Madhya Pradesh, Uttar Pradesh and Bihar from June, 2014 to May, 2015 is 2590.613 M.Cum, nil and 1109.294 M.Cum respectively.

Financial Achivement of Bansagar Dam (Unit-I) (2015-16)

The details of expenditure during 2015-16 (from 01.04.2015 to 31.12.2015) in respect of Bansagar Dam (Unit-I) and the status of contribution of fund during 2015-16 (from 01.04.2015 to 31.12.2015) as per the information provided by the Water Resources Department, Government of Madhya Pradesh are given at tables below 7.12

Table 7.12: Sub-head wise Cumulative Expenditure during the Financial Year 2015-16 (up to December, 2015)

(Rs. in Crores)

S.No.	Sub-Head	Expenditure during 2015-16 (up to December, 2015)	Cumulative Expenditure up to 12/2015
1.	Establishment	14.91	271.539
2.	Tools & Plants	-	2.078
3.	Suspense (Debit)	-	148.58
4.	Works	24.92	1380.176
Total		39.83	1802.373
5.	Suspense	-	143.347
Gross Total		39.83	1659.026
6.	Salary of daily wages & Work Charged staff	18.56	95.41
GRAND TOTAL		58.39	1754.436

7.2.6 UPPER YAMUNA RIVER BOARD

Introduction

“Upper Yamuna” refers to the reach of Yamuna from its origin at Yamunotri to Okhla Barrage at Delhi. A Memorandum of Understanding (MoU) was signed on 12th May, 1994 amongst the basin States of Himachal Pradesh, Uttar Pradesh, Haryana, Rajasthan and Delhi, for sharing the utilizable surface flows of river Yamuna up to Okhla. The MoU also provided for creation of “Upper Yamuna River Board” to implement the said agreement.

Accordingly, the Central Government constituted the Upper Yamuna River Board in 1995 as a subordinate office under the Ministry of water Resources. After creation of Uttaranchal State in 2000, the resolution was modified to include Uttaranchal (now Uttarakhand) also in the Board.

The resolution also provided for constitution of a Review Committee, to be known as the Upper Yamuna Review Committee (UYRC), comprising the Chief Ministers (Governor in case of President’s rule) of the co-basin States as Members and Union Minister/Minister of State for Water Resources as Chairman, to supervise the working of the Upper Yamuna River Board (UYRB).

Organization

The Board comprises of Member (WP&P), Central Water Commission as the part time Chairman; one representative from each of the six basin States, Central Electricity Authority, Central Ground Water Board and Central pollution Control Board as its part-time Members and a full time Member Secretary. The expenditure on the Board is shared equally by the six basin States. The Board has sanctioned staff strength of 58.

Functions of UYRB

The functions of the Board include all aspects of water management in the Upper Yamuna Basin, viz. implementation of the water sharing agreement; water allocation; water accounting and data warehousing; monitoring and upgrading the quality of surface and ground water; co-ordination of the constitution of all projects in the basin, integrated operation of all the projects, watershed development and catchment area treatment plans.

Activities of UYRB

The Board has been making tentative seasonal distribution of water to basin States at various distribution points. The Board has also been engaged in resolving the inter- State issues amongst the basin States related to water distribution and issues related to benefits and cost sharing from the proposed storage projects in Yamuna Basin. The Board had constituted Water Accounting Committee to prepare Water Accounting Manual for UYRB. The committee has finalized its report on Water Accounting Manual. The Board has held 48 meetings so far. The last meeting was held on 23rd June, 2015.

Following the complaints from Rajasthan and Haryana that they were not receiving their due share of water from Okhla Barrage due to incorrect assessment of inflows at Okhla Barrage, UYRB in its 46th meeting of held on 01.08.2014, constituted a committee of Superintending Engineers of Haryana, Rajasthan and UP for joint observations of the discharge at Hindon Cut canal and Agra/Gurgaon canal, in order to resolve the issue of gauge and discharge sites. The committee has so far had three joint observations and it would continue the joint observations, periodically.

The 6th meeting of UYRC held on 20.03.2015. In the meeting, then Additional Secretary(WR,RD&GR) suggested that WAPCOS may be asked to install telemetry system at the distribution points. UYRB has forwarded WAPCOS proposal to the states of Rajasthan, UP & Haryana requesting them to send their concurrence with one month. Only Rajasthan's views have been received.

7.3 REGISTERED SOCIETIES

7.3.1 NATIONAL WATER DEVELOPMENT AGENCY

Introduction

The National Water Development Agency (NWDA) was set up in July 1982 by the Government of India as a Society under Societies Registration Act 1860 under the then Ministry of Irrigation (now Ministry of Water Resources, River Development and Ganga Rejuvenation) to study the feasibility of the links under Peninsular Component of National Perspective Plan. NWDA is fully funded by the Government of India. Subsequently in 1990, NWDA Society resolved to take up the studies of the Himalayan Component also. Further, on 28th June, 2006 preparation of Detailed Project Report

(DPR) of link projects and pre-feasibility/ feasibility reports of intra-State links as proposed by States were also included in the functions of NWDA. Accordingly, the Ministry vide resolution dated 30.11.2006 has modified the functions of NWDA Society. The functions of NWDA were further modified vide the Ministry's resolution dated 19.05.2011 to undertake the work of preparation of DPRs of intra-State links also by NWDA, and the same has been published in the Gazette notification of Govt. of India dated 11th June, 2011.

Functions of NWDA

The Agency functions with the following main objectives:

- (a) To carry out detailed surveys and investigations of possible reservoir sites and interconnecting links in order to establish feasibility of the proposals 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 (FR) of the 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.
- (e) To prepare pre-feasibility / feasibility / detailed project reports of the intra-State links as may be proposed by the States. 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.

Hon'ble Union Minister of Water Resources, River Development and Ganga Rejuvenation (WR, RD and GR) is the President of the Society. The President exercises such powers for the conduct of the business of the Society as may be vested in him/her by the Society.

The Governing Body (GB) of the NWDA Society under the Chairmanship of the Secretary (WR, RD and GR), Govt. of India, manages, administers, directs and controls the affairs and funds of the Society subject to the rules, bye-laws and orders of the Society and generally pursue and carries out the activities of the Society.

Organizational Set-up

NWDA is headed by the Director General of the rank of Additional Secretary to the Govt. of India. He is the Principal Executive Officer of the Society, responsible for proper administration of the affairs and funds of the Society assisted by Chief Engineer (HQ) and Directors, and is also responsible for coordination and general supervision of the activities of the Society. The Headquarters of the Agency is at New Delhi. NWDA has 2 Field Organisations each headed by a Chief Engineer, 5 Circles each headed by a Superintending Engineer, 16 Divisions each headed by an Executive Engineer and 2 Sub-Divisions each headed by an Assistant Executive Engineer/Assistant Engineer.

Major Activities

Inter Basin Water Transfer Proposals

The National Water Development Agency has been carrying out studies of inter-linking of rivers under National Perspective Plan for water resources development. The proposal comprises two components, namely; (a) Peninsular Rivers Development Component and (b) Himalayan Rivers Development Component.

Peninsular Rivers Development Component

Under Peninsular Component, NWDA has completed collection of data and water balance studies of all 137 basins/sub-basins and 52 identified diversion points (including 3 additional studies), 58 reservoir studies, Toposheet studies of 18 links including 1 additional study and all 18 pre-feasibility reports. Based on these studies, NWDA has identified 16 water transfer links under Peninsular Component for Surveys and Investigations and preparation of Feasibility Reports. So far FRs of 14 links under Peninsular Component has been completed.

DPR of Ken-Betwa Link Project Phase-I, Ken-Betwa Link Project Phase-II, Damanganga – Pinjal Link Project and Par-Tapi-Narmada Link Project have been completed by NWDA.

Himalayan Rivers Development Component

The studies in respect of Himalayan Rivers Development Component were started by NWDA during the year 1991-92. The Himalayan Component envisages construction of storage reservoirs on the principal tributaries of the Ganga and the Brahmaputra in India, Nepal and Bhutan, along with inter-linking canal systems to transfer surplus flows of the eastern tributaries of the Ganga to the west, apart from linking of the main Brahmaputra and its tributaries with the Ganga and Ganga with Mahanadi.

Under the Himalayan Rivers Development Component, NWDA has completed water balance studies of all the 19 diversion points, Toposheet studies of 16 storage reservoirs & 19 water transfer links and pre-feasibility report of 14 links. Based on these studies, NWDA has identified 14 water transfer links under Himalayan Component for Surveys and Investigations and preparation of Feasibility Reports (FRs). So far FRs of 2 links (Indian portion) in the Himalayan Component have been completed. The surveys and investigations and preparation of draft feasibility reports of seven more links in Indian portion have been completed. Field surveys & investigations for the remaining links under Himalayan Component are under progress except one link which lies entirely in Nepal.

Benefits from Inter Basin Water Transfer Link Schemes

The National Perspective Plan would give additional 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 34000 megawatt of power, apart from the incidental benefits of flood control, navigation, water supply, fisheries, salinity and pollution control etc. in various States.

NWDA has identified the States which are to be benefited from the inter-basin water transfer links and assessed the annual irrigation benefits likely to accrue to the concerned States from these link schemes. While the Himalayan Component of the inter-basin water transfer proposal will benefit directly Uttar Pradesh, Uttrakhand, Haryana, Rajasthan, Gujarat, Assam, West Bengal, Bihar, Jharkhand and Odisha and enrich the Peninsular Component from the surplus waters of Brahmaputra, the Peninsular Component will benefit Andhra Pradesh, Telangana, Odisha, Karnataka, Tamil Nadu, Kerala, Puducherry, Madhya Pradesh, Uttar Pradesh, Rajasthan, Maharashtra and Gujarat.

Other Initiatives

(a) Preparation of Detailed Project Report (DPR)

Ken-Betwa Link Project

A tripartite Memorandum of Understanding (MoU) for the preparation of Detailed Project Report (DPR) of Ken-Betwa Link Project was signed amongst the Union of India, Governments of Madhya Pradesh and Uttar Pradesh on 25.8.2005.

Ken-Betwa Project has been declared as a National Project by the Government of India in the year 2008 and subsequently been included as a part of Prime Minister's package for development of drought prone Bundelkhand region.

(i) Present status of Ken-Betwa link Project Phase-I

Ken-Betwa Link Project Phase-I was considered by Expert Appraisal Committee (EAC) of MOEF&CC for environmental clearance in its 86th meeting held on 24.8.2015 and in its 88th meeting held on 26th October, 2015 at New Delhi. The Committee required the wildlife clearance of the project by the State Wildlife Board, MP for the consideration of Environmental Clearance and further desired information on mitigation measures to be adopted in Panna Tiger Reserve like detailed Landscape Management Plan (LMP).

MP, State Wildlife Board has given its clearance to the project and recommended it to MoEF & CC. The required details/clarification asked by the EAC have been submitted to EAC Sectt in MoEF&CC. The project is considered by EAC in its 91st meeting held on 09.02.2016.

The wildlife clearance of Ken-Betwa Link Project, Phase-I has been considered by the State Wildlife Board of Madhya Pradesh in its meeting held on 22nd September, 2015 under the Chairmanship of Hon'ble Chief Minister, Madhya Pradesh. The Board decided to forward the proposal to National Board of Wild Life (NBWL) of MoEF&CC with recommendations for according the Wild Life Clearance of Ken-Betwa Link Project Phase-I. The proposal has been submitted to MoEF&CC by PCCF (wildlife), MP vide letter dated 14.12.2015, for consideration by NBWL.

The FRA certificates for diversion of forest land in respect of Chhattarpur and Panna Districts have been received. The technical approval of Catchment Area Treatment (CAT) Plan from Chief Conservator of Forests Chhattarpur, Sagar, Damoh have been received. All

required details/documents have been submitted to the Forest Department, MP and uploaded on MOEF & CC web site on 31.12.2015. The Forest Department, MP is processing the case of forest land diversion clearance. NWDA is pursuing the matter with the concerned officials in this regard.

(ii) Present status of Ken-Betwa link Project Phase-II

The DPR of Ken-Betwa Link Project Phase-II has been completed and submitted to Government of Madhya Pradesh and Uttar Pradesh in January, 2014. Ken-Betwa link project phase-II entirely pertains to Madhya Pradesh. The WRD, Govt. of M.P. has suggested some modifications in DPR. The DPR is being finalized by NWDA in consultation with Govt. of Madhya Pradesh. Status of various statutory clearances of the project is given below:

Draft Environmental Impact Assessment (EIA) Study of the Lower Orr Dam has been completed by WAPCOS as per the ToRs approved by MoEF&CC. The public hearings for the Lower Orr dam have been conducted at three places i.e. (i) Village Dadauni, District Shivpuri on 17.9.2015, (ii) Village Piproud, District Ashok Nagar on 18.9.2015 and (iii) Village Nauner, District Datia on 19.9.2015. The issues raised by the participants along with the compliance thereof will be included in the final EIA and Environmental Management Plan (EMP) Report. Environmental Impact Assessment (EIA) Study of the Lower Orr Dam has been completed and submitted to MoEF & CC and EAC (River Valley and Hydroelectric Projects). MoEF & CC considered in its 91st meeting for environmental clearance on 08.02.2016 and it has been decided to issue clearance of Lower Orr dam Project.

Form-I for diversion of forest land under Lower Orr Dam has been submitted to Collector and District Forest Officer (DFO) Ashok Nagar and Shivpuri for processing the case of forest clearance. Further processing of the case for forest clearance of Lower Orr Dam is to be done by Forest Department, Madhya Pradesh. After completing other parts of Form by Forest Department, MP, same will be submitted to MoEF&CC with their recommendations for issuing forest clearance.

The concerned Collector and District Forest Officer (DFO) of Ashok Nagar and Shivpuri has submitted the Form-I after completing their parts to APCCF (Land Management), Bhopal for further processing the case. Additional Principal Chief Conservator of Forest (APCCF) will submit the complete proposal soon to Govt. of Madhya Pradesh for necessary approval.

The same will be submitted to MoEF&CC with their recommendations for issuing forest clearance.

(iii) Damanganga-Pinjal and Par-Tapi-Narmada Link Project

An MoU for preparation of DPRs of both these links was signed by the Chief Minister of Gujarat, Maharashtra and Union Minister (WR), in the presence of Hon'ble Prime Minister, on 03.05.2010 and work for preparation of DPRs of these links were initiated. DPR of Damanganga-Pinjal link project has been completed during March, 2014 and submitted to the concerned State Governments of Gujarat and Maharashtra. Preparation of DPR of Par-Tapi-Narmada link is completed by August, 2015 and submitted to Water Resources Departments of Government of Gujarat and Maharashtra.

The Hon'ble Chief Minister of Gujarat vide D.O. letter dated 10.09.2015 to Hon'ble Union Minister (WR, RD&GR) expressed desire to sign an agreement for implementation of Damanganga-Pinjal and PAR-Tapi-Narmada link projects together after resolving all issues relating to water sharing under the proposed link project.

The issue of sharing of water and power in respect of Par-Tapi-Narmada link project has been under discussion amongst NWDA, Water Resources Departments, Government of Gujarat and Maharashtra at the official level. The water availability study of Par-Tapi-Narmada link has been agreed by both the States.

(b) Intra-State links

So far 46 proposals from 9 States viz. Jharkhand, Maharashtra, Bihar, Gujarat, Odisha, Rajasthan, Chhattisgarh, Karnataka and Tamil Nadu. NWDA has initiated action for preparation of PFRs of these Intra – state link proposals. PFRs of the 35 intra-State links have been completed and sent to concerned states. The DPRs of Burhi Gandak-Noon-Baya-Ganga and Kosi-Mechi link projects of Bihar State have been completed and submitted to Government of Bihar in December, 2013 and March, 2014 respectively. These are also under appraisal in Central Water Commission. DPRs of the Ponnaiyar - Palar link of Tamil Nadu is expected to be completed by March, 2016 and Wainganga-Nalganga link of Maharashtra, Barakar-Damodar-Subarnarekha link of Jharkhand and Vamsadhara-Rushikulya of Odisha are under progress.

Recently, Ministry of WR, RD&GR vide their letter No. 2/12/2015-BM/2217 dated 1.12.2015 (copy enclosed at Annex 62.13.1) has conveyed the following decision regarding the funding of DPR of intra-state links that:

“NWDA should generally confine itself to inter-state river linkage project DPR. They can take up intra-state river linkage projects only as consultancy works, if awarded by any State Government. The Government of India fund should not be utilized for DPR preparation of intra-state river linking projects”.

In view of the above decision/direction of the Ministry of WR, RD, & GR, the cost of preparation of DPR of Intra-state links for future projects by NWDA will be borne by the concerned State Governments.

Constitution of Special Committee on “Interlinking of Rivers”

The Hon’ble Supreme Court in the matter of Writ Petition (Civil) No.512 of 2002 on Networking of Rivers alongwith Writ Petition 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 reads as follow:

“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 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 compliance MoWR, RD and GR has constituted a committee called Special Committee on Interlinking of Rivers vide Gazette Notification dated 23rd September, 2014.

Eight meetings of the Special Committee for Interlinking of Rivers have been held on 17.10.2014, 6.01.2015, 19.03.2015, 14.05.2015, 13.07.2015, 15.09.2015, 18.11.2015& 08.02.2016 respectively at New Delhi. 1st, 2nd, 4th, 6th & 8th meetings of the Special Committee were chaired by Sushri Uma Bharti, Hon’ble Union Minister(WR,RD&GR) and 3rd, 5th and 7th meeting of the Special Committee were chaired by Prof. Sanwar Lal Jat, Hon’ble Union Minister of State (WR,RD&GR).

State Irrigation/Water Resources Ministers and Principal Secretaries/Secretaries of various States and other members attended the meetings.

Special Committee for Interlinking of Rivers has constituted four specific sub-committees; (i) Sub-committee for comprehensive evaluation of various studies/reports (ii) Sub-Committee for system studies for identification of most appropriate alternate plan, (iii) Sub-Committee for consensus building through negotiations and arriving at agreement between concerned States and (iv) Sub – Committee for restructuring of National Water Development Agency. The Sub-Committee for consensus building at serial no. (iii) is already functioning as Consensus Group under Chairman, CWC. Other three Sub-Committees have been constituted vide MoWR, RD&GR O.M. dated 13.02.2015.

The first combined meeting of Sub-Committees for (i) Comprehensive evaluation of various studies/reports on ILR (Sub-Committee-I) and (ii) system studies for identification of most appropriate alternative plan (Sub-Committee-II) was held on 26.02.2015. The second meeting of the Sub-Committees (I) and (II) was held on 12.03.2015 and 12.03.2015 respectively. During these meetings, broadly the Term of Reference and modalities of working of these Sub-Committees were discussed. The Sub-Committee for comprehensive evaluation of various studies/reports available on the issue of ILR (Sub-Committee I) held its 4th meeting on 30th June, 2015 and 5th meeting (combined meeting with Sub-Committee II) on 21st August, 2015. The guidelines of Technical Advisory Committee (TAC) of NWDA for preparation of water balance studies of various basins/sub-basins were discussed.

The Sub-Committee for System Studies for identification of most appropriate alternative plan (Sub-Committee-II) held its 4th meeting on 11th May, 2015, 5th meeting on 28th July, 2015 and 6th meeting (combined with Sub-Committee I) on 21st August, 2015. During these meetings, Mahanadi-Godavari link, Godavari-Krishna links and Manas-Sankosh-Tista Ganga link were discussed. The Sub-Committee for Restructuring of National Water Development Agency held 7 meetings and submitted its Report to Hon'ble Minister (WR, RD & GR) and Chairperson, Special Committee on 29.09.2015.

Sub-Committee for Consensus Building under Chairman, CWC held two meetings on 17.04.2015 and 30.10.2015. The issues with regard to Netravati-Hemavati and Bedti-Varada link under NPP were discussed in the meeting.

MoWR, RD & GR also constituted a group on Intra-State river links under the chairmanship of Shri A.D. Mohile, Former Chairman, CWC. The group has finalized its report and submitted it to MoWR, RD & GR on 28.05.2015.

As per the decision of the Special Committee for Interlinking of Rivers, a Sub-Committee for Restructuring of NWDA under the Chairmanship of Shri M. Gopalakrishnan, Former Secretary General, ICID was constituted vide MoWR, RD & GR OM dated 13.02.2015. Sub – Committee for restructuring of National Water Development Agency held 7 meetings.

The important recommendations of the Committee are (i) A new constitution called National Interlinking of Rivers Authority (NIRA) be created, suitably empowered to effectively function with enhanced mandate for achieving the overall objectives of ILR through an Act of Parliament and (ii) NIRA will absorb all existing NWDA offices and personnel protecting their rights and privileges and enhancing them comparable to that of an Organised Services.

The report has been resubmitted by NWDA to the MoWR, RD&GR on 29.01.2016 to decide on the recommendations of the Sub – Committee on Restructuring of NWDA and early approval of the Government of India.

Further, Hon'ble Apex Court vide their judgment in a Writ Petition (Civil) on Networking of Rivers (Inter-linking of Rivers) had directed that the Ken-Betwa inter-linking project be taken up for implementation at the first instance and the progress obtaining be placed bi-annually before the Cabinet. The Hon'ble Apex Court had also directed constitution of a Special Committee under the chairmanship of Hon'ble Minister for Water Resources for carrying forward the inter-linking of rivers programme.

Other Important Meetings & Public Awareness Programme

Annual General Meeting (AGM) of NWDA

29th Annual General Meeting of NWDA was held on 17.10.2014 under the Chairpersonship of Sushri Uma Bharti, Hon'ble Union Minister of WR, RD and GR & President of the NWDA Society. The meeting was attended by the senior officers of NWDA, CWC, MoWR, RD&GR and other Central and State Government Departments.

62nd Governing body meeting

62nd meeting of the Governing body of NWDA was held under the Chairmanship of Shri Shashi Shekhar, Secretary, MoWR, RD&GR on 27.01.2016 at Committee Room, Ministry of Labour, Shram Shakti Bhawan, New Delhi. The audited accounts, audit report along with audit certificate and replies of NWDA to the Audit Report have been included in the Annual Report for the year 2014–15 and are placed before the Governing Body for approval. Governing Body considered and approved the Annual Report & Audited Accounts for the year 2014-15 for placing the Annual Report on the table of both the Houses of Parliament.

Governing Body noted with satisfaction of the progress vis-a-vis targets of works during the year 2014-15 and also noted the efforts made NWDA on ILR programme. The meeting was attended by the senior officers of MoWR, CWC, NWDA and other Central and State Government Departments.

Participation in India International Trade Fair – 2015 and other Water Expo

NWDA participated in following events:

1. India International Trade Fair during 14-27 November, 2015 at New Delhi
2. 12th EA Water Conference/Training on Water & Waste Water Management, Mumbai, 21st to 23rd May, 2015.
3. 7th Agri Tech India 2015 along with 6th Grain Tech India 2015, 7th India Foodex 2015, 5th Dairy Tech, Flora Tech 2015 and India Food Park Expo 2015 at BIEC, Bangalore from 21-23 August, 2015.
4. 103rd Indian Science Congress (ISC) – pride of India Expo-2016, 3-7 January, 2016 University of Mysore, Karnataka.
5. Second National Dam Safety Conference. 12-13 January, 2016 at JN TATA Auditorium, IISc, Bengaluru.

7.3.2 National Institute of Hydrology

The National Institute of Hydrology, a Govt. of India Society under the Ministry of Water Resources, RD & GR, established in December 1978 at Roorkee, is conducting basic, applied and

strategic research in the fields of hydrology and water resources development. The Institute is fully aided by the Ministry of Water Resources, Govt. of India.

Objectives

- To undertake, aid, promote and coordinate systematic and scientific work on all aspects of hydrology:
- To cooperate and collaborate with other national and international organizations in the field of hydrology:
- To establish and maintain a research and reference library in pursuance of the objectives of the society and equip the same with books, reviews, magazines and other relevant publications:
- To carry out activities that the Society may consider necessary, incidental or conducive to the attainment of the objectives for which the Institute has been established.

Organization

The Union Minister of Water Resources is the President of the NIH Society and the Union Minister of State of Water Resources is its Vice- President. The Ministers-in-Charge of Irrigation/Water Resources in the states (ten States to be nominated for every three years by the President of the Society), the Secretaries of Ministries in the Government of India concerned with water and related areas, and eminent experts in hydrology and water resources are members of the Society. The Secretary, Ministry of Water Resources, Government of India, is the Chairman of the Governing Body. The Institute's research and other technical activities are monitored and guided by the Technical Advisory Committee (TAC), headed by the Chairman, Central Water Commission. The Director of the Institute is appointed by the Government of India and is the Principal Executive Officer of the Society.

The Institute has set up six regional centers in order to deal with the area specific hydrological issues of different regions in the country and for providing effective interaction with the States in the region. These Centres are: Hard Rock Regional Centre (Belgaum), Western Himalayan Regional Centre (Jammu), Deltaic Regional Centre (Kakinada); Ganga Plains Regional Center (Bhopal), Centre for Flood Management Studies for Brahmaputra basin (Guwahati), and Centre for Flood Management Studies for Ganga basin (Patna). The studies and research in the Institute are carried

out under five scientific themes at the Headquarters, two Centers for Flood Management Studies and four regional centers. The five scientific themes at the Headquarters are: (1) Environmental Hydrology, (2) Ground Water Hydrology, (3) Hydrological Investigations, (4) Surface Water Hydrology, and (5) Water Resources Systems. The Institute has a Research Management and Outreach Division (RMOD), which provides the interface with various research and academic institutions.

Major Research Areas(XII Plan)

- Hydrology of extremes
- Regional hydrology
- Environmental hydrology
- Integrated water resources management
- Hydrology for watershed management
- R&D under National Water Mission
- Technology transfer and outreach activities

Studies and Research

The studies and research in the Institute are being carried out broadly under the following major categories:

- Basic studies and research
- Applied studies and research
- Software development
- Field and laboratory oriented and strategic research
- Sponsored research

Sponsored Research Activities

The Institute has been undertaking research studies for providing solutions to the real life hydrological problems in the field using advanced techniques. Some of the significant contributions of NIH include studies for solution of real-life problems related to augmentation of water supply and

water management in cities, glacier contribution in streamflow of Himalayan rivers for hydro-electric power projects, watershed development, water quality management plan for lakes, watershed development, storm water drainage network in cities, flood inundation mapping and flood risk zoning, and water quality assessment in major cities.

Consultancy Capabilities

The Institute has excellent capabilities in the areas of hydrology and water resources to take up national and international consultancy. The Institute is taking up consultancy projects, which provide a good opportunity for the scientists of NIH to implement the results of their research for solving need-based problems.

Laboratories

The Institute has the following well equipped laboratories with state-of-art instruments to provide the necessary support to field studies:

- Nuclear Hydrology
- Remote Sensing & GIS
- Soil Water
- Snow & Glacier
- Water Quality
- Ground Water Modeling
- Hydrological Instrumentation

Technical Publication

The research output of the Institute is published in the form of reports and peer reviewed scientific papers. During the year 2015-16, the Institute has published 138 papers in reputed international and national journals and proceedings of international and national conferences and symposia. About 51 studies were going on.

Technology Transfer

One of the main objectives of the Institute is to transfer the developed technology to the target users. Besides wide dissemination of reports and research papers, organization of workshops, training

courses, seminars, symposia, conferences, brain storming sessions, etc. have been major activities under the Technology Transfer Programme. The Institute has organized 17 training programmes for field engineers, scientists, researchers, etc.

Capacity Building Activities

NIH organized a number of training courses covering various topics of interest. The objective of the training courses was to upgrade the knowledge, skills and attitudes of the field engineers, NGO representatives, research students and other stakeholders operating in different states. Twenty Six Scientists and scientific staff of the Institute were trained at various places in the country.

Important Events

The Institute participated in the 35th India International Trade Fair (IITF-2015), held at New Delhi during Nov 14-27, 2015, by putting up a stall in the pavilion of Ministry of Water Resources showcasing activities of the Institute. Physical models of Hydrologic Cycle and Gangotri Glacier were displayed during the exhibition.

Organizing conference / seminars on Ganga Rejuvenation:

Two conferences organized by NIH on Ganga cleaning during 2015-16. One conference was organized exclusively in Hindi.

राष्ट्रीय जलविज्ञान संस्थान, नरुड़की द्वारा दिनांक 19-20 नवम्बर, 2015 को “बदलते परिवेश में जल संसाधन प्रबंधन की भूमिका” विषयक दो दिवसीय राष्ट्रीय जल संगोष्ठी आयोजन किया गया।

इस आयोजन की संपूर्ण कार्यवाही हिंदी में संचालित की जाती है।

संगोष्ठी में देश के भिन्न-भिन्न राज्यों, ग्रन्थमध्या प्रदेश, महाराष्ट्र, उत्तर प्रदेश, दिल्ली, राजस्थान, तेलंगाना, उत्तराखंड, जम्मू एवं कश्मीर जैसे सुदूरवर्ती क्षेत्रों से आए वैज्ञानिकों, इंजीनियरों, शोधकर्ताओं द्वारा जल प्रबंधन से जुड़ी भिन्न-भिन्न विषय-वस्तुओं पर कुल 44 शोध पत्र प्रस्तुत किए गए।



उद्घाटन समारोहके दौरान मंचासीन अतिथिगनों द्वारा दीप प्रज्वलन



Sushri Uma Bharti, Hon'ble Minister, lighting the lamp during Inaugural Function.



Sushri Uma Bharti, Hon'ble Minister delivering the inaugural address

The institute also organized a National Seminar on “R&D Perspective & Rejuvenation of River Ganga” during 16-17 Dec. 2015. A total of 14 key notes and 56 research papers were presented at the seminar covering various aspects concerning the rejuvenation of river Ganga. A panel discussion, involving 15 experts from various organizations and Institutions was organized and specific recommendations on the R & D issues related to rejuvenation of river Ganga were made.



The “Centre of Excellence for Advanced Groundwater Research” was officially inaugurated by the Hon’ble Union Minister for Water Resources, River Development and Ganga Rejuvenation, Sushri Uma Bharati on 26th October, 2015 at NIH, Roorkee.



Review pilot IWRM study at Tikamgarh:

Tikamgarh project found to be a good project and after review, WEP-DSS model of the project was appreciated and it was decided to link it with Jal Kranti Abhiyan by involving all stakeholders.

MoWR, RD & GR has constituted a Central Team to visit UR River watershed in Tikamgarh district of vide Order dated 16.12.2015. The Committee recommended extending the work carried out by NIH, Roorkee in this basin to the other districts of Bundelkhand region. In pursuance of the Govt. order, the Committee visited various districts of Bundelkhand region from 17th to 19th December, 2015 to assess the ground situation, interact with the officials of the State governments and collect relevant data/information. The primary objective of vulnerability assessments is to identify people or places that are most susceptible to harm and to identify vulnerability-reducing actions. With the current experience of NIH, a 2-year study will be required in project mode to create the database and process/analyze the data for preparation of the vulnerability maps.

Important Meetings

- 42nd Working Group Meeting held at Roorkee during March 19-20, 2015.
- 34th Annual General Meeting of NIH Society held at New Delhi on April 21, 2015.
- 68th Meeting of Technical Advisory Committee (TAC), held at CWC, New Delhi on July 21, 2015.
- 43rd Working Group Meeting, held at Roorkee during December 8-9, 2015.
- 38th Foundation Day of NIH held at Roorkee on December 16, 2015.





Participants of Essay and Poster making competition



Debate competition at CFMS, Patna



Valedictory & Prize distribution function at NIH, Roorkee

7.3.3 NORTH EASTERN REGIONAL INSTITUTE OF WATER AND LAND MANAGEMENT (NERIWALM)

North Eastern Regional Institute of Water and Land Management (NERIWALM) is the only Institute of its kind established and governed by Govt. of India and serving eight states of North East. It was established by North Eastern Council (NEC), Shillong, Ministry of DoNER and subsequently was transferred to Ministry of Water Resources, RD & GR w.e.f. 1st April, 2012. Institute has been functioning under a two tier administration i.e. '**Governing Body (GB)**', Presided over by Hon'ble Minister, MoWR, RD & GR and '**Executive Council (EC)**' which is Chaired by the Secretary.

ACHIEVEMENT OF ACTIVITIES

The Institute has been conducting different capacity building activities based on a **Training Calendar** prepared in each year different programmes like training, conferences and seminars covering various subjects and issues like, Water Use Efficiency in Irrigation Projects, Irrigation Water Management, Command Area Development, Participatory Irrigation Management (PIM) for Water Users' Association, Crop Planning in Irrigated Areas, Benchmarking of Irrigation Projects, Preparation of DPR for Irrigation Projects, Rain Water Harvesting, Integrated Watershed Management Programme (IWMP), Women's participation in Irrigation Management, System of Rice Intensification (SRI), Multiple Cropping System, Organic Farming System etc. Institute also undertakes R&D activities on water and land resources management in North Eastern Region of India.

Institute also looks for sponsorship to conduct capacity building programmes. Three capacity building programme sponsored by National Water Mission (NWM), Ministry of Water Resources, RD & GR has offered NERIWALM has already been conducted and 01 (one) national workshop on enhancement of Water Use Efficiency and water productivity is being conducted during January, 2016. NWM has also sponsored two R&D projects on "Base Line Survey on Water Use Efficiency" of two Irrigation Projects namely Pohumara medium irrigation project in Assam and Loktak Major irrigation project in Manipur at cost of Rs.23.70 lakh and Rs. 52.81 lakh respectively. Project staff on contractual basis has been recruited. Activities like transact and preliminary field survey, collection of data, measuring of discharge in canals in various sections (in Loktak project) for determination of conveyance loss etc. have been started. Study will be completed as per action

plan and likely to be completed within stipulated period of 18 months. Achievement of both physical and financial is given in Table -7.13. Three more base line studies on Water Use Efficiency has also been awarded by NWM and 40% of advance payment has already been received on 29.2.2016 for following three irrigation projects of Assam :

- Kaliabor Lift Irrigation Project (Rs.22.53 lakh)
- Rupahi Medium Irrigation Project (Rs.12.79 Lakh)
- Sukla Irrigation Project (Rs. 32.93 Lakh)

Table 7.13: Achievement of activities during 2015-16

Activity	Achievement from 1 st April, 2015 to 31 st December, 2015		Anticipated achievement during 1 st January, 2016 to 31 st March, 2016	
	Physical (No.)	Financial (Rs. in lakh)	Physical (No.)	Financial (Rs. in lakh)
Training programme sponsored by NWM	33	299.83	17	120.00
a) Capacity building	03	1.42	01 (National workshop)	3.26
b) R&D on base line study on WUE	02 (continued)	3.44	02 (continued) 03 (new)	4.70 0.00

New Initiatives being taken by the Institute

Efforts are being taken to enter into the following new activities:

- **Organizing Exposure Visit** to good practices areas in country for clientele state department's farmers/officers in context with water and land management. The first batch of members of WUAs and JEs of Meghalaya Water Resources Development Agency (MeWDA) is expected to go for Exposure Visit during February, 2016 to WALMI, Aurangbad (Maharashtra), Jain irrigation, Jalgaon and WALMI, Anand (Gujarat). The team will also visit Dr. Y S Parmar University of Horticulture & Forestry, Solan, Himachal Pradesh. Necessary funds for the programme has been provided by MeWDA, Govt. of Meghalaya.
- **Testing of soil parameters** of farmer's fields in NERIWALM laboratory.

- Few **typical and commercially important horticultural crops of NE region** have been grown in small plots in the Research Farm of the Institute with purpose of demonstration of important crops and their better cultivation practices for the trainees of different in-campus training/ awareness programme of Institute and other visitors.

Collaborative programmes

- With Assam Agricultural University (AAU), Jorhat for undertaking experiments/demonstrations in different locations of Assam on in- situ soil moisture conservation technologies developed by AAU. Also to organize training for farmers with help of Krishi Vigyan Kendra's (KVKs) of AAU on "Water Management in different crops" and "Motivation of farmers (women groups in particular) for irrigated agriculture".
- With Indian Council of Agricultural Research (ICAR), NE Region Hill centre, Barapani, Shillong for capacity building programmes on Rain water harvesting and implement the same in few locations of the NE Region.
- Collaborative programme with Central Institute of Fisheries Education (CIFE), Mumbai. CIFE has approached NERIWALM for collaboration of a project for testing efficacy of devises for Arsenic removal in different NE States of North Eastern Region of India.

7.3.4 NATIONAL GANGA RIVER BASIN AUTHORITY (NGRBA)

National Mission for Clean Ganga

National Mission for Clean Ganga (NMCG) is the implementation wing of National Ganga River Basin Authority (NGRBA). It is a registered society under the Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR,RD&GR). The Secretary to the Government of India, MoWR, RD & GR is the current Chairman of the Governing Council of NMCG. As per the approval of the Cabinet Committee on Economic Affairs (CCEA), the mandate of NGRBA is being implemented by the National Mission for Clean Ganga (NMCG). At national level NMCG is the coordinating body and is being supported by States-Level Program Management Groups (SPMGs) of UP, Uttarakhand, Bihar and West Bengal which, are also registered as societies under Societies Registration Act, 1860 and a dedicated Nodal Cell in Jharkhand. As per the 306th amendment of the Government of Indian (Allocation of Business) Rules, 1961 both NGRBA and NMCG are allocated to the Ministry of Water Resources, River Development & Ganga Rejuvenation.

The area of operation of NMCG is the Ganga River Basin, including the states through which Ganga flows, as well as the National Capital Territory of Delhi.

The Mission Director of NMCG is a Joint Secretary (JS) in Government of India. For effective implementation of the projects under the overall supervision of NMCG, the State Level Program Management Groups (SPMGs) are, also headed by senior officers of the concerned States. At present, Secretary, Ministry of Water Resources, RD & GR has taken the additional charge of Mission Director, NMCG.

The function of National Ganga River Basin Authority include development of Ganga River Basin Management Plan, regulation of activities aimed at prevention, control and abatement of pollution, to maintain water quality and to take measures relevant to the river ecology in Ganga basin states.

It is mandated to ensure to maintain the minimum ecological flow in the river Ganga and abate pollution through planning, financing and execution of programs including:

- Augmentation of sewage infrastructure.

- Catchment Area Treatment.

- Protection of Flood Plain.

- Creating Public Awareness.

Namami Gange Programme

Union Budget 2014-15 has taken cognizance of the substantial amount of money already spent on the conservation and improvement of the Ganga, which has a very special place in a collective consciousness of this country. However, the efforts are not yielded desired results because of the lack of concerted efforts by all the stakeholders.

Accordingly, an Integrated Ganga Conservation Mission called “Namami Gange” has been proposed to be set up during budget 2014-15. Namami Gange approaches Ganga Rejuvenation by consolidating the existing ongoing efforts and planning for a concrete action plan for future. The interventions at Ghats and River fronts will facilitate better citizen connect and set the tone for river centric urban planning process.

Recognizing the multi-sectoral, multi-dimensional and multi-stakeholder nature of the Ganga Rejuvenation challenge, the key Ministries comprising of (a) WR, RD&GR, (b) Environment,

Forests & Climate Change, (c) Shipping, (d) Tourism, (e) Urban Development, (f) Drinking Water and Sanitation and Rural Development have been working together since June, 2014 to arrive at an action plan. The concerned Ministers have nominated a Group of Secretaries to develop a draft action plan and have held periodical meetings to review the progress and provide guidance. The Group of Secretaries submitted its initial report on 21st July, 2014 and after taking into account the feedback received from the Hon'ble Ministers, the final report has been submitted on 28th August, 2014.

Cabinet approved the Namami Gange program on 13th May, 2015 as a comprehensive approach to rejuvenate the river Ganga and all tributaries under one umbrella. Namami Gange focuses on cleaning of river Ganga in short term as well as also has a comprehensive vision with 7 main thrust areas – that includes maintenance of flow, River Front Development, Capacity Building, Research & Monitoring, Biodiversity Conservation and communication & public outreach. A total of Rs. 20,000 crore has been allocated for this project to be spent over the next five years (2019). This includes funds allocated for ongoing projects to clean river Ganga and new initiatives. Primary focus of the program is on pollution abatement. The major activities under Namami Gange includes rehabilitation of existing STPs, creation of new STP, complete sanitation coverage for gram panchayats, development of model cremation/dhobhighats, development of a decision support system in GIS platform for efficient planning and monitoring, creation of an IT-based monitoring center with capabilities of real-time alerts and prediction. The program envisages 100% central government funding for the entire life cycle cost of the treatment assets created which includes 10 year Operation and Maintenance (O & M) cost. The importance of maintenance of flow in the River and afforestation with medicinal and native plant species along river sides is also identified under 'Namami Gange' along with conservation of aquatic species.

Integrated Ganga Conservation Mission is being implemented for which the main thrust is controlling pollution of the river. Initiated comprehensive measures aimed at immediate results for condition assessment in all 118 cities / towns onbank of Ganga. These have been assigned to five leading CPSUs namely, WAPCOS, EIL, NBCC, EPIL and NPCC.

An amount of Rs. 2750 crore has been allotted for FY 2015-2016 which includes Rs. 100 crore for Ghat Works.

Eco Task Force for Ganga cleaning

Four battalions of Eco Task Force under Territorial Army with Ex-Servicemen have been deputed by Ministry of Defence. Training to these battalion is being given. The eco task force will keep a check on industrial pollution in Ganga, guard plantation across Ganga and also will generate awareness.

Sanctioned Projects

National Ganga River Basin Authority (NGRBA) has so far sanctioned a total 96 projects in 53 towns in Ganga States costing Rs. 8383.13 crore under NGRBA Program including Externally Aided Projects (EAP) component with the assistance of Japan International Agency (JICA) and the World Bank. These include projects of Rs 2256.01 crore in Uttar Pradesh, of Rs 2155.62 crore in Bihar, of Rs 99.36 crore in Jharkhand, of Rs 1352.51 crore in West Bengal and of Rs 378.41 crore in Uttarakhand for laying of sewage networks, treatment plants, development of river fronts, etc. These sanctioned projects also include three CPCB projects worth Rs 198.48 crore on Pollution Inventorization, Assessment and Surveillance (PIAS) on river Ganga Strengthening of Environmental Regulator (SER)-CPCB and a project of setting up the Ganga Knowledge Centre (GKC) in NMCG (Rs.48.54 crore). Further, for projects related to biodiversity conservation, afforestation, assessment of special properties of Ganga, communication & awareness and Dolphin conservation, Rs 20.42 Crores have been sanctioned. An expenditure of Rs.1664.73 crore (as on 31st December 2016) has been incurred on implementation of the sanctioned projects.

(a) Hybrid Annuity based Public Private Partnership (PPP) model

An institutional mechanism and financial model for execution of infrastructure projects under Namami Gange Programme on Hybrid Annuity based Public Private Partnership (PPP) model and setting up a Centrally owned Special Purpose Vehicle (SPV) to plan, structure, procure concessionaires, monitor implementation of such projects and develop market for treated water is being explored. The purpose is to implement infrastructure projects under 'Namami Gange' in a financially sustainable, outcome oriented and accountable mode given in Table 7.14.

Table 7.14: Status of Projects as on date under National Ganga River Basin Authority (NGRBA).

Sl.No.	State/Town	Approved Project Cost in Cr.	Tentative year of completion
1.	40 mid STP at Jagjeetpur Haridwar (Namami Gange) U.K.	71.4	2016-17
2.	Restoration and Reconstruction of Sewage Scheme due to disaster in Devprayag (Non-EAP) U.K.	4.50	2016-17
3.	Restoration and Reconstruction of Sewage Scheme due to disaster in Gangotri (Non-EAP) U.K.	0.45	2016-17
4.	Restoration and Reconstruction of Sewage Scheme due to disaster in Uttarkashi (Non-EAP) U.K.	0.48	2016-17
5.	Development of ChandiGhat in Haridwar	55.36	2018-19
6.	Saidpur STP and adjoining Network for Patna, Bihar (EAP-World Bank)	184.93	2018-19
7.	Saidpur Sewer Network, Patna, Bihar (EAP-World Bank)	268.63	2018-19

(b) Standard & design model of crematorium prepared by M/s HSCL (Hindustan Steelworks Construction Ltd.)

1. Work order has been issued to Varanasi Nagar Nigam to take up the Ghat cleaning activities in Varanasi-U.P. amounting Rs. 5.00 crore for one year.
2. Allocation of Work on Condition Assessment and Feasibility Study, Entry Level activities – under Namami Ganga Programme has been awarded to Central Government PSUs namely; EILC, WAPCOS, NBCC, NPCC and EPIL.

(c) Industrial Pollution – Projects Status

Diagnostic Study & Feasibility Report, Detailed Project Report & Tender document preparation for implementation of Common Effluent Treatment Plant with Zero Liquid Discharge system for textile clusters at following 5 locations are under progress:

Mathura
Rooma
Pilkuwa
Farrukabad
Bhadohi

Detailed project Report preparation for implementation of Common Effluent Treatment Plant with Zero Liquid Discharge system for Tanneries sector at Jajmau, Kanpur. The preparation of DPR work is in progress.

(d) Ganga Gram – Projects Status

Exposure visit / Study tour undertaken on 7th to 9th October, 2015 along with 9 Gram Pradhans and 4 Mukhiya from Sahebgang District (Jharkhand) to Seenchewal, Jalandhar, Punjab.

(e) Likely/ anticipated (January 2016 to March 2016)

Ganga Nirichan Abhiyan undertaken by the Minister on 4th & 5th January, 2016.

Exposure visit /study tour n to Seenchewal, Jalandhar, Punjab conducted on 19th to 21st January, 2016 alongwith Gram Pardahans of villages along the bank of river Ganga from 4 state- Uttarakhand, Uttar Pradesh, Jharkhand and West Bengal. One day program on Swachh Ganga-Gramin Sabhagita was held on 30th January, 2016 at Talkatora Indoor Stadium in the presence of Hon'ble Minister(MoWR,RD&GR) and Ministers from other related Ministries. Gram Pradhans and other guests from five Ganga basin states attended the event.

7.4 Statutory Bodies

7.4.1 BRAHMAPUTRA BOARD

Background

The Brahmaputra Board was constituted in the year 1980 by an Act of Parliament (No. 46 of 1980 called “The Brahmaputra Board Act”) with the objective of planning and integrated implementation of measures for control of floods and bank erosion in Brahmaputra and for matters connected therewith. It started functioning since 11th January, 1982 with headquarters at Guwahati, Assam. The jurisdiction of the Board includes the states of Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland, Tripura, Sikkim and northern part of West Bengal falling within the Brahmaputra Basin.

Composition of Brahmaputra Board

The Board consists of the Chairman, Vice-Chairman, General Manager and Financial Adviser as Ex-officio members and 17 part time Members representing 7 states of the North Eastern Region, North

Eastern Council, concerned Ministries of Government of India namely Water Resources, Finance, Agriculture, Power, Road Transport & Highways and Organizations of Government of India namely Central Water Commission, Central Electricity Authority, India Meteorological Department and Geological Survey of India.

High Powered Review Board

A High Powered Review Board to oversee the work of the Brahmaputra Board was constituted with the Union Minister of Water Resources River Development & Ganga Rejuvenation as the Chairman, Chief Minister of Assam, Manipur, Meghalaya, Nagaland, Tripura, Arunachal Pradesh, Mizoram, and Union Minister / Ministers of State – Finance, surface Transport, Power, Agriculture, Ministers of State- Water Resources and Secretary to the Ministry of Water Resources RD&GR Govt. of India, Chairman of Central Water Commission as Members and Chairman of Brahmaputra Board as the Member-Secretary. Member (RM), CWC is a permanent invitee.

The North Eastern Hydraulic & Allied Research Institute (NEHARI)

The institute was established near Guwahati with facilities of Hydraulic Modelling, Soil Testing, Concrete and Rock Mechanics Laboratory in association with CSMRS, CWPRS. The Board has successfully carried out sample testing as requested by various organizations like NEEPCO, CWC, NEC, NHPC and State Government of Assam, Manipur, Meghalaya and Mizoram for their on-going projects. So far, NEHARI has completed physical model studies of (i) Jiadhal River, (ii) River Brahmaputra from Porvita to South Salmara, (iii) Majuli Island and (iv) Kameng River (Jia Bharali in Assam).

Major Functions

The main function of the Board as per the Act is ‘Survey and Investigation’ and preparation of Master Plans for the control of flood and bank erosion and improvement of drainage giving due importance to the development and utilization of Water Resources of the Brahmaputra Valley for irrigation, hydropower, navigation and other beneficial purposes within the jurisdiction of the Board. Other important functions are preparation of Detailed Project Reports (DPRs) and Estimates of projects proposed in the Master Plans, approved by Ministry of Water Resources and construction of Multipurpose Dams and other works in the field of management and development of water resources under its jurisdiction proposed in the Master Plans.

Achievements of the Year

The Important activities of Brahmaputra Board under its jurisdiction are as below-

Master Plans

Preparation of Master Plans (Status)

The Brahmaputra Board had taken up preparation of Master Plans of the main stem of the Brahmaputra and Barak along with 68 major tributaries of Brahmaputra, including Majuli Island, River Dhaleswari and rivers of Meghalaya, Mizoram, Manipur and Tripura in three Parts. Part-I consists one number, Part-II consists one number and Part-III consists of 68 Master Plans.

All 57 Master Plans identified up-to XI plan have been completed by Brahmaputra Board. Out of above, 49 Master Plans have been approved by Government of India.

During the year 2015-16-

- A) Draft master Plan completed in 2015 for Ganol, Dareng & Bugi and under process of submission to Ministry for approval of Government of India.
- B) 8 Master Plan approved by Board and under process of approval of Government of India are returned to Board for meeting up observation in 2015 and now these are being attended by Brahmaputra Board.

Master plan of Imphal River in Manipur, Feni River in Tripura and 2 Master Plans in the State of Mizoram namely, Tuichang and Kaladain are identified for preparation of Master Plans during XII Plan.

‘Survey & Investigation’ and Preparation of Detailed Project Reports of Multipurpose Projects

Brahmaputra Board took up ‘Survey & Investigation’ of 14 of Multipurpose Projects in Brahmaputra and Barak Basin and in the south flowing rivers of Meghalaya.

Detailed Project Reports (DPRs) Completed

Out of above, after ‘Survey & Investigation’ and Detailed Project Reports (DPRs) in respect of following Projects have already been completed and the Projects are under commissioning by various Agencies – Siang Dam Project, Subansiri Dam Project, Tipaimukh Dam Project, Pagladiya Dam Project, Bairabi Dam Project.

Projects under ‘Survey & Investigation’ and Formulation of Detailed Project Reports

The following five Water Resources Projects are presently under ‘Survey & Investigation and preparation of DPR in Brahmaputra Board- Kulsi Multipurpose Project, Noa-Dehing Dam Project, Simsang Dam Project, Jiadhol Dam Project, Killing Dam Project.

Anti-Erosion and Flood Management Schemes

Protection of Majuli Island from Flood and Erosion

Majuli Island has constantly been subjected to erosion by the mighty Brahmaputra. Responsibility for undertaking anti-erosion works for protection of Majuli Island was given to Brahmaputra Board in the year 1999. Physical activities on the ground started in the year 2004.

The total area of the land mass of Majuli Main Island was 502.21 sq km in the year 2004. Since the year 2004, with regular implementation of ant-erosion / bank protection measures by Brahmaputra Board, the total area of Majuli Island has increased to 523.88 sq km till the year 2014. Currently, works under Phase-II & III are under execution. Works – such as construction of five spurs, river bank revetments, laying permeable RCC porcupine screens, construction of ‘Raised Platforms’ in low lying flood vulnerable areas are under execution and targeted to be completed by March 2016.

Restructuring of Brahmaputra Board:

Setting up of North East Brahmaputra River Rejuvenation Authority (NEBRRA) by restructuring Brahmaputra Board is in advance stage of approval. Matter referred to Ministry of Corporate Affairs and Ministry of Law & Justice for their comments. The new structure would be able to address emerging issues.

Financial Implication

Expenditure incurred by Brahmaputra Board on undertaking measures for protection of Majuli Island from floods and erosion under Phase-II & Phase-III are detailed below-

Table 7.15: Expenditure incurred by Brahmaputra Board for protection of Majuli Island from floods and erosion under Phase-II & Phase-III

Sl.No	Description	Estimated Cost (Rs in Cr.)	Actual Expenditure	Remarks
1	Phase-II & Phase-III	115.99	111.99 (upto Dec’15)	91.28% of physical progress has been achieved. Targeted to be completed by March, 2016.

2	Phase-IV	Rs. 35.00 crore has been approved by MoWR, RD&GR through letter No. 2/3/2012-B (Vol.I)/494-512 dated 28.04.2014 for additional work. DPR for Phase-IV works amounting to Rs. 213.61 crore are under appraisal of CWC.
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Plan Ahead

Ministry of Water Resources, Government of India has constituted a ‘Standing Committee of Experts’ under the Chairmanship of Member (River Management), Central Water Commission to undertake visits to the work sites, advice / recommend and monitor implementation of protection measures. Based upon recommendations of 8th visit of ‘Standing Committee of Experts’, Brahmaputra Board has formulated a scheme – **Protection of Majuli Island from Floods and Erosion-Phase-IV** – at the estimated cost of Rs. 213.61 crore for implementation during the XII Five Year Plan. The scheme is under appraisal in Central Water Commission for ‘Techno-Economic’ clearance. The Standing Committee has been reconstituted as Technical Advisory Committee (TAC) of Brahmaputra Board.

Restoration of Dibang and Lohit Rivers at Dhola-Hatighuli

The scheme “Avulsion of Brahmaputra at Dhola-Hatighuli (Measures for diversion of River Dibang to its original course) with ancillary anti-erosion measures” prepared by Government of Assam was approved by Ministry of Water Resources, Government of India in the Technical Advisory Committee (TAC) meeting held in May, 2002 and the Brahmaputra Board was entrusted with the responsibility for execution of the scheme. Total expenditure of Rs 74.48 crore has so far been incurred by Brahmaputra Board on execution of works envisaged under Phase-I, Phase-II, Phase-III and Phase-IV. With construction of ‘Tie-Bund’, the lands earlier used to form part of main channel of Dibang River are now completely protected from floods and erosion. The inhabitants of deserted areas have returned back and restarted cultivation in a big way.

11 villages under Doomduma Revenue Circle in an area of about 1500 ha got protection from floods, since the year 2004 onwards, on construction of retirement bund at Hatighuli area on Left bank of Lohit river. Details of Phase-IV are as below-

Table 7.16: Details of Phase-IV of scheme Avulsion of Brahmaputra at Dhola-Hatighuli (Measures for diversion of River Dibang to its original course) with ancillary anti-erosion measures

Sl. No.	Description	Estimated Cost (Rs. in crore)	Actual Expenditure (Rs. in crore)	Remarks
1	Phase-IV (December 2013)	54.43	52.65 (up-to Nov'15)	99.8% of the physical progress has been achieved.

Anti-erosion Schemes Planned to be executed during XII Five Year Plan

The following Anti-erosion Schemes are planned to be executed during the 12th Five Year Plan –

- Protection of Majuli Island from floods and erosion Phase –IV
- Restoration of original channels of Dibang and Lohit Rivers at Dhola-Hatighuli Phase-V
- Anti-erosion measures in Bhajaner Charra, Cooch Behar, West Bengal
- Bank Protection work in Bhogdebri area, Cooch Behar, West Bengal

7.. Drainage Development Schemes (Dds)

Brahmaputra Board identified based upon studies carried out under 49 approved Master Plans. During 2015-16 the DPR of Pota-Kolong, Nelli & Kolamonijan are completed and submitted to MoWR. The Techno-economic clearance of DPR for Pota-kolong has been received. The revised DPR of Demow is submitted to MoWR.

(V) Monitoring of Schemes under Flood Management Programme – A State Sector Scheme Under Central Plan – In Brahmaputra And Barak Valley

The Brahmaputra Board is entrusted with monitoring of schemes under Flood Management Programme in respect of entire North Eastern Region including Sikkim and part of West Bengal falling under Brahmaputra Basin since X Plan.

Restructuring of Brahmaputra Board

Constitution of India under Article 246 Entry 56 of the Union List (List 1) provides for regulation and development of inter-State rivers and river valleys to the extent to which such regulation and

development under the control of the Union is declared by Parliament by law to be expedient in the public interest. Under these provisions, Brahmaputra Board was created under Brahmaputra Board (BB) Act of 1980 to undertake the development of the master plans for the Brahmaputra Basin. A review of the functioning of the Brahmaputra Board reveals that it did not have a mandate to provide a strong framework for the holistic development of the Brahmaputra river basin with regard to the optimal utilization of land, water and other natural resources of the basin. Some of the shortcomings of the Brahmaputra Board which have been identified are as follows –

- Lack of mandate for basin level planning for integrated water resources development and management with a multi disciplinary approach
- Lack of ownership of the plans and programmes by the State Governments
- Overwhelming emphasis on flood and drainage works
- Need to build up competent engineering cadre to support the activities of the Board
- Apparent concentration of the work done by the Board in the State of Assam
- Non-inclusion of the political or stakeholder's will in the decision making

Change in the Water Governance in North-Eastern Region

This proposal seeks to restructure the existing Brahmaputra Board into a new entity to be called **North East & Brahmaputra River Rejuvenation Authority (NEBRRA)**. The Authority shall have a policy making Governing Council and an Executive Board which will be the executive agency. The concept of creating a Basin Level Authority is innovative and focused on emergent issues. By involving the highest political executives of the region in decision making, it is expected that the needs of the NE Region in Water Resources will be met adequately. After the approval of Intra Ministerial Consulting-Group and Secretary (WR,RD&GR) a presentation was made on 23.09.2014 to Sushree Uma Bharti, Hon'ble Minister(WR, RD&GR) and accompanying Ministers wherein it was decided to present the case to the Chief Ministers of North Eastern States during 7th High Powered Review Board (HPRB) Meeting. The issue was therefore discussed during 7th HPRB Meeting held on 11.02.2015 at Shillong, Meghalaya. The Draft Bill on NEBRRA was circulated among the participant States for their comments. Comments in favour of formation of NEBRRA have been received from all the member-states with acceptable suggestions.

7.4.2 NARMADA CONTROL AUTHORITY

In pursuance of the decisions of the Narmada Water Disputes Tribunal (NWDT) under Clause-XIV of its final order, the Government of India framed the Narmada Water Scheme, which, inter-alia, constituted the Narmada Control Authority and Review Committee in 1980 for proper implementation of the decisions and directions of the Tribunal.

The Narmada Control Authority (NCA) has been vested with powers for the implementation of the orders of the Tribunal with respect to the storage, apportionment, regulation and control of the Narmada water, sharing of power benefits from Sardar Sarovar Project (SSP), regulated release of water by Madhya Pradesh, acquisition of land likely to be submerged under the Sardar Sarovar Project by the concerned States, compensation, resettlement/rehabilitation of the oustees, and sharing of costs and implementation of the environmental safeguard measures.

Organisation

The Authority is headed by the Secretary, Ministry of Water Resources, Govt. of India, as its Chairman, with Secretaries of the Union Ministries of Power, Environment & Forests, Social Justice & Empowerment and Tribal Welfare, Chief Secretaries of the four party States, viz. Madhya Pradesh, Maharashtra, Gujarat & Rajasthan, one full time Executive Member and three full time Members appointed by the Central Government and four part time Members one each nominated by each party States.

The Review Committee for Narmada Control Authority (RCNCA), headed by the Union Minister of Water Resources comprises Union Minister for Environment & Forest and Chief Ministers of four party States viz. Madhya Pradesh, Rajasthan, Maharashtra & Gujarat as Members.

The Narmada Control Authority has its Head Quarter at Indore (MP), Regional Offices at Indore, Bhopal & Vadodara, Liaison Unit in New Delhi and Field Offices at Mandla, Hoshangabad, Kevadia and Indore.

Meeting of Narmada Control Authority, Sub-Committees / Sub-Groups

During the year, one meeting of NCA i.e., 87th meeting on 25th June, 2015 and one each of Hydromet Sub-Group and Narmada Main Canal Sub-Committee, six meetings of the Sardar Sarovar Reservoir Regulation Committee and three meetings of Power Sub- Group were held.

Environmental Monitoring Activities

Environment Sub-Group of Narmada Control Authority chaired by Secretary, Ministry of Environment and Forests monitors various surveys, studies and implementation of Environmental Safeguard Measures in respect of Sardar Sarovar Project and Indira Sagar Project as per terms of Narmada Water Scheme and various clearances issued to the projects by the Central Government including clearance from environmental angle issued by Ministry of Environment & Forest, Govt. of India. Accordingly, the progress on following activities is being monitored by the Narmada Control Authority.

Phased Catchment Area Treatment

Compensatory Afforestation

Command Area Development

Flora, Fauna & Carrying Capacity of surrounding area

Seismicity

Health Aspects

Archaeological & Anthropological aspects

Progress reports received from the party states are discussed in Environment Sub-Group meeting and are also being displayed on NCA website www.nca.gov.in. NCA officers are also making field visits to review & reconcile the progress on Environmental issues.



Phase-I construction of Sardar Sarovar Dam-Reinforcement ready for concreting in span 41-42



S B C Pumping station- upstream view

Resettlement and Rehabilitation Activities

(i) Sardar Sarovar Project (SSP)

The progress of R&R is being monitored by the Resettlement and Rehabilitation (R&R) Sub-group chaired by the Secretary, Ministry of Social Justice and Empowerment and also by a Task Force constituted by the NCA in its 72nd meeting held on 8.9.2004. In addition, Chairman/Chairperson of R&R Sub-group and NCA's Member (E&R) and R&R Officials undertake field visits as per requirements for the submergence villages and R&R sites in the States of Madhya Pradesh, Maharashtra & Gujarat. The Table 7.17 given below indicates overall cumulative progress of R&R of Project Affected Families (PAF), up to December, 2015

Table 7.17: SARDAR SAROVAR PROJECT (SSP) PROGRESS OF R&R Up to 31st December, 2015

STATE	Total Project Affected Families (PAFs)*	Total PAFs resettled	Balance Families to be resettled/Remarks
GUJARAT	4769	4765	4
(i)			
MAHARASHTRA	749		
(a) In Gujarat	3552	749	0
(b) In Maharashtra		3237	315
Total (ii)	4301	3986	315
<i>MADHYA PRADESH</i>			
(a) In Gujarat	5540	5540	
(b) In Madhya Pradesh	32221	32221 ^{\$}	0
Total (iii)	37761	37761	0
Total (i+ii+iii)	46831*	46512	319 [*]

* This number may change after inclusion of PAFs to be declared by GRA/State Government including impact of backwater level.

\$. Special Rehabilitation Package (SRP) details (as on 31.12.2015)

➤ Number of PAFs eligible for land -4563

➤ Number of PAFs opted for SRP -4363

- Number of PAFs allotted Govt. land -200
- Number of PAFs purchased land through SRP -2906
- Number of registration found fake-686 (Justice Jha Commission is Inquiring the matter)
- Number of PAFs who obtained 1st installments but yet not purchase land -1457
- Number of PAFs without land (Fake +1st installment) -2143

(ii) Indira Sagar Project (ISP)

In pursuance to the direction of Hon'ble High Court of M.P. dated 6.9.2006 in WP. No. 3022 of 2005 and decisions of R&R Sub-Group of NCA from time to time, the NCA is coordinating with Grievances Redressal Authority (GRA)-ISP, NVDA and NHDC, and NCA's R&R officials are also undertaking field visits. The **table 7.18** given below indicates the progress of R&R up to 31st December, 2015

Table 7.18: Indira Sagar Project, Progress of R&R up to 31st December, 2015

Sl No.	Description	Total Project Affected Families (PAFs)	Total PAFs resettled	Balance PAFs to be resettled
1.	Up to FRL	40505	40505	0
2.	In Harsud Left out ward 9,12,13	693	691	02
3.	Islands affected	111	111	0
4.	Additional PAFs identified in resurvey			
	-PAFs between Back Water Level & FRL to MWL	3322	1759	1563
	Grant Total (1+4)	44631	43066	1565

(iii) Meeting of R&R Sub-Group

The 77th meeting of R&R Sub-Group of NCA was held on 27.06.2013

(iv) Energy Management Centre (EMC)

Energy Management Centre (EMC), NCA, Indore is planning, scheduling & coordinating activities of Power Generation of Sardar Sarovar Power Complex (River Bed Power House 6X200 MW & Canal Head Power House 5X50 MW) in consultation with Western Regional Power Committee (WRPC), Western Regional Load Dispatch Centre (WRLDC), Central Electricity Authority (CEA) and beneficiary States & concerned State Generation/Transmission departments. The generation planning, daily scheduling, monitoring of generation, transmission planning, schedule for maintenance and energy accounting etc. are carried out in compliance of NWDT Award. The total energy generation at SSP complex was 1975.547 Mus (1450.128 Mus from RBPH & 525.419 Mus from CHPH) during the FY 2015-16 (April'15 to 27th December 2015). The net power available at bus bar in RBPH switchyard (after allowing for station auxiliaries) was shared among the party States i.e. Madhya Pradesh, Maharashtra and Gujarat in the ratio of 57%, 27% and 16% respectively as prescribed by the NWDT Award. Apart from energy generation, RBPH units are also being operated in synchronous condenser mode as per requirement for voltage regulation and to provide stability to the grid. During the FY 2015-16 (up to 27th December'15) SSP machines were operated for 461:18:00 hours in synchronous condenser mode.

Further, in compliance to the directions issued by Western Regional Power Committee (WRPC), quarterly mock drill for crisis management/disaster management was carried out at SSP and the quarterly reports sent regularly to all concerned viz. WRPC/CEA. A Black Start Mock Drill Exercise (BSMD) was conducted on 20th December 2015 with SSP Unit No. 2 at Sardar Sarovar Project.

(v) Performance of River Bed Power House (RBPH), SSP

The total energy generation achieved from RBPH from April 2015 to 27th December 2015 was **1450.128** Mus. The anticipated energy generation from RBPH, SSP for remaining months of Jan.'16- March'16 of F.Y. 2015-16 is Nil Mus due to non-availability of water for electricity generation at RBPH.

(vi) Performance of Canal Head Power House (CHPH), SSP

The total energy generation achieved from CHPH from April 2015 to 27th December 2015 was **525.419** Mus. The anticipated energy generation from CHPH, SSP for remaining month of Jan.'16- March'16 of F.Y. 2015-16 is 370* Mus.

*Calculation of approximate Mus for CHPH.

(vii) Real Time Data Acquisition System in Narmada Basin

NCA has been entrusted with the works of establishment of Real Time Data Acquisition System Phase-I comprising of 26 remote stations and 1 Master Control Centre at Indore in Narmada Basin under Phase-I. At present, 4 project stations and MCC are operational and hourly hydro metrological data from the sensors are being received with varied degree of performance and stored at MCC, Indore. Based on this information and also considering manually collected data from other 18 remote stations, NCA issues the daily hydrological status report containing important hydrological parameters like water level, live storage, inflow / discharge for the major reservoir in the Narmada Basin. Due to deterioration of satellite KALPANA-I and ageing and obsolescence of the equipments leading to failure of stations beyond their revival. It is decided that the second Phase of RTDAS comprising 38 stations will be installed by Madhya Pradesh in whole basin in integrated manner and provide the data seamlessly on real time basis to NCA as well as to other party states. Meanwhile, decision is taken to upgrade 4 project stations with GSM technology by installing the cell net modem with the exiting data logger so that the data can be assessed in mobile/PC with internet facility on real time basis. NCA will develop water management software integrated reservoir operation and flood forecasting software etc.

(viii) Water Accounting

NCA prepares Annual Water Account (AWA) of Narmada Basin and the draft AWA for the year 2014-15 has been prepared and circulated to the party States for their comments. NCA allocates the water among the party states on the basis of utilizable flow assessed by the end of October each year. On the basis of available storage of various reservoirs as on 31.10.2015, the utilizable flow was assessed 26.36 MAF which was 6% lesser than 28.00 MAF at 75% dependability. Water allocation to the party States are being done as per the provision made in the NWDT Award. NCA effectively monitors the regulation and uses of Narmada water in 10-daily basis by issuing the O.Ms. on the basis of approved Reservoir Operation Table and actual status.

7.4.3 BETWA RIVER BOARD

ORGANISATION AND ITS COMPOSITION

A decision to harness the available water resources of Betwa River was taken in a meeting held on 22nd July 1972 between Chief Ministers of Uttar Pradesh and Madhya Pradesh. Further Uttar Pradesh and Madhya Pradesh in a meeting held on 9th December 1973 agreed for setting up of a tripartite Control Board for the speedy, smooth and efficient execution of the various inter-state projects of both the States. Betwa River Board (B.R.B) was constituted in 1976 by an Act of parliament to execute the Rajghat Dam Project and Power House. The project authority started construction of the project under the overall guidance of Betwa River Board after promulgation of Betwa River Board Act 1976. The benefits and cost of the above projects are being shared equally by both the State Governments.

The Union Minister of Water Resources in the Chairman of the Board. Union Minister of Power, Union Minister of Water Resources, Chief Ministers and Ministers-in-charge of Finance, Irrigation and Power of the two States are its members. An Executive Committee of the Board headed by Chairman, Central Water Commission manages the activities of the Board.

Rajghat Dam Project

The Rajghat Dam with appurtenant structures has been constructed across River Betwa to provide Irrigation facilities to 1.38 lakh ha. In Uttar Pradesh and 1.21 lakh Ha. In Madhya Pradesh with power generation of 45 MW through Rajghat Hydro Electric Project at the toe of dam on left flank. The cost as well as benefits of the project are to be shared equally by both the States. Construction work of Dam and Power House have been completed.

Land Acquisition

The dam submerges 38 villages in U.P. and 31 villages in M.P. State. Compensation in M.P. area is completed. In U.P. the District Administration, Lalitpur had paid the land compensation of 25 villages and BRB have paid the compensation of 13 villages by mutual negotiation except the property compensation of village Kalapahar between FRL and MWL and the case has already been submitted for its valuation to the concerned department of U.P.

Approximate 99.5% work have been completed and this year the Dam filled upto 370.55 M. against F.R.L. 371.00 M.

Planning and Present status of Rajghat Power House works

The estimate of Rajghat Hydro Electric Project at 1997 price level was Rs. 131.26 crores which included Rs. 58.41 crores for the civil works. The further revised cost of the civil works of Power House is Rs. 66.89 crores at December, 1999 price level and same has been furnished by BRB to MPPGCL. MPPGCL have contributed Rs. 59.51 crores. The total expenditure incurred on civil works of Rajghat Power House till June, 2008 is Rs. 63.15 crores.

The three unit of Power House have been tested and commissioned during 1999-2000. From 1999-2000 to 2009-2010 (Ten years) total units of power generation from Rajghat Power House are 10613 lakh units.

O & M Estimate of Rajghat Dam Project during Transition Period

An estimate amounting to Rs. 9.00 Crore per annum towards O&M has been prepared and submitted to both the party states by Chief Engineer, BRB for transition period until the project is taken over by one of the party states. The matter was discussed in Secretary, MOWR level meeting held on 02.02.2006. It was agreed to operate O&M account of the project from October, 2005. Both the states agreed to contribute their due share towards O&M held in addition to pending liabilities under capital cost. The State of U.P. have paid only Rs. 94.50 crores and M.P. has paid only Rs. 47.40 crores against their due share upto December 2015.

Utilization of present storage

The phase-1 of the construction of Dam upto Spillway crest level was completed in 1992. Since then reservoir storage is being utilized in down stream in Betwa Canal System (U.P) and Bhandar Canal System (UP & MP) the impounding of water above crest level has been started since 1999-2000.

FRL of the reservoir is 371.00 m. The details of Reservoir filling during the last 15 years are given in the following table 7.19.

Table 7.19: Details of reservoir filling

Sl.No.	Year	Filling level
1.	2001-2002	368.35 m.
2.	2002-2003	367.00 m
3.	2003-2004	370.00 m.
4.	2004-2005	370.00 m.
5.	2005-2006	369.85 m.
6.	2006-2007	370.20 m.
7.	2007-2008	366.75 m.
8.	2008-2009	370.15 m
9.	2009-2010	370.35m
10.	2010-2011	369.05 m.
11.	2011-2012	371.00 m.
12.	2012-2013	371.00 m.
13.	2013-2014	371.00 m.
14.	2014-2015	371.00 m.
15.	2015-2016	370.55 m.

Financial position of Betwa River Board**Table-7.20: The financial position of Rajghat Dam Project****Rupees in Crores**

S.No.	Item	U.P.	M.P.	Total
1.	Apportioned cost as per revised cost estimate.	150.30	150.30	300.600
2.	Contribution received	150.30	150.30	300.600
3.	Revenue/other receipts	-	-	41.64
4.	Contribution due against O&M head upto December , 2015	110.975	110.975	221.95
5.	Contribution received against O&M head upto December, 2015	94.50	47.40	141.90
6.	Balance to be contributed against O&M head upto December, 2015	16.475	63.575	80.05
7.	Gross expenditure upto 12/2015	-	-	482.01
8.	Balance available with BRB in December/2015	-	-	3.25

7.4.4 TUNGABHADRA BOARD

Introduction

The Tungabhadra Board was constituted by the President of India in exercise of the powers vested under sub section (4), Section 66 of Andhra State Act 1953 for completion of the Tungabhadra Project and for its operation and maintenance. The Board is regulating water for irrigation, Hydro power generation and other uses from the reservoir.

Organization

The Board consists of a Chairman, appointed by the Government of India, and three Members, one each representing the States of Andhra Pradesh, Karnataka and Government of India. In the discharge of its assigned functions, the Board exercises powers of a State Government. It makes rules for the conduct of its own business. The Government of Andhra Pradesh and the Government of Karnataka provide funds in agreed proportions and also depute staff to man the various specified posts, as per an agreed proportion. The working table for canal wise distribution of water to the States is prepared every year by the Tungabhadra Board in consultation with the State Governments, and is reviewed from time to time during the water year. The regulation of water is carried out in accordance with the agreed working table.

Focus on physical and financial achievements and new initiatives taken during the current financial year from 1st April 2015 to 31st December 2015

Irrigation Wing

The Tungabhadra Reservoir filled up to the full reservoir level 495.73 (1626.40 ft.) in this year. The inflow in to the reservoir from April 2015 to December 2015 was 3412.37 Million Cubic Meters (Mcum) (120.508 TMC). The utilization by the Karnataka State, Andhra Pradesh & Telangana till end of December 2015 was 1710.58 Mcum (60.409 TMC), 814.58 Mcum (28.767TMC) and 26.79 Mcum (0.946 TMC) respectively as against the likely abstraction of 3114.82 Mcum (110 TMC) for the water year 2015-16. Evaporation losses from April 2015 to December 2015 were 143.62 Mcum (5.072 TMC) to be shared equally by the State of Karnataka on left side and the half share of the right side in the Reservoir evaporation loss shall be shared by the State of Karnataka and Andhra Pradesh in the ratio of 3.5 : 5.5. There is no surplus over spillway in this water year 2015-2016.

Hydro Electric Scheme

Two Power Houses are maintained by the Tungabhadra Board, with a total installed capacity of 72 MW and a target of 179 million units of power generation is envisaged during the water year 2015-2016. Against this, the power generated till end of December 2015 was 103.2675 million units. The power generated is shared between the States of Karnataka and Andhra Pradesh in the ratio of 20:80.

Mini Hydel Power Plant

1. A Mini Hydel Plant at the head of Right Bank High Level Canal of the Tungabhadra Project under Build, Operate, Own and Transfer (BOOT) system through an independent power producer viz., M/s NCL Energy Ltd., Hyderabad has been commissioned on 27-10-2004. The Mini Hydel Plant comprised 3 units of 2.75 MW each and generated 12.891 million units upto December 2015. The power generated is purchased by the Transmission Corporations of Karnataka and Andhra Pradesh in the agreed ratio of 20:80.
2. One more new Mini Hydel plant was implemented at the head of Rayabasavanna canal of Tungabhadra Project under Build, Operate, Own and Transfer (BOOT) system through an independent power producer viz., M/s Khandaleru Power Company Limited, Hyderabad. The project construction was started in September'2012 and commissioned in record time of 11 months i.e., 31-8-2013. The total project capital cost is Rs.11.5 crores. The Mini Hydel plant comprising single unit of 1.4 MW has generated 4.535 million units upto December 2015. The power generated is purchased by the GESCOM, Gulbarga (Karnataka) and rate of power purchase is Rs.2.80 per unit.

Fisheries Wing

The Tungabhadra reservoir has a water spread area of 378 sq.km at full reservoir level affording tremendous scope for development of fisheries. Quality fish seeds are produced and reared in the Board's Fish Farm to meet the demand of the public and for stocking in the reservoir to increase the biomass of fish wealth. The fishing rights of the reservoir was renewed for the year 2015-16 to a local Fishermen's Cooperative Society for Rs.110.292 lakhs. In order to facilitate preservation of fish catch, the Board is running an ice-cum-cold storage plant. The gross earnings from the Ice Plant upto December 2015 is 17.78 lakhs.

Board Meeting

In between April to December 2015 Tungabhadra Board held one meeting

Likely/anticipated achievement from 1st January 2016 to 31st March 2016:

Irrigation Wing

Due to poor monsoon this year, there is no water for utilizing during rabi season. Minimum canal maintenance works will be carried out. Modernization of canals will be takenup subject to allotment of additional funds from the GoAP.

Hydro Electric Scheme

Anticipated power generation from Jan'2016 to Mar'2016 will be 20 million units.

Fisheries Wing

Likely earnings from Jan'2016 to Mar'2016 will be approximately Rs.6.00 lakhs.

7.4.5 POLAVARAM PROJECT AUTHORITY

Indira Sagar (Polavaram) project is located on river Godavari near Ramayyapet village of Polavaram Mandal of West Godavari district in Andhra Pradesh. The project is multipurpose major terminal reservoir project on river Godavari for development of Irrigation, Hydropower and drinking water facilities to East Godavari, Vishakhapatnam, West Godavari and Krishna districts of Andhra Pradesh. The project will provide irrigation to 2.91 Lakh Hectares(CCA) and hydropower with installed capacity of 960 MW apart from 23.44 TMC (663.7 MCM) drinking and industrial water supply to Vishakhapatnam township and steel plant and diversion of 80 TMC waters to river Krishna. The ultimate irrigation potential of the project is 4.368 lakh ha and annual power generation will be 2369.43 million units. In addition, 540 villages will also be provided with drinking water facilities in the command area.

The project implements Godavari-Krishna link under Interlinking of rivers project. The project envisages transfer of 80TMC of surplus Godavari water to river Krishna which will be shared between AP, Karnataka and Maharashtra in proportion of 45 TMC by AP and 35 TMC by Karnataka and Maharashtra as per the decision of the Godavari Water Dispute Tribunal award. A sum of Rs. 650 crore has been released since 2014. A full time CEO was placed for further action.

7.5 AUTONOMOUS BODIES

7.5.1 KRISHNA AND GODAVARI RIVER MANAGEMENT BOARDS

Apex Council

In exercise of the powers conferred by sub-section (1) of Section 84 of the Andhra Pradesh Reorganisation Act, 2014 (Act 6 of 2014), the Central Government has constituted vide Gazette Notification dated 29th May, 2014, the Apex Council consisting of:—

- (a) Minister of Water Resources, Government of India —Chairperson;
- (b) Chief Minister of State of Andhra Pradesh —Member;
- (c) Chief Minister of State of Telangana —Member

Functions of the Apex Council

As per section 84 (3) of the Andhra Pradesh Re-organisation Act, 2014 (6 of 2014), the functions of the Apex Council shall include—

- (i) supervision of the functioning of the Godavari River Management Board and Krishna River Management Board;
- (ii) planning and approval of proposals for construction of new projects, if any, based on Godavari or Krishna river water, after getting the proposal appraised and recommended by the River Management Boards and by the Central Water Commission, wherever required;
- (iii) resolution of any dispute amicably arising out of the sharing of river water through negotiations and mutual agreement between the successor States;
- (iv) reference of any disputes not covered under Krishna Water Disputes Tribunal, to a Tribunal to be constituted under the Inter-State River Water Disputes Act, 1956.

Constitution of the Boards and their Composition

In exercise of the powers conferred by sub-sections (1), (4) and (5) of Section 85 of the Andhra Pradesh Reorganisation Act, 2014 (6 of 2014), the Central Government has constituted vide Gazette Notifications dated 28th May, 2014, the Krishna River Management Board (KRMB) and Godavari River Management Board (GRMB). The headquarters of the two Boards are located at Hyderabad. The Boards consist of the following Chairperson and Members, namely:—

- 1) An officer of the level of Additional Secretary to the Government of India from the Central Water Engineering (Group 'A') Service - Chairperson
- 2) Two members each of the successor States of Telangana and Andhra Pradesh, of which one shall be the technical member not below the rank of Chief Engineer and the other administrative member to represent the concerned States - Members
- 3) One expert from the Central Power Engineering (Group 'A') Service - Members
- 4) An officer not below the rank of Chief Engineer from the Central Water Engineering (Group 'A') Service - Member Secretary

Functions of KRMB and GRMB

As per section 85 (8) of the Andhra Pradesh Reorganisation Act, 2014 (6 of 2014), the functions of each Board shall include—

- (a) the regulation of supply of water from the projects to the successor States having regard to—
 - (i) Awards granted by the Tribunals constituted under the Inter-State River Water Disputes Act, 1956;
 - (ii) Any agreement entered into or arrangement made covering the Government of existing State of Andhra Pradesh and any other State or Union territory;
- (b) the regulation of supply of power generated to the authority in-charge of the distribution of power having regard to any agreement entered into or arrangement made covering the Government of the existing State of Andhra Pradesh and any other State or Union territory;
- (c) the construction of such of the remaining on-going or new works connected with the development of the water resources projects relating to the rivers or their tributaries through the successor States as the Central Government may specify by notification in the Official Gazette;

- (d) making an appraisal of any proposal for construction of new projects on Godavari or Krishna rivers and giving technical clearance, after satisfying that such projects do not negatively impact the availability of water as per the awards of the Tribunals constituted under the Inter-State River Water Disputes Act, 1956 for the projects already completed or taken up before the appointed day; and
- (e) such other functions as the Central Government may entrust to it on the basis of the principles specified in the Eleventh Schedule.

Activities Undertaken

KRISHNA RIVER MANAGEMENT BOARD

Three board meetings have been held on 10.7.2014, 30.10.2014 and 16.12.2015. The important decisions taken in 1st Board meeting are formation of Working Group and review of implementation of earlier water release order. Need for developing operational protocol in an integrated manner was re-emphasised in 2nd Board Meeting. Structure of the board has been approved in 3rd Board Meeting.

A meeting on the issue of jurisdiction was held on 18th and 19th June, 2015 under the Chairmanship of Additional Secretary, MoWR, RD&GR. Prominently in the meeting the issues related to regulation of water use by Krishna River Management Board between the States of Andhra Pradesh and Telangana were discussed. It was the view in the meeting that before taking any decision regarding notification of projects and regulation of water, it is necessary that broad principles of water regulation and an appropriate implementation mechanism are worked out.

A three-Member committee comprising Engineer-in-Chiefs of the two States and Member-Secretary, KRMB was constituted to assist the Board. Meetings of three members committee were held on 30.06.2015, 03.08.2015, 24.08.2015, 09.10.2015, 05.12.2015 and 01.02.2016.

GODAVARI RIVER MANAGEMENT BOARD

Pursuant to Andhra Pradesh Reorganization Act, 2014, three Board Meetings have been held on 06.08.2014, 30.12.2014 & 21.01.2016. The Regulations- 2014 of GRMB have been approved in the 3rd Board Meeting for notification by Ministry of Water Resources. The Chairman, GRMB along with Member Secretary, Chief Engineer and other Officials visited Sri Ram Sagar Project, Nizamabad, Telangana State.

As per section 87 (1) of the Andhra Pradesh Reorganization Act, 2014 (6 of 2014), the Boards ordinarily exercise jurisdiction on Godavari and Krishna rivers in regard to any of the projects over

headworks (barrages, dams, reservoirs, regulating structures), part of canal network and transmission lines necessary to deliver water or power to the States concerned, as may be notified by the Central Government, having regard to the awards, if any, made by the Tribunals constituted under the Inter-State River Water Disputes Act, 1956. GRMB has requested both the State Governments of Andhra Pradesh and Telangana vide letters dated 22.09.2014, 19.05.2015 and 1.07.2015 to communicate the list of projects to be notified.

7.6 Restructuring of various Boards/ Organizations and delegating more powers:

(i) A Committee was constituted under the Chairmanship of Special Secretary (WR, RD & GR) to examine the restructuring of various Boards/ Organizations for delegation of more powers to them. All the organizations were requested to furnish their final restructuring proposal.

Restructuring proposal of NIH has been received and the p

(ii) Another Committee under the Chairmanship of Shri Mihir Shah was constituted to examine the issue of restructuring of CWC and CGWB. Seven meetings have already been held till 8.2.2016. The Committee was to submit its report within a period of three months. However, tenure of the committee was further extended by three months beyond 1.12.2015. Report is expected in April, 2016.

Chapter 8

Public Sector Enterprises



KEY ACHIEVEMENTS

- WAPCOS has been graded as **“Excellent”** by the Department of Public Enterprises on the basis of compliance with Guidelines on Corporate Governance for the year 2014-15.
- Periodic review of WAPCOS done by Hon’ble Minister & MoS. Issues pending with MEA relating to Liquidation Charges and Damages clause in the Salma Dam project were resolved.
- NPCC is working on more than 140 projects spread all over the country. The Corporation achieved a turnover of Rs. 1145.25 crore during the year 2014-15 and is anticipating the turnover for year 2015-16 to be Rs.1250 crore, whereas the turnover of Rs. 496 crore has been achieved up to November, 2015.

8.1 Wapcos Limited

Introduction

WAPCOS Limited is a “MINI RATNA-I” Public Sector Enterprise under the aegis of the Union Ministry of Water Resources, Ganga Rejuvenation & River Development. Incorporated on June 26th, 1969 under the Companies Act, 1956; WAPCOS has been providing consultancy services in all facets of Water Resources, Power and Infrastructure Sectors in India and Abroad. The quality management systems of WAPCOS comply with the Quality Assurance requirements of ISO 9001:2008 for Consultancy Services in Water Resources, Power and Infrastructure Development Projects.

Vision

To be a Premier Consultancy Organization recognized as a Brand in Water, Power and Infrastructure Development for Total Project Solutions in India and Abroad.

Mission

Sustained Profitable Growth, Excellence in Performance, Use of State-of-the-art Technical Expertise, Innovativeness and Capacity Building to Meet Society's Needs Globally.

Objectives

- To perform the role of a premier agency for offering integrated package of services of scientific, technological and managerial quality for optimal planning and development of Projects.
- To adopt modern technology and systems to build in quality, reliability and accuracy thereby ensuring customer satisfaction.
- To continue the pace of growth of domestic and overseas business and to transfer know-how to Clients.
- To adopt international standards in surveys, investigations, designs, cost estimates, project planning including environmental studies and project management services for cost-effective and integrated development of Water resources, Power and Infrastructure Projects.
- To promote research and development through interaction with other national and international agencies.
- To maintain pre-eminence in the field of consultancy through diversification in allied fields.
- To secure a fair monetary return to the enterprise as a result of its operations through improved productivity.
- To play a dynamic role in use of state-of-the-art consultancy for innovative design alternatives.
- To attract the best available talent and promote a committed and motivated workforce.
- To strive to achieve client satisfaction.
- To promote WAPCOS as a Brand Name.

Fields of Specialization

Main Fields of specialization of the Company cover Irrigation and Drainage, Flood Control and Land Reclamation, River Management, Dams, Reservoir Engineering and Barrages, Integrated Agriculture Development, Watershed Management, Hydropower and Thermal Power Generation,

Power Transmission and Distribution, Rural Electrification, Ground Water Exploration, Minor Irrigation, Water Supply and Sanitation (Rural and Urban), Environmental Engineering including Environmental Impact Assessment and Environmental Audit, Ports and Harbours and Inland Waterways, Roads & Bridges; Rain Water Harvesting; Ghats Development; Survey & Investigations, System Studies & Information Technology, City Development Plans, Financial Management Systems, Quality Control and Construction Supervision, Roads & Bridges. The Company provides concept to commissioning services for developmental projects in India and Abroad.

Range Of Consultancy Services

WAPCOS' spectrum of services covers a wide range of activities e.g. Pre-Feasibility Studies, Feasibility Studies, Simulation Studies, Diagnostic Studies, Socio-Economic Studies, Master Plans & Regional Development Plans, Field Investigations, Detailed Engineering Including Designs, Detailed Specifications, Tendering Process, Contract Management & Construction Supervision, Commissioning & Testing, Operation & Maintenance, Quality Assurance & Management, Software Development and Human Resource Development.

The USPs of WAPCOS include Survey & Investigation/Pre-Feasibility/DPRs for Projects in Irrigation, Water Resources & Agricultural etc. contribution to develop Irrigation Potential; Projects in Ports & Inland Navigation; Projects in Water Supply & Sanitation, Rural & Urban Development, Roads & Highway Engineering; Environmental Impact Assessment (EIA) for Projects in the fields of Irrigation, Hydro/Thermal Power, Ports & Harbours in India and Abroad. Similarly, in Hydro-Power Sector; WAPCOS has completed Hydro-Power Projects in 19 Countries, Hydro Power Projects in India. In Thermal Power; the Company has successfully completed 10 overseas Projects and 9 Projects in India. In Transmission & Distribution WAPCOS has accomplished more than 25 Projects in India and Abroad.

Registration with International Organisations

WAPCOS is registered with various international funding agencies for participating in the funded projects like World Bank, Asian Development Bank, African Development Bank, Japan Bank for International Cooperation and United Nations Office for Project Services.

Operations Abroad

Apart from India, WAPCOS has successfully completed/on-going consultancy assignments abroad and is currently engaged in providing consultancy services in Angola, Afghanistan, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, DR Congo, Ethiopia, Fiji, Ghana, Guinea, Conakry, Kenya, Lao PDR, Lesotho, Liberia, Malawi, Maldives, Mali, Mongolia, Mozambique, Myanmar, Nepal, Niger, Nigeria, Philippines, Rwanda, Senegal, Sierra Leone, South Sudan, Sri Lanka, Swaziland, Tanzania, Trinidad & Tobago, Togo, Uganda, Yemen and Zimbabwe.

Dividend

In view of the excellent performance of the company for the year 2014-15, dividend of Rs. 16.50 Crore, which is highest-ever in the history of the company and is 66% of the paid-up capital of Rs. 25.00 Crore, was paid in September, 2015

MoU Score for the Year 2014-15

The Company has become eligible for “Excellent” rating under the MoU system of Company’s performance evaluation by the Department of Public Enterprises.

Awards for Wapcos

- “SCOPE Meritorious Award on Corporate Governance” instituted by Standing Conference of Public Enterprises, an apex body of Public Enterprises
- Hon’ble Minister of State for Water Resources, River Development & Ganga Rejuvenation presented CBIP Award – 2015 “Best Consultancy Organization” instituted by Central Board of Irrigation and Power, Premier Institution setup by the Government of India
- Best Performing PSU- “Mini Ratna” instituted by India Today Group
- “Organization with Innovative HR Practices” award, endorsed by Asian Confederation of Businesses, during Asia Pacific HRM Congress Award 2014
- Eminent Engineer Award-2014 to CMD WAPCOS by Institution of Engineers (India) for Exemplary services in the fields of Engineering and Technology
- Water & Power Sector Company of the year with Overseas footprints at the India Hydro Award 2014

- Most Valuable Indian Power Sector Enterprise Making Global Impact- 8th ENERTIA Awards-2014
- MINI-RATNA PSE of the Year Award 2014 – India Public Sector Enterprises Awards for Excellence
- PSE Excellence Award-2014 - “Human Resource Management” instituted by Department of Public Enterprises, Ministry of Heavy Industry and Public Enterprises, Government of India and Indian Chamber of Commerce
- “Water Awards” – 2015 under the category of “Best Consultancy Company” and “Made in India - Best Water Company”
- Corporate Governance and Sustainability Award – Indian Chamber of Commerce

Corporate Social Responsibility and Sustainability

The Company has a two tier Corporate Social Responsibility and sustainability Structure, First tier being of Senior Officials of the Company and Second Tier of Board Level Committee. Activities have been undertaken in different States of India and in diverse fields, which include Empowerment of Women through Skill Development Activities, Environmental Sustainability, Promotion of Renewable Sources of Energy - Non-Conventional Energy Sources, Construction of Rainwater harvesting structures and water conservation awareness programs in backward areas, School Sanitation, Hygiene and Health, Healthcare programme for underprivileged people, Upliftment of deprived society, Promoting Water and Energy conservation and Water Quality Monitoring through education program. A Training session was also organized to sensitize the employees and change their mindset/orientation.

The monitoring of CSR Activities was done regularly by independent agencies and such activities were also reported to TISS Hub.

Corporate Governance

WAPCOS is committed to adoption of and adherence to best Corporate Governance practices. It has been complying with the guidelines on Corporate Governance issued by the Department of Public Enterprises (DPE), Government of India.

Foreign Projects

WAPCOS is providing services in a number of countries apart from India. Some of the projects being undertaken by WAPCOS abroad are mentioned below:-

(i) Asian Region

Afghanistan

Salma Dam Project

Salma Dam Project is a multipurpose project planned for generating 42 MW of power, irrigating 75000 ha area of land, water supply and other benefits to the People of Afghanistan. It is being funded by Ministry of External Affairs. WAPCOS is implementing the project on behalf of Ministry of External Affairs.

The Project is across Harirud River and is located in the Chist-e-Sharif district of Herat province in Afghanistan. The Project envisages construction of 107.5 meters high, 550 meter long rock fill dam across the river. Other components of the project are surface Powerhouse of installed capacity of 42 MW with three units of 14 MW each, 36 m wide overflow concrete spillway controlled by the radial gates, Irrigation sluice and Diversion tunnel at right flank of the river. A single circuit 110 Kv transmission line of about 157 Km is being constructed for evacuation of power to Herat city.

The project site is located in a very remote area of Herat province and connected with the nearest commercial town by dilapidated 160 km kachcha road. This kachcha road has been closed for the Indian project officials by the Govt. of Afghanistan since January 2011 because of the reported presence of Anti-Government elements and plantation of mines on the road. All Indians come to Herat only by Helicopter which is provided by Govt. of Afghanistan intermittently. The project is being executed in adverse conditions.

Periodic review of WAPCOS done by Hon'ble Minister & MoS. Issues pending with MEA relating to Liquidation Charges and Damages clause in the Salma Dam project were resolved. The Dam has been named as "India Afghanistan Friendship Dam" and the contribution of WAPCOS and India has been highly appreciated.

Bangladesh

- Detailed Project Report for Establishment of Inland River Port at Ashuganj Port
- Techno Commercial Feasibility Study for setting up an Inland Container Port at Narayanganj

Bhutan

- Detailed Design Engineering of Punatsangchhu-I Hydro-Electric Project
- Detailed Design Engineering of Punatsangchhu-II Hydro-Electric Project
- Design, Engineering, Construction & Supervision for Gas Insulated Substation at Jigmeling
- Design, Engineering, Construction & Supervision for 2 Nos. Double Circuit Mangdechhu Transmission Line Project
- Surveys, Investigation and Detailed Project Report for Kuri-Gongri Hydro-Electric Project
- Surveys, Investigation and Studies for Detailed Project Report for Amochhu Hydro-Electric Project

Cambodia

- Transmission line between Kratie and Associated Substation at Kratie
- Stung Tasal Water Resources Development Project
- Trenchless Technology for Carrying out Execution of Drainage System for the Stagnant Water within 1st to 3rd enclosures at Ta Prohm Temple Complex, Siem Reap
- Siem Reap River Basin- Development of Master Plan
- Study of Ground Water Resources in Kampong Spue Province
- Ground Water Exploration for Augmentation of Rural Water Supply in two Provinces

Lao PDR

- Engineering, Procurement and Construction of Transmission Line and Associated Substation Projects
- Namsong Hydro Power Project
- Development of Six Irrigation schemes in Champassack Province
- Project Management for Construction of Storage Dams and Development of Irrigation Systems

Maldives

- Feasibility Report, Detailed Scheme Report, Bidding Documents and supervision of construction for a Roof Water Harvesting based Water Supply Scheme in ARI ATOLL Ukulhas

Mongolia

- Project Management for Atal Bihari Vajpayee IT Education and Outsourcing Center Project, Ministry of Education, Culture and Science

Myanmar

- Project Management for Development of Irrigation and Land Consolidation Schemes

Nepal

- DPRs and CEIA Study of Pancheshwar Multipurpose Project,
- Construction, Supervision and Construction Management For Rahughat HEP,
- Construction, Supervision and Construction Management For Kulekhani-III HEP
Project Management Services for Strengthening of India - Nepal Power Transmission line Interconnection at 132 kV Level.
- Koshi Corridor Transmission Line Project
- Project Management Consultants for India-Nepal Power Transmission Interconnection Project
- Pancheshwar Multipurpose Project
- Surveys, Investigations and Detailed Project Report for Arun-3 Hydro Electric Project
- Construction Management and Supervision of Kulekhani-III Hydro-Electric Project
- Project Management Consultancy for Rahughat Hydro-Electric Project
- Communication Survey for Sapta Kosi High Dam Multipurpose Project and Sun Kosi Storage-cum-Diversion Scheme

Philippines

- Design of 20 MLD Muntinlupa Sewage Treatment Plant and Interceptor System

Sri Lanka

- Project Management Consultant for Construction of 4,000 Housing Units in Central and Uva Provinces

(ii) African Region

Angola

- Design Check and Supervision of Network & House Connections in Peri Urban Areas of UIGE

Benin

- Feasibility Study and Constructions Supervision of Village Water Supply schemes in 69 villages

Burundi

- Project Management for Kabu 16 Hydro Electric Projects

Chad

- Strategy Paper for Water Resources Development (Chad Lake Basin)

D. R. Congo

- Project Management Consultancy for Grand Katende Hydro Electric Project
- Strategy Paper on Integrated Water Resources Development and Management for Sankuru River Basin

Ethiopia

- Gerbi Dam Reservoir, Transmission and Treatment Plant Study including preparation of Designs & Tender Documents

Ghana

- Engineering Design and Construction Supervision of Irrigation Schemes in Western and Central regions
- Supervision for Fish Processing and Fish Harvesting Plant
- Review and Rehabilitation of the Kpong and Akosombo Dam Safety Monitoring System / Instrumentation
-

Kenya

- Detailed Design and Supervision of Bondo and Siaya Water Supply and Sanitation Project
- Feasibility Study, Preliminary and Final Designs and Environmental and Social Impacts Assessment for the Proposed Rare Multipurpose Dam Water Project in Kilifi County
- Feasibility Studies, Preliminary and Final Designs and Environmental Impact Assessment Report, Tender Documents and Relevant Manuals for Solid Waste Management Facilities in the 8 Municipalities
- Strategic Drought Mitigation Plan for Coast Water Services Board Region of Kenya
- Environmental and Socio Impact Assessment and Development of a resettlement policy framework for the proposed Borenga and Norera small Dams in the Mara River Basin, Kenya and Tanzania (A Nile Basin Initiative)

Laos

- Construction of Storage Dams & Development of Irrigation system in Laos

Liberia

- Detailed Project Report for Power Transmission & Distribution Project

Malawi

- Construction, Supervision Works for Salima Lake Shore Water Supply Project
- Independent Environmental and Social Impact Assessment and Resettlement Action Plan for Diamphwe Multipurpose Dam and Associated Structures

Mozambique

- Strategy Paper on Integrated Water Resource Development and Management for Limpopo River Basin.
- Design Review, Pre-Contract and Supervision of Civil Works Contract for Multinational Nacala Road Corridor Project – Lot B – Ribaue-Malema : 103 km
- Design for Project of Improving the quality of Power Supply-Distribution Transmission works
- Detail Design Review, Pre-Contract Services and Supervision of Civil Works Contract for Multinational Nacala Road Corridor Project- Phase I, Nampula – Cuamba Road Project, Lot B, Ribaue- Malema

- Design Review and Supervision of works for the Rehabilitation and Expansion of Cuamba City water Supply
- Design and Construction Supervision of Rehabilitation of Roads N280/281 between Tica, Buzi and Nova Sofala in Sofala Province
- Irrigation Service Provider for Horticulture under PROIRRI Sustainable Irrigation Development Project

Nigeria

- Feasibility Studies, Detailed Engineering Design and Contract Documents for Development and construction of coal fired power plant in Benue/Kogi/Gombe Axis

Republic of Togo

- Control and Inspection of Agricultural Equipment and supervision of construction of works in the project of operating 1000 ha of Rice, Sorghum and Maize
- Assistance to the Client for the Control and Monitoring the work of Rural Electrification Project Phase 2
- Updation of Tender document, Procurement assistance and supervision, control and monitoring of the 161 kV Transmission and associated sub-stations
- Studies and Supervision for Electrification of 150 Rural Communities (Rural Electrification Phase 4)

Rwanda

- Export Targeting Modern Irrigated Agriculture Project
- Peat-to-Power Project
- Detailed Design Study for Lake Kivu Water Transport Project
- Technical Design Study for Development of Nyabirandi – Ndongozi Marshland (370 ha)
- Detailed Design for Reinforcement of Water Supply in 6 Satellite Cities for Economic Development and Poverty Reduction Strategy
- Rehabilitation, Reinforcement and Extension of Water Supply Distribution in 3 Districts of Kigali City

Senegal

- Project Management for Lifting of Water from Senegal River Valley to Irrigate Areas in Dagana, Matam and Bakel in Northern Valley

Sierra Leone

- Supervision of Supply and Installation of Solar Street Lights in Freetown, Lungi and 12 Districts Headquarter Towns
- Rehabilitation of Existing Potable Water Facilities in Lungi, Kaiahun, White Water Community, Allen Town, Wellington and Tender Hill Communities
- Irrigation Development in Tomabum Swamps (Bonthe District)

South Sudan

- Feasibility Report for Integrated Rice Irrigation Scheme in Aweil
- Feasibility Report for Tractor & Farm Implements Plant at Juba

Swaziland

- Project Management Consultancy Services for Turnkey Project for Ensuring Food Security through Increased Maize Production by Soil Conditioning, Farm Mechanization and Granular Fertilizer Application

Tanzania

- Project Management for Augmentation of Water Supply Scheme in Dar Es Salaam and Chalinze (Design & Construction Supervision Phase)

Uganda

- Revision of DPR and Tender Document for Ayago Hydro Power Project

Zimbabwe

- Skill support for Operation and Maintenance of Hwange Thermal Power Station
- Up-Gradation of Deka Pumping Station and River Water Intake System at Hwange Thermal Power Station
- Replacement of existing boilers with Circulated Fluidized Bed Combustion boilers for Small Thermal Power Station at Harare, Bulawayo and Munyati

- Project Management Consultancy Services for Gairezi Hydro Electric Project
- Skill Development for Zimbabwean Engineers and Operators
- Strategy Paper on Integrated Water Resources Development and Monitoring for Save River Basin

(iii) Middle East

Yemen

- Construction Supervision of Abyan Irrigation Project under National Irrigation Programme, Republic of Yemen Irrigation Potential 7,000 ha
- Road Construction Supervision for Hadramout Governorate and Abdullah Gharib Road

(iv) Indian Projects

Andhra Pradesh

- Detailed Route Survey for Slurry Pipeline from Kirandul to Vizag and Water Pipeline from Sukma to Kirandul
- Environmental Impact Assessment study for Expansion of Visakhapatnam Port
- Environmental Impact Assessment study for Kakinada Special Economic Zone Project
- Differential GPS Survey and updation of GIS Incremental charges in 32 towns of Southern Power Distribution of Andhra Pradesh Limited, Tirupati
- Third Party Inspection of various equipment produced by APEPDCL
- APPDCL- Sea Water Intake and Outfall System - Finalization of specification of Fish Barrier System
- APPDCL-Sea Water Intake & Outfall System - Field Monitoring of Shoreline Changes and Intake Basin for SWIO System

Arunachal Pradesh

- Environmental Impact Assessment Study for Tagurshi Hydro Electric Project
- Environmental Impact Assessment Study for Kalai-II Hydro Electric Project
- Model Studies for Etalin HE Project

Assam

- Feasibility Report for Development of Distribution System in Upper Assam region in Public Private Partnership Mode

Bihar

- Slum Free City Plan of Action and Detailed Project Report for 38 District Headquarters of Bihar under Rajiv Awas Yojna – (Cluster 2, Bihar Urban Development Agency, UD & HD)
- Survey of Sitamarhi District of Bihar and its surrounding areas and generate Digital Elevation Model

Chhattisgarh

- Project Management Services for Road Network System, Water Supply System, Sewerage, Electrical Networks, Storm Water Drains and Re-use System for Kamal Vihar, Raipur
- Environmental Impact Assessment & Environmental Management Plan study for Arpa Bhaisajhar Barrage Project, Bilaspur
- Preparation of Master Plan and Preliminary Feasibility Report for Kharun River Front Development on the Down Stream of Mahadev Ghat, Raipur
- Project Management for Construction of Low Cost Housing under Basic Services to the Urban Poor, JNNURM in Naya Raipur
- REC Quality Monitoring for Rural Electrification works under RGGVY

Goa

- Feasibility Report for Capital Dredging at the Mormugao Port

Gujarat

- Block contouring, planning, design and preparation of plans, estimates of distribution of SSNNL network & drainage downstream of chak for the command area under various Canals
- Environmental Impact Assessment Study for Par-Tapi-Narmada Link Project
- Development of Fishing Ports in Veraval Fishery Harbour Phase-II and Bhadreshvar Fishery Harbour
- Development of Fishing Ports in Porbandar Fishery Harbour Phase-II and Okha Fishery Harbour

Haryana

- Third Party Inspection of Water Supply & Sanitation Projects for Water Supply & Sanitation Department
- Project Estimation for Restoration Capacity and Improvement in Channels of Different Districts of Haryana State for Irrigation Department
- Survey, Design and Estimates of Conveyance System for providing assured supply of 180 cusecs of cooling water to Nuclear Power Plant at Gorakhpur from tail to BML (Bailyala Head Works) and Extension of Old Sirsa Branch to provide Yamuna water to take care of the Decay Heat at Nuclear Power Plant at Gorakhpur as an Alternate Arrangement for Irrigation Department

Himachal Pradesh

- Environmental Impact Assessment Study for Sachkhas Hydro-Electric Project

Jammu & Kashmir

- Project Management for Implementation of Engineering, Procurement and Construction Contracts for Construction of Dah & Hanu Small Hydro-Electric Projects in district Leh
- Project Management Consultant for Improvement of Road Networks in Leh
- Project Management Consultant for Sewerage Schemes in Leh
- Preparation of Detailed project report (DPR) of (i) Water Supply & Sewerage (ii) Solid Wastage Management (iii) Improvement of Road & Traffic Management in District Kargil
- Revised Detailed Project Report for Flood Management works for River Jhelum as per CWC Guidelines
- Providing comprehensive contract management services for Implementation of EPC Contracts for Construction of Dah & Hanu HE Projects in District Leh.

Jharkhand

- Detailed Project Report and Project Management work for slums in various cities
- Development of Ghats in Sahibganj
- Detailed Feasibility Report for Execution of Transmission Project through Public Private Partnership mode

Karnataka

- Extension, Rehabilitation and Modernization of Narainpur Left Bank Canal
- Detailed Project Report for Flood Control and River Management for Don River including Environmental Impact Assessment studies

Kerala

- Environmental Impact Assessment study for Naval Jetty at Kochi
- Design and Supervision Consultancy for package 2 (Kochi Thrissur and Kozhikode) – DSC 2

Madhya Pradesh

- Slum Free City Plan for Upgradation/ Rehabilitation of Slums under Rajiv Awas Yojana Scheme
- Extension, Renovation and Modernization of Tawa Irrigation Project
- Pilot Detailed Project Report of Pragati Nagar Slum under Awas Yojna for Burhanpur Municipal Corporation
- Integration of Raghavpur, Rosra, Basana Dam with Bargi Multipurpose Project
- Chinki Multipurpose Project
- Sher-Machhrewa-Shakkar Project
- Environmental Impact Assessment Study for Sonpur Irrigation Project
- Environmental Impact Assessment Study for Bina Irrigation Project
- Project Monitoring, Construction, Supervision & Quality Control for Sewerage Project of Jabalpur city under JNNURM
- Feasibility Report and Detailed Project Report on Sewerage and Sewage Treatment for Bhopal City
- Project Monitoring and Supervision of Quality of Works under Rajiv Gandhi Grameen Vidyuti Karan Yojana schemes of Morena and Sheopur District
- Environmental Impact Assessment Study for Mohanpurs Major irrigation Project
- Environmental Impact Assessment Study for Kundaliya Major Irrigation Project
- Project Management for implementation of Rajiv Gandhi Grameen Vidyuti Karan Yojana works in four districts of WEST DISCOM, MPPKVVCL, Indore

Maharashtra

- Environmental Impact Assessment Study for Mirkarwada Fishery Harbour Project
- Environmental Impact Assessment Study for Damanganga Pinjal Link Project
- Monitoring, Evaluation, Learning & Development in Integrated Watershed Management Programme in Latur
- Environmental Impact Assessment Study for Nandgao Port in Thane district
- Design Consultancy of Purna Barrage-2 (near Dhamna) district Akola
- Design Consultancy of Kwatha Barrage, district Akola
- Design Consultancy of Pedhi Barrage, district Amravti
- Concurrent Evaluation of Gosikhurd National Project
- Feasibility Studies and Preliminary Design of Proposed Reservoir for MVVPL Hill Station Project
- Study analysis and necessary clearances for creation of new navigational channel
- Technical Proposal for Rehabilitation of Surface Water Inlet Pipe for intake well of Dhariwal Infrastructure Ltd., Chandrapur

Manipur

Project Monitoring and Supervision of Quality of RGGVY works of XI Plan Schemes for 5 districts

Odisha

- Construction of 81 Nos. 33/11kV segment-II under Phase-1 of the project (WESCO & NESCO)
- Detailed Project Report for Pumped Storage Power Plant at Upper Indravati Hydro Electric Project, Mukhiguda in the district of Kalahandi
- Survey and Investigation for setting up a riverine port on river Mahanadi near Paradip
- DPR for Upper Indravati Pumped Storage Project

Punjab

- Shahpurkandi Hydro-Electric Project

Rajasthan

- Planning of drainage system for Storm Water and Domestic Waste Water in Bhiwadi

- Detailed Project Report and Project Management for revamping of Chambal Canal's Distribution system in Right & Left Main Canal
- River Front Development of River Ayad in Udaipur
- Command area survey and Micro-Canalization studies for Indira Gandhi Nahar Project
- Benchmarking and Water Auditing of Major and Minor Irrigation Projects
- Joiari River Front Development Project through Abatement of Pollution, Flow Channelization and River – Front Beautification in Jodhpur
- Environmental Impact Assessment Study for various Gypsum Mines
- Technical consultancy for Jodhpur , Udaipur and Ajmer City Distribution System on Public Private Partnership model
- Detailed Project Report for 12 districts of Jaipur DISCOM for DDUGJY & IPDS Scheme
- Detailed Project Report for 10 districts of Jodhpur DISCOM, JdVVNL for DDUGJY & IPDS Schemes

Sikkim

- Basin study for Teesta basin
- Investigation, Design and Detailed Project Report for Construction of Alternate Highway from Melli to Singtam
- Lender's Engineer of 400 kV Teesta III HE Project to Kishanganj Transmission Line Project

Tamil Nadu

- Kundah pumped Storage Hydro-Electric Project in Nilgiri Hills.
- Environmental Impact Assessment Study for River Interlinking Project
- Environmental Impact Assessment Study for Flood Carrier Canal from Kannadian Channel to drought prone areas in Tirunelveli and Thoothukudi Districts by inter-linking of Tamirabarani, Karumeniyar and Nambiyar Rivers
- Environmental Impact Assessment study for Barge Jetty at Chennai Port
- Construction Quality Management and Technical Supervision under Tamil Nadu Irrigated Agriculture Modernization and Water-bodies Restoration and Management Project

- Improvements and Rehabilitation of Irrigation System in Cauvery Basin for Efficient Irrigation Management under Funding Assistance of Accelerated Irrigation Benefit Programme (AIBP) – Phase-I Grand Anticut Canal
- Preliminary Engineering for development of the Waterways stretch between Shollinganallur to Kalpakkam of South Buckingham Canal of NW-4 in Engineering, procurement and construction Mode
- Development of Shollinganallur to Thiruvannamiyur stretch of South Buckingham Canal of NW-4 in Engineering, procurement and construction Mode

Telangana

- Detailed Project Report for construction of Barrage at Medigadda (Kaleshwaram) & Lift Irrigation Scheme

Uttarakhand

- Lender's Engineer for THDC Pumped Storage HE Project Geotechnical Investigation, Details Design, Review of Design, Technical Supervision, Monitoring and Quality Assurance during construction of ADB funded projects namely Kaliganga-I, Kaliganga-II and Madhyamaheshwar Small Hydro Projects
- Detail design, Engineering Survey, Drawings of civil works & review of Drawing of E&M works for Surind II small Hydro Project at Tehsil Munsiyari, Distt. Pithoragarh.
- Design, Technical Supervision, Monitoring & quality assurance etc. of River training works of Maneri Bhali Stage-II HEP, Uttarkashi,
- Design Supervision -Bhimtal Infrastructure Development Investment Program for Tourism
- Design and Drawing, Technical Supervision, Monitoring & Quality Assurance of River Training and Protection Works on banks of Bhagirathi River, Uttarkashi
- Development of Chandi Ghat, Haridwar
- Concurrent Monitoring, Quality Monitoring, Mid-term and Final Evaluation of Accelerated Irrigation Benefit Programme

Uttar Pradesh

- External and Independent Monitoring and Evaluation of UP Sodic Land Reclamation III Project (UPSLRP-IIIP)

- Project Management for Implementation of R-APDRP Part-B (Non-SCADA) Scheme of Government of India in various Towns
- Project Management for Implementation of APDRP Part B Scheme of Government of India in six SCADA Towns
- Project Monitoring and Supervision of quality of works during construction for implementation of RGGVY Phase-II, Meerut
- Project Management for Implementation of R-APDRP Part-B Scheme of Government of India in Mathura, Vridavan and Chitrakoot towns (underground works) under DVVNL, Agra
- R-APDRP during XI Five Plan in Kanpur Town under KESCO Ltd.
- Detailed Project Report of Districts under DDUGJY in Jhansi/Lalitpur and Jaulan town of DVVNL
- Detailed Project Report and Bid Process Management for Construction of 33/11 Kv S/S for Quality Electricity Supply to Tehsil Towns
- Identification of Gaps in Input Supply, Credit Availability, Dissemination of Appropriate Technology and Other requirements relevant for improvement of productivity of field and horticultural crops in Rainfed areas of Bundelkhand Region

West Bengal

- Survey, Investigation, Design for implementation of West Bengal Piped Water Supply Project (Purulia)
- Detailed Project Report for Capacity Teesta Low Dam-V Hydro-Electric Project
- Basin Study for Teesta River Basin
- Turga Pumped Storage Project
- Project Management for Water Supply Scheme for IIT Kharagpur
- Pre-feasibility Study for setting up of Deep Sea Port at the Western Part of the Hooghly Estuary
- "Renovation/Modernization of Navigational lock at Farakka under Farakka Barrage Project"- Scoping Study

Union Territory

Delhi

- Remodeling and Covering of Ramesh Nagar Drain from Kirti Nagar Furniture Block/ Railway Line to Najafgarh Drain
- Aquifer Mapping Project – National Capital Region
- Master Plan for Sewerage System of Delhi for the year 2031
- Review of Experience from Pilot R&M interventions in TPS in India

Central Western and Southern Command

- Survey, Demarcation and Verification of Defense land under various Cantonment Boards

All over India

- REC Quality Monitors in 196 Projects under Rural Electrification in Arunachal Pradesh, Kerala, Maharashtra, Meghalaya, Manipur, Mizoram, Nagaland, Rajasthan, Sikkim, Tripura & West Bengal under “RGGVY”
- Third Party Inspection Energy Audit under R-APDRP for the States of Haryana, Uttar Pradesh, Madhya Pradesh, Kerala and North Eastern States
- Monitoring & Evaluation on Effectiveness of Artificial Recharge of Groundwater Programmes / Schemes / Projects in the Rainfed Regions of Andhra Pradesh, Karnataka, Tamil Nadu, Rajasthan, Madhya Pradesh and Gujarat
- Engineering Measure for limiting maximum water level at KAPP-3&4 below RL 50.3m - incorporating the changes in the road alignment and new bridge for Nuclear Power Corporation of India Ltd.

Financial Performance

The Company has achieved turnover of Rs. 18337 lakh from Consultancy and Engineering Projects (Unaudited) for the year ending 30.09.2015 as against the previous figure of Rs. 18025 lakh for the corresponding period.



Sushri Uma Bharti, Hon'ble Union Minister for Water Resources, River Development and Ganga Rejuvenation being presented Dividend Cheque in the presence of Shri Shashi Shekhar, Secretary and Dr. Amarjit Singh, Special Secretary, Senior Officers from Ministry of Water Resources, River Development and Ganga Rejuvenation and WAPCOS



Diversion Tunnel Gate Closure, Salma Dam Project, Afghanistan



Construction of underground Powerhouse cavern,
Punatsangchhu-I Hydro-Electric Project



Hwange Power Station (HPS), Zimbabwe: WAPCOS is providing Skill Support for Operation & Maintenance of the power plant since year 2010



Salma Dam Project, Afghanistan



During India Water Week 2015, Sushri Uma Bharti, Hon'ble Union Minister and Prof. Sanwar Lal Jat, Hon'ble Minister of State for Water Resources, River Development & Ganga Rejuvenation, Government of India at WAPCOS Stall



Sushri Uma Bharti, Hon'ble Union Minister for Water Resources, River Development and Ganga Rejuvenation
Government of India delivering Inaugural address on

“Regional Day Programme of GWP-South Asia

8.2 National Projects Construction Corporation Limited (NPCC)

Organisation

National Projects Construction Corporation Limited (NPCC) was established on 9th January 1957 as a premier construction company to create necessary infrastructure for economic development of the country. NPCC Ltd comply with Quality management requirements of **ISO 9001-2008** for execution of Civil Works for Thermal & Hydro Electric Projects, River Valley Projects, Industrial Structures, Project Management Consultancy services for buildings, Housings, Roads, Bridges and Infrastructure Projects. In its 59 years of existence the Corporation has successfully associated itself with completion of several National Projects from concept to commissioning stage. Some of them are in remote and hazardous location over the country. The corporation is making profit for the last five years and now has a positive net worth. Today as a Team, NPCC is gearing up to achieve greater heights for “Mini Ratna” status. The corporation has also been awarded credit rating as A+ company by ICRA.

Fields of specialization

Townships & Other Residential Buildings, Institutional Buildings, Office Complexes, Roads, Bridges & Fly-Overs, Hospitals & Health Sector Projects, Industrial Structures, Surface Transport Projects, Environmental Projects, Thermal Power Projects, Hydro-Electric Power Projects, Dams, Barrages & Canals, Tunnels & Underground Projects and Real Estate Works.

Financial Status

The authorized capital of the corporation is Rs. 700 Crores and its Paid up Capital is Rs. 94.53 Crores. The Corporation achieved a turnover of Rs. 1108.51 crore during 2014-15 compared to previous year's turnover of Rs 1145.25 crore. The turnover during the year 2015-16 is anticipated amount to Rs. 1250 crore, whereas the turnover of Rs. 496 crore is achieved upto November 2015. At present networth of corporation is Rs 107.05 crore with profit of Rs 13.59 crore for the current year.

The turnover from 2010-11 to 2015-16 has been indicated in table below. The order book position as on 30th November 2015 stand at Rs. 4412 crore.

The turnover of the Corporation during last six years and the achievement for the current year 2015 - 16 is given exhibit below:

Exhibit 8.1

MoU rating for the year 2014-15

NPCC Ltd has submitted its MoU evaluation to DPE with rating of “**Good**” and composite score of 3.50 for the year 2014-15 on the basis of audited data provided to Department of Public Enterprises(DPE).

NPCC is executing projects for various Ministries/ Govt. Departments/ Organizations as their “Extended engineering Arm” like MoRD, MHA, MoH, MoFPI, Banks, Ministry of AYUSH, Ministry of Youth Affairs & Sports, Central Universities as well as State Governments. NPCC had added new clients like Indira Gandhi National Tribal University, Amarkantak & Manipur, Ministry of Youth Affairs & Sports, Municipal Corporations of Shimoga and Bagalkot, SC/ST Commission, Govt. of Odisha, Karnataka, Container Corporation of India Ltd, Central Warehousing Corporation, National Bank for Agriculture and Rural Development (NABARD), Bank of Baroda etc. for its value addition for infrastructure development of country.

Major Works Secured during 2015-16

- Construction of Indoor Sports Hall in Blocks all over the country Under Rajiv Gandhi Khel Abhiyan (RGKA) Scheme of Ministry of Youth Affairs & Sports Development of Sports, Mission Directorate
- Construction of five College of Central Agricultural University (CAU), Imphal at Nagaland, Mizoram and Tripura.
- Development of infrastructure facilities for National Institute of Pharmaceutical Education and Research (NIPER), Hyderabad
- Construction of Swimming Pool, Hostel Building, Wrestling hall , Staff Qtrs. & allied works, Repair & Renovation work of SAI and Bharat Scouts & Guides works all over the country
- Construction of godowns and Up-gradation of internal roads of CWC works at UP, Kolkata and Chhattisgarh

Construction work of 2nd phase for work of Central Research Institutes (CRI) of Central Council for Research in Yoga & Naturopathy (CCRYN) at Village Devarkhana- Distt Jhajhhar, Haryana and Nagamangala - Distt Mandya, Karnataka

- Permanent Administrative Building for NERIST at Nirjuli, Itanagar
- Constuction of Bank Building at Plot No.C-1 Vedvyas Puri , Meertut (U.P.)

- Development of property for Bank of Baroda at Sion, Mumbai

Status of major works under execution

At present, the corporation is working at more than 140 projects spread all over the country. These includes Indo Bangladesh Border Fencing works in Tripura, Mizoram, Assam & Meghalaya, Assam Rifle works in different States of North Eastern, Irrigation & River Valley Projects (Dolaithabi Barrage in Manipur), Hydroelectric Projects (Haithiari Power house in Utrakkhand) & other miscellaneous projects.



Boys Hostel Building at IGNTU, Amarkantak



Academic Block for IGNTU, Amarkantak



Road work in Jharkhand under PMGSY



Indo-Bangladesh Border fencing along with Flood lighting work



Indo-Bangladesh Border fencing work at Tripura



Border out Post for Border Security Force at B.N.Das Para, Tripura

Chapter 9

Initiatives in the North East



KEY ACHIEVEMENTS

- CSMRS, in association with Water Resources Department (WR/MWRDA) of Meghalay, conducted a mass awareness programme on “Jal Kranti Abhiyan” on 22.12.2015 in the water scarce remote area of Mendipathar, Resubelpara, North Garo Hills District, Meghalaya.
- The Central Ground Water Board is conducting scientific and technical studies for ground water assessment, development and management in the North Eastern Region including Collection and Compilation of Existing Data, Hydrological information & parameters on ground water recharge, Field Activities for Aquifer Mapping. Major achievements of the North Eastern Region in the year 2015-16 up to 31st December, 2015 is in table 9.1

9.1 National Institute of Hydrology

The North Eastern Regional Centre (NERC), Guwahati catering for the seven N-E States, Sikkim and parts of West Bengal (Teesta Basin) was established in August 1988 at Guwahati and has been working for various water resources problems of the region. Considering flood as the major problem in the region, Ministry of Water Resources, Govt. of India decided to rededicate the Regional Centre towards service of the region and renamed it as NIH Centre for Flood Management Studies for the Brahmaputra Basin (NIH-CFMS). As per the five-year action plan of 11th plan period, the centre had worked in the following thrust areas during 11th plan period:

- Flood estimation and routing,
- Structural / non structural measures for flood management,
- Integrated watershed management for flood control,
- Hydrological data base management system,

- Drainage congestion and erosion problems,
- Water quality problems,
- Socio-economic aspect of flood disaster, and
- Technology transfer activities.

Keeping in view the importance of the above thrust area, the Centre proposed to continue the work in the above thrust area during the 12th plan period with more emphasis on pilot basin studies. During the year under report, the Centre has been working on the following studies:

- Flood Inundation Mapping using Rainfall-Runoff-Inundation (RRI) Model for Kulsi River Basin (Assam/Meghalaya)
- Application of Universal Soil Loss Equation(USLE) model for estimation of soil loss in Kulsi River Basin using remote sensing and geographic information system

9.2 CSMRS

CSMRS, in association with Water Resources Department (WR/MWRDA) of Meghalay, conducted a mass awareness programme on “Jal Kranti Abhiyan” on 22.12.2015 in the water scarce remote area of Mendipathar, Resubelpara, North Garo Hills District, Meghalaya. The program was organized to sensitize the people to protect water bodies and water sources and to stop disposal of waste into rivers and streams thereby making the water fit for human use and consumption.



Discussion with members of water user associations

9.3 NPCC

NPCC is working in eight north eastern states for the last 35 years for developing the infrastructure and other social amenities for the upliftment of socio-economy of the peoples of North Eastern States. Assam movement emphasized that a large chunk of Bangladeshi population has come & settled in North-East. In an accord, it was decided to have a barrier in North Eastern States, which will safe guard the people from illegal entry of the Bangladeshi & insurgent groups. The Indian Government started Border Fencing in Assam. Thereafter, to other North Eastern states of Tripura, Meghalaya & Mizoram to check the influx of illegal migrant.

(i) Indo-Bangladesh Border Fencing and Road Works

Initially, NPCC worked for construction of Fencing in Tripura and Mizoram for 351.0Km mostly in insurgency prone area. NPCC has today made the area total accessible having network of road along the border fencing, where, there were no accessibility & BSF Jawans used to move 20.0Km. to 30.0Km. to reach the existing Border. NPCC has already completed 585.38 Km of fencing works, 437.22 Km of Road Works in the border areas of Indo-Bangladesh Border.

(ii) Indo-Bangladesh Border Flood-Lighting Works

The excellent performance of NPCC, encouraged MHA (GoI) for construction of Border Flood Lighting of Tripura & Meghalaya. NPCC has kept performance intact & taken Border Flood Light Work of 632.36Km in Tripura and 485.370km in Meghalaya. The Border Flood Light is helping to BSF 24hrs vigil over insurgent groups & illegal migrant of Bangladesh.

Border out Post work -

MHA (GoI) has awarded the construction of BOP works in extreme difficult area of Tripura-50 No. posts, Mizoram- 21 No. posts, Assam- 6 No. post, Meghalaya- 17 No. post & West Bengal- 94 No. posts for monitoring the border activities by BSF. At present NPCC has completed the 59 No. of Border out Post.

NPCC has improved the socio-economy of the people of the North Eastern States & people are living fearlessly with their earned money, crops & animal property from illegal migrant.

It is creating further national integrity as Govt. has taken all the pain for security, safety & peaceful life of the people of these states.

Indira Gandhi National Tribal University (IGNTU) Works -

In addition to above NPCC is also doing service to nation by creating infrastructure & regional centre of IGNTU Manipur costing Rs. 66.0 cr, which is now completed.

Jawahar Navodaya Vidyalaya (JNV) Works -

To enlighten the buddies for the future to have better society NPCC is also building the Infrastructure for Jawahar Navodaya Vidyalaya in the extreme difficult location of Lawngtalai Lunglei, Kolasib in the state of Mizoram & Bagmara of Meghalaya.

National Institute of Electronics & Information Technology (NIELIT) Works -

NPCC is also playing a major role for the creating infrastructure for 10 No. extension centre & 01no. Centre of NIELIT in the N.E. states of Mizoram, Nagaland, Manipur, Arunachal Pradesh, Meghalaya and Assam to help the nation for development for the skills of information technology & teach the people for the better socio-economic development.

Assam Rifle Works -

Construction of complete Establishment of Assam Rifles in all the states of north east with Administrative Block, hospitals, all types of residential quarters, Barracks, Posts, Recreation centres, library building, museum building, MT park, etc. New works are also awarded with expansion of works of Assam Rifles. NPCC has completed the building works of more than 4 lakh Sq.m in total with 950 Km of Roads and 25 Km of Security Wall & Lighting for Assam Rifle.

Development of North Eastern States -

In addition to above NPCC has served the people of North Eastern States by constructing the barrages & other socio-economic development project with financial support from Japan International Cooperation Agency (JICA). NPCC worked for following major projects for the development of North Eastern States.

1. Gomti Hydro Project
2. Maharani Barrage
3. Khowai Barrage
4. Manu Barrage

5. Kalashi Barrage
6. Tripura Tribal Area Autonomous District Council works
7. Khuga Dam in Manipur
8. College of Fisheries under Central Agriculture University
9. IGNOU Works
10. Singda Dam
11. Loktak river valley project
12. Dolaithabi river valley project etc.

9.4 CGWB

The Central Ground Water Board is conducting scientific and technical studies for ground water assessment, development and management in the North Eastern Region. Major achievements of the North Eastern Region in the year 2015-16 up to 31st December, 2015 are given below in table 9.1

Table 9.1: MAJOR ACHIEVEMENTS OF THE NORTH EASTERN REGION

Sl.	Activities	Achievements
1.	<i>Collection and Compilation of Existing Data (in sq.km.)</i>	Collection and compilation of existing data in respect of data base on exploration wells; delineation of principal aquifers; information of geology, geophysics, hydrogeology, geochemical, hydrology; aquifer wise water level data and aquifer wise draft data from CGWB/State agencies etc have been completed for the entire area of 15184 sq.km
2.	<i>Identification of data gap analysis (in sq.km.)</i>	Identification of data gap analysis in respect of delineation of aquifers by exploration; Information on Geology, Geophysics, Hydrogeology, Geochemical, Hydrology; aquifer wise water level data and aquifer wise draft data etc have been completed for the entire area of 15184sq.km.
3.	<i>Generation of Geological & Geomorphological layers (in sq.km.)</i>	Preparation of geological layers and other associated layers like subsurface geology,

Sl.	Activities	Achievements
		geomorphology and land use pattern are completed for an area of 1205 sq.km. 8550 sq.km, 8550 sq.km. and 8550sq.km., respectively.
4.	<i>Hydrological information & parameters on ground water recharge (in sq.km.)</i>	Hydrological information & parameters on ground water recharge has been attempted in the target area through preparation of drainage map, demarcation of water bodies, rainfall data analysis achieved for an area of 8550 sq.km, 10149 sq.km and 8550 sq.km. respectively.
5.	Soil Infiltration studies (Nos)	13 nos
6.	<i>Field Activities for Aquifer Mapping:</i>	
	• <i>Ground Water Exploration</i>	During financial year 2015-16 (up to 31.12.2015), the Central Ground Water Board has constructed 17 wells (EW-8, OW-7).
	• <i>Geophysical Studies</i>	<i>Central Ground water Board has carried out 9 Vertical Electrical Soundings(VES) and geophysical logging of 2 bore holes in various parts of NER.</i>
	• <i>Water Quality Analysis</i>	<i>332 nos of water samples were analysed for the basic constituents, heavy metals (such as Cu, Zn, Fe, Mn, CO, Cd, Cr, Ni, Pb etc.), organic and specific constituents.</i>
7.	<i>Ground Water Regime Monitoring</i>	Monitoring of water level from GWMS for the month of March, August and November, 2015 completed.
8.	<i>Establishment of additional wells</i>	12 wells
9.	<i>Short Term Water Supply Investigation.</i>	40 nos.
10.	<i>Ground Water Resources Assessment (No of States/ UT) (As</i>	Under progress.

Sl.	Activities	Achievements
	<i>on 31-03-2013)</i>	
11.	<i>Issuance of District Brochures</i>	78 updated Brochures submitted to CHQ.
12.	<i>Ground Water Year Books</i>	Ground Water Year Book of NE State Submitted
13.	Organizing National Ground Water Congress, Workshops, Seminars etc	2 nos Workshops Organized

9.5 BRAHMAPUTRA BOARD

Details pertaining to Brahmaputra Board are given in Chapter 7.

Chapter 10

Training

10.1 Implementation of Training Policy of the Ministry of WR, RD & GR

1. Administration Division administers the Budget allocated under 'Training of Ministry of Water Resources, RD & GR officers' under HRD & Capacity Building Scheme. It is meant to train officers/ officials of the Ministry in reputed Institutions located in India and abroad in different fields, induction training on selection/ recruitment in the Ministry. Officers/ officials are also deputed on mid-career training at various levels/stages in their career as well as for thematic training like leadership development, stress management, ethics and values, finance, administration, etc.
2. A total of 220 officers/officials of the Ministry were sent for training till December 2015. 20 In-House trainings were organized in the Ministry for training employees on various topics like Service Book maintenance, Reservation Roster, Noting/Drafting, Stress Management etc. by availing the expertise of In-House trainers as well as faculty from ISTM.
3. An amount of Rs. One crore was allocated for training of Ministry of Water Resources, RD & GR officers for the year 2015-16 out of which Rs. 66 Lakhs have been utilized till 31.12.2015.

10.2 Human Resource Development and Capacity Building

The Human Resource Development (HRD) and Capacity Building Scheme of the Ministry of Water Resources is a new scheme formed by merging three on-going publicity and training schemes, namely, (i) Information, Education & Communication (IEC), (ii) National Water Academy (NWA), (iii) Rajiv Gandhi National Ground Water Training Institute (RGI) and introducing two new components, viz. (iv) Strengthening of North Eastern Regional Institute of Water and Land Management (NERIWALM) and (v) Implementation of Training policy of MoWR.

CSMRS

CSMRS conducted training programmes and imparted practical training to Engineers/ Scientists from state governments, engineering colleges, students and other stakeholders in the field of water resources and hydro power development.

(i) Training Programmes

The details furnished below:

1. Half day seminar on Geo-materials in association with Delhi chapter of IGS at CSMRS
2. Summer training on rock, soil, concrete technology, concrete chemistry & concrete diagnostics, Rockfill and soil dynamics to the students of GITAM Institute of Technology, Vishakhapatnam from 12/5/2015 to 11/6/2015
3. Summer training on rock, soil, concrete technology, concrete chemistry & concrete diagnostics, Rockfill and soil dynamics to the students of KIIT University, Odisha from 5/5/2015 to 30/5/2015
4. Summer training on rock, soil, concrete technology, concrete chemistry & concrete diagnostics, rock fill and soil dynamics to the students of Ch. Brahm Prakash Govt. Engineering, Jaffarpur, New Delhi
5. Summer training on rock, soil, concrete technology, concrete chemistry & concrete diagnostics, rock fill and soil dynamics to the students of Tek Chand Mann College of Engineering, Sonapat, Haryana.
6. Summer training on rock, soil, concrete technology, concrete chemistry & concrete diagnostics, rock fill and soil dynamics to the students of Gautam Buddha University, Gr. Noida, UP.
7. students from HRCT Group of Institute, Ghaziabad U.P.
8. Summer training on rock, soil, concrete technology, concrete chemistry & concrete diagnostics, rockfill and soil dynamics to the student from Jamia Millia Islamia University, Jamiya Nagar, New Delhi
9. Summer training on rock, soil, concrete technology, concrete chemistry & concrete diagnostics, rockfill and soil dynamics to the students from Ch. Devi Lal Memorial State Institute of Engineering & Technology, Sirsa, Haryana,
10. Summer training on rock, soil, concrete technology, concrete chemistry & concrete diagnostics, rockfill and soil dynamics to the student from Amity Institute of Biotechnology, Amity University, Noida, U.P.
11. Summer training on rock, soil, concrete technology, concrete chemistry & concrete diagnostics, rockfill and soil dynamics to the student from Panipat College of Engineering, Haryana

12. Summer training on rock, soil, concrete technology, concrete chemistry & concrete diagnostics, rockfill and soil dynamics to the student from Araybhatta Institue of Engineering and Management, West Bengal (08.07.2015 to 07.08.2015).
13. Training course on ““Importance of Construction Materials Investigation in Hydroelectric Projects” at CSMRS from 10th and 12th August, 2015.
14. Training program on “Laboratory Assessment of Rock (with Practical Demonstration)” organized on 22nd & 23rd September’2015
15. Training program on “Investigations of Existing Dams” under “Dam Rehabilitation & Improvement Project” at CSMRS from 28th & 29th September’ 2015
16. Training course on “Rockfill material survey, testing, design and quality assurance for Rockfill dams” was conducted from 14-16 October, 2015 at CSMRS

CWC

Central Water Commission offers training to water sector professionals every year. These trainings are organised at National Water Academy (NWA), CWC Headquarter and field offices of CWC.

The National Water Academy, CWC is a centre of excellence for imparting training on all facets of Water Resources Development and Management covering the different areas of planning, design, evaluation, construction, operation and monitoring of water resources projects, and also the application of high-end technology in water sector. The programs at NWA are open to all stakeholders of water sector including those from NGOs, Media, Private Sector Organisations, academic institutions, PSUs, individuals and foreign nationals also. During 2015-16 (upto December, 2015) NWA conducted 27 training programs. Some of the notable program organised by NWA are as under:

- (i) Training of officials of Flood Warning Section, Royal Government of Bhutan in April 2015.
- (ii) Training on “District Irrigation Plan” for IAS / IFS officers under Pradhan Mantri Krishi Sinchai Yojana (PMKSY) during 24-28 August 2015. 18 IAS/ IFS officers of various States participated in this program.
- (iii) As Regional Training Centre of WMO, one Distance Learning Programs on Basic Hydrological Sciences for Asian Region Countries was conducted in which 40 officers have been trained.

During 2015-16 (upto December, 2015), CWC-HQ / Field Office also conducted 17 programs in which 439 in-service officers participated.

In order to ensure capacity building of its officers, CWC also sends officers to training programs/ workshops/ seminars organised by other organisation, both in India and abroad. During the year 2015-16 (upto December 2015) CWC has sent 173 officers to 46 programs / workshops/ seminars. This includes 4 programs conducted abroad in which 6 officers participated.

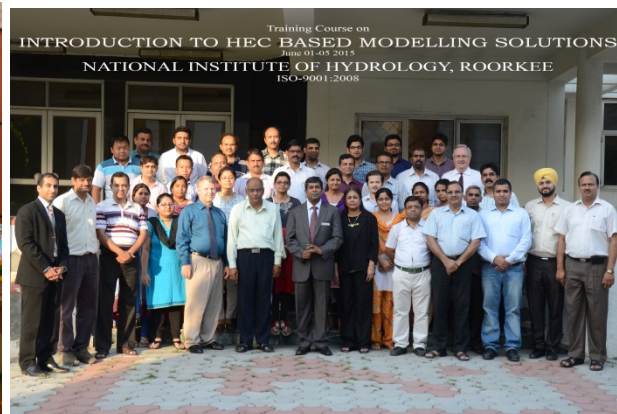
NERIWALM

The Institute has been conducting different capacity building activities based on a **Training Calendar** prepared each year.

NIH

NIH organized a number of training courses covering various topics of interest. The objective of the training courses was to upgrade the knowledge, skills and attitudes of the field engineers, NGO representatives, research students and other stakeholders operating in different states.





Twenty Six Scientists and scientific staff of the Institute were trained at various places in the country.

Rajiv Gandhi National Ground Water Training and Research Institute (RGNGWTRI)

Rajiv Gandhi National Ground Water Training and Research Institute (RGNGWTRI) located at Raipur, Chhattisgarh caters to the training requirements of Central Ground Water Board and for many Central and State Government Organizations, Academic Institutes, NGOs etc. in the field of ground water.

During XII Plan, RGNGWTRI under HRD and Capacity Building Scheme of MoWR, RD&GR is implementing a three-tiered training programme keeping in view the requirements of the National Project on Aquifer Management (NAQUIM). These trainings will enable creation of a trained workforce for implementation of National Project on Aquifer Management and overall sustainable development of ground water resources. Total outlay for RGNGWTRI component for XII Plan is Rs 90.00 Crores.

As a part of this three-tiered training programme, during the entire plan period (2012-17) a total of 174 Tier I (National Level) training courses are proposed in which professionals from Central/State Government departments, Academic Institutions etc. are to be trained. Under Tier II (State Level) training programme, a total of 222 courses are proposed in which ground water professionals, NGOs, VOs, PRIs etc are proposed to be trained. Similarly, 1250 Tier III (Block Level) training programme are proposed in which NGOs, PRIs, Progressive Farmers and other stakeholders at grassroots level are to be trained.

Achievements in the year 2015-16 (As on 31st December, 2015)

- As on 31st December, 2015 RGNGWTRI has organized 68 training programmes including 27 tier I (National Level) and 19 tier II (State Level) and 22 Tier III (block Level) training programmes. As a part of these training programmes a total of 4150 participants including 1177 female participants were imparted training on various aspects of ground water.

During the remaining part of the year , the target of 32 nos tier I, 30 nos tier II and 50 nos Tier III training programmes *are* likely to be completed by March, 2016.



“Participants of the training programme during session II: Discussions on “Climate Change and ground Water “ at Rajiv Gandhi National Ground Water Training & Research Institute, Raipur on 12-10-2015.”



TRAINEES AT DRILLING SITE

Chapter 11

Transparency

The Right to Information Act, 2005

The Right to Information Act, 2005 came into effect from 12.10.2005. As provided under Section 4(1) (b) of the Act, all the 17 manuals in respect of Ministry (Sectt.) and its organizations were prepared and have been placed in the Ministry's website <http://www.mowr.gov.in>. Appointment of Central Public Information Officers (CPIOs) made in terms of section 5 (1) and (2) of the said Act and hosted in the website of the Ministry and concerned organizations.

The Coordination Section of Ministry of Water Resources, RD & GR, Room No. 19, B-wing, Ground Floor, Shram Shakti Bhawan, Rafi Marg, New Delhi has been assigned the task of accepting applications and the fees under the RTI Act. The RTI petitions are forwarded to the concerned CPIOs and the fees are deposited with the DDO, Ministry of Water Resources, River Development and Ganga Rejuvenation. The requisite fees for providing information under RTI Act, 2005 can be paid either through Demand Draft/ Postal Order issued in favour of Pay & Account Officer, Ministry of Water Resources, River Development and Ganga Rejuvenation or by cash.

During the period from 01.01.2015 to 31.12.2015, 1014(Approx.) RTI applications and 89 RTI appeals were received in RTI Cell, Ministry of Water Resources, RD & GR which were forwarded to concerned CPIO/ First Appellate Authority in the Ministry/ Other Public Authority for necessary action as per RTI Act, 2005.

Chapter 12

Role of Women in Water Resources Management

Role of women in water resources management and conservation has been duly recognized. The National Water Policy while stressing on participatory approach in water resources management, specifically provides for necessary legal and institutional changes to be made at various levels for the purpose of ensuring appropriate role for women.

In pursuance of the provisions in the National Water Policy, farmers are to be involved progressively in various aspects of management of irrigation systems, particularly in water distribution and collection of water charges. The Ministry of Water Resources, while issuing guidelines, specifically emphasized that the States consider representation of women in the Water Users' Associations (WUAs) at all levels. As a result, many States have amended their Irrigation Acts or came out with Specific Acts on Participatory Irrigation Management.

Considering the importance of women in terms of their numerical strength and the significant contribution they make to the agricultural labour force, there is a need to encourage participation of women in management of water resources. Water Users' Associations can contribute significantly in this regard and bring in a new culture among the water users.

In recent past, some of the States, such as Madhya Pradesh have attempted to ensure that all farm owners, be it men or women, are made rightful members of the outlet committees. Efforts have also been made to ensure that where there are no women members, at least one woman from the area must be taken even if she is not a land owner. Further, at least one woman shall be nominated to the Governing Body of the Association.

Chapter 13

Progressive Use of Hindi

Effective measures have been taken for progressive use of Hindi for official purposes in various sections and attached and subordinate offices of the Ministry during the year. Efforts were also made to ensure compliance of various orders/instructions issued by the Department of Official Language.

The Second Sub-Committee of Parliamentary Committee on Official Language inspected-8 offices of the Ministry of Water Resources, River Development & Ganga Rejuvenation viz. (1) Central Ground Water Board, Bhubaneswar (2) Central Water Commission (Yamuna Basin), Delhi (3) Central Ground Water Board, Jammu (4) NWDA, Delhi (5) NWDA, Bhubaneswar (6) Central Water Commission, Bhubaneswar (7) Central Ground Water Board, Ahmadabad and (8) National Projects Construction Corporation Ltd., Faridabad during this period. During these inspections the parliamentary Committee on Official Language suggested various measures for progressive use of Hindi.

The meetings of Official Language Implementation Committee of the Ministry under the Chairmanship of Economic Advisor and In-charge Official Language, Ministry of Water Resources, River Development & Ganga Rejuvenation have been convened regularly. In these meetings, the Committee reviewed the progress made in the use of Hindi in the Ministry as well as in its various offices and pinpointed shortfalls in relation to targets prescribed by Department of Official Language. The measures were also suggested for removal of the shortfalls.

In order to encourage the use of Hindi in the official work of the Ministry, messages and appeal were issued by the Hon'ble Union Minister of Water Resources, River Development & Ganga Rejuvenation, Hon'ble Minister of state for Water Resources, River Development & Ganga Rejuvenation and Secretary, Ministry of Water Resources, River Development & Ganga Rejuvenation on 30.07.2015, 31.07.2015 and 05.08.2015 respectively.

Hindi Fortnight was organized in the Ministry from 01.09.2015 to 15.09.2015. The competitions like Rajbhasha Quiz, Hindi Noting & Drafting, Hindi Essay, Hindi Typing, Hindi Essay (only for MTS and equivalent), Hindi Debate and Hindi Poetry Recitation were organized. Officers and employees of the Ministry enthusiastically participated in these competitions. First, Second and Third prizes of Rs. 4000/-, Rs.2500/ and Rs. 1500/- respectively were given to winners of each of these

competitions. There was also provision of four consolation prizes of Rs. 1000/- for each of these competitions. The prizes were given to 51 meritorious participants.

Incentive Schemes like, 'Rajbhasha Vijayanti Puraskar Yojana' and 'Incentive Scheme for doing work in Hindi' were implemented in the Ministry for Promoting the Implementation of Official Language Policy. 'Rajbhasha Vijayanti Puraskar Yojana' is for promoting the Hindi work in Attached and Subordinate Organizations of the Ministry. The winners are selected after evaluating total work in Hindi of the Organization. The Office, Which gets first prize, is given Shield and certificate; second and third prize winning offices are given cups and Certificates. Under 'The incentive scheme for doing work in Hindi' provision has been made to give cash awards each year to the officers and employees on the basis of the work done by them in Hindi.

Hindi workshops on 'the problems of Hindi Typing (unicode) on computer and its solution' were organized on 06.11.2015 and 09.11.2015 in the Ministry to address the problems of Hindi Typing (unicode) on computers. The Objectives of the workshops were imparting practical training. Thirty nine officers/employees participated in these workshops.

To monitor the implementation of Official Language policy of the government, various sections and offices of the Ministry are inspected from time to time. The officials of the Hindi Section, MoWR, RD&GR inspected Ban Sagar Control Board, Riwa On 14th May, 2015. Proposal for inspection of implementation of Official Language policy in respect of various organizations such as National Water Development Agency, New Delhi, C.W.C. New Delhi, CGWB, Faridabad, National Projects Construction, Corporation Ltd. Faridabad, CSMRS, New Delhi, WAPCOS Ltd., Gurgaon, NMCG, New Delhi and Vigilance section, Parliament section, Project section, Cash section, PSU section, E-III section, B.M. Section and Indus Section are made by the officers of the Hindi Section of the Ministry.



Chapter 14

Staff Welfare

Administration Wing

The Administration Section of the Ministry is primarily responsible for the establishment, personnel and administrative matters of the officers and staff of the Ministry (Proper). The section is the Cadre Controlling Authority of posts borne on CSS/CSSS/CSCS sanctioned in the Ministry (Proper), Central Water Commission and Central Soil & Materials Research Station.

2. Administration Section also handles other matters like filling up of posts by Direct Recruitment/Deputation/Promotion, Termination of Probation, Confirmation, grant of financial upgradation under Modified Assured Career Progression Scheme, release of annual increments, pay fixation, maintenance of Confidential Reports, sanction of TA/LTC advance, House Building Advance, Motor Car/Scooter/Cycle advances, GPF advance/withdrawals, framing/amendment of Recruitment Rules, finalization of pension/family pension cases, leave of all kinds, forwarding of applications etc.

Monitoring of Reservation for SCs/STs/OBCs

The Scheduled Castes/Scheduled Tribes and Other Backward Classes (SCs/STs/OBCs) Cell also forms part of Administration Section. It renders secretarial assistance to Liaison Officers for SCs/STs and OBCs in discharging the functions on various matters relating to reservation for SCs/STs/OBCs in Government Services and carrying out inspections of reservation rosters.

2. The Cell is regulating and monitoring the status of filling up the backlog vacancies for SCs/STs/OBCs in its attached/subordinate offices and taking corrective measures wherever found necessary. Liaison Officer carries out inspections in respect of Attached/Subordinate offices for supervising/rectifying deficiencies for correct implementation of reservation roster.

Complaint Committee on Sexual Harassment of Women Employees

In Compliance with the guidelines laid down by the Hon'ble Supreme Court of India on prevention of sexual harassment of women employees, a Committee is functioning to look into the complaints

of the women working in the Main Secretariat of the Ministry. The composition of the Committee is as below:

- | | | |
|-------|---|-------------|
| (i) | Smt. Bindu Sreedathan, Director | Chairperson |
| (ii) | Shri A.K. Kaushik, Under Secretary | Member |
| (iii) | Smt. Mamta Sharma, Section Officer | Member |
| (iv) | Representative of NariRakshaSamiti, NGO | Member |

2. The Complain Committee shall be deemed to be the Inquiring Authority appointed by the Disciplinary Authority for the purpose of CCS (CCA) Rules, 1965 and its reports are to be treated as Inquiry Report. It will examine the complaints made against sexual harassment by women employee(s) and, if necessary, conduct an enquiry. On completion of the same, the Committee will submit its findings to the Joint Secretary (Admn), Ministry of Water Resources, RD & GR for further necessary action.

3. During the year ending 31st December, 2015 no complaint on sexual harassment of women employees was received by the Committee. Similar Committees have already been constituted in the organizations under this Ministry.

Redressal of Public/Staff Grievances

A Grievances Redress Cell was set up in the Ministry of Water Resources, RD & GR which entertains the grievances of employees/officers working in various organizations under the Ministry. Shri Banarsi Ram, Deputy Secretary (Coord.), has been designated as Director (Public & staff Grievances) and all grievances are to be disposed off within a period of 60 days. Most of the grievances received are related to service matters, payment of pensionary benefits, programmes undertaken by Ministry etc. Further, Centralized Public Grievance Redress and Monitoring System (CPGRAMS) software developed by Deptt. of AR & PG, is regularly monitored in the Ministry.

During the period from 01st January, 2015 to 31st December, 2015, a total number of 5168 grievance petitions were received in this Ministry. Besides, 136 grievance petitions were carried forward which were pending at the end of 31st December, 2014. Out of total 5304 grievance petitions, 4508 were settled during the above period. A list of postal addresses of Public/Staff Grievance officers in the Ministry and its various organizations is at Annexure-VII.

Chapter 15

Vigilance

The Vigilance matters relating to this Ministry and its Subordinate organizations are handled by the Vigilance Division of this Ministry which functions under the guidance, supervision and control of a part time Chief Vigilance Officer of the level of Joint Secretary assisted by a Deputy Secretary and the Vigilance Section. Various aspects pertaining to Vigilance cases of all the employees of the Ministry (Proper) and all Group A and retired Officers of the attached/subordinate offices as well as Group-A Officers of other Organizations under the Ministry, including PSUs are dealt with by the Division.

The Vigilance Division functions as a link between the Ministry and the Central Vigilance Commission and other Authorities in the matters pertaining to Vigilance. This Division tenders advice, wherever required, on vigilance matters, to the Attached and Subordinate Offices, PSUs, Statutory Bodies etc. under the administrative control of the Ministry, in consultation with CVC and other agencies/departments.

This Division monitors the disciplinary cases and related matters of the organizations under the Ministry through periodical returns prescribed by CVC, DoPT, etc. The Division prepares the “List of officers of Doubtful Integrity” and the “Agreed List” in consultation with CBI.

This year, Vigilance Awareness Week was observed from 26th October, 2015 to 31st October, 2015. Various competitions were held which received wide participation from the employees. Preventive Vigilance Inspection of one organisation under the purview of the Ministry has been carried out so far during the year 2015-16 and it is proposed to conduct two more preventive inspection during the next three months of this Financial Year with a view to check various irregularities and identify corruption prone areas.

The Vigilance Division is also responsible for calling for the Annual Property Returns of all Officers/Officials of Group ‘A’, ‘B’ and ‘C’ including erstwhile Group ‘D’ Staff and monitoring them. Annual Property Returns for the year ending 2015 are being collected and recorded and after the returns are received, the same will be computerized.

Chapter 16

Appointment of Persons with Special Needs

Monitoring of Reservation for Persons with Special Needs

Monitoring of the recruitment of persons with Special Needs is being done to ensure fulfillment of 3% quota for the category by the Ministry as well as various organisations under it. Periodic reports on the progress made are being sent regularly to the Ministry of Social Justice & Empowerment. Accordingly, 3% of posts/vacancies (1% each for Orthopaedic, Blind & Hearing Handicapped) are reserved to be filled up from Persons with Special Needs. The Persons with Special Needs are given facilities, concessions and relaxations at the time of test/interview as per the rules on the subject matter. The posts identified to be filled up by the Persons with Special Needs in Groups A, B, C & D categories as per the revised list of posts notified by the Ministry of Social Justice and Empowerment, are filled up as per the requirement of the different offices under this Ministry. The relevant reservation rosters as prescribed by the Government are also maintained for planning the reservation of Persons with Special Needs.

ANNEXURES

Annexure –I

ANNEXURE –I I

STAFF IN POSITION IN THE MINISTRY OF
WATER RESOURCES, RD &GR

AS ON 31.12.2015

Group A					Group B										Group C				
					Gazetted					Non-Gazetted									
Total	SC	ST	PH	OBC	Total	SC	ST	PH	OBC	Total	SC	ST	PH	OBC	Total	SC	ST	PH	OBC
96	18	8	-	11	65	11	4	-	-	126	22	3	6	19	148	57	43	3	26

Annexure – III

List of Names & Addresses of Senior Officers & Heads of Organisations under the Ministry of WR,
RD & GR

S. No.	Name of the Organisation	Head of the Organisation
	Government of India Ministry of Water Resources, Room No. 412, IV Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri Shashi Shekhar, Secretary Tel No. 23710305, 23715919 Fax. 23731553
	Government of India Ministry of Water Resources, Room No. 406, IV Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Dr. Amarjit Singh, Special Secretary Tel No. 23710619 Fax. 23725477
	Government of India Ministry of Water Resources, Room No. 6, 2nd Floor, B wing, Lok Nayak Bhawan, Khan Market, New Delhi.	Smt. Sudha Midha, Additional Director General (Stat) Tel No. 24691080 Fax. 24691080
	Government of India Ministry of Water Resources, Room No. 403, IV Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Dr. Amita Prasad, Joint Secretary (Admn.&GW) Tel No. 23710343 Fax. 23730719
	Government of India Ministry of Water Resources, Room No.220, 2nd Floor, Block No.3,CGO Complex, Lodi Road, New Delhi.	Shri M. SatyaNarayana, Adviser (C&M/NWM) Tel No. 24366614 Fax. 24366614
	Government of India Ministry of Water Resources, Room No. 404, IV Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Dr. B. Rajender, Joint Secretary (PP), Tel No. 23711946 Fax. 23711946

Government of India Ministry of Water Resources, Room No. 401, IV Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri Jagmohan Gupta, Joint Secretary & Financial Adviser Tel No. 23710297 Fax. 23710297
Government of India Ministry of Water Resources, Room No. 411, IV Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri Pradeep Kumar, Commissioner (SPR) Tel No. 23710107 Fax. 23350051
Government of India Ministry of Water Resources, Room No. 827, 8 th Floor, CGO Complex, Lodi Road, New Delhi-110 001	Shri C. Lal, Commissioner (Flood Management) Tel No. 24368238 Fax. 24362780
Government of India Ministry of Water Resources, Room No. 204, 2nd Floor, CGO Complex, Lodi Road, New Delhi-110 001	Shri T.S. Mehra, Commissioner (B&B) Tel No. 24364724 Fax. 24367093
Government of India Ministry of Water Resources, Room No. 814, 8th Floor, CGO Complex, Lodi Road, New Delhi-110 001	Shri K. Vohra, Commissioner (Indus) Tel No. 24361540 Fax. 24361540
Government of India Ministry of Water Resources, Room No. 236, 2 nd Floor, A wing, Krishi Bhavan, Rafi Marg, New Delhi-110 001	Shri R.K. Gupta, Addl. Charge, Commissioner (Pen. River) Tel No. 23382256 Fax. 23382256
Government of India Ministry of Water Resources, Room No. 7, Ground Floor, Shastri Bhavan, Dr. Rajendra Prasad Road, New Delhi-110 001	Shri K.M.M. Alimalmigothi, Economic Advisor Tel No. 23383078 Fax. 23383078

Government of India
Ministry of Water Resources,
3rd Floor, MDSS Bldg.,
Rear wing 9, CGO Complex,
Lodi Road, New Delhi-110001

Shri Shashi Shekhar, Addl. Charge,
Mission Director (NMCG)
Tel No. 24367987
Fax. 24367988

Attached Offices

- | | | |
|----|---|--|
| 1. | Central Water Commission,
Room No. 326, Sewa
Bhawan, R.K. Puram, New
Delhi | Shri G.S. Jha, Chairman,
Tel. No. 26715351
Fax: 26108614 |
| 2. | Central Soil and Materials
Research Station,
Room No. 111, Hauz Khas,
New Delhi-110016 | Shri. Hasan Abdullah, Director
Tel. No. 26961894, 26967985
Fax: 26967985 |

Subordinate Offices

- | | | |
|----|--|--|
| 3. | Farakka Barrage Project,
P.O. Farakka Barrage,
Distt. Murshidabad-742212
(W.B.) | Shri S.K. Haldar,
General Manager
Tel. No. 03485-253644
Fax: 03485-253608 |
| 4. | Ganga Flood Control
Commission,
Sinchai Bhawan, III floor,
Patna-800015 | Shri Ghanshyam Jha, Chairman,
Addl. Charge,
Tel. No. 0612-2217294
Fax: 0612-2217960 |
| 5. | Central Water and Power
Research Station,
P.O. Khadakwasla,
Pune-411024 | Shri M.K. Sinha, Director
Tel. No. 020-24380552
Fax: 020-24381004 |
| 6. | Central Ground Water
Board,
Jamnagar House, New Delhi | Shri K.B. Biswas, Chairman
Tel. No. 0129-2477100
Fax: 0129 2477200 |
| 7. | Bansagar Control Board,
Samab Colony,
Rewa (Madhya Pradesh) | Shri T.D. Sharma, Secretary
Tel. No. 07662-226318
Fax : 07662-242433 |
| 8. | Sardar Sarovar Construction
Advisory Committee,
Narmada Bhawan,
A Block, IV Floor,
Vadodara-390001 | Shri Gulshan Raj,
Secretary
Tel. No. 0265-2421438
Fax 0265-2437262 |
| 9. | Upper Yamuna River Board
201, "S", Sewa Bhawan,
R.K. Puram, New Delhi-
110016 | Shri Narendra Kumar, Chairman,
Addl. Charge
Tel. No. 26108590
Fax: 26195289 |

Public Sector Undertakings

- | | | |
|-----|--|---|
| 10. | Water and Power
Consultancy Services (India)
Limited, 5 th Floor, 'Kailash',
26, Kasturba Gandhi Marg,
New Delhi- | Shri R.K. Gupta,
Chairman
Tel. No.23313881
Fax: 23314924 |
| 11. | National Projects
Construction Corporation
Limited, Plot No.67-68,
Sector-25, Faridabad
(Haryana) | Shri H.L. Chaudhary, Chairman & Managing
Director,
Tel. No. 0129-2231269
Fax : 0129-26484842 |

Autonomous Bodies

- | | | |
|-----|---|---|
| 12. | National Institute of
Hydrology, Jal Vigyan
Bhawan, Roorkee-247667
(Uttarakhand) | Dr. R.D. Singh, Director
Tel. No. 01332-272106
Fax: 01332-272123/273976 |
| 13. | National Water
Development Agency, 18-
20, Community Centre,
Saket, New Delhi-110017 | Shri S. Masood Husain, Director General
Tel. No. 26519164
Fax: 26513846 |

Statutory Bodies

- | | | |
|-----|--|---|
| 14. | Narmada Control Authority,
Narmada Sadan Sec-B,
Scheme No.74-C, Vijay
Nagar, Indore-452010 | Shri Narendra kumar, Executive Member
Tel. No. 0731-2557276
Fax : 0731-2559888 |
| 15. | Brahmaputra Board,
Basistha, Guwahati | Shri Nikhilesh Jha, Chairman
Addl. charge
Tel. No. 0361-2301099
Fax 0361-2301099 |
| 16. | Betwa River Board,
Nandanpura, Jhansi-284003 | Sh. V.K. Gupta, Chief Engineer
Tel. No. 0510-2480210
Fax : 0510-2480749 |
| 17. | Tungabhadra Board,
Tungabhadra Dam, Taluk:
Hospet, Distt: Bellary,
Karnataka State, PIN :
583225 | Shri R.K. Gupta, Chairman
Tel. No. 040-29808740
Fax 040-29808742 |

Annexure –IV

Annexure-IV					
BE, RE & Actual Expenditue under Plan Schemes during the 12th Plan, 2014-15 & 2015-16					
Rs. In Crore (Net)					
Sl. No.	Sector/Orgn/Secheme	2014-15 Actual	2015-16		
			BE	RE	Exp. upto Dec. 2015
1	2	3	4	5	6
1	Development of Water Resources Information System	81.53	81.00	75.34	48.61
2	Flood Forecasting	28.65	50.00	35.00	23.65
3	Hydrology Project	24.85	10.00	2.00	0.02
4	Ground Water Management and Regulation	125.29	163.00	163.00	77.27
5	Research & Development	31.95	30.00	54.60	28.16
6	HRD/Capacity Building	26.90	29.00	18.95	10.52
a	Information Education & Communication	16.53	10.00	4.68	1.38
b	National water Academy	4.85	6.00	6.00	4.16
c	RGN Grond Water Training Institute	5.46	7.00	6.65	4.34
d	Capacity Building Programme	0.00	5.00	0.65	0.00
e	Training of MoWR Officers	0.06	1.00	0.97	0.64
7	Infrastructure Development	17.64	17.00	8.00	3.07
8	River Basin Management	155.54	119.00	165.15	99.88
a	River Basin Organisation	0.00	0.10	0.00	0.00
b	Investigation of Water Resources Development Schemes	75.54	45.00	87.00	55.37
c	Restructuring of CWC	0.00	0.10	0.00	0.00
d	Brahamaputra Board	80.00	73.80	78.15	44.51
9	River Management Activities and works related to Border Rivers	93.66	102.00	240.56	71.72
10	Farakka Barrage Project	79.39	100.00	84.00	60.08
11	Implementation of National Water Mission	1.29	20.00	9.00	2.40
12	Irrigation Management Programme	0.00	1.00	0.00	0.00
13	Dam Rehabilitation & Improvement Programme	13.71	29.00	16.00	9.10
14	Bodwad Parisar Sinchan Yojana	66.66	1.00	0.00	0.00
15	Impact Assessment Studies of Project (AIBFMP)	0.03	5.00	0.13	0.03
16	Polavaram Project Authority	250.00	100.00	400.00	100.00
17	National River Conservation Plan	337.46	550.00	550.00	367.00
18	National Ganga Plan	0.00	2100.00	1000.00	1000.00
19	National Ganga Plan(met from balance	0.00	-2100.00	-1000.00	-1000.00

	under NCEF)				
20	DPR for Interlinking of Rivers	0.00	100.00	0.00	0.00
21	Ghat works for beautification of River Fronts	0.00	100.00	100.00	67.00
22	For Water Projects for NCT	320.00	0.00	0.00	0.00
	EAT and Others				
	Sub Total-I	1654.55	1607.00	1921.73	968.51
	Centrally Sponsored Scheme				
1	Accelerated Irrigation Benefit & Flood Management Programme (AIBFMP) *	3261.04	1000.00	3009.76	793.89
	1) AIBP	2610.33	251.00	2549.00	509.82
	2) CAD&WM	199.99	397.00	185.76	185.76
	3) RRR	130.49	151.00	0.00	0.00
	4) FMP	320.23	201.00	275.00	98.31
	5) Ground Water Development in Eastern and North Easter Region	0.00	0.00	0.00	0.00
2	Pradhan Mantri Krishi Sinchai Yojana	0.00	1000.00	1500.00	351.35
	Sub Total-II	3261.04	2000.00	4509.76	1145.24
	GRAND TOTAL	4915.59	3607.00	6431.49	2113.75

Annexure – V**BUDGET AT A GLANCE****(SECTOR-WISE)****(Rupees in crore)**

Sl N o.	Sector/ Organisation /Scheme	Actuals 2014-15		BE 2015-16		RE 2015-16	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
I.	Secretariat-Economic Services						
1.	Ministry of Water Resources	0.00	39.04	0.00	46.35	0.00	47.81
2.	Ravi-Beas Waters Tribunal	0.00	0.37	0.00	0.44	0.00	0.40
3.	Cauvery Water Disputes Tribunal	0.00	2.39	0.00	2.89	0.00	2.05
4.	Krishna Water Disputes Tribunal	0.00	1.98	0.00	2.20	0.00	2.63
5.	Vansadhara Water Dispute Tribunal	0.00	3.57	0.00	4.35	0.00	4.13
6.	Mahadayi Water Disputes Tribunal	0.00	2.61	0.00	2.80	0.00	2.39
	Total : Secretariat-Economic Services	0.00		0.00	59.03	0.00	59.41

Sl N o.	Sector/ Organisation /Scheme	Actuals 2014-15		BE 2015-16		RE 2015-16	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
II	Medium Irrigation						
	Central Water Commission						
1.	Direction & Administration	0.00	31.13	0.00	33.82	0.00	33.36
2.	Data Collection	0.00	94.16	0.00	97.84	0.00	93.48
3.	Training	0.00	0.28	0.00	0.48	0.00	0.28
4.	Research	0.00	2.36	0.00	2.80	0.00	2.35
5.	Survey & Investigation	0.00	9.34	0.00	10.29	0.00	7.76
6.	Consultancy	0.00	30.44	0.00	32.80	0.00	30.28
7.	Contribution to international bodies						
8.	Seminars and conferences on water resources on water.	0.00	0.00	0.00	0.01	0.00	0.01

Sl N o.	Sector/ Organisation /Scheme	Actuals 2014-15		BE 2015-16		RE 2015-16	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
9.	Exhibition and Trade Fair	0.00	0.17	0.00	0.20	0.00	0.20
10.	Modernization of equipment CWC Offset Press	0.00	0.27	0.00	0.38	0.00	0.69
11.	Cell for monitoring externally aided projects	0.00	0.49	0.00	1.01	0.00	0.97
12.	Water Planning Wing	0.00	2.05	0.00	2.49	0.00	2.97
13.	Hydrological observations in Chenab basin	0.00	2.43	0.00	3.04	0.00	2.89
	Total : CWC	0.00	173.12	0.00	185.16	0.00	175.24
14.	Central Soil and Materials Research Station	0.00	10.96	0.00	11.85	0.00	11.89
15.	Central Water & Power Research Station	0.00	42.11	0.00	50.33	0.00	48.62
16.	National Institute of Hydrology	0.00	14.42	0.00	15.43	0.00	18.10

Sl N o.	Sector/ Organisation /Scheme	Actuals 2014-15		BE 2015-16		RE 2015-16	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
1 7.	Sardar Sarovar Construction Advisory Committee	0.00	0.93	0.00	1.02	0.00	0.82
1 8.	Bansagar Control Board	0.00	0.31	0.00	0.36	0.00	0.36
1 9.	Sutlej Yamuna Link Canal Project	0.00	0.00	0.00	1.00	0.00	0.90
2 0.	Upper Yamuna River Board	0.00	0.67	0.00	2.34	0.00	0.64
2 1.	Krishna River Management Board	0.00	1.00	0.00	0.00	0.00	0.00
2 2.	Godavari River Management Board	0.00	1.00	0.00	0.00	0.00	0.00
2 3.	Research and Development Programme	31.95	0.00	30.00	0.00	54.60	0.00
2 4.	Development of Water Resources Information System	81.53	0.00	80.99	0.00	75.33	0.00
2 5.	Hydrology Project	24.85	0.00	10.00	0.00	2.00	0.00

Sl N o.	Sector/ Organisation /Scheme	Actuals 2014-15		BE 2015-16		RE 2015-16	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
2 6.	Infrastructure Development	1.89	0.00	1.00	0.00	1.00	0.00
2 7.	HRD/ Capacity Building	21.44	0.00	22.00	0.00	12.30	0.00
2 8.	River Basin Management	75.54	0.00	45.20	0.00	87.00	0.00
2 9.	Implementation of National Water Mission	1.29	0.00	20.00	0.00	9.00	0.00
3 0.	Irrigation Management Programme	0.00	0.00	1.00	0.00	0.00	0.00
3 1.	Dam Rehabilitation and Improvement Programme	13.71	0.00	29.00	0.00	16.00	0.00
3 2.	Bodwad Parisar Sinchan Yojana	66.66	0.00	1.00	0.00	0.00	0.00
3 3.	AIBFMP (Impact Assessment Studies)	0.03	0.00	5.00	0.00	0.13	0.00
3 4.	Accelerated Irrigation Benefit Programme & Flood Management	3261.04	0.00	1000.00	0.00	3009.76	0.00

Sl N o.	Sector/ Organisation /Scheme	Actuals 2014-15		BE 2015-16		RE 2015-16	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
	Programme (Centrally Sponsored Scheme)						
3 5.	Polavaram Project Authority	250.0 0	0.00	100.00	0.00	400.00	0.00
3 6.	DPR for Interlinking of rivers	0.00	0.00	100.00	0.00	0.00	0.00
3 7.	Pradhan Mantri Krishi Sinchai Yojana	0.00	0.00	1000.00	0.00	1500.00	0.00
	Total: Medium Irrigation	3829. 93	244.52	2445.19	267.49	5167.12	256.57
II I.	Minor Irrigation						
1.	Central Ground Water Board	0.00	145.09	0.00	152.06	0.00	154.13
2.	Ground Water Management and Regulation	125.2 9	0.00	163.00	0.00	163.00	0.00
3.	Development of Water Resources Information	0.00	0.00	0.01	0.00	0.01	0.00

Sl N o.	Sector/ Organisation /Scheme	Actuals 2014-15		BE 2015-16		RE 2015-16	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
	System						
4.	Infrastructure Development	3.55	0.00	9.00	0.00	3.00	0.00
5.	HRD/ Capacity Building	5.46	0.00	7.00	0.00	6.65	0.00
	Total : Minor Irrigation	134.30	145.09	179.01	152.06	172.66	154.13
I V .	Flood Control						
1.	Central Water Commission	0.00	81.16	0.00	89.37	0.00	81.70
2.	Payment to Govt. of Bhutan for maintenance of flood forecasting and warning centres	0.00	0.39	0.00	1.04	0.00	1.03

Sl N o.	Sector/ Organisation /Scheme	Actuals 2014-15		BE 2015-16		RE 2015-16	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
3.	Strengthening and moderni-zation of flood forecasting and hydrological network in Brahmaputra and Barak Basin	0.00	3.08	0.00	1.13	0.00	3.76
	Total : CWC	0.00	84.63	0.00	91.54	0.00	86.49
4.	Emergent Flood Protection Measures in Eastern and Western Sectors	0.00	0.00	0.00	0.10	0.00	1.00
5.	Flood Forecasting	28.65	0.00	50.00	0.00	35.00	0.00
6.	River Management Activities and Works related to Border Areas	93.66	0.00	102.00	0.00	240.56	0.00
7.	Infrastructure Development	12.20	0.00	7.00	0.00	4.00	0.00

Sl N o.	Sector/ Organisation /Scheme	Actuals 2014-15		BE 2015-16		RE 2015-16	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
8.	River Basin Management	80.00	0.00	73.80	0.00	78.15	0.00
	Total : Flood Control	214.51	84.63	232.80	91.64	357.71	87.49
V	Other Transport Services						
1.	Farakka Barrage Project	79.39	38.85	100.00	45.13	84.00	34.18
2.	Jangipur Barrage	0.00	2.22	0.00	2.60	0.00	2.35
3.	Feeder Canal	0.00	6.95	0.00	7.48	0.00	6.81
	Total : Transport Services	79.39	48.02	100.00	55.21	84.00	43.34
V	Ecology and Environment						
1.	National River Conservation Plan	337.46	0.00	550.00	0.00	550.00	0.00
2.	National Ganga Plan	0.00	0.00	2100.00	0.00	1000.00	0.00
2	Less amount met from NCEF			-2100.00	0.00	-1000.00	0.00

Sl N o.	Sector/ Organisation /Scheme	Actuals 2014-15		BE 2015-16		RE 2015-16	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
3.	Ghat works for beautification of river fronts	0.00	0.00	100.00	0.00	100.00	0.00
4.	Water projects of NCT	320.00	0.00	0.00	0.00	0.00	0.00
	Total : Ecology and Environment	657.46	0.00	650.00	0.00	650.00	0.00
	TOTAL: (I to VI) \$	4915.59	572.22	3607.00	625.43	6431.49	600.94
	GRAND TOTAL	4915.59	572.22	3607.00	625.43	6431.49	600.94

Source of financing: \$ Demand No.107 – Ministry of Water Resources for 2015-2016

Annexure – VI

List of Central Public Information Officers / Appellate Authorities in the Ministry

S.No.	Name & Designation of CPIO appointed (S/Shri/Smt)	Name of the Section/ Desk/ work	Name & Designation of the Appellate Authority appointed (S/Shri/Smt/Kum)
1.	Narendra Singh, Under Secretary (Admn) Tel. No. 23738126 Email id: usadmn-mowr@nic.in	Administration Section & SC/ST/OBC Cell	Khatchin Langel, Dir (Admn, GA and e-Gov) Tel. No. 23714734 Email id : diradmn-mowr@nic.in
2.	R.K. Ojha, Under Secretary (GA) Tel. No. 23710303 Email id: rk.ojha25@nic.in	General Administration & CR Sections	
3.	Ashok Kumar Gupta, Under Secretary (e-Gov.) Tel. No. 23714350 Email id: ashok.kgupta@nic.in	e-Governance Cell	
4.	Arun Kumar, Under Secretary (Coord) Tel. No. 23716894 Email id: uscoord-mowr@nic.in	Coordination Section	
A.	Ashok Kumar Gupta,	Infrastructure Development	Banarsi Ram, DS (Coord & ID) Tel. No. 23716747 Email id : dscoord-mowr@nic.in

	Under Secretary (ID) Tel. No. 23714350 Email id: ashok.kgupta@nic.in		
5.	R.N. Dixit, Under Secretary (Parliament & RTI) Tel. No. 23766944 Email id: usparl-mowr@nic.in	Parliament and RTI matters	Ram Swarup, Director (E-III & Parliament) Tel. No 23711459 Email id: ram.swarup56@nic.in
6.	Amit Kumar Singh, Under Secretary (E-III) Tel. No. 23384186 Email id: use3-mowr@nic.in	Establishment III Section	
7.	Vineeth Abraham, Under Secretary (CGWB) Tel. No. 23711370 Email id: usgw-mowr@nic.in	Central Ground Water Board Desk	Surender Kumar Garg, DS (GWE) Tel. No. 23716683
8.	S.K. Kataria, Under Secretary (E-II) Tel. No. 23716028 Email id : use2-mowr@nic.in	Establishment-II Section	
9.	Shashi Pal, Under Secretary (PSU & PPP) Tel. No. 23716928	Public Sector Undertakings Section and PPP Cell	Nityanand Ray, DS (PSU) Tel. No. 23382448

	Email id: shashi.pal25@nic.in		
B.	Narendra Singh, Under Secretary (Vig) Tel. No. 23738126 Email id: usvig-mowr@nic.in	Vigilance Section	Ms. Surinder Kaur, Director (Vigilance & Estt) Tel. No. 23711988
10.	A.K. Kaushik, US (E-I) Tel. No. 23716928 Email id : use1-mowr@nic.in	E-I Section	Email id : direct-mowr@nic.in
C	Shashi Pal, Under Secretary (IEC) Tel. No. 23716928 Email id: shashi.pal25@nic.in	Information, Education & Communication Cell	R.K. Gupta, Joint Secretary (Pen. River & Parl) Tel. No. 23708150 Email id : dirgw-mowr@nic.in
11.	Shambhu Nath Pal, Under Secretary (GW) Tel. No. 23766907 Email id : usgw2-mowr@nic.in	Ground Water Desk	
12.	V.K. Balayan, Under Secretary (EA & IC and WS) Tel. No. 23074005 Email id: vkbalayan@nic.in	External Assistance and International Cooperation Desks including Foreign Training & Bilateral issues and Internal Work Study Unit	Ravi Sinha, Director (CADWM, EA & IC and WS) Tel. No. 23384186

13.	B.L. Meena, Under Secretary (B&B) Tel. No. 24367106 Email id: bl.meena15@nic.in	Water Quality Issues	Ravindra Singh, Director (Water Quality) Tel. No. 24362133 Email id: wqcell-mowr@nic.in
14.	Shraddha Mathur, Assistant Director (OL) Tel. No. 23719033 Email id : shraddha.mathur@nic.in	Official Language Section	Ramesh Babu Aniyeri, Director (OL) Tel. No. 23714374 Email id: r.anivery@nic.in
15.	Avanish Kanth, Sr. Hydrogeologist Tel. No. 24367081 Email id: avanish.kanth@nic.in	Hydrology Project	Ashok Gupta, Director (HP) Tel. No. 24363417
E.	B.L. Meena, Under Secretary (B&B) Tel. No. 24367106 Email id: bl.meena15@nic.in	Matters of Brahmaputra & Barak Wing	Ajay Kumar Gupta, Sr. Joint Commissioner (B&B) Tel. No. 24367590
16.	Munni Lal, Sr. Joint Commissioner (FM) Tel. No. 24361565 Email id: munni.lal@nic.in	Flood Management Wing	C. Lal, Commissioner (FM) Tel. No. 24368238 Email id: commer-mowr@nic.in
17.	Ravish Ali, Under	Policy and Planning	

	<p>Secretary (PP)</p> <p>Tel. No. 23719627</p> <p>Email id : uspp-mowr@nic.in</p>	Section	<p>S.K. Sharma, Sr. Joint Commissioner (PP)</p> <p>Tel. No. 23719503</p>
18.	<p>Ajay Kumar, Under Secretary (E-IV)</p> <p>Tel. No. 23714350</p> <p>Email id: ajay.kumar71@nic.in</p>	Matters related to NCA, BCB, BRB, SSCAC, Tungabhadra Board and establishment matters of NWDA	Email id: sjcphp-mowr@nic.in
19.	<p>Ravi Sinha, Director (CADWM, EA & IC and WS)</p> <p>Tel. No. 23382481</p> <p>Email id: moti.la89l@nic.in</p>	CAD related matters	<p>Rajat Bhargava, Member (Finance), CGWB and Joint Secretary</p> <p>Tel. No. 23708418</p> <p>Email: rajat.bhargava@nic.in</p>
20.	<p>Shashi Rakesh, DC (BM)</p> <p>Tel. No. 24368344</p>	River Basin Management, Administration of UP, Bihar, MP Reorganisation Act, Inter State Water Disputes Act, Inter State Water Disputes Tribunal, technical matters of NWDA and Inter-linking of Rivers	<p>Asit Chaturvedi, Sr. JC (BM)</p> <p>Tel. No. 24367109</p> <p>Email id: sjcblm-mowr@nic.in</p>
21	<p>Bisny Suresh Kumar, Section Officer (Projects)</p> <p>Tel. No. 23711370</p> <p>Email id : project1-mowr@nic.in</p>	Project Section	<p>Rajeev Kumar, Sr. Joint Commissioner (SPR)</p> <p>Tel. No. 23385186</p> <p>Email id: sjcpr-mowr@nic.in</p>

22.	S.K. Bhagat, Under Secretary (Pen. River) Tel. No. 23383059 Email id: uspenriv-mowr@nic.in	Peninsular River Wing	S.K. Kamboj, Sr. JC (Pen. River) Tel. No. 23388020
23.	Kiran Pramanik, Sr. Joint Commissioner (MI) Tel. No. 23387834	Minor Irrigation & Water Bodies	Pradeep Kumar, Commr (SPR) Tel. No. 23710107 Email id : commpr-mowr@nic.in
24.	Rajveer Singh, DC (Indus) Tel. No. 24360332 Email id: dcindus-mowr@nic.in	Indus Wing	Bhupinder Singh, Sr. JC (Indus) Tel. No. 24361467 Email id: bhupinder.singh48@gov.in
25.	Gyanendra Pratap Singh, Deputy Director (MI Stat) Tel. No. 24656135 Email id: gyanendra.ps@nic.in	Minor Irrigation Statistics	Bindu Sreedathan, Director (MI Stats) Tel. No. 24699496 Email id: dirmi-mowr@nic.in
26.	Vijay Srivastava, Under Secretary (Finance) Tel. No. 23719302 Email id:	Finance Wing – Finance Desks and Budget Section	Manish Tripathi, Director (Finance) Tel. No. 23711360 Email id: dirfin-

	vijayk.srivastava@nic.in		mowr@nic.in
27.	S.K. Mohiddin, Scientist 'C' (National Water Mission) Tel. No. 24368343 Email id: mohiddin.sk@nic.in	National Water Mission	Joginder Singh, Advisor (Tech) Tel. No. 24369170 Email id: j.sing25@nic.in
28.	Sachin Dev Verma, US (NMCG) Tel. No. 24367985	NMCG & NGRBA	L.B. Tuolte, Deputy Secretary (NMCG) Tel. No. 24367985
29.	K.N. Joshi, Assistant Controller of Accounts Tel. No. 23384843	Matters related to Principal Accounts Office and Cash Section	Anil Srivastava, Controller of Accounts Tel. No. 23386644 Email id: ca-mowr@nic.in
30.	A. Srinivas, Pay & Accounts Officer (FBP) Tel. No. 03485-253648	Matters related to Pay & Accounts Office (FBP)	
31.	Sunita R. Shinde, Sr. Accounts Officer (CWPRS) Tel. No. 020-24381813	Matters related to Pay & Accounts Office (CWPRS)	
32.	Balbir Singh, Sr. Accounts Officer (CGWB) Tel. No. 0129-2410370	Matters related to Pay & Accounts Office (CGWB)	

33.	R.S. Khatri, Sr. Accounts Officer (CWC) Tel No. 26012185	Matters related to Pay & Accounts Office (CWC)	
34.	J.P. Singh, Sr. Accounts Officer (CSMRS) Tel. No. 26850358	Matters related to Pay & Accounts Office (CSMRS)	

Note : In case work of any CPIO/ Appellate Authority is changed due to transfer/ retirement/ any other reasons and a new official joins in place of the existing CPIO/ Appellate Authority, he/ she would automatically be the CPIO/ Appellate Authority of the allotted work. In case any CPIO/ Appellate Authority proceeds on leave/ training, the concerned Link Officer or the officer who is entrusted with the charge of the post of the concerned Division/ Branch Head would automatically be the CPIO/ Appellate Authority of the allotted work.

Annexure – VII

LIST OF POSTAL ADDRESSES OF PUBLIC/ STAFF GRIEVANCE OFFICERS IN THE
MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA
REJUVENATION AND ITS VARIOUS ORGANISATIONS

S. No.	Name of the Organization	Address	Name & Designation of P.G./ S.G. Officer
1.	Ministry of Water Resources, River Development and Ganga Rejuvenation	Room No.421, Shram Shakti Bhavan, New Delhi-110001 (Tele No. 23716747)	Shri Banarsi Ram, Director (Admn.) & Director (PG & SG)
2.	Narmada Control Authority	Narmada Sadan, Sector-B, Scheme No. 74, Vijay Nagar, Indore – 452010(MP) (Tele No. 0731-2554477)	Shri Naresh Lall, Secretary and Grievance Redressal Officer
3.	Bansagar Control Board	Bansagar Control Board, Samab Colony, Rewa (MP) (Tele No. 07662-226318), 0755-2762059 (Fax No. 07662-242433 –Fax No. 0755-2558264)	Shri S.K. Kamboj, Director (Monitoring), CWC, Bhopal & Director (Staff Grievances)
4.	Betwa River Board	O/o Pay & Account Officer, Betwa River Board, Nandanpura, Jhansi-284003 (U.P) (Tele No. 0510-2480279)	Shri O.P. Kalra, Pay & Account Officer & Public Grievance Officer

5.	Central Ground Water Board	CGWB, CHQ, Faridabad (Tele No.95129-2415024 & (Fax No. 95129-2412524)	Shri Mukesh Kumar Garg, Jr. Hydro geologist (Scientist 'D') & Public Grievances officer
6.	Central Soil and Materials Research Station	Room No. 309, CSMRS, Olof Palme Marg, Hauz Khas, New Delhi – 110 016 (Tel No. 26581368, 26581368, 26850025) FAX No.-26853108	Shri Hari Dev, Scientist 'D' (RM-I) & Director (Grievances)
7.	Central Water Commission	Room No. 313(S), Sewa Bhawan, R.K. Puram, New Delhi-110066 (Tele No. 26187232) (Fax No. 26195516)	Shri A.K. Srivastava, Secretary & Grievances Officer
8.	Central Water & Power Research Station	Central Water & Power Research Station, P.O. Khadakwasla Research Station, Pune – 411024 (Tele No. 020-24103236) (Fax No. 020-24381004)	Shri M.D. Kudale, Scientist 'E' & Chairman (Grievance Cell)
9.	Farakka Barrage Project	P.O. Farakka Barrage, Distt. Murshidabad, West Bengal-742212 (Tele No. 03485 – 253285) (Fax No. 03485-253608)	Shri R.K. Singh, Superintending Engineer (Coord.) & Director (Staff Grievances)
10.	Ganga Flood Control Commission	Ganga Flood Control Commission, Sinchai Bhawan, IIIrd Floor, Patna-800015 (Tele No. 0612-2233591) (Fax No. 0612-2222294)	Shri Akhilesh Kumar Jha, Director (Admn.) & Director (Staff Grievances & Public Grievances)
11.	National Institute of Hydrology	Jal Vigyan Bhawan, Roorkee-247667 (Uttarakhand) (Tele No. 01332-276414)	Dr. J.V. Tyagi, Scientist F, Public Grievance Officer & OIC, Staff Grievances

12.	National Projects Construction Corporation Limited	NPCC Ltd., Plot No. 67-68, Sector 25, Faridabad (HNA) (Tele No. 0129-2442546, 2234760, 2442546) (FAX No.-0129-4067915, 2230891)	Shri Akhilesh Mishra, GM (HR) & Staff Grievances Redress Officer
			Shri Adesh Kumar, GM (Law) & Director (Public Grievances)
13.	National Water Development Agency	18-20, Community Centre, Saket, New Delhi-110017 (Tele No. 26852735) (Fax No. 26960841)	Shri R.K. Jain, Chief Engineer (HQ) & Grievance Officer
14.	Sardar Sarovar Construction Advisory Committee	Sardar Sarovar Construction Advisory Committee, Narmada Bhavan, "A" Block 4 th Floor, Vadodara – 390001 (Tele No. 0265-2421272) Fax No. 0265-2437262 (Telefax)	Shri Sushil Kumar, Deputy Secretary (Grievances)
15.	Water & Power Consultancy Services (India) Ltd.	76-C, Institutional Area, Sector-18, Gurgaon-122015 (Tele No. 0124-2348022, 2397392) FAX No.-2349448	Shri S. Vijaya Rao, Director (Staff/Public Grievances)
16.	Brahmaputra Board	Basistha, Guwahati – 29 (Tele No.0361-2300128) (Fax No. 0361-2308588)	Shri Joy Barman, Secretary & Director (Staff/Public Grievances)
17.	Upper Yamuna River Board	Upper Yamuna River Board, Wing No. 4, Ground Floor, West Block No. 1, R.K. Puram, New Delhi-110066 (Tele.-26174147, 26184025)	Shri H.K. Sahu, Member Secretary & Director of Grievances

18.	Tungabhadra Board	Tungabhadra Board, Tungabhadra Dam, Taluk: Hospet, Distt: Bellary, Karnataka State, PIN: 583225 Phone-08394-259113	Shri D. Ranga Reddy, Secretary & Director of Grievances
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