Annual Report

2016-17

सत्यमेव जयते

GOVERNMENT OF INDIA

MINISTRY OF WATER RESOURCES,

RIVER DEVELOPMENT AND GANGA REJUVENATION

NEW DELHI

A Bird's-eye view of Farakka Barrage

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ABBREVIATIONS

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

MoU	Memorandum of Understanding
MoEF	Ministry of Environment & Forest
MoWR,RD &GR	Ministry of Water Resources, River Development and Ganga Rejuvenation
MPPGCL	Madhya Pradesh Power Generation Corporation Ltd.
NAPCC	National Action Plan on Climate Change
NASC	National Agriculture Science Centre
NCA	Narmada Control Authority
NCMP	National Common Minimum Programme
NCSDP	National Committee on Seismic Design Parameters
NEEPCO	North Eastern Electric Power Corporation Limited
NeGP	National e- Governance Plan
NERIWALM	North Eastern Regional Institute of Water and Land Management
NGRI	National Geophysical Research Institute
NHDC	Narmada Hydro-electric Development Corporation
NLC	Neyveli Lignite Corporation Limited
NLPMC	National Level Programme Monitoring Committee
NLSC	National Level Steering Committee
NPCC	National Projects Construction Corporation Ltd
NPP	National Perspective Plan
NRLD	National Register of Large Dams
NWDT	Narmada Water Disputes Tribunal
NWM	National Water Mission
NRSC	National Remote Sensing Centre
NWDA	National Water Development Authority
OFD	On Farm Development
ONGC	Oil and Natural Gas Corporation
OW	Observatory Well
PAC	Project Advisory Committee
PAF	Project Affected Families
PDS	Purpose Driven Studies
PIM	Participatory Irrigation Management
PMKSY	Pradahan Mantri Krishi Sinchai Yojana
PSC	Permanent Standing Committee
PZ	Piezometer
R&R	Rehabilitation and Resettlement
RFD	Results Framework Document
RMIS	Rationalisation of Minor Irrigation Statistics
ROS	Reservoir operation system
RRR	Repair, Renovation and Restoration
RRSSC	Regional Remote Sensing Service Centre
RTDAS	Real Time Data Acquisition System
RTSF	Research Technology Support Facility
SAC	Standing Advisory Committee
SCEC	Sub Committee on Embankment Construction
SFRC	Steel Fibre Reinforced concrete
SS	State Sector
SSCAC	Sardar Sarovar Construction Advisory Committee
SSP	Sardar Sarovar Project
SW	Surface Water
TAC	Technical Advisory Committee
TAMC	Technical Assistance and Management Consultancy
TB	Tungabhadra Board
Th.	Thousand
TOR	Terms of Reference
UYRB	Upper Yamuna River Board
VWDT	Vansadhara Water Dispute Tribunal
WALMI	Water and Land Management Institute
WAPCOS	Water and Power Consultancy Services (India) Ltd.
WB	World Bank
WEGWIS	Web Enabled Ground Water Information System
WQAA	Water Quality Assessment Authority
WRIS	Water Resources Information System
WUA	Water User Association
WUE	Water Use Efficiency

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GOVERNMENT OF INDIA

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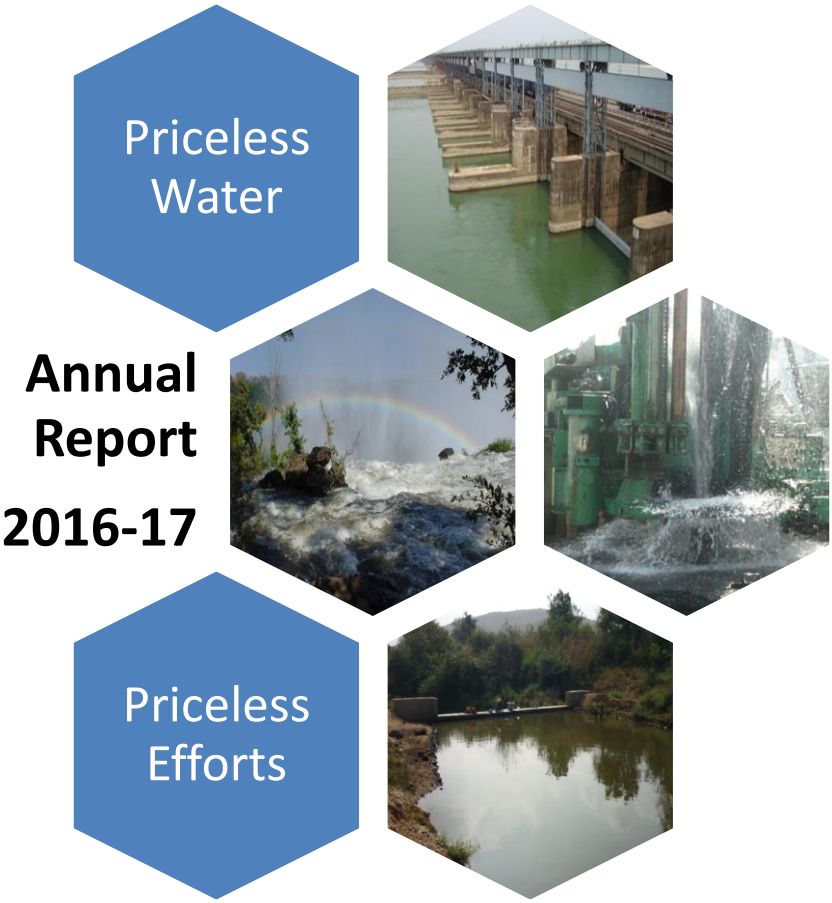
MINISTRY OF

WATER RESOURCES | RIVER DEVELOPMENT | GANGA REJUVENATION

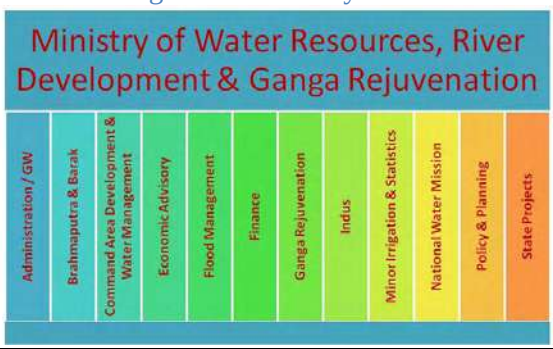


1. Overview

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 (MoWR,RD&GR), 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.

Twelve wings of the Ministry are as below:



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, Bansagar 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); 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. Sushri Uma Bharti took over the charge of the Ministry on 26th May, 2014. On 5th July

2016 two Ministers of State, viz. Shri Vijay Goel and Dr. Sanjeev Kumar Balyan, also assumed their charges in the Ministry. Shri Shashi Shekhar was Secretary of the Ministry w.e.f 5th June, 2015 and continued till 31st December 2016. Dr. Amarjit Singh, working as Special Secretary/ Officer on Special Duty in the Ministry, took over as Secretary w.e.f. 1st January, 2017. The organizational 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.**

MAJOR INITIATIVES

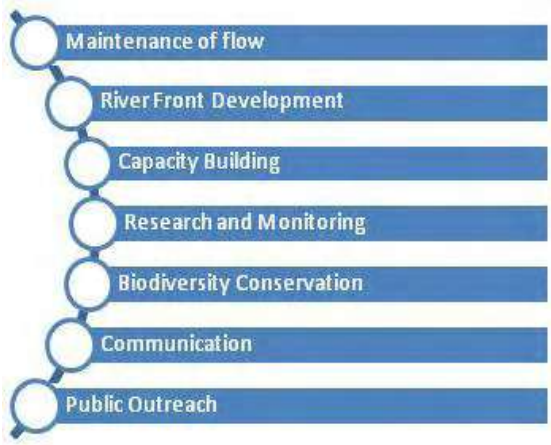
NATIONAL GANGA RIVER BASIN AUTHORITY (NGRBA)

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 functions 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). 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; it also has a comprehensive vision with seven main thrust areas as below:



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 finalized 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 meetings. 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. Details of meeting of sub committees etc. is highlighted under the head NWDA in Chapter 7.

'JalManthan -3' at VigyanBhawan on 13.01.2017

JAL MANTHAN -3

Jal Manthan-3 was organized on 13th January, 2017 at Vigyan Bhawan, New Delhi. During the event, discussions on Implementation of PMKSY & Improvement of Water Use Efficiency, Ecology Improvement, Participatory Irrigation Management, River Basin Management, River Rejuvenation and Flood Management were held. During this one day event extensive consultations were held among different stakeholders on several important and critical areas in the water sector like River Basin Approach for Sustainable Development, Ground Water Management, Water Security, Water Management, Coordination between Centre and States, water conservation Innovation in Water Governance etc.

MAJOR ACHIEVEMENTS UNDER STATE SECTOR SCHEMES

Under Accelerated Irrigation Benefits Programme, the State Governments have been provided an amount of Rs. 58503.70crore as CLA/Grant under AIBP (MMI) since its inception till March 2016-17. After commencement of this Programme, 143 major/medium irrigation projects have been completed and 5 were foreclosed out of 297 projects taken up under the programme so far. The irrigation potential of 85.54 lakh hectare has been created through major/medium AIBP projects.

During 2016-17, Central Assistance (CA) of Rs.3308 crore has been provided to various projects under AIBP.

Further, 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, Saryu Nahar Pariyojana of Uttar Pradesh and Polavaram project of Andhra Pradesh have been funded under the scheme of National Projects. Gosikhurd and Shahpurkandi projects have been provided grant amounting to Rs.2987.94crore and Rs.26.04 crore respectively. 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.SaryuNaharPariyojana of Uttar Pradesh started

funding under the scheme of National Projects during 2012-13 and an amount of Rs.1221.60crore has been released. 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.

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. In addition, 540 villages will also be provided with drinking water facilities in the command area.

So far CA of Rs.562.469 crore under AIBP and Rs. 3364.16 crore under scheme of National project including Rs.2514 crore during 2016-17 has been provided for this project.

Further details of AIBP and National Projects are given at Chapter 3.

MAIN POLICY CHANGES IN AIBP

A Committee was constituted under Minister (WR), Chhattisgarh to prioritize the AIBP projects which can be completed by 2019-20. In consultation with States, the Committee identified 99 such projects. The Government has approved the funding of balance cost of these projects amounting to about Rs. 775.95 crore including CDA&WM works through NABARD (both Central and State share). Further, cost for providing CA, escalation of 20% has been allowed on approved cost of project as on 1.4.2012. Further, a Mission has been established in this Ministry to ensure completion of these projects. Further, a Council headed by CEO, NITI Aayog has also been established to look after overall implementation of the projects.

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

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, about 150 projects were under implementation in the beginning of 12th Plan. The Programme was restructured and renamed as Command Area Development and Water Management (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 12th 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.5753crore has been released to States under the CAD Programme since its inception in 1974-75 up to March, 2014. An amount of Rs 691.74 crore has been released during 2016-17as Central Assistance under PMKSY (HKKP). Details are in chapter 3.

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. Other details of WUA is given in Chapter 3.

Wardha Project (Maharashtra)

REPAIR, RENOVATION & RESTORATION OF WATER BODIES (RRR)

Under the scheme, a total of 1354 water bodies have been taken up for restoration during XII Plan, out of which 464 water bodies have been completed. Central grant amounting to Rs. 264.67 crore has been released to the States for completion of works on these water bodies.

SURFACE MINOR IRRIGATION (SMI) SCHEME

During XII Plan, 3348 SMI schemes have been taken up under the programme out of which 1327 schemes have been reported to be completed. CA of Rs.3327.9 crore has been released for these schemes out of which an amount of Rs.140.9 crore was released during 2016-17.

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 AIBP, Har Khet ko Pani), Water shed development and Per Drop More Crop.

MAJOR ACHIEVEMENTS UNDER CENTRAL SECTOR SCHEMES

FLOOD FORECASTING

Flood Forecasting - In order to enable the local administration to take suitable administrative measures like evacuation of people from flood affected areas to safe relocations during flood season and also to enable the project authorities in proper operation of reservoirs, the activity of flood forecasting in India is performed by Central Water Commission (CWC) on major rivers and their important tributaries. For this purpose, CWC issues flood forecasts at 199 stations (151 Level forecasting, 48 inflow forecasting) in the country. CWC has started three days advisory forecast at some of the locations using rainfall-runoff modeling and rainfall forecast to give adequate lead time to the disaster managers for preparedness.

The forecasts issued by CWC prove to be very useful in saving life and public properties as a result of timely action by the authorities.CWC has been making continuous endeavour for modernization and expansion of its flood forecasting network in order to have desired automatic system of data collection and real time data transmission. So far, 502 data collection stations have been modernized, three Earth receiving Stations have been set up at New Delhi, Jaipur and Burla, 21 Modeling Centers have been equipped with latest computer systems for analysis of data, flood forecast formulation and its dissemination to concerned agencies expeditiously. For activities of flood forecasting, modernization and expansion in Xll plan, a proposal amounting to Rs. 281.0 crore is approved.

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 Xll Plan, the central assistance of Rs. 1307.07 crore has been released, which includes Rs.149.99 crore up to 31.12.2016 to States under Flood Management Programme.

HYDROLOGY PROJECT

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. Details are in Chapter 3.

RESEARCH AND DEVELOPMENT

Under Indian National Committee on Surface Water (INCSW), there are 75 research schemes under implementation, funded by the Ministry. Expenditure till December, 2016 was Rs. 26.82 crore against allocation of Rs. 55.50 crore(B.E.)/35.0 crore (R.E.).

INFORMATION, EDUCATION AND COMMUNICATION

Ministry of Water Resources, River Development and Ganga Rejuvenation had erected a pavilion in Hall No.7-E in the 36th Edition of India International Trade Fair organized by ITPO in Pragati Maidan from 14th to 27th November, 2016. 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: "Pradhan Mantri Krishi Sinchayee Yojana" (PMKSY) with sub-components consisting of Accelerated Irrigation Benefit Programme (AIBP), Har Khet Ko Pani, More Crop Per Drop, Watershed development.

Central Model installed at MoWR pavilion, IITF 2016, PragatiMaidan, New Delhi

INFRASTRUCTURE DEVELOPMENT

Infrastructure Development (ID) Scheme has been approved by the Government by merging four continuing schemes viz. (i) Land & Building and 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.

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.

FARAKKA BARRAGE PROJECT

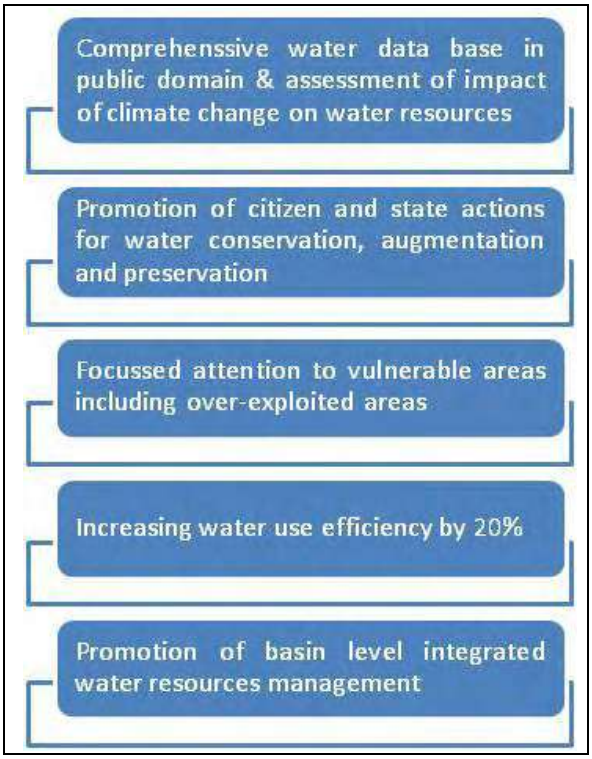
With the successful accomplishment of time specific anti-erosion and bank protection works in critical reaches on river Ganga / Padma, FBP authority has been able to ensure the safety of Farakka Barrage besides providing reasonable protection from floods to lives and livelihood of local people in the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

Interaction with Farmers, Upper Tunga Project (Karnataka)

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".

"National Water Mission" document, approved by the Union Cabinet on 6th April 2011 (details in Chapter 3) has identified five goals for the mission as listed below:



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.

Third National Dam Safety Conference is organized by CWC in collaboration with IIT Roorkee and UJVN Limited, on 18th and 19th February 2017 in IIT Roorkee. A workshop on "Lessons Learnt from DRIP" was also organized in which 136 delegates participated.

3rd National Dam Safety Conference, February 2017, IIT Roorkee

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 "CBIP Award 2016" for promoting Health and Safety of Large Dams under DRIP.

ORGANIZATIONS AND INSTITUTIONS

ATTACHED OFFICES

CENTRAL WATER COMMISSION

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
- 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

Details of CWC are given in Chapter 7.

CENTRAL SOIL AND MATERIALS RESEARCH STATION (CSMRS)

New Initiatives taken during financial year 2016-17 include:

- Investigations for 6 Water resources projects
- Publication of 1 research review papers/ documents
- Completion of 2 self sponsored research schemes
- Evaluation of 7 Detailed Project Reports

Details of CSMRS are given in Chapter 7.

SUB-ORDINATE OFFICES

CENTRAL GROUND WATER BOARD

The main activities of CGWB may be summarized as follows:

- National Aquifer Mapping.
- Monitoring of Ground Water Regime in the Country.
- Estimation of Ground Water Resource.
- Training under Rajiv Gandhi National Ground Water Training and Research Institute.
- National Hydrology Project.
- Demonstrative Project on Artificial recharge to Ground Water.
- Regulation of Ground Water

Details CGWB is depicted in Chapter 7.

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; details of achievements given in Chapter 7.

Centenary Celebration of CWPRS

GANGA FLOOD CONTROL COMMISSION (GFCC)

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 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;

Details of GFCC are given in Chapter 7.

SARDAR SAROVAR CONSTRUCTION ADVISORY COMMITTEE

The Sardar Sarovar Construction Advisory Committee (SSCAC) was constittued 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 (Hydropower works) of the Sardar Sarovar Project.

SardarSarovar Dam (Gujarat)

The 84th meeting of the SSCAC was held on 19th December 2016 at New Delhi, under Chairmanship of Secretary, MoWR, RD & GR, New Delhi. Details of achievements of SSCAC are given in Chapter 7.

BANSAGAR CONTROL BOARD

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.Details of amendments are listed in Chapter 7.

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, 1994amongst 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 in1995 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 Uttrakhand) also in the Board.

REGISTERED SOCIETIES

NATIONAL WATER DEVELOPMENT AUTHORITY (NWDA)

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 Reports (DPRs) 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. Further, two new Functions in the mandate of NWDA were added vide Gazette notification dated 07.10.2016.

Details of NWDA are in Chapter 7.

NWDA: Meeting of Technical Advisory Committee

NATIONAL INSTITUTE OF HYDROLOGY (NIH)

The National Institute of Hydrology, a Govt. of India Society under the Ministry of Water Resources, River Development & Ganga Rejuvenation, 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.

International Workshop at NIH, Roorkee

The Objectives of NIH are:

- 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.

Details of Achievements of NIH are in Chapter 7.

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

North Eastern Regional Institute of Water and Land Management (NERIWALM) is a Registered Society under the administrative control of the Ministry of Water Resources, RD & GR, Government of India. This is only Water and Land Management Institute (WLMI) established and governed by Government of India and serving eight states of North East.

Details of achievements of NERIWALM is given in Chapter 7.

Statutory Bodies

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.Details are given in Chapter 7.

Indira Sagar Dam Project (Madhya Pradesh)

BETWA RIVER BOARD

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.

Details of achievements of BRB are narrated in Chapter 7.

TUNGABHADRA BOARD

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.

Tungabhadra dam

Details of achievements of Tungabhadra Board are narrated in Chapter 7.

PUBLIC SECTOR ENTERPRISES

WAPCOS Ltd.

WAPCOS Limited is a "Mini Ratna-I" Public Sector Enterprise under the aegis of the Union Ministry of Water Resources, River Development and Ganga Rejuvenation. The company was incorporated on June 26th 1969 under the Companies Act, 1956 to:

- share India's experience and expertise,
- facilitate Diplomatic Initiatives, and
- to augment endeavors of State and Central Agencies.

Salma Dam Project (Afghanistan) executed by WAPCOS

Details of achievements of the WAPCOS are given in Chapter 8.

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED (NPCC)

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 60 years of existence the Corporation has successfully associated itself with completion of several National Projects from concept to commissioning stage.Details of achievements of the NPCC are given in Chapter 8.

'INDIA-WRIS'WEBSITE

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. Details of achievements of the India-WRIS are given in Chapter 3

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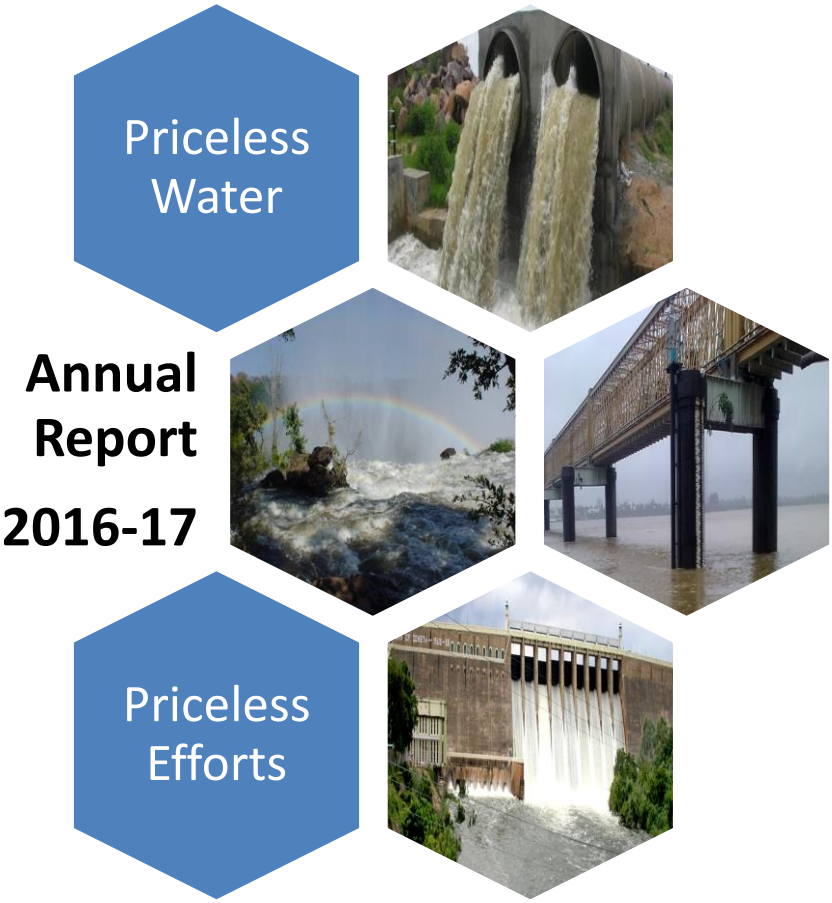

Annual Report 2016-17

2. National Water Policy

NATIONAL WATER POLICY

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 forformulation of State Water Policies.

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.

Later a Committee under the Chairmanship of Dr.Mihir Shah has been constituted on 28.12.2015 to examine the provisions of the draft National Water Framework Law and suggest changes/modifications therein taking into account inter-alia the emerging challenges in the water sector, reuse of waste water after treatment, the likely impact of climate change on water resources, importance of river restoration/ rejuvenation, water contamination issue etc.

The Mihir Shah Committee submitted a Draft Report in May, 2016 containing the National Water Framework Bill, 2016. The Bill was circulated to States/UTs and the concerned Central Ministries for obtaining their comments. The Bill was also placed on the website of the Ministry for inviting comments from general public. After receiving the comments from various quarters, the Committee has submitted its final Report on 18th July, 2016.

The final report submitted by Dr. Mihir Shah Committee has been circulated to all States/UTs and concerned Central Ministries for inviting their comments on the proposed National Water Framework Bill, 2016 for taking further necessary action in the matter. The salient features of the draft National Water Framework Bill, 2016 are as under:-

(1) The draft National Water Framework Bill, 2016 seeks to provide an overarching national legal framework based on principles for protection, conservation, regulation and management of water as a vital and stressed natural resource, under which legislation and executive action on water at all levels of governance can take place.

(2) The Bill proposes that every individual should have a right to sufficient quantity of safe water for life within easy reach based on the principles of integrated river basin management. The States shall hold water resources as a Common Heritage and Public Trust.

(3) The draft Bill proposes that the appropriate government shall strive towards rejuvenating river systems with community participation, ensuring:

(a) 'Aviral Dhara' – continuous flow in time and space including maintenance of connectivity of flow in each river system;

(b) 'Nirmal Dhara' – unpolluted flow so that the quality of river waters is not adversely affected by human activities; and

(c) 'Swachh Kinara' – clean and Aesthetic River banks with ecological integrity.

(4) It proposes that the appropriate government shall take all measures to protect the ecological integrity necessary to sustain eco-systems dependent on water and should adopt people-centred decentralized water management, for both surface and ground water, including local rainwater harvesting, watershed development and participatory irrigation management, shall be prioritized, while recognizing, encouraging and empowering local initiatives.

(5) It proposes that the appropriate Government shall take into consideration the following:

(a) Water Use and Land Use

(b) Appropriate Treatment and Use of Wastewater

(c) Standards for Water Quality and Water Footprints

(d) Water Use Prioritization. Provided that these uses of water are consistent with the objective of sustaining aquifers and ecosystem indispensable to long terms sustenance of the resource.

(6) The draft Bill lays high priority to Integrated River Basin Development and Management, wherein a river basin, including associated aquifers, shall be considered as the basis hydrological unit for planning, development and management of water. Each State Government shall develop, manage and regulate basins of inter-State rivers through a River Basin Master Plan to be implemented by an appropriate institutional mechanism.

(7) It proposes for establishment of a River Basin Authority for each inter-State river basin, or for a sub-basin for sub inter-State river basin wherever appropriate for optimum and sustainable development of the inter-State rivers and river valleys, with active participation and cooperation by all basin States to ensure equitable, sustainable and efficient utilisation of water resources with emphasis on demand management through conjunctive and integrated use of resources. Each River Basin Authority shall prepare a Master Plan for the River Basin.

(8) The Bill also proposes that the appropriate Government shall prepare and oversee the implementation of a Water Security Plan for:

(a) Attainment of sufficient quantity of safe water for life and sustainable livelihoods by every person; and

(b) Ensuring water security even in times of emergencies like droughts and floods.

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 & 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 is 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. 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.

(8) 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.

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. Dr. Mihir Shah Committee has further referred the matter to the committee under the Chairmanship of Retired Justice Giridhar Malivia. The Report of the Committee are still awaited.

JAL KRANTI ABHIYAN

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, with special inauguration functions held at Jaipur, Shimla and Jhansi.

OBJECTIVES

The objectives of Jal Kranti Abhiyan are as under:

- Strengthening grass root involvement of all stakeholders including Panchayati Raj Institutions and local bodies in the water security and development schemes (e.g. Participatory Irrigation Management (PIM);
- Encouraging the adoption/utilization of traditional knowledge in water resources conservation and its management;
- To utilize sector level expertise from different levels in government, NGO's, citizens etc; and
- Enhancing livelihood security through water security in rural areas.

STRATEGIES

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

- Use of modern techniques coupled with traditional wisdom for devising area/region specific innovative measures for increasing water security;
- Revival of traditional knowledge and sources for water conservation and utilization;
- Encouraging conjunctive use of surface and groundwater;
- 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;
- Rainwater harvesting for recharge to be made mandatory for residential, commercial and industrial buildings/premises;
- Selected interventions for maintaining the specified water quality standards;
- Convergence of efforts of various departments in water resources development and management;
- 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;
- 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.
- Provision for incentivizing / honouring PRIs for devising innovative/unique ways to create water security in their areas for amelioration in water related issues.
- A logo for Jal Kranti Abhiyan shall be used to connect positively with all stakeholders.

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

ACTIVITIES

Activities being undertaken under Jal Kranti Abhiyan are:

- Jal Gram Yojana
- Development of Model Command Area
- Mass Awareness Programme
- Other Activities

SUCCESS

Success achieved under Jal Kranti Abhiyan:

- Three meetings of the National Level Advisory and Monitoring Committee for overall coordination and monitoring Jal Kranti Abhiyan have been held so far.
- Under Jal Kranti Abhiyan, 1105 Jal Grams have been identified so far and out of the 1105 Jal Grams, 246 Water Security Plans have been prepared. In addition to these 100 Dalit Jal Grams has also been identified. Model Command Area in 10 different States has also been identified.
- DPR's for all the identified villages in the States of Nagaland have been received and are at the stage of approval.
- Facebook and Twitter Account for Jal Kranti Abhiyan operationalized.

'Jal Manthan -3', 13th January 2017, Vigyan Bhawan, New Delhi

JAL MANTHAN

Jal Manthan is an initiative of the Ministry of Water Resources, River Development & Ganga Rejuvenation for wider consultations among various stakeholders for churning out new ideas as well as tangible solutions to various water sector issues. The First Jal Manthan was organized from 20-22nd Nov., 2014 at New Delhi resulting in many new perspectives leading to greater understanding among the stakeholders of water sector.

Jal Manthan-2 was organized on 22-23 February, 2016 with the theme "Integrated Approach for Sustainable Water Management". On the First Day, Sessions were held on PMKSY Priority Projects – Implementation Issues; Inter Linking of rivers – Progress and Challenges; and River Basin Approach – Present Status and Future Indication, whereas sessions on Second Day were held on Ground Water and National Hydrology Project; Principles of Allocation of Water; Water Management; Use of innovative Technologies and Water Conservation.

Jal Manthan-3 was organized on 13th January, 2017 at Vigyan Bhawan, New Delhi. During the event, discussions on Implementation of PMKSY & Improvement of Water Use Efficiency, Ecology Improvement, Participatory Irrigation Management, River Basin Management, River Rejuvenation and Flood Management were held. During this one day event extensive consultations were held among different stakeholders on several important and critical areas in the water sector like River Basin Approach for Sustainable Development, Ground Water Management, Water Security, Water Management, Coordination between Centre and States, water conservation Innovation in Water Governance etc.

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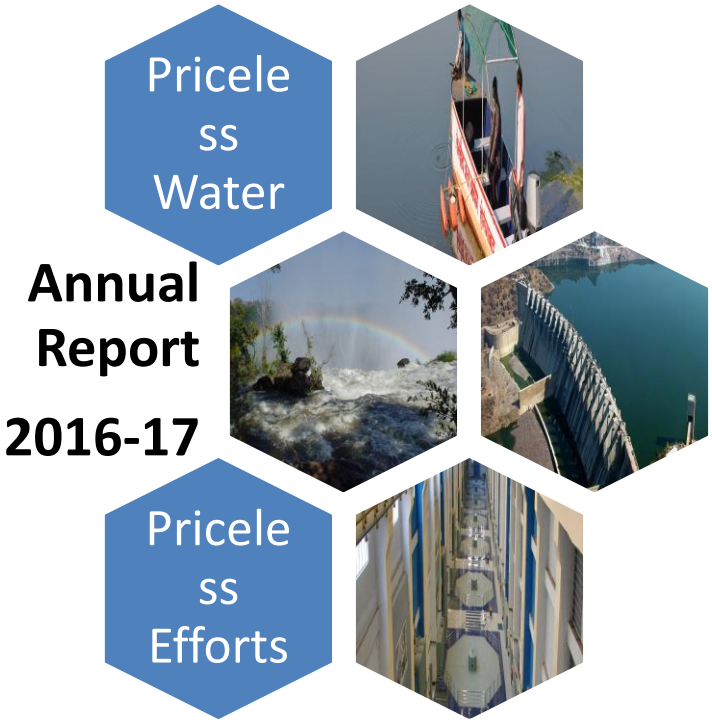


3. Major Programs

MAJOR PROGRAMMES (STATE SECTOR)

PRADHAN MANTRI KRISHI SINCHAYEE YOJANA (PMKSY)- ESTABLISHMENT OF MISSION FOR COMPLETION OF PRIORITIZED IRRIGATION PROJECTS AND FUNDING ARRANGEMENTS.

ACCELERATED IRRIGATION BENEFIT PROGRAMME (AIBP)

Central Government launched the Accelerated Irrigation Benefits Programme (AIBP) in the year 1996-97 to provide Central Assistance to major/medium irrigation projects in the country, with the objective to accelerate implementation of such projects which were beyond resource capability of the States or were in advanced stage of completion. Priority was given to those projects which were started in Pre-Fifth and Fifth Plan period and also to those which were benefiting Tribal and Drought Prone Areas. From the year 1999-2000 onwards, Central Loan Assistance under AIBP was also extended to minor surface irrigation projects (SMI) of special category States (N.E. States & Hilly States of H. P., Sikkim, J&K, Uttaranchal and projects benefiting KBK districts of Orissa).

Since its inception, 297 Irrigation / Multi Purpose Projects have been included for funding under AIBP. Out of this 143 projects have been completed and 5 projects were foreclosed. An irrigation potential of 24.39 Lakh ha has been created through these completed projects. The cumulative Central Loan Assistance / Grant provided to States under AIBP to all of above project till 31.3.2015 was Rs. 67539.52crore. Twenty five States got benefited from the programme.


Pench Project, Maharashtra

PRADHAN MANTRI KRISHI SINCHAYEE YOJANA (PMKSY)

During 2015-16, Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) was launched with an aim to enhance physical access of water on farm and expand cultivable area under assured irrigation, improve on farm water use efficiency, introduce sustainable water conservation practices etc. Major and medium irrigation/multipurpose irrigation projects are being funded under PMKSY-AIBP and Repair, Renovation and Restoration (RRR) of Water Bodies, Surface Minor Irrigation (SMI) projects and Command Area Development & Water Management (CADWM) projects are being funded under PMKSY-Har Khet Ko Pani (HKKP). During 2015-16, Central Assistance of Rs. 2327.82 crore was released for projects under AIBP and CA of Rs. 1905.81 crore was released for projects under CADWM, SMI and RRR of water bodies together. Total CA of

Rs4233.63 crore was released during 2015-16 for PMKSY (AIBP+HKKP)

PRIORITIZATION OF PROJECTS

The issues related to implementation of projects under PMKSY-AIBP including prioritization of projects were deliberated in the Committee headed by Minister (Water Resources) of Chhattisgarh. As per the information supplied by concerned States to the Committee, 99 projects were identified by committee which could be completed by 2019-20[23 projects (Priority-I) by 2016-17,31 projects (Priority-II) by 2017-18. and 45 projects (Priority-III) by Dec., 2019].

One of the major reasons for the projects to remain incomplete was inadequate provision of funds by the concerned State Governments. As a result, large amount of funds spent on these projects were locked up and the benefits envisaged at the time of formulation of the projects could not be achieved. This was a cause for concern and initiative was required at the national level to remedy the situation.

MISSION MODE COMPLETION OF PROJECTS

Total funds required for completion of all the 99 identified projects have been estimated atRs.77595 crore (Rs.48546 crore for project works and Rs.29049 crore for CAD works) with estimated CA of Rs.31342crore.Likely potential utilization through these projects is estimated to be 76.03 lakh hectare (Lakh ha).

The Finance Minister in his budget speech during 2016 has announced for creation of dedicated Long Term Irrigation Fund (LTIF) in NABARD with an initial corpus of about Rs. 20,000 Crore and an amount of Rs.12517 crore has been provided as budgetary resources and market borrowings during 2016-17.Accordingly a proposal was made for providing Central Assistance and State share for above mentioned 99 projects through NABARD.

The Cabinet on 27.07.2016 approved establishment of the Mission to ensure completion of 99 prioritised projects in phases by Dec., 2019 including CAD&WM. The arrangement of funds for Central share/Assistance (CA) has been made by taking loan from NABARD as per year-wise requirements which could be paid back in 15 years' time keeping a grace period of 3 years. Further, the State Governments, if required, may borrow funds from NABARD for the State Share.The estimated fund requirement (Central Assistance as well as State share for completion of these 99 projects is given at **Annexure-VII.**State wise summary of the number of projects, their estimated balance cost, admissible Central Assistance and targeted potential utilization is given at **Annexure-VIII.**

Main provisions of Mission Mode proposal are:

- JointProposalfor release of CA to be made by concerned officers of State Govt. and CWC.
- States shall implement the project.
- Mission will ensure overall coordination and outcome focused monitoring of components of PMKSY i.e. HKKP, Per drop more crop, Watershed development etc.

- Maximize use of pressurized pipe irrigation and micro irrigation wherever possible.
- CAG audit, third party monitoring and monitoring by NABARD.
- Social audit in 10% of the projects in each State after completion.

ACTION TAKEN ON THE APPROVAL GIVEN BY THE CABINET

A Mission has been established vide order dt. 7.9.2016 with the Officer on Special Duty (now secretary) in the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD & GR) as the Mission Director .

A Council headed by CEO, NITI Aayog and having Secretary(WR, RD & GR), Secretary (A&C), Secretary (RD) and Secretary(Finance), Chairman, NABARD as members, has been established vide order dt. 7.9.2016 which shall look after the overall implementation of works and policy matters. Chief Secretaries (or their representative) of the States having large number of projects to be completed under this programme i.e. Andhra Pradesh, Maharashtra, Madhya Pradesh, Odisha and Telangana shall also be members. Further, one of Chief Secretaries(or his representative) from rest of the States implementing projects, under this programme, shall also be a member by rotation. The Mission Director would be the Member Secretary of the Council.

A High Level Empowered Committee (HLEC) comprising of Finance Minister, Minister (WR, RD & GR), Minister of Agriculture, Cooperation and Farmer's Welfare, Minister of Rural Development, Vice Chairman, NITI Aayog has also been constituted vide order dt 7.9.2016 which would review the progress of the identified 99 MMI projects and other components under PMKSY and also provide policy guidance for mid-term course correction if required.

National Water Development Agency (NWDA), a registered society under this Ministry identified to act as pass through agency for channelizing LTIF loan from NABARD for central assistance (CA) to the identified 99 projects. The Agreement between NABARD, NWDA and MoWR, RD & GR for providing Central Share Funds has been signed on 06.09.2016 in consultation with Ministry of Finance. MoAs for state share for Maharashtra, Gujarat, Manipur, MP, Bihar, Andhra Pradesh and Jharkhand have been signed.

Online MIS system and mobile based application for monitoring of physical/financial progress of these projects has been developed.

MONITORING OF PRIORITIZED PROJECTS

The prioritized projects were inspected by monitoring team of CWC during first half of 2016-17 for ascertaining their physical and financial progress. NITI Aayog has also visited 31 projects.Second monitoring visits have started during February, 2017 and are expected to be completely shortly.

REVIEW OF THE PROGRESS OF PROJECTS

The progress of the projects is being reviewed regularly by Hon'ble Minister(WR, RD & GR) and Secretary(WR, RD & GR).PMKSY

Council under Chairmanship of CEO, NITI Aayog reviewed the progress of PMKSY scheme in its First meeting held on 25.10.2016.Another meeting Committee under the chairmanship of Minister (WR), Chhattisgarh was also held on 23.11.2016 to review the progress of 99 prioritized projects under PMKSY.

Four review meetings were held in Feb. 17 end/first week of March, 17 with the Principal Secretaries (WR/Irr), project authorities of different states and CWC regional Chief Engineers to review the project wise progress of AIBP and CAD components of the prioritized 99 projects.

The PS to PM also reviewed the progress of the projects twice during the year. Hon'ble Prime Minister also reviewed the progress on 30.3.2017.

COMPLETION OF PROJECTS DURING 2016-17

After reviewing the progress of projects it emerged that some of projects which were to be completed during current year would be completed next year due to certain bottlenecks, whereas some of projects which were to be completed next year have been fast tracked and are likely to be completed by June, 2017. In all 21 AIBP projects having total potential of 5.22 Lha. are likely to be completed by June, 2017. Details of these projects are at **Annexure-IX.**

Along with completion of these 21 projects, 22 projects of Maharashtra, 6 projects of Odisha, 17 projects (including phases) of Madhya Pradesh have been put on fast track and likely to be completed in advance of the scheduled time. Out of total 76.03 lakh ha. of irrigation potential utilization by 2019-20, potential utilization is expected to be more than 14 lakh ha during 2016-17 from all the 99 projects.

Further, issues in respect of many other projects which were at standstill such as Gosikhurd in Maharashtra state have been streamlined and are getting back on the track so as to meet the completion targets of Dec., 2019. This project is likely to create an irrigation potential of 2.50 lakh ha. Similarly, Polavaram Project has been put on a fast track when completed this project is likely to irrigate 2.9 lakh ha.

Many States like Maharashtra have utilized innovative means such as installation of underground pressure pipelines to get over the difficulties of land acquisition.

RELEASE OF FUNDS

(i) AIBP:

During 2016-17, apart from release of Central Assistance (CA) of Rs. 825 crore from the budget of ministry, CA of Rs. 2482.90crore has been released through NABARD. Details are at **Annexure- X.**

(ii) CAD works

CA of Rs. 854crore has been released through NABARD.

(iii) State share:

State share amounting to Rs. 2099 crore for Maharashtra and Rs. 970 crore for Gujarat has been sanctioned to be released through NABARD during 2016-17 as per their proposals. Further, State share for States of Andhra Pradesh, Jharkhand, Madhya Pradesh and Odisha has also been sanctioned. An amount of Rs.3334.98 crore has been released for State shares of projects of these States by NABARD.

(iv) Release of funds through LTIF during 2016-17:

LTIF was set up during 2016-17 for irrigation schemes. This fund is being utilized for providing Central Assistance (CA) to AIBP and CAD works as well as state share to the states as per requirement for identified 99 projects and for CA to Polavaram project. Release of funds through LTIF during 2016-17 is as below:

Item	Funds released (Rs. crore)
AIBP (CA)	2482.90
CAD (CA)	854.00
State Share (AIBP)	3334.98
Polavaram Project	2414.16
Total	**9086.02**

In addition to above, Rs.825 crore for AIBP and Rs.100 crore for Polavaram project was released during 2016-17.

NATIONAL PROJECTS

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

- 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.
- Inter-State projects which are dragging on due to non-resolution of inter-state issues relating to sharing of costs, rehabilitation, aspects of power production, etc., including river inter-linking projects.
- 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.
- 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 identified in the scheme of National Projects. Five projects, namely, Gosikhurd (Maharashtra), Shahpurkandi (Punjab), Teesta Barrage (West Bengal), Saryu Nahar Pariyojana (Uttar Pradesh) and Polavaram (Andhra Pradesh) have been funded under the scheme of National Projects. Central Assistance (CA) of Rs. 2987.94 crore, Rs. 26.04 crore and Rs. 178.20 crore has been provided to Gosikhurd, Shahpur Kandi and Teesta Project respectively. Saryu Nahar Pariyojana of Uttar Pradesh starting getting funds under the scheme of National Project during 2012-13 and Central Assistance of Rs. 1221.60crore has been released for this project so far. Details of Polavaram Project is as below:

POLAVARAM MULTIPURPOSE PROJECT

(i) Project:

Polavaram Irrigation Project (also known as Indira Sagar (Polavaram) Project is a multi-purpose project on the river Godavari in Andhra Pradesh (AP). It shall provide irrigation to 7.2 lakh acres (2.91 lakh ha) of Culturable Command Area (CCA) in East Godavari, Visakhapatnam, West Godavari and Krishna districts, help divert 80 TMCft of Godavari waters for utilization in Krishna basin, 23.44 TMC of water supply to industries in Visakhapatnam, domestic water supply to 28.5 lakh population in 540 villages, generation of 960 MW power, etc.

(ii) Status as National Project:

The Polavaram Irrigation Project was declared a National Project on 1st March, 2014 vide section 90 of AP Reorganization Act, 2014. Central Government has created Polavaram Project Authority (PPA) with Governing Body to execute the Project and obtain all requisite clearances including environmental, forests and rehabilitation and settlement norms and all court cases. The Govt. of India will provide 100% of the remaining cost of the irrigation component only of the project for the period starting from 01.04.2014 to the extent of the cost of the irrigation component on that date.

(iii) Financial Progress

Before declaration as a National Project, **a**n expenditure of Rs. 5135.87 crore has been incurred upto 31.03.2014 including Central Assistance of Rs. 562.469 crore provided under AIBP. The CA released to Polavaram Project Authority from FY 2014-15 onwards is as under:

Financial Year	CA released to Polavaram Project Authority(Rs. Crore)
2014-15	250.00
2015-16	600.00
2016-17	2514.16
Total	3364.16

**2414.16 through NABARD funding*

(iv) Efforts made for completion of Project:

Dam Design Review Panel (DDRP) under the Chairmanship of Sri A. B. Pandya (former Chairman, CWC) have been constituted during June 2016 for technically sound and timely execution of the project. DDRP monitors the execution of the project related works and suggest measures for timely execution, quality control aspects and measures to maintain the time lines for the completion of the project. 5 meetings of DDRP have been held so far.

A Joint Committee of MoWR,RD&GR and water resources departments, Government of Andhra Pradesh , Chhattisgarh and Odisha has been constituted to resolve the interstate issues including Polavaram project. One meeting of the Committee has been held and information sought by Government of Odisha and Chhattisgarh has been sent to them.

Approval from Ministry of Finance have been obtained for NABARD funding to the project during 2016-17 keeping in view of limited budgetary resources

COMMAND AREA DEVELOPMENT AND WATER MANAGEMENT

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.

The Programme was restructured and renamed as Command Area Development and Water Management (CAD&WM) Programme w.e.f. 01-04-2004. The Programme is being implemented *pari-passu* with Accelerated Irrigation Benefits Programme (AIBP) during the XII Five Year Plan. The programme is under implementation as a sub-component of Har Khet Ko Pani (HKKP) component of Pradhan Mantri Krishi Sinchai Yojna (PMKSY) - from 2015-16 onwards. The ongoing CADWM programme has now been restricted to implementation of CAD

works of 99 prioritized AIBP projects during 2016-17 to December, 2019.

The activities covered under CAD component of a Project are broadly categorized as 'Structural' and 'Non-Structural' interventions. Structural Intervention includes survey, planning, design and execution of: (i) On-Farm Development (OFD) works;(ii) Construction of field, intermediate & link drains; (iii) Correction of system deficiencies; and (iv) Reclamation of waterlogged areas. Non-Structural Intervention includes activities directed at strengthening of Participatory Irrigation Management (PIM):(i) One time Functional Grant to the registered Water Users' Associations (WUAs); (ii) One time Infrastructure Grant to the registered WUAs; (iii) Trainings, demonstration, and adaptive trials with respect to water use efficiency, increased productivity, and sustainable irrigation participatory environment.

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. Micro-irrigation infrastructure includes components of sump, pump, HDPE pipelines, and pertinent devices needed for bringing efficiency in water conveyance and field applications (through sprinklers, rain guns, pivots etc).

In case of micro-irrigation, other components such as land leveling, drainage works etc, would be reduced, or entirely discarded; enabling certain cost savings which is expected to offset the higher cost of Micro-irrigation infrastructure. The devices – such as sprinkler/ rain gun/ Drip sets etc. – needed to be installed by individual farmers below farm outlets are not part of the micro-irrigation infrastructure. Farmers are expected to bear the cost of such devices or avail subsidies available in extant scheme of the Ministry of Agriculture.

Monitoring of CAD implementation is now planned to be carried out with the intent of continual improvement in three-tier Monitoring System:

All CAD works are planned, designed, tendered and executed by the State Governments through its pertinent Departments. Central Water Commission (CWC) through its CAD Cells in the Regional Offices of CWC and the Project Monitoring Organization (PMO) at it's headquarter provides the overall monitoring and coordination support. The Detailed Project Report (DPR) of the CAD component of prioritized Project prepared by the concerned State Government is submitted to CAD Cell of the pertinent Regional Office of CWC. CWC through its CAD Cell and the PMO appraises the DPR and forwards its recommendations to the CADWM Wing of the Ministry.

CADWM Wing of Ministry processes the case for approval of competent level for inclusion of Project under CADWM Program.

Funds under PMKSY (HKKP) for the CAD component will be provided to the State Governments as per Cost Sharing Ratios (which will be applied on the Ceiling Costs) indicated below:

Cost sharing for the CAD component

For eight North Eastern States and three Himalayan States of Himachal Pradesh, Jammu & Kashmir, and Uttarakhand, the cost sharing norms for 'All activities of Non-Structural interventions except Functional Grant to WUAs' will be 75:25 (Centre : State) in lieu of 60:40 norm applicable for other States.

Since the inception of the programme in 1974-75, 219 projects have been completed benefiting a Cultural Command Area (CCA) of about 15 Mha for which CA of about Rs.5028 crore have been given (up to March 2012). During XII Plan period, a CCA of 7.6 Mha has been targeted with CA amount of Rs 15,000 crore which was subsequently reduced to 3.6 Mha during midterm appraisal. From 2015-16, the programme become HKKP component of PMKSY with a target of 1.5 Mha. Subsequently, from2016-17 onwards, the role of programme has been restricted to 99 prioritised AIBP projects. The physical and financial achievement of the project during XI and XII Plan period are summarised below:

Physical and financial achievement of the PMKSY (HKKP) during XI & XII Plan

Plan	Physical (in Million hectare)		Financial (Central Assistance) (Rs in crore)	
	Target	Actual	Target	Actual
XI Plan	1.32	1.686	1833	1680.12
XII Plan				
(up to 2015-16)	7.6	1.419*	15000	1887.87
(from 2016-17 onwards)	7.2	0.225* (till date)	14525	691.74^

**The achievement is as per Central Assistance released;*

Activities Eligible for Funding	Cost Sharing Ratio
All activities of Structural interventions	50:50 (Centre : State)
All activities of Non-Structural interventions excluding Functional Grant to WUAs	60:40 (Centre : State)
Functional Grant to registered WUAs	45:45:10 (Centre: State: farmer)
Incremental Establishment Cost	50:50 (Centre : State)

^Till December, 2016

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. Apart from this, an amount of Rs. 3.00 lakh (60% - Central: 40% - State) is being provided to each WUA as

one time infrastructure Grant. Overall 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 WUAs. During the year it is expected that more than 1000 WUAs will be formed in New Projects.

REPAIR, RENOVATION & RESTORATION (RRR) OF WATER BODIES

Under the scheme, a total of 1354 water bodies have been taken up for restoration during XII Plan, out of which 464 water bodies have been completed. Central grant amounting to Rs. 264.67 crore has been released to the States for completion of works on these water bodies.

SURFACE MINOR IRRIGATION (SMI) SCHEME

During XII Plan, 3348 SMI schemes have been taken up under the programme out of which 1327 schemes have been reported to be completed. CA of Rs.3327.9 crore has been released for these schemes out of which an amount of Rs.140.9 crore was released during 2016-17.

FLOOD MANAGEMENT PROGRAMME

The Flood Management Wing deals with matters concerning flood management in the country, the Ganga Flood Control Commission, Farakka Barrage Project and matters related to Ganga Basin States including Upper Yamuna River Board. It has also beenentrusted with international aspects of cooperation and development of Water Resourceswith Nepal and Bangladesh, including implementation of the Ganga Water Sharing Treaty(1996) with Bangladesh and Mahakali Treaty (1996) with Nepal.

FLOOD MANAGEMENT PROGRAMME

A State Sector SchemeDuring Xl plan, the Government of lndia launched "Flood Management Programme" for providing central assistance to the State Governments for undertaking the works relatedto 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 Xl Plan. The completed works have restored 17.004lakh 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 **Annexure XI** and **XII** respectively.

In view of demands by States and also recommendations of Xll Plan Working Groupon Flood Management and Region Specific Issues, the Government of lndia has approved continuation of Flood Management Programme during Xll Plan

with an outlay of Rs. 10,000crore. During Xll Plan, the central assistance would also be provided for catchment area treatment projects having objectives of flood management. During Xll Plan, the central assistance of Rs. 1307.07 crore has been released, which includes Rs.149.99 crore up to 31.12.2016 to States under Flood Management Programme (FMP).

FLOOD FORECASTING

In order to enable the local administration to take suitable administrative measures like evacuation of people from flood affected areas to safer locations during flood season and also to enable the project authorities in proper operation of reservoirs, the activity of flood forecasting in India is performed by Central Water Commission (CWC) on major rivers and their important tributaries. For this purpose, CWC issues flood forecasts at 199 stations (151 Level forecasting, 48 inflow forecasting) in the country. CWC has started three days advisory forecast at some of the locations using rainfall-runoff modeling and rainfall forecast to give adequate lead time to the disaster managers for preparedness. The forecasts issued by CWC prove to be very useful in saving life and public properties as a result of timely action by the authorities.

CWC has been making continuous endeavour for modernization and expansion of itsflood forecasting network in order to have desired automatic system of data collection andreal time data transmission. So far, 502 data collection stations have been modernized, three Earth receiving Stations have been set up at New Delhi, Jaipur and Burla, 21 Modeling Centres have been equipped with latest computer systems for analysis of data,flood forecast formulation and its dissemination to concerned agencies expeditiously.For activities of flood forecasting, modernization and expansion in Xll plan, a proposal amounting to Rs. 281.0 crore is approved.

FARAKKA BARRAGE PROJECT AUTHORITY

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.

Farakka Barrage Project at Farakka (Murshidabad)

The Farakka Barrage Project comprises of a 2245 m long barrage across river Ganga at Farakka in Murshidabad district of West Bengal, a canal headregulator at Farakka for diverting water to Feeder Canal, a 38.38 km long Feeder Canal andJangipur Barrage at river Bhagirathi-Hooghly system, besides the road cum rail bridge across Ganga at Farakka, Navigation Locks at Farakka, Jangipur and Kalindri, a road cumrail bridge across the Feeder Canal, Townships at Farakka, Ahiron and Khejuriaghat. Its appurtenant structures include flood embankments, marginal bunds, afflux/guide bunds, etc.

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); along with its allied structureslike 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 under taken by FBP. So far 39 gates of the Farakka Barrage have been replaced with new gates and the work of replacement of remaining gates have been taken up by FBP in phased manner. 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 besides providing reasonable protection from floods tolives and livelihood of local people in the region Apart from above, Farakka Barrage projects facilitating implementation of lndia-Bangladesh Ganga Water Treaty -1996 on sharing of Ganga water between lndia and Bangladesh.

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, 1994amongst 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 alsoprovided for creation of "Upper Yamuna River Board" to implement the said agreement.

Accordingly, the Central Government constituted the Upper yamuna River Board in1995 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 Uttrakhand) 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 incase 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).

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 share; equalityby the six

basin States. The Board has sanctioned staff strength of 58.

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. 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 49meetings so far. The last meeting was held on 24th May,2016.

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 itwould continue the joint observations, periodically.

In the 6th meeting of UYRC held on 20.03.2015, the then Additional Secretary (nowSecretary), WR,RD&GR suggested that WAPCOS may be asked to install telemetry system at the distribution points. UYRB has identified 11 locations where the telemetry system for observation of flow is to be installed. Accordingly, UYRB prepared draft tender documents for installation of telemetry system.

MAJOR PROGRAMMES (CENTRALSECTOR)

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.
8. 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 croreup to31st December, 2015 has been incurred against a Budget Estimate (BE) of Rs.12.70 crore for the financial year 2015-16.

FLOOD FORECASTING

CWC is providing Flood Forecasting service at 199 stations, of which 151 are level forecasting stations on major rivers and 48 are inflow forecasting stations on major dams/barrages. Out of this, Flood Forecasting service at 23 stations have been started during 2016. It covers 19 major river systems in the country and 20 States viz., Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jammu & Kashmir, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Telangana, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh & West Bengal and one Union Territory viz., Dadra & Nagar Haveli and National Capital Territory of Delhi.

During the flood season, CWC operates Flood Control Room on 24X7 basis at Headquarter in New Delhi and 24 Division Offices spread throughout the country for monitoring the flood situation. On an average, about 6000 forecasts are being issued during flood season every year by the Central Water Commission. Normally, these forecasts are issued 6 to 48 hours in advance, depending upon the river terrain, the locations of the flood forecasting sites and base stations. In addition to conventional flood forecasting methodology, mathematical model forecasting based on rainfall-runoff methodology is also being used in some areas. This has enabled CWC to issue 1-day/ 3-day advance forecast /advisory.

During the flood season 2016 (May to December), 6239 flood forecasts (4969 level forecast and 1270 inflow forecasts) were issued out of which 5948 (95.34%) forecasts were found within accuracy limit (± 0.15 m for level forecast and ± 20% for inflow forecast). Since 2014, CWC is using web-based software "e-SWIS" for entry of hydrological data on hourly basis, analysis of data and dissemination of flood forecasts is being entered by all divisions of CWC in since monsoon to monitor the current status of the river.

Due to very heavy pre monsoon rainfall occurring in North-eastern region resulting in flood like situation in the year 2016, the flood forecasting service in Brahmaputra basin was started on 21st April, about 10 days advance of the designated flood season. During the year, 245 daily bulletins (once daily), 58 Orange

Bulletins for High Flood Situation (Twice daily) and 81 Red Bulletins (every 3 hours) for Unprecedented Flood Situation were issued by CWC as per Standard Operating Procedure (SOP). The flood forecast and water level information have been made available to common public through website "https://india-water.gov.in/ffs" on near real time basis.

During the flood season of 2016 (May to December), Unprecedented Flood Situation, where the water level exceeded previous recorded Highest Flood level (HFL) for the station, was witnessed at four(4) stations. High Flood Situations, where water level had attained within 0.5m of previous HFL, were experienced at 18 stations; the details in this regard are given in Table 3.8. During 2016, CWC has also analysed data of stations other than flood forecasts stations but receiving data on near real time basis. Based on analysis of such data, the details of stations experiencing unprecedented and high flood situation is given below:

18 Stations That Witnessed Unprecedented Flood Situations(May to December 2016)

Sl. No.	Station Name	River	District	State
Unprecedented Flood Situation				
1	Ballia	Ganga	Ballia	Uttar Pradesh
2	Gandhighat	Ganga	Patna	Bihar
3	Hathidah	Ganga	Patna	Bihar
4	Bhagalpur	Ganga	Bhagalpur	Bihar
High Flood Situation				
1	Dibrugarh	Brahmaputra	Dibrugarh	Assam
2	Neamatighat	Brahmaputra	Jorhat	Assam
3	Tezpur	Brahmaputra	Sonitpur	Assam
4	Goalpara	Brahmaputra	Goalpara	Assam
5	Dhubri	Brahmaputra	Dhubri	Assam
6	Nanglamoraghat	Desang	Sibsagar	Assam
7	Kampur	Kopili	Nagaon	Assam
8	NT Road Crossing	Jia-bharali	Sonitpur	Assam
9	Beki Road Bridge	Beki	Barpeta	Assam
10	Golokganj	Sankosh	Dhubri	Assam
11	Jhawa	Mahananda	Katihar	Bihar
12	Kursela	Kosi	Katihar	Bihar
13	Maner	Sone	Patna	Bihar
14	Khagaria	Burhi Gandak	Khagaria	Bihar
15	Dighaghat	Ganga	Patna	Bihar
16	Kahalgaon	Ganga	Bhagalpur	Bihar
17	Balrampur	Rapti	Balrampur	Bihar
18	Ghazipur	Ganga	Ghazipur	Uttar Pradesh

12 Stations That Witnessed Unprecedented Flood Situations other than Flood Forecast Stations 2016

Sl. No.	Station Name	River	District	State
Unprecedented Flood Situation				
1	Desangpani	Desang	Sibsagar	Assam
2	Gajaria	Burima	West Tripura	Tripura
3	Saharghat	Adhwara	Darbhanga	Bihar
4	Nasik	Godavari	Nasik	Maharashtra
5	Duddhi	Kanhur	Sonebhadra	Uttar Pradesh
6	Dhariawad	Jakham	Pratapgarh	Rajasthan
7	Kaimaha	Urmil	Mahoba	Uttar Pradesh

Sl. No.	Station Name	River	District	State
High Flood Situation				
1	N H Crossing	Aie	Bongaigaon	Assam
2	Paliakalan	Sharda	Kheri	Uttar Pradesh
3	Kachhla bridge	Ganga	Badaun	Uttar Pradesh
4	Bhinga	Ghaghra	Shrawasthi	Uttar Pradesh
5	Sitamarhi	Ganga	Mirzapur	Uttar Pradesh
6	Taibpur	Mahananda	Kishanganj	Bihar
7	Runisaidpur	Bagmati	Sitamarhi	Bihar
8	Dumariaghat	Gandak	East Champaran/ Gopalganj	Bihar
9	Naugaon	Yamuna	Uttarkashi	Uttarakhand
10	Kharra	Rihand	Sarguja	Chhattisgarh
11	Jotasan	Wakal	Sabarkanta	Gujarat
12	Japla	Sone	Palamau	Jharkhand

The CWC Flood Control Room at New Delhi keeps a close watch of flood situation likely to arise in country on the basis of rainfall forecasts issued by the India Meteorological Department. Necessary analysis are carried out on the receipt of warning of heavy to very heavy rainfall with isolated extremely heavy rainfall received from IMD and suitable advisory are issued to appropriated authority for taking flood preparedness exercise. During the year 2016, advisory was issued to the State Government of Maharashtra, Karnataka, Telangana and Andhra Pradesh in September. Another advisory inflow forecast for lakes surrounding Chennai was issued to the Government of Tamil Nadu in November in the backdrop of very severe cyclonic storm "Vardah".

Apart from regular bulletins, CWC also provided requisite technical input to National Disaster Management Authority (NDMA) on regular basis as well as during significant flood events to help then in taking appropriate decision in planning pre and post flood disaster management activities.

As a new initiative, CWC partnered with Google for dissemination of flood forecasts/ alerts using their Public Alert Platform based on Common Alerting Protocol (CAP). Using the service, the flood forecasts/ alerts was made available to common public on different Google applications such as Google Web Search, Google Now Cards, Google Maps and Google Public Alerts Homepage which can be accessed on desktop and smart mobile phones. The information available to users include likely flood situation, current water level, forecasted water level, recommended action for affected people and website address for detailed water level information. Availability of near real-time flood information is very helpful to affected people in preparing and fighting flood disasters. The service was launched in November 2015 and was fully operational during monsoon season 2016.

Central Water Commission also compiles annual flood damage statistics based on data received from State Government. The damage data up to 2012 has been finalized and published. The data for the year 2013, 2014, 2015 and 2016 has also been compiled and submitted to States for confirmation.

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 9thPlan, 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 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). During XII Plan, telemetry system has been installed at 57 stations. The activity for installation of telemetry system at 572 stations are in progress.

In order to receive and analyse data collected by the telemetry stations, Earth Receiving Station and Modeling Centres have been established 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 22Modeling Centre has been established in the country till the end of XI Plan. These Modeling Centres are located at Agra, Asansol, Bhubaneshwar, 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, one Modeling Centre has been established at Chennai. The activities for establishment of 4Modeling Centres are in progress.

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 modeling in Mahanadi up to Naraj and Inflow Forecast at Hirakund Dam is under operation. Further, two additional sites (Alipingal & Nimrapara) have also been incorporated in the model.
c. Hydrodynamic (HD) based model for Brahmaputra has been developed. The model for the reach from Tejpur to Dhubari is under operation. Further extension of the model is under progress.
d. Rainfall based model for Hathnikund Barrage on river Yamuna was run on experimental basis. The Hydrodynamic (HD) based model for Yamuna in downstream reach is operational up toDelhi. Further extension of the model is under progress.
e. Rainfall based model for Alaknanda up to Srinagar; inflow forecast model for Bhagirathi at Tehri Dam and model for Ganga for Rishikesh and Haridwar is operational.
f. Rainfall based modeling in Jhelum up to Ram Munshi Bagh has been developed. Advisory Flood Forecast using above model and QPF inputs from IMD were issued in 2016 monsoon.
g. Development of rainfall based Flood Forecasting model for the entire Ganga and Godavari Basin in under progress.
h. Models for Inflow forecasting of Hathnur & Ukai Reservoir in Tapi River and Madhuban Reservoir in

Damanganga River in Tapi basin have been developed.

i. Rainfall Based Runoff Modeling in Sharda (up to Sharda Barrage), Sutlej (up to Rampur) and Ghagra (up to B K Ghat) is under progress. The model for Sharda (up to Sharda Barrage) has been calibrated for the year 2012-14, while model for Sutlej (up to Rampur) has been calibrated for year 2013-14 and Ghagra (up to B K Ghat) initially calibrated for the year 2015. These models will be further calibrated and validated in next monsoon.

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 with 49 Implementing Agencies (includes 10 Central IAs and 39 State/ UT IAs), 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 project duration of NHP is eight years.

The EFC of National Hydrology Project has been approved from the DEA, Ministry of Finance on 16.10.2015. The Cabinet has approved the NHP on 6.4.2016 as Central Sector Scheme with an outlay of Rs. 3679.7674 crore [Rs.3,640crore for National Hydrology Project (NHP) and Rs.39.7674 crore for creation of National Water Informatics Centre (NWIC)]. While giving approval to NHP, the Cabinet has also approved establishment of an independent organization National Water Informatics Centre (NWIC) in New Delhi under the overall supervision of Secretary (WR, RD & GR) as a repository of nation-wide water resource data. The components of NHP are summarized below:

Components of NHP

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, establishment of Centre of Excellence, etc.

Expected Outcomes from NHP and NWIC are as under:

- Data storage, exchange, analysis and dissemination through National Water Information Centre.
- Lead time in flood forecast including flood inundation from 1day to 3 days - 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.

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.

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 is thriving for the standardization of water quality laboratories of CWC, CGWB and CPCB. The Authority has decided "India-WRIS Web GIS" as a single web based platform to host water quality data of various Central/State agencies for utilization. The officials from WQAA secretariat inspected thirteen Real Time Water Quality Monitoring Stations (RTWQMS) (10 of CPCB and 3 of CWC) to evaluate the performance and suggested remedial measures to CWC and CPCB. The report entitled "Status of Ground Water Quality in Coastal Aquifers of India" prepared by CGWB has been circulated to various organizations for valuable comments. The report on "Status report on ground water quality of NCR region" has been submitted by CGWB. The other activities included the following:

- A workshop has been organized on 'Trend Analysis of Rivers Water Quality of India' in the month of September, 2016 in Delhi.
- One training program on 'Water Quality Monitoring and Assessment' for capacity building of personnel associated with water quality monitoring & assessment activities has been organized at NWA, Pune in the month of November, 2016.
- One workshop on 'Water Quality & its Management' and one training program on 'Hands on Advanced Instrument of Water Quality Monitoring & Testing' is being organized in the month of January, 2017 and March, 2017 respectively at NIH, Roorkee.

The 13th meeting of WQAA is scheduled to be held on 12th January, 2017 wherein the issues related with notification of the Authority, Revision of UPWQM, rationalization & optimization of water quality stations, uploading of water quality data of CWC, CGWB & CPCB on a single web based platform 'India-WRIS', the study reports are likely to be discussed.

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.

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.

Expenditure till December, 2016 was Rs. 26.82 crore against allocation of Rs. 55.50 crore(B.E.)/35.0 crore (R.E.). Physical achievement for the year 2016-17 (up to31.12.2016) is preparation of technical reports / studies (119), publication of research papers (106), organization of Training course / workshops / seminars / symposia (24) and training of personnel (448).

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.

Indian National Committee on Climate Change (INCCC): Similar to above two committees, a third committee "Indian National Committee on Climate Change (INCCC)" has been constituted to address the issue of research in the field of climate change impacts. The committee has the following functions:

1. To co-ordinate and recommend funding for research proposals/schemes to be taken up by the research institutions/ organization/ R&D labs in the country on basic research, applied research and action research, along with other areas of research in the subject field.
2. To review the R&D programme in the subject area; identify topics which need immediate attention and encourage the national institutions to take up research on these topics. The

INCs committee may also identify and recommend the institutions for taking up research on specific topics etc.
Recently 10 new studies have been awarded to assess the basin wise climate change impacts.

INFORMATION, EDUCATION & COMMUNICATION (IEC)

PARTICIPATION IN FAIRS/EXHIBITIONS

India International Trade Fair 2016:

Ministry of Water Resources, River Development and Ganga Rejuvenation had erected a pavilion in Hall No.7-E in the 36th Edition of India International Trade Fair organized by ITPO in Pragati Maidan from 14th to 27th November, 2016. 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:"Pradhan Mantri Krishi Sinchayee Yojana" (PMKSY)with sub-components consisting of Accelerated Irrigation Benefit Programme (AIBP), Har Khet Ko Pani, More Crop Per Drop, Watershed development.

Various organizations under the Ministry exhibited their models. A central Three Dimensional model of "Pradhan Mantri Krishi Sinchayee Yojana" (PMKSY) was prepared and exhibited by CWCwith 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.

Dr. Sanjeev Kumar Balyan, Hon'ble MoS(WR,RD&GR) inaugurated the Ministry's pavilion at India International Trade Fair- 2016 on 14th November, 2016

CWC had also displayed the Model of industrial pollution and Domestic pollution, Sewage treatment plant highlighting 'Swachh Bharat Abhiyan'. The other highlights of the pavilion were Hydrologic cycle model and Waste Water Management by NIH, display of river linking project by NWDA, early flood warning system and port model by CWPRS, sprinkler and drip irrigation by pressure valve by WAPCOS, Geotechnical investigation and embankment protection by CSMRS and the various programme and action plan to clean river Ganga by NMCG.The pavilion was visited by over 1.55 lakh people as recorded by footfall machine.

This year for the Ministries & Departments Pavilion, the Pavilion of MoWR,RD&GR has been adjudged Second for excellence in display and given special appreciation certificate by ITPO, which is a significant achievement for the efforts taken by Ministry and all the organizations involved in the display.

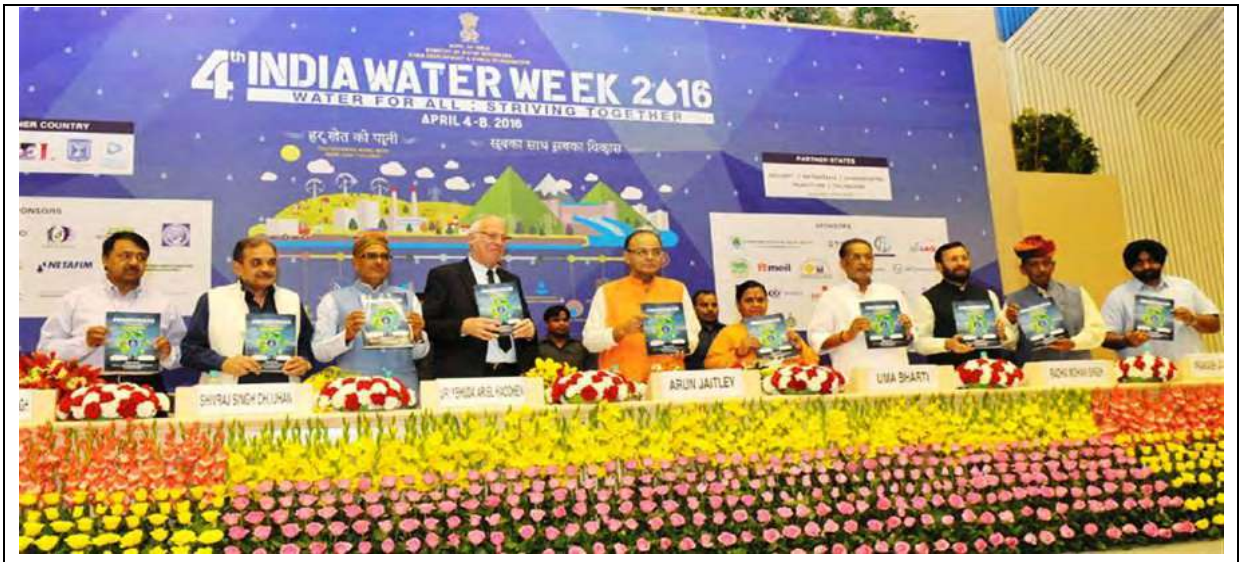
India International Science Festival – 2016:

The Ministry participated in India International Science Festival – 2016 at New Delhi from 7th to 11th December, 2016 organized by Ministry of Science and Technology and Earth Sciences through Central Water Commission, Central Ground Water Board, Central Soil and Material Research Station, National Mission for Clean Ganga and National Water Development Agency.

ORGANISATION OF WORKSHOPS /SEMINARS/ CONFERENCES

India Water Week 2016:

The fourth edition of India Water Week was observed from 4th to 8th April, 2016. The theme for this year's India Water week was "Water for all: Striving together". Israel was associated as the partner country for this mega event.



Dignitaries at dais during INDIA WATER WEEK 2016

The Inaugural session of India Water Week was followed by Plenary session and Water Resources Ministers conclave on first day. About 1500 delegates from India and 20 other countries attended the conclave. The event was divided into Seminars (eight nos.), Brainstorming sessions (six nos,), Panel Discussions (seven nos.), Case studies (six nos.) and Side Events (five nos.). These events were held at ITPO, Pragati Maidan. Apart from this, an Exhibition 'Water Expo-2016'

showcasing the technologies and solutions in water resources sector was also organised at Hall No. 9, Pragati Maidan.

Bhujal Manthan-2:

The Ministry has organized one day "Bhujal Manthan-2" at Vigyan Bhawan, New Delhi on 29.11.2016 on the theme 'Aquifer Mapping and Ground Water Management'. The one day interaction was oriented towards addressing the emerging issues related to groundwater and its governance to cope up with the competing demand tools and measure in order to ensure the most efficient use of available resources thereby maintaining sustainability as well as quality. A mobile application named 'Bhujal' was also launched by Hon'ble Minister (WR,RD&GR) during the event.

Dignitaries at dais during Bhujal Manthan-2

Other Events: A programme was organized on Dr. Bhimrao Ambedkar's birth anniversary through Central Water Commission at NDMC Convention Centre, New Delhi to highlight 'the contribution of Dr. Bhimrao Ambedkar in Water Sector and discuss Way Forward' on 19th April, 2016.A Seminar was also organized through Central Water Commission on 'Marching Ahead on Dr. Bhimrao Ambedkar's path for management of Water Sector' on 6th December, 2016 at CWC Auditorium, New Delhi.

PUBLICITY THROUGH PRINT MEDIA I.E. NEWSPAPERS /MAGAZINES

An advertisement was issued on 'Achievement / Schemes of the Ministry' during India Water Week 2016.An advertisement on 'Water Conservation and other related areas' was issued in collaboration with Ministry of Drinking Water and Sanitation on 06.5.2016.

ORGANISATION OF TRAINING PROGRAMMES

Various Workshops and Training Programmes are being organized through Central Water Commission and Central Ground Water Board aimed at delivering knowledge regarding efficient Water Management especially through various techniques of artificial recharge to benefit various stakeholders including non government organisations and village Pradhans from across the States / UTs. The trainings are being imparted by the officers of Central Ground Water Board, State Governments as well as experts from other institutions.

ACTIVITIES LIKELY/ ANTICIPATED TO BE UNDERTAKEN FROM 1ST JANUARY, 2017 TO 31ST MARCH, 2017

Electronic Media Campaign: Production of 03 Radio Jingles and 01 Radio Spot through National Film Development Corporation is in the final stage. Once developed, these Jingles/Spots will be aired through All India Radio / FM Channels / Private Channels etc.

Painting Competition on Water Conservation:A three tier Painting Competition has been 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 School and State Level Painting Competitionshave been successfully conducted across all States/UTs. The 7th National Level Painting Competition will be conducted in January, 2017 on the theme 'Save Water, Save Life' or 'Save Water, Save Earth'.

Essay Competition on Water Conservation: First Essay Competition has been successfully organized in FY 2015-16 through Central Ground Water Board, on the similar lines Second National Essay Competition will be organized in the last quarter of FY 2016-17.

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 2016-17.

Publicity through Print Media i.e. newspapers/magazines: Central Ground Water Board has been entrusted with printing / distributing of Publicity Materials(booklets/brochures/pamphlets/posters etc.) spreading the messages of Water Conservation and related issues.

JAL KRANTI ABHIYAN

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.

The objectives of Jal Kranti Abhiyan are as under:

- Strengthening grass root involvement of all stakeholders including Panchayati Raj Institutions and local bodies in the water security and development schemes (e.g. Participatory Irrigation Management (PIM);
- Encouraging the adoption/utilization of traditional knowledge in water resources conservation and its management;
- To utilize sector level expertise from different levels in government, NGO's, citizens etc; and
- Enhancing livelihood security through water security in rural areas.

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.

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

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

Success achieved under Jal Kranti Abhiyan are as below:

1. Three meetings of the National Level Advisory and Monitoring Committee for overall coordination and monitoring Jal Kranti Abhiyan have been held so far.
2. Under Jal Kranti Abhiyan , 1105 Jal Grams have been identified so far and out of the 1105 Jal Grams, 246 Water Security Plans have been prepared. In addition to these 100 Dalit Jal Grams has also been identified. Model Command Area in 10 different States has also been identified.
3. DPR's for all the identified villages in the States of Nagaland have been received and are at the stage of approval.
4. Facebook and Twitter Account for Jal Kranti Abhiyan operationalized.

JAL MANTHAN

Jal Manthan is an initiative of the Ministry of Water Resources, River Development & Ganga Rejuvenation for wider consultations among various stakeholders for churning out new ideas as well as tangible solutions to various water sector issues.

The First Jal Manthan was organized from 20-22ndNov., 2014 at New Delhi resulting in many new perspectives leading to greater understanding among the stakeholders of water sector. Jal Manthan-2 was organized on 22-23 February, 2016 with the theme "Integrated Approach for Sustainable Water Management". On the First Day, Sessions were held on PMKSY Priority Projects – Implementation Issues; Inter Linking of rivers – Progress and Challenges; and River Basin Approach – Present Status and Future Indication, whereas sessions on Second Day were held on Ground Water

and National Hydrology Project; Principles of Allocation of Water; Water Management; Use of innovative Technologies and Water Conservation.

Jal Manthan-3 was organized on 13th January, 2017 at Vigyan Bhavan, New Delhi. During the event, discussions on Implementation of PMKSY & Improvement of Water Use Efficiency, Ecology Improvement, Participatory Irrigation Management, River Basin Management, River Rejuvenation and Flood Management were held. During this one day event extensive consultations were held among different stakeholders on several important and critical areas in the water sector like River Basin Approach for Sustainable Development, Ground Water Management, Water Security, Water Management, Coordination between Centre and States, water conservation Innovation in Water Governance etc.

Hon'ble Minister of Ministry of Water Resources, River Development & Ganga Rejuvenation Sushri Uma Bharti addressing during 'Jal Manthan -3' at Vigyan Bhavan on 13.01.2017

BHUJAL MANTHAN

Ministry of Water Resources, River Development and Ganga Rejuvenation organized one day Seminar- Bhujal Manthan-2 on 29th November, 2016 at Vigyan Bhavan, New Delhi with a theme of "Aquifer Mapping and Ground Water Management".


Lighting of Lamp by Dignitaries in BHUJAL MANTHAN-2

The BhuJal Manthan program was inaugurated by Sushri Uma Bharati the

Hon'ble Minister of WR, RD & GR, in presence of Shri Narendra Singh Tomar, Hon'ble Minister for Rural Development, Panchayat Raj and Drinking Water, Sh. Shashi Shekhar, Secretary, Ministry of Water Resources RD& GR, Sh. Parameswaran Iyer, Secretary, Ministry of Panchayat Raj, Dr. Amarjit Singh, OSD, Ministry of Water Resources RD & GR, Sh. K.B. Biswas, Chairman, CGWB, Ministry of Water Resources, RD & GR. During the Program Sushri Uma Bharati the Hon'ble Minister of WR, RD & GR, released the app "Mera Bhujal" and Bhujal Manthan-2 Volume. It was attended by about 1200 experts and delegates including Officers from various Ministries, Govt. Organizations (Central as well as State Governments), Non-Government organizations, Academicians, Scientists from Research Institutes working in the ground water domain and stakeholders like Students, Farmers & Industrialists from across the country. The Seminar was organized in five technical sessions with following sub-themes followed by the Panel Discussions:

- Aquifer Mapping – A National Perspective
- Advances in Science & Technology in Aquifer Mapping
- Groundwater Management: Community Involvement & Convergence
- Sustainable Management of Groundwater in Stressed Aquifer
- Aquifers in Arid Area &Palaeo-channels

A One day Workshop and Global Market Conference on "Emerging issues, Opportunities and Challenges in Water well drilling for Drilling Engineers, Service provider and Rig Manufactures" was organized by CGWB on 24.05.2016 at New Delhi. The objectives of the workshop is i) to deliberate upon and to assess emerging issues, opportunities and challenges in water well drilling and related data generation; ii) to provide a platform to Government organizations, private service providers, drilling contractors, drilling rig manufacturers and all related stakeholders in water well drilling to share their experiences and difficulties in the field; iii) Assessing the potential of the market in terms of equipment and capabilities for water well drilling and related data generation in NAQUIM.The workshop was attended by about 150 delegates including experts from various Central and State Government Departments, professionals, service providers, drilling contractors and rig manufacturers. Distinguished invitees included Shri Shashi Shekhar, Secretary, MOWR, RD & GR, Shri Harbans Singh, DG GSI, Dr R.D. Singh, Director, NIH, Shri Subodh Kumar, ONGC, Dr. D.K. Chadha & Dr. S.C. Dhiman, Ex Chairman, CGWB, Shri S.S.Chauhan, Dr. R. C. Jain, Shri Bhajan Singh, Shri Ashis Chakraborthy, Ex-Member, CGWB, and Senior officers of CGWB have also attended the workshop.

A Workshop on "Palaeochannels - Evolution and Ground Water Prospects" was organized by CGWB at CSMRS Auditorium, New Delhi. The programme was inaugurated by Honorable Minister of State, Water Resources, River Development & Ganga Rejuvenation, Prof. Sanwar LalJat, in the presence of Sh. U. P. Singh, Additional Secretary, Ministry of Water Resources, River Development and Ganga Rejuvenation, Sh. B. Rajendra, Joint Secretary, MoWR, RD & GR, Shri K.B Biswas, Chairman, CGWB and other dignitaries.

Padma Bhushan Prof. K.S. Valdiya, in his keynote speech discussed in detail about the origin and history of the palaeo-channels with special emphasis on the once mighty River Sarswati flowing along the north westerns and western part of India. Prof. Anindya Sarkar, Head, Dept. of Geology & geosciences, IIT Khargpur dealt with the archaeological

findings depicting one of the oldest civilization along the floodplains of the rivers in the north western India which is recently published in the Journal Nature. Padma Shri Dr. Bisht explained in detail about the correlation between archeological sites and the palaeo-channel courses of river Sarswati. Prof. Rajiv Sinha, Head Geosciences Deptt. IIT Kanpur spoke about the sedimentological characters of the palaeo-channels. Dr. D. Saha, Member CGWB, spoke about the work being carried out by the department in the palaeochannel areas of river Sarswati. During the panel discussion, Prof. S.K. Tandon emphasised the need for further studies to accurately delineate the palaeo-channels and ascertain their characters particularly along the once mighty River Saraswati. Sh. Prashant Bhardwaj, briefed about the various activities being undertaken in the state of Haryana in this regard. The programme was attended by the luminaries from the field of geosciences, water resources engineering, archaeology, environment etc.

Central Ground Water Board, Ministry of WR, RD and GR, Govt. of India has organized a workshop on 1st September 2016 at IIT, Kharagpur under the NAQUIM. The theme of the Workshop was "Ground Water Modeling for Aquifer Management in Soft Rock Areas". This workshop mainly dealt with the challenges and issues arising during Groundwater modeling in Soft rock areas of Indo-Gangetic Plains. The workshop was inaugurated by Dr. S K Bhattacharyya, Acting Director, IIT, Kharagpur along with Shri K B Biswas, Chairman, CGWB; Dr. D Saha, Member, CGWB; Dr. Anindya Sarkar, Professor and Head, Department of Geology and Geophysics, IIT, Kharagpur; and Dr.J.Bhattacharya, Professor and Head, School of Environmental Studies, IIT, Kharagpur. The workshop consisted of 2 Technical sessions each comprising of 4 presentations on various aspect of modeling in soft rock areas. Total 80 invitees had participated in the workshop.

Central Ground Water Board, Ministry of WR, RD and GR, Govt. of India has organized a workshop on 15.10.2016 at CSMRS, New Delhi. During workshop Sushri Uma Bharati the Hon'ble Minister of WR, RD & GR released the Report entitled "Palaeochannel of North India: Review & Assessment", compiled by expert Committee constituted by the Ministry. Total about 200 invitees had participated in the workshop from CGWB and other Department.

INFRASTRUCTURE DEVELOPMENT

Infrastructure Development (ID) Scheme has been approved by the Government by merging four continuing schemes viz. (i) Land & Building and 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.

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 residential quarters at Guwahati, office building of Sub Division at Balasore are in progress. Approval for procurement of land for

construction of SWRSD-III at Mangaluruhas been accorded from competent authority during the FY 2015-16. Acquisition of land for hutments is under process.

CGWB – Land & Building:- Expenditure Sanction for construction of Rajiv Gandhi National Ground Water Training & Research Institute (RGNGWT&RI) building at Naya Raipur has been issued to CGWB. Construction of CGWB office building in Guwahati is in progress.

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

a) Implementation of e-Procurement has been further extended to National Hydrology Project and External Assistance Division of the Ministry.
b) Hon'ble Minister (WR, RD & GR) has approved an Action Plan for the implementation of e-Office. e-File Management system is expected to be operationalized very soon.
c) Development of MIS/ Dashboard for monitoring the Physical and Financial progress of various projects/ Schemes has been approved by the Ministry. MIS for 99 projects under PMKSY has been prepared.
d) Development of e-Human Resources Management System (e-HRMS-Manav Sampada) for 6 Organizations under the Ministry on a pilot basis has been initiated in coordination with NIC-Himachal Pradesh team.

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:

1. 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.

2. 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 Sapta Kosi 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 along with DPRs of Sapta Kosi 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.

3. Pre-construction activities of Pancheshwar, Naumure and activities of Panchehswar 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.

4. 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.

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, 2016)

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

1.1 Initial projections of the impact of climate change on water resources, including the likely change in water availability across time and space: Studies on impact of climate change on water resources for seven river basins (Mahanadi, Mahi, Luni, Tapi, Sabarmati, Subarnarekha and western flowing rivers from Tadri to Kanyakumari) in association with research institutes like IITs, NITs, IISc. and NIH have been approved under the Research & Development scheme of the Ministry. A study on statistical downscaling of global climate change models for the river basins has also been

approved in 2016. The work has been awarded to the project implementing agencies.

1.2 Reassessment of river basin wise water situation: CWC in collaboration with NRSC has started the work on the reassessment of 19 river basins. Two training programmes for CWC officials have been conducted by NRSC and more training programmes are planned for regional offices. Procurement of 25 nos. of licenses of software (latest Arc GIS with two no. of extensions- Spatial Analyst & 3D Analyst and ERDAS Imagine) has been completed and installed in CWC HQ and in most of the concerned field offices. Most of the requisite data has been collected and field offices are collecting the remaining data. Hands on training on Arc GIS and Erdas imagine software has been imparted to CWC officers.

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 Station (HoS). There are 878 HoS working in different river basins. CWC has a target to establish 800 new HoS in XII Plan, out of which CWC has opened 676 new HoS up to December, 2016.

1.4 Uploading the water data in public domain:

a. Central Water Commission (CWC) has launched web based Water Resources Information System (India-WRIS) 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 India-WRIS 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 India-WRIS.
c. The ground water level and water quality data of Central Ground Water Board (CGWB) for the period 1996 to 2016 has been made available on India-WRIS.
d. National Water Informatics Centre (NWIC) is being setup by MoWR,RD & GR under National Hydrology Project and Costal Management Information System (CMIS) is being developed by CWC.

1.5 WebPortal & MIS for NWM: National Water Mission Web Portal development has been made operational by NIC on their server. The URL of website is http:// www.nationalwatermission.gov.in.The NWM website was launched on 26-04-2016 by Hon'ble Minister Water Resource, River Development and Ganga Rejuvenation. Management Information System (MIS) has also being developed.

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 stakeholders 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

2.1 Regional Conventions of Water Users Associations (WUA): NWM has organized one National Convention of Water User Associations (WUAs) on Participatory Irrigation Management (PIM) on 7th- 8th November, 2014 at New Delhi and three Regional Conventions covering WUAs and officials from Northern (States of J&K, HP, Uttrakhand, Punjab, Rajasthan and Haryana), Western (Maharashtra, M.P., Gujarat, Chhattisgarh and Goa) and Southern (Andhra Pradesh, Telangana, Tamil Nadu, Karnataka and Kerala) regions on 25-26 August 2015 at Ludhiana, 8-9th January, 2016 at WALMI Aurangabad and 24-25th September, 2016 at Bengaluru to identify the problems being faced by WUAs with the overall objective of water conservation, increasing water use efficiency in irrigation sector.

2.2 Second Regional Convention for Presidents of Water Users Associations (WUAs) on Participatory Irrigation Management (PIM). Held on 8th& 9th January, 2016 at Water & Land Management Institute (WALMI), Aurangabad for Western Region for the States of Maharashtra, Madhya Pradesh, Gujarat, Chhattisgarh and Goa

.

2.3 Training / Capacity Building / Mass Awareness Programmes: 21 training/capacity building/mass awareness programmes have been organized till December 2016. Information on these programmes are presented below:

Table-3.11: Training/capacity building/mass awareness programmes

S. No	Organization	Nature of Training/Workshop/ Mass Awareness	No. of Programmes
1	NERIWALM, Tezpur	IWM for WUAs, women &self help groups	1
2	WALMI, Aurangabad	Workshops/Trainings on WUE in IWM	8
3	HIRMI, Kurukshetra	Trainings on WUE for farmers	1
4	NIRD&PR, Hyderabad	Trainings / workshops on PIM, Basin level IWM, WRM of over exploited areas, WUE for water resource system and PIM	3
5	NIH, Roorkee	Brain Storming Session on impacts of climate change on water resources	1
6	WALAMTARI,	WUE, Water Management & Rainwater	3

	Hyderabad	Harvesting	
7	CWPRS Pune	National Seminar on Water Environment (in Hindi)	1
8	NIH, Regional Centre, Kakinada	National Conference on Coastal Areas	1
9.	India NPIM New Delhi	Regional conventions on PIM for WUE at Aurangabad &Bangalore	2
	WUE- Water use efficiency, *IWM- Irrigation Water Management* *WUA – Water User Association* *PIM – Participatory Irrigation Management*		

2.4. NWM Guidelines Prepared:NWM hasprepared Guidelines (both uploaded in websites of MoWR, RD & GR and NWM) for Organizing HRD / training / capacity building / mass awareness programmes and Grants in Aid to NGOs/VOs in water sector under NWM-TISS Water Programme.

2.5. NWM-TISS Water Project: The MOU executed between NWM and Tata Institute of Social Science (TISS), Mumbai has been extended till March 2017. As per the MOU, the following activities are carried out by TISS:

- To facilitate empanelment of NGOs/VOs to implement activities recommended in the Mission document.
- Evaluation of training modules, & capacities of Lead NGOs.
- Oversee criteria and selection process of field NGOs based on recommendations of NWM in collaboration with Lead NGOs.
- Site visits for field verification by a panel of multidisciplinary consultants/

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

Strategies

- Expeditious implementation of water resources projects particularly the multipurpose projects with carryover 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

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: Asian Development Bank (ADB) has completed the study "Operational Research to support mainstreaming of integrated flood management under climate change" with focus on community participation. Two pilot studies have been completed for Burhi Gandak basin in Bihar and Brahmani-Baitarani basin in Odisha. The project reports have been sent to State Governments for implementation. A scoping study for a National Water Use Efficiency Improvement Support Program for Major/Medium Irrigation Projects has been completed with technical assistance from Asian Development Bank (ADB). Two pilot projects, Dharoi Irrigation Project in Gujarat and Sanjay Sarovar Irrigation Project in Madhya Pradesh, have been taken up under Phase-II of the study.

3.3 Promotion of Water Purification and Desalination: In coastal areas of the country, ground water became 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 labeling 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

4.1 Base Line studies for Improving WUE in Irrigation Sector: National Water Mission, MoWR, RD&GR has awarded twenty one Baseline studies in respect of Major-Medium Irrigation projects for Improving Water Use Efficiency (WUA) in Irrigation Sector covering five states – Assam, Manipur, Andhra Pradesh, Telangana and Maharashtra.

4.2 marking studies for Improving WUE in Industrial Sector: National Water Mission, MoWR, RD&GR has awarded a bench marking Study to "The Energy & Resources Institute (TERI)", New Delhi to establish benchmarks in water use efficiency in industrial sector. The study would focus on two industrial sectors viz. Thermal power plants & textile industries in phase-I and scoping exercise, preliminary baseline assessment & comprehensive water audit in Pulp & Paper and Steel Industries in the phase-II.

4.3 Demonstration projects on Use of waste water: National Water Mission (NWM), MoWR, RD&GR has awarded a Pilot Project on "Grey Water to Blue Water – Natural Treatment Techniques for Transforming Wastewater into Sustainable Useable Water" under Goal-IV. The project is being executed by National Institute of Hydrology,(NIH), Roorkee in collaboration with IIT, Bombay and Utarakhand Jal Sansthan (UJS), Government of Uttarakhand, Dehra Dun.

For developing standards in respect of improving water use efficiency in domestic appliances, National Water Mission, MoWR, RD&GR has collaborated with Bureau of Indian Standard (BIS) for efficiency labeling. Standards for Washing Machine are under finalization and standards for Dish Washer, Tap, Bathing Shower, Toilet cistern etc. are under consideration.

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

5.1 Preparation of State Specific Action Plans (SSAP) for water sector: National Water Mission has initiated action to prepare State Specific Action Plans (SSAP) for water sector covering irrigation, agriculture, domestic water supply, industrial water supply and waste water utilization in respect of all the States/UTs. The SSAP will present situation of water resources development and management, water governance, Institutional arrangements, water related policies, cross-boundary issues, agreements etc., Status Reports on problems/issues related to all the aspects of water resources specific to the State, and a set of probable solutions is part of SSAP. Twelve States namely, Andhra Pradesh, Telangana, West Bengal, Uttarakhand, Gujarat, Assam, Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Odisha and Tamil Nadu have been requested to prepare their State Specific Action Plans, in the 1st phase. The North-Eastern Research Institute of Water and Land Management

(NERIWALM), Tezpur, Assam under the Ministry of Water Resources, River Development & Ganga Rejuvenation is working as the nodal agency for coordination, monitoring for 19 States/UTs. National Institute of Hydrology(NIH) has been designated as nodal agency for 17 States/UTs.

5.2 Draft guide lines for Integrated Water Resources Development and Management: The draft guidelines for Integrated Water Resources Development and Management have been developed by CWC and are being finalized.

LIKELY AND ANTICIPATED ACHIEVEMENTS FROM 1ST JANUARY, 2017 TO 31ST MARCH, 2017

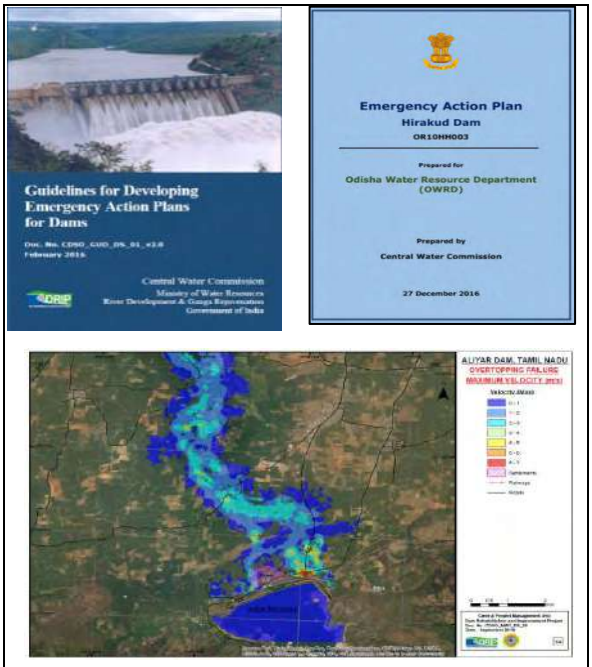
(i) Initiation of preparation of State Specific Plan for water sector in three States of Assam, Chhattisgarh and West Bengal, Arunachal Pradesh, and Sikkim.

(ii) 4 Base Line Studies for Improving Water Use Efficiency in Irrigation Sector.

(iii)Regional Convention for Water Users Associations on Participatory Irrigation Management in Eastern and North Eastern Region will be conducted.

DAM REHABILITATION AND IMPROVEMENT PROJECT (DRIP)

Keeping in view dam safety issues being faced by ours ageing large dams and with an objective to address this issue in a holistic way in all respect, Govt. of India undertook a comprehensive Dam Safety Rehabilitation and Improvement Project (DRIP) with financial assistance from the World Bank in April 2012 which covers rehabilitation of 225 large dam projects spreads across seven States (Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Tamil Nadu, and Uttarakhand) along with institutional capacity building of all participating agencies and with a provision for enhancement of capacity in dam safety areas of selected academic and research institutions. The original Project cost is Rs. 2100 Crore [World Bank funding is 80% of this cost (i.e. US$ = 279.30 Million), and 20% is to borne by different agencies].



Emergency Action Plan: Guidelines & Model EAP

Key highlights of the project are summarized below:

- Preparatory activities (DSRP inspections, Early finalization of key documents i.e. Project Screening Template, Design Flood Review, Dam Inspection by Dam Safety Review Panel, Environment and Social Management Framework, Bidding Documents completed for all 225 dam projects. So far, rehabilitation works in respect of 186 dam projects have been awarded and works completed for 14 dams.
- Dam Safety Intuitional strengthening of the State Dam Safety Organisations of participating Sates and Central Dam Safety Organisations is one of the important components of this project. Training programs with a focus on

DRIP implementation were initiated well in advance for building up in-house technical capabilities of participating States. So far, 69 training programmes were organized for the benefit of officials from various Implementing Agencies under DRIP in which over 2,372 personnel have been trained in various aspects of dam safety and rehabilitation. Two National Dam Safety Conferences organized, first at IIT Madras in 2015 (280 delegates participated) and IISc, Bengaluru in 2016 (425 delegates participated) to disseminate the knowledge, issues, and lessons learnt in the Project to all stakeholders. The third National Dam Safety Conference is scheduled on 18th&19th February 2017 at IIT Roorkee (about 400 delegates are expected to participate). In addition, one workshop on Lessons Learnt from DRIP was conducted which was attended by 135 participants from all over the Country. These Conferences are very useful events for non-DRIP States in terms of knowledge sharing and experiences being shared by DRIP and overseas professionals. Six technical exposure visits organized by World Bank to Japan covering 50 participants from Central as well as State agencies to have exposure on seismic, de-siltation, instrumentation and other dam safety related issues. Two international training programs were organized under this project in 2016 [Deltares, Netherland and USBR, USA] benefiting about 36 officials from States as well as Central Agencies. Two more such international training programs targeting 50 DRIP officials are scheduled in May-June 2017.

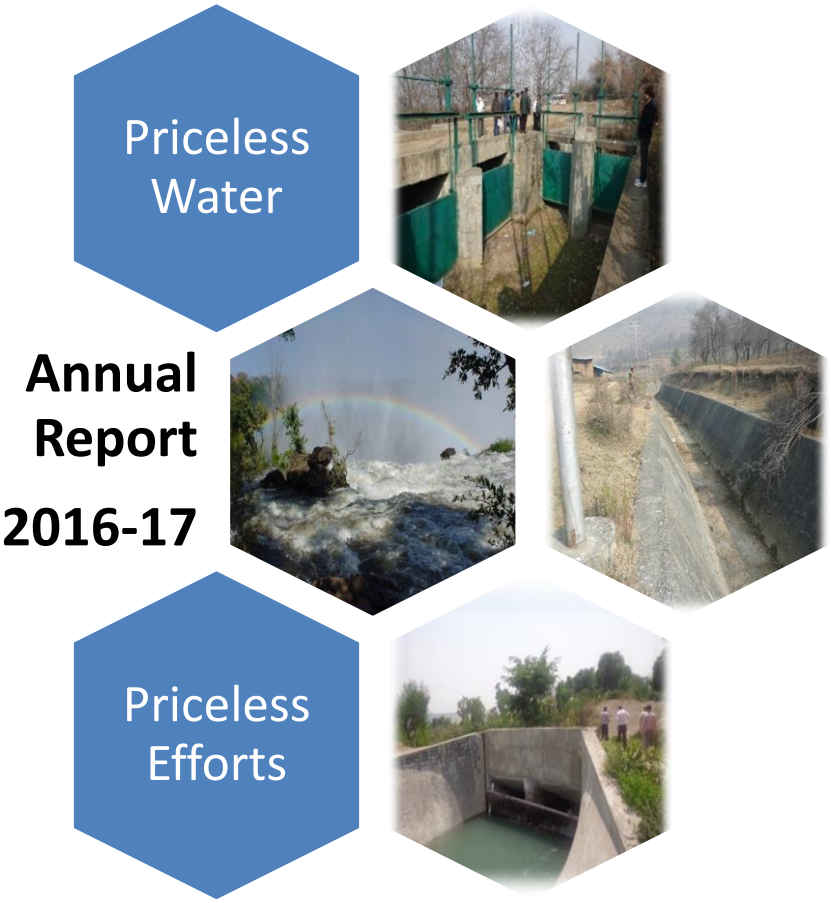
- Central Dam Safety Organization has been successfully obtained the ISO 9001:2008 for Quality Management System by the Bureau of Indian Standards (BIS).
- As a part of non-structural measures, Dam Break Analysis, as well as development of inundations maps and preparation of Emergency Action Plans for 45 dams, has already been completed by CPMU and work is in progress for 11 more dams. It is one of the important activities under DRIP, in order to ensure the safety of downstream habitations as well as important downstream installation.
- Development of Dam Health and Rehabilitation Monitoring Application (DHARMA) is one of the important tools for effective collection and management of asset and health data for all large dam of India. Three modules have been developed and are in use by different IAs. Preparation of balance modules is under process and will be completed by June 2017.


Krishna Raja Sagar Dam, Karnataka

- De-siltation work of two dams of TANGEDCO is under evaluation stages. Major intervention for Hydro-Mechanical works of Krishna Raja Sagar dam in Karnataka (more than 80 years old) about 136 nos of spillway gates are planned to be replaced. People-inclusive approach for Dam Safety is being followed for construction of additional spillway of Hirakud dam, Odisha costing more than Rs. 500.00Crore.
- Against the estimated cost of Rs. 2100 Crore, total expenditure till December 2016 is Rs. 556 Cr, and an additional expenditure of Rs. 500 Crrore is planned to be incurred by all the IAs during December 2016-March 2017.

MINISTRY OF

WATER RESOURCES | RIVER DEVELOPMENT | GANGA REJUVENATION



4. Inter-state River Issues

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.

INTER-STATE WATER DISPUTES TRIBUNALS

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 up to 02.11.2017 as per provisions of ISRWD Act, 1956. 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 along with 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 along with contempt petition 6l of 2013 in IA No. I of 2013. Further, it is directed to list 2453 of 2007 along with 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 Counsel 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 25.11.2014which 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. However, Hon'ble Supreme Court, in its proceeding dated 04.01.2017, passed an order in the matter that appeals is likely to take

almost three weeks if the matter is taken up every day at 2.00 p.m. and fix the appeals for hearing at 2.00 p.m. on 7th February, 2017.

Expenditure incurred by the Cauvery Water Disputes Tribunal

Sl. No.	Specification	Rs. Lakhs
i)	Budget Allocation for 2016-17	280.00
ii)	Expenditure from 04/16 to 12/16	119.40
iii)	Cumulative Expenditure up to31/12/16	2279.74

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. In view of time taken for completion of renovation work damaged court wing the term of the Tribunal has been extended for a further period of one year w.e.f. 01.08.2016.

Expenditure incurred by the Krishna Water Disputes Tribunal

Sl. No.	Specification	Rs. In Lakhs
i)	Budget Allocation for 2016-17	260.00
ii)	Expenditure incurred by the Tribunal from 4/16 to 12 /16	174.40
iii)	Cumulative Expenditure up to 31st December, 2016	1835.00

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.

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 pending for hearing.

The Tribunal has already framed the Issues of the dispute. Its has recorded evidences of the witnesses of the State of Odisha and is currently recording evidence of witnesses of the State of Andhra Pradesh. Thereafter, the arguments on the issues before the Tribunal will be taken up. Further, the Central Government, as per proviso in Section 5(2) of ISRWD Act, has extended tenure of VWDT for a further period of one year w.e.f. 17.9.2016.

Expenditure incurred by the Vansadhara Water Disputes Tribunal

S. No.	Specification	Rs. Lakhs.
i)	Budget allocation for 2016-17	452.00
ii)	Expenditure incurred by the Tribunal during 04/16 to 12 /16	311.40

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 information 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 there from, 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. During the cross examination of witnesses, the state of Karnataka has moved IA No. 60 of 2015 to permit it at its own cost, to lift or pump 7tmc of water annually from Mahadayi basin to Malaprabha basin during the months of monsoon. This application has been disposed off by the Tribunal vide its order dated 27.07.2016. Further, examination of witness of state of Goa has been completed and examination of witnesses of state of Karnataka has been taken up.

Expenditure incurred by the Mahadayi River Water Disputes Tribunal

Sl. No.	Specification	Rs in Lakhs.
i)	Budget allocation for 2016-17	310.00
ii)	Expnditure from 04/16 to 12/16	200.00

RAVI & BEAS WATERS 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 up to 5th August, 2017. A Presidential Reference related to Punjab Termination of Agreement Act, 2004 was made to Supreme Court. The Supreme Court has given its judgment on the issue on 10.11.2016 and accordingly, process to make the Tribunal functional has been initiated by the Ministry.

Expenditure incurred by the Ravi & Beas Water Disputes Tribunal

Sl. No.	Specification	Rupees in Lakhs.
i)	Budget allocation for 2016-17	68.00
ii)	Expenditure incurred by the Tribunal from 4/16 to 12/2016	34.15

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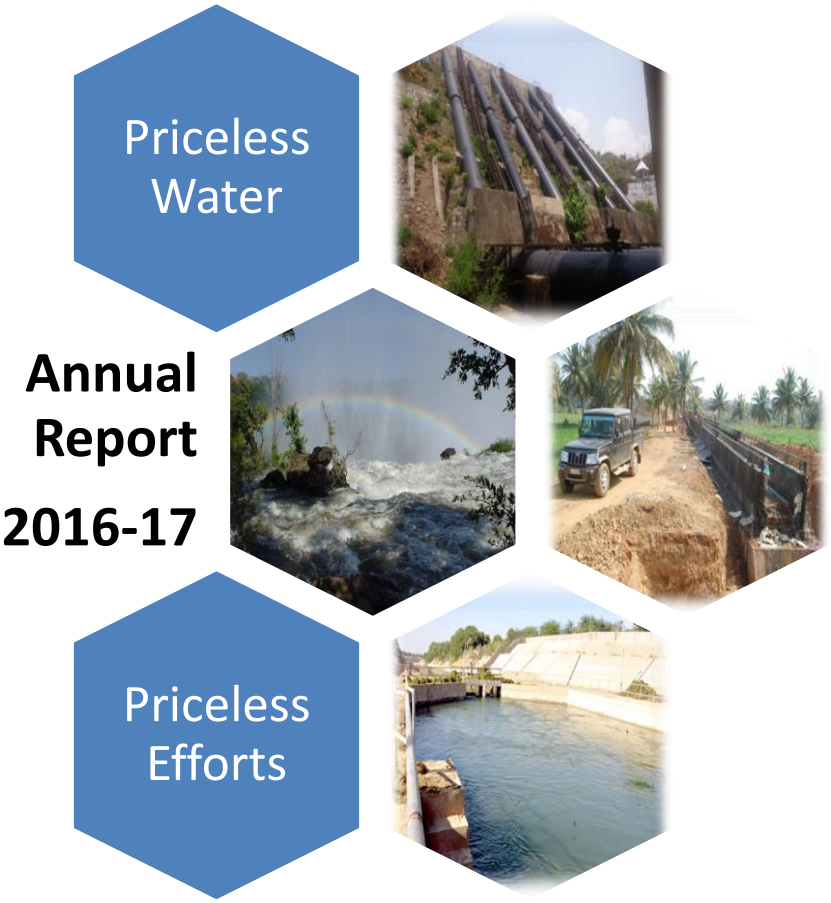

5. International Cooperation

INDIA-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 effort; in maximizing the benefits from common river systems. It is headed by Water Resources Ministers of both the countries. Scores of meetings of the Commission have been held in India as well as in 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 structure on river Ganga in lndia) during lean period, from 1st January to 31stMay 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 The 63rd and 64th meeting of Joint Committee were held at Kolkata (in April, 2016) and Dhaka (in December, 2016), respectively. The "Ganga Water Treaty of 1996 with Bangladesh is being implemented to the satisfaction of both the countries since 1997.

Proposed "Ganga/Padma Barrage Project" in Bangladesh: Government of Bangladesh has proposed to construct "Ganga/Padma Barrage Project" at Pangsha in Bangladesh. In this context, an lndian Team visited the project site in October, 2016 and held a meeting with Bangladesh officials at Dhaka, thereafter. Further, a "Joint Technical Sub-Group' comprising of lndian and Bangladesh officials has been formed to jointly study the different aspects of this Project.

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, Goat para 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 lndia 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 2016.

INDIA- NEPAL COOPERATION:

Pancheshwar Multipurpose project (5600MW): Pancheshwar Multipurpose Project is the centerpiece of the Mahakali (Sarda) Treaty of 1996 signed between lndia and Nepal. The project envisages construction of Pancheshwar dam having 2 Power Houses with installed capacity of 4800 MW as peaking station and reregulation 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 lndia 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. Five meetings of the Governing Body (GB) of the PDA have been held. The draft final DPR of the project has been submitted by the WAPCOS Limited in November, 2016. The draft final DPR of Pancheshwar Multipurpose project has been circulated currently for comprehensive examination and appraisal

Sapta Kosi High Dam Multipurpose Project & Sun Kosi cum Diversion Scheme(3300 MW): For undertaking the Joint Investigations of Sapta Kosi 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 tenure of JPO-SKSKI has been extended up to 28th February, 2O17.

lndia-Nepal Joint Ministerial Level Commission on Water Resources (JMCWR): India-Nepal Joint Committee on Water Resources (JCWR) during its 3rd meeting held from29th 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 lndia and Nepal. The composition of the JMCWR was also decided by JCWR. The first meeting of JMCWR was held on 15th February, 2012 at New Delhi.

lndia-Nepal Joint Committee on Water Resources (JCWR): Seventh meeting of lndia- 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.

lndia-Nepal Joint Standing Technical Committee (JSTC): Fifth Meeting of lndia- Nepal Joint Standing Technical Committee (JSTC) was held on 26th May, 2016 at New Delhi in which a outstanding technical issues between the two countries were discussed.

lndia-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 tenure of JPO-SKSKI has been extended up to 28th February, 2017.

BILATERAL COOPERATION

The year 2016 has been quite productive in terms of developing bilateral cooperation in water sector as Ministry of Water Resources, River Development and Ganga Rejuvenation has signed agreements with Tanzania, European Union, Hungary and Israel. It will strengthen mutual cooperation between India and respective foreign country and its agencies to derive maximum benefits in the areas of water harvesting, water conservation, water management, ground water management, recycling/reuse of waste water etc. to name a few.

A brief on the Memorandum of Understandings (MoU) signed during 2016 are as follows:

India-Israel: A memorandum of understanding was signed between India and Israel was signed on 11th November 2016 on "cooperation at the regional, national and international levels in the field of water resources development and management by collaborating and sharing of experience and expertise in the areas mutually agreed upon, including techniques in the efficient use of water resources, recycling/reuse of waste water, desalination, aquifer recharge and in-situ water conservation techniques", for a period of five years. Benefits will accrue after convening the first meeting of Joint Working Group from both the countries.

India-Hungary: A Memorandum of Understanding (MoU) was signed between India and Hungary on 16th October 2016 for "cooperation in the areas of River Basin Management Planning, Integrated Water Resources Management; Water and Waste Water Management; Water related education, research & development; Management of Ground Water", for a period of five years. Benefits will accrue after convening the first meeting of Joint Working Group from both the countries.

India-European Union: A Memorandum of Understanding (MoU) was signed between India and European Union on 7th October 2016 under Indo-European Water Partnership (IEWP) with a view to bring together representatives and relevant stakeholders, including interested EU Member States and Indian States, European and Indian Institutions, business and civil society to strengthen, promote and develop cooperation in the field of water management on the basis of equality, reciprocity and mutual benefit. This MoU has been signed for a period of five years and the benefits of this MoU will accrue after convening the first meeting of Joint Working Group from both the countries.

India-Tanzania: A Memorandum of Understanding (MoU) was signed between India and Hungary on 10th July 2016 for "bilateral cooperation in the field of Water Resources Management and Development by collaboration and sharing of experience and expertise on the areas mutually agreed upon including techniques in water harvesting, water conservation, surface and groundwater management and development, aquifer recharge", for a period of five years. Benefits will accrue after convening the first meeting of Joint Working Group from both the countries.

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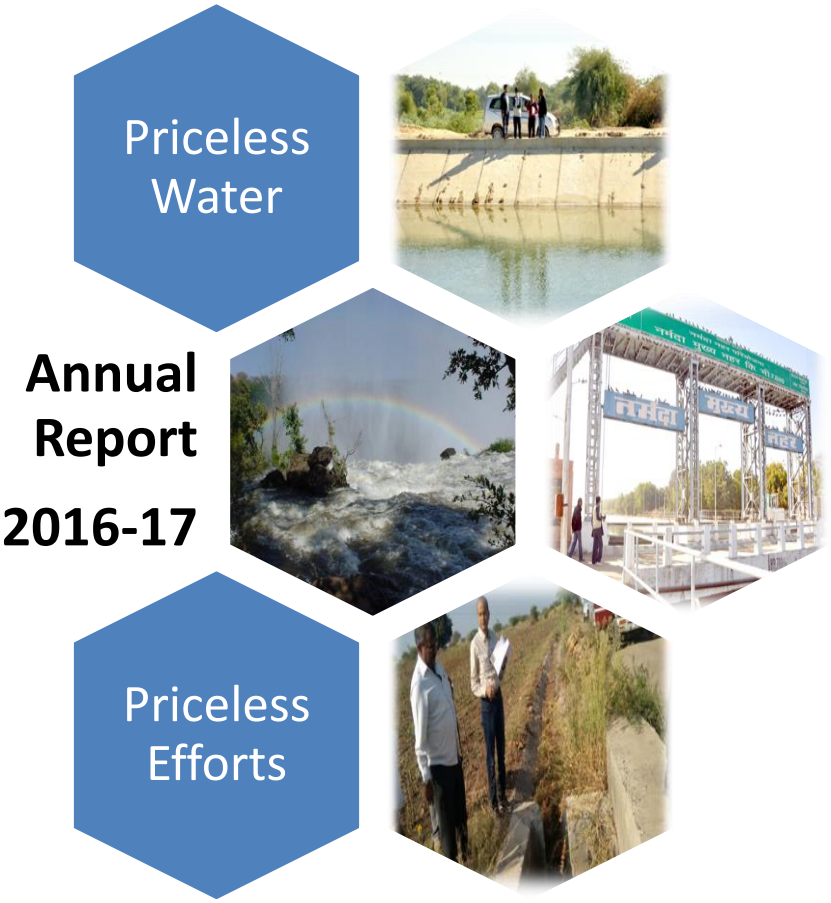

6. External Assistance in Water Resources sector

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. Presently, there are 14 ongoing externally aided projects in water sector implemented in various States with the assistance from different funding agencies, viz. World Bank (7 projects), Asian Development Bank (5 projects) and Japan International Cooperation Agency (JICA) (2 projects).

EXTERNALLY AIDED PROJECTS (WORLD BANK)

Out of 7 ongoing externally aided projects assisted by the World Bank, 2 relate to water sector restructuring in the states of Andhra Pradesh and Uttar Pradesh; 2 relate to community based tank management in the states of Andhra Pradesh, Telangana & Odisha; 1 relates to irrigated agriculture modernization in Tamil Nadu, 1 relates to development of minor irrigation project in West Bengal and 1 relates to Dam rehabilitation & Improvement Project covering Madhya Pradesh, Odisha, Kerala, Tamil Nadu, Karnataka, Uttarakhand and Jharkhand.

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

EXTERNALLY AIDED PROJECTS (ASIAN DEVELOPMENT BANK)

Out of 5 ongoing externally aided projects by Asian Development Bank (ADB), 1 relates to coastal protection in Maharashtra and Karnataka, 1 relates to flood and erosion management in Assam; 1 relates to sustainable water resources management in Karnataka, 1 relates to integrated irrigation agriculture in Odisha and 1 relates to climate adaptation in Cauvery Delta Basin in Tamil Nadu.

Brief status of World Bank assisted ongoing externally aided projects is given in Table 6.2.

EXTERNALLY AIDED PROJECTS (JAPAN INTERNATIONAL COOPERATION AGENCY)

Out of 2 externally aided projects by JICA, 1 relates to livelihood improvement project in Andhra Pradesh and 1 relates to irrigation project in Odisha. Given in Table 6.3.

Table – 6.1
World Bank Assisted Ongoing Projects in water sector

As on Dec'2016

No	State	Name of Project	Original Agreement date/ Terminal disbursement date	Original closing date/ Extended closing date	Total Project Cost *US$ mill INR in cr*	Amount of assistance *US$/ XDR in million*	State Govt. share/ other funding *US$ in million*	Cum. disbursement *US$/ XDR in million*
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	Tamil Nadu	4846-IN: Tamil Nadu Irrigated Agriculture Modernization and Water Bodies Restoration & Management Project	12.02.2007 15.01.2016	31.03.13 15.01.16	566.00 (USD)	335.00 (IBRD)	50.20	289.57
2	Andhra Pradesh & Telangana	4857-IN: Andhra Pradesh & Telangana Community Based Tank Management Project	08.06.20073 1.07.2016	31.12.12 31.07.16	217.80 (USD)	87.00 (IBRD)	-	72.70
		4291-IN: Andhra Pradesh & Telangana Community Based Tank Management Project				58.14 (XDR)		50.78
3	Odisha	7576-IN: Orissa Community Tanks Management Project	27.01.20093 0.06.2016	31.08.14 30.06.16	76.39 (USD)	38.47 (IBRD)	-	31.06
		4499-IN: Orissa Community Tank Management Project				16.98 (XDR)		16.98
4	Andhra Pradesh & Telangana	7897-IN: Water Sector Improvement Project	14.08.2010 28.07.2018	31.07.16 28.07.18	988.97 (USD)	450.60 (IBRD)	505.40	253.05
5	Madhya Pradesh, Odisha, Kerala & Tamil Nadu, Karnataka, Uttarakhand, Jharkhand	7943-IN: Dam Rehabilitation and Improvement Project	21.12.2011 30.06.2018	30.06.18	437.50 (USD)	139.65 (IBRD)	72.73	0.44
		4787-IN: Dam Rehabilitation and Improvement Project				93.02 (XDR)		33.08
6	West Bengal	8090-IN: West Bengal Accelerated Development of Minor Irrigation Project	21.12.2011 31.12.2017	31.12.17	300.00 (USD)	30.00 (IBRD)	50.00	1.22
		5014-IN: West Bengal Accelerated Development of Minor Irrigation Project				78.20 (XDR)		36.23
7	Uttar Pradesh	5298 IN: Uttar Pradesh Water Sector Restructuring Project, Phase-2	24.10.2013 31.10.2020	31.10.20	515.00 (USD)	239.40 (XDR)	155.00	55.81

Table-6.2
Asian Development Bank assisted Ongoing Projects in water sector

As on Dec'16

No	State	Name of Project	Agreement date / Terminal date of disbursement	Original closing date/ Extended date	Total Project Cost *US$ mil*	Amt of loan assistance *US$ mill*	State Govt. share/ others *US$ mill*	Cumulative disbursement *US$ mill*
1	Maharashtra & Karnataka	2679-IND: Sustainable Coastal Protection and Management Investment Program-I	17.8.2011/ 30.6.2017	31.12.2014/ 30.6.2017	58.50	47.40	11.10	23.45
2	Assam	2684-IND: Assam Integrated Flood and River-bank Erosion Risk Management Investment Program-I	10.5.2011/ 31.7.2017	30.9.2014/ 31.7.2017	120	48.50	30	30.28
3	Karnataka	3172-IND: Karnataka Integrated & Sustainable Water Resources Management Invest. Program-1	7.5.2015/ 31.3.2019	31.3.2019	48	31	17	1.25
4	Odisha	3265-IND: Orissa Integrated Irrigated Agriculture & Water Management Investment Program-2	7.6.2016/ 17.9.2018	17.9.2018	172	120	48	0
5	Tamil Nadu	3394-IND: Climate Adaptation in Vennar Sub-basin in Cauvery Delta Project	14.7.2016/ 14.7.2023	14.7.2023	144	100	44	0

Table-6.3
JICA Assisted ongoing projects in water sector

As on Dec'16

No	**State**	**Name of Project**	**Agreement date / Terminal date of disbursement**	**Original closing date/ Extended date**	**Total Project Cost** *INR in crore*	**Amt of loan assistance** *JPY mill/ INR in cr.*	**State Govt. share/ other** *INR in cr.*	**Cumulative disbursement** *JPY mill*
1	Andhra Pradesh & Telangana	IDP-181: Andhra Pradesh Irrigation & Livelihood Improvement Project Phase-I	30.3.2007/ 10.7.2017	Mar 2013/ 10.7.2017	1137.98 crore	23974 (JPY)	-	13987 (JPY)
2	Odisha	IDP-244: Rengali Irrigation Project Phase-2	30.3.2015/ 30.3.2026	30.3.2026	2148 crore	32378 (JPY)	-	0
		IDP-244A: Rengali Irrigation Project Phase-2				1581 (JPY)		0

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7. Organisations and Institutions

ATTACHED OFFICES

CENTRAL WATER COMMISSION

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.

CWC Headquarter at R.K.Puram, New Delhi

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. 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

Major activities of CWC are as under:

(i) Hydrological Observations:

Central Water Commission is operating a network of 954 hydro-meteorological observation stations (including 76 exclusive meteorological 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.

Gauge & Flood Forecasting Site (Bharuch)

During the 12th Plan, 676 new hydro-meteorological observation stations have been opened. However, due to paucity of required manpower, these stations are not fully functional.

(ii) Water Quality Monitoring:

Central Water Commission is monitoring water quality at 406 key locations covering all the major river basins of India. At present CWC Water Quality network covers 67 main rivers, 138 tributaries and 55 sub-tributaries.

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 all 406 field water quality monitoring stations 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. Five (5) level-III / II+ laboratories are functioning at Coimbatore, Delhi, Guwahati, Hyderabad, Varanasi and where 41 parameters including heavy metals / toxic parameters and pesticides are analysed.

During the year 2016-17, the National River Water Quality Laboratory, CWC, New Delhi has been accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL) in accordance with Standard ISO/IEC 17025:2005 in the discipline of chemical and biological testing.

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.

CWC is operating online Water Quality Monitoring System at three sites, namely, Agra (Jawahar Bridge) on river Yamuna, Lucknow on river Gomti and Moradabad on river Ramganga 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 onwards on web site http://cwc.rtwqms.com.

(iii) Survey and Investigation:

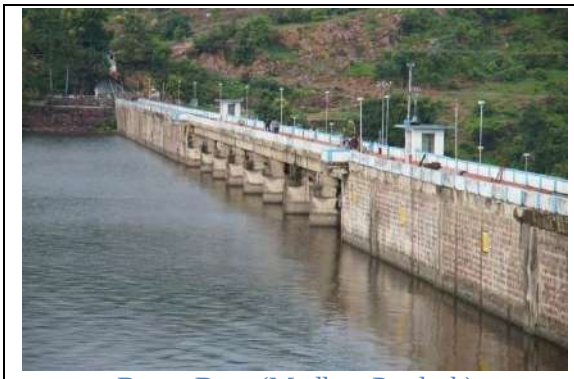
CWC is carrying out surveys and investigations for preparation of Detailed Project Reports (DPRs) in the NE region, Sikkim, Uttrakhand, Biharand J&K on the request of the respective States for development of water resources potential for irrigation, hydropower and other uses.

The investigations for various projects were continued during 2016-17 namely, Ujh MP Project (J&K), Kalez Khola HE Project (Sikkim), Rukni Irrigation Project (Assam), Sonai Irrigation Project (Assam), Tarumchu HEP(Sikkim), Kali Khola HEP (Sikkim).The estimate for new project Berinium HEP has been submitted to the ministry for approval.

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.

(iv) Project Appraisal:

During the year 2016-17 (up to Dec, 2016), technical examinations of 34 water resources projects (17 irrigation and 17 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 29,07,471 hectare area and flood protection projects will provide protection to 1,69,990 persons and 2,45,096 hectare area land. As of now, 14 new irrigation projects (8 Major & 6 Medium), 6 ERM (all Major) as well as 3 revised cost estimates (all Major) are under different stages of appraisal.



Barna Dam (Madhya Pradesh)

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 11 hydroelectric projects have been completed during the current year (up to December 2016). Other components of hydro-electric projects are appraised in CEA and TEC to the project is also accorded by the CEA. During the year 2016-17 (up to December, 2016), CEA has accorded TEC to hydro-electric projects having total installed capacity of 8167 MW.

A web enabled Project Appraisal Management System (e-PAMS) is under development. A dashboard has already been made operational for monitoring the status of appraisal of ongoing Major & Medium Irrigation Projects and flood control projects.

The revised Guidelines for Submission, Appraisal and Acceptance of

Irrigation and Multipurpose Projects has been issued in January, 2017.

(v) 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 2016-17, a total of 47 (20 Major and 27 medium) projects under General monitoring and 149 (73 Major, 55 Medium and 21 ERM) on-going projects under AIBP are targeted by CWC field units. During 2016-17(up to December 2016), 5 monitoring visits were undertaken and 4 status reports were issued in respect of projects under General Monitoring. Similarly, 92 visits were undertaken and 89 status reports were issued for projects under AIBP.

Central Grants totaling to Rs. 821.89 Crore have been released to 10 Major & Medium Irrigation Projects under AIBP during 2016-17 (till December 2016). Further, Central Assistance (Loan) through NABARD totaling to Rs. 849.51 Crore was also released to 39 Major & Medium Irrigation Projects under AIBP during 2016-17 (till December 2016). Since the inception of the AIBP, the cumulative total Central Loan Assistance / Grant provided to States for 297 projects is Rs. 57272.51 Crore (till December 2016). The number of States benefited from the programme is 25. As on 31.12.2016, out of 297 projects, 143 projects have been completed and 5 projects were deferred.

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.

Omkareshwar Canal (Madhya Pradesh)

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.

Proposal for procurement of satellite imageries and hiring professional services of NRSC for online monitoring of projects under AIBP-PMKSY using BHUVAN portal has been submitted to MoWR, RD & GR. A project monitoring system (MIS) has been developed by MoWR, RD & GR for online monitoring of projects under AIBP & CAD-PMKSY.

(vi) 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 Crore 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.

Hirakud Dam (Odisha)

(vii) 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. CWC provides inputs and assistance to NWM secretariat in examining the research proposals related to climate change received in NWM Secretariat.

Seminar on "Waste Water – Monitoring and Management" on World Water Day 22nd March 2017 at New Delhi

MoWR 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 Chairmanship of Chairman, CWC for each of the Institute separately which has to meet once in a year.

Monitoring of Glacial lakes/Water bodies in the Himalayan Region of Indian river basin has been carried out on monthly basis from June to October. The main objective of the study is to monitor the changes in the spatial extent of the glacial lakes and water bodies greater than 50 ha area with the area of base year 2009 using satellite data received from NRSC, Hyderabad. Monthly Monitoring Reports have been sent to Central/State Govt agencies and other stack holders.

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. Model developed by NRSC has been handed over/installed at CWC, Snow Hydrology Division and M&A Dte, CWC, Shimla. NRSC officials have also imparted brief training on the model to CWC officials from different Himalayan River Basins.

(viii) 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.

The country has been divided into 7 zones and further into 26 hydro-meteorologically homogeneous sub-zones and flood estimation models are developed for each subzone to compute the design flood in un-gauged catchments. So far, flood estimation reports covering 24 sub-zones have been published. The periodic revisions/updating of earlier reports are carried out whenever additional data are received.

Design precipitation (PMP/SPS) estimates are basic inputs in computing design flood magnitudes. 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 organizations like IMD and CWC. In order to overcome this, CWC has published generalized PMP Atlases covering almost entire country, which gives a first-hand estimate of design storm depths.

During the year 2016-17 (up to December, 2016), Technical examination of hydrological aspects of DPRs in respect of 117 projects have been carried out in CWC. Out of this, 65 projects have been cleared. The observations in respect of remaining projects were communicated to the concerned project authority.

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.

Tehri Dam (Uttrakhand)

(ix) 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 providing design consultancy to 54 projects. Out of this, 24 projects (including 4 from North Eastern region and 3 from neighbouring countries) are at construction stage; 10 projects (including 2 from North Eastern region and 2 from neighbouring countries) are at DPR stage and 20 projects (including 02 from North Eastern region and 2 from neighbouring countries)involve special problems.

In addition to above, technical examinations of DPRs of 73 nos. of Hydro-electric/ Irrigation/ Flood Management/ Multi Purpose Projects were also carried out during the year (till Dec 2016). These include 5 projects from neighbouring countries, namely, Nepal (4) and Bhutan (1). Out of these, DPRs of 30 nos. of projects have been cleared. Remaining 43 nos. of projects are at various level of appraisal.

(x) Dam Rehabilitation & Improvement Project (DRIP):

Dam Rehabilitation and Improvement Project (DRIP) is the World Bank assisted project with the provision of rehabilitation of 217 dam projects (comprising 242 dams) in the seven participating States (namely, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Tamil Nadu and Uttarakhand) along with 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 215 dam projects have been approved by the World Bank. Tender Documents in respect of 199 dam projects have also been approved and works in respect of 186 dam projects have been awarded. Work on the preparation of Asset Management Tool (Dam Health And Rehabilitation Monitoring Application (DHARMA)) is in advanced stage. Three static data modules out of a total of seven modules envisaged have been launched for implementation.

Several guidelines and manuals are also being developed under the project with the guidance of renowned specialists working in the respective fields working in close coordination with expert committees. Total of sixteen guidelines and manuals encompassing different facets of dam design, construction, operation, maintenance and rehabilitation are envisaged. Capacity Building of various academic institutes has also been taken up within the funds allotted for central component of DRIP Plan Scheme.

DRIP: Knowledge sharing visit

Twenty Five (25) trainings have been conducted by the Central Project Management Unit for DRIP Project, wherein about 859 officials have been trained on different aspects of Dam Safety. 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) in which 425 delegates participated. The Third National Dam Safety Conference is scheduled to be organized by CWC in collaboration with IIT Roorkee and UJVN Limited, on 18th and 19th February 2017 in IIT Roorkee. A workshop on "Lessons Learnt from DRIP" was also organized in which 136 delegates participated.

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 "CBIP Award 2016" for promoting Health and Safety of Large Dams under DRIP.

(xi) National Register of Large Dams:

As per the latest information compiled under the National Register of Large Dams (NRLD) maintained by CWC, there are 5701 large dams in the country as on January 2017. Out of this, 5254 large dams have been completed and 447 large dams are under construction. The NRLD is available on CWC Website. The compilation of NRLD is expected to prove useful/ handy to all engineers, planners and policy makers associated with Water resources sectors

(xii) 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 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 State 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. 36 meetings of NCDS have been held so far. The last meeting was held on 11.1.2016.

Inspection inside the dam gallery

(xiii) 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. The Member (D&R), CWC is the chairman of the Committee with 11 other experts from various engineering disciplines from different technical institutions and Govt. organizations as its Members. Director FE&SA, CWC is the Member Secretary of the NCSDP.

During 2016-17, one meeting (31st) of NCSDP was held on 23rd June, 2016. During the meeting, site specific seismic study reports of 13 projects were discussed and cleared by the Committee.

(xiv) Dam Break and Other Special 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. 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 report of Bursar H E Project, J&K has been examined and cleared. Further, GLOF Study in respect of Sapta Kosi H E Project, Nepal and Sun Kosi H E Project, Nepal is under progress .

(xv) 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

The draft Rehabilitation & Resettlement Plan for Siang Single Storage Project prepared by CWC in August 2015 was modified to include best provisions of various existing R&R Plans and provisions in "Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement Rules – 2015. A tentative estimate for Rehabilitation & Resettlement Plan for Upper Siang Basin Project (Arunachal Pradesh has also been prepared.

Stakeholder sensitization: IITF 2016, Pragati Maidan, New Delhi

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. NEMCRVP has representatives of Ministries of Environment & Forests, Agriculture & Co-operation, Tribal Affairs and Water Resources, besides Planning Commission.

The latest status of the implementation of the environmental safeguards of the projects have been sought from the Chairmen 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.

(xvi)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 (Orissa), 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, Sutiyapat Project and Tawa Project. The Expression of Interest for short-listing firms for conducting the studies has been published.

(xvii) Application of Remote Sensing Techniques in Water Resources Sector:

The important studies undertaken during the year is as under:

(i) The work "Sedimentation Assessment of 30 Reservoirs using Remote Sensing Technique" has been awarded to MERI Nashik. Nine (9) reservoirs have been found feasible for the study. The consultant has submitted final reports for these 9 (Nine) reservoirs in July 2016. The final reports have been circulated to relevant Directorates of CWC, State and project authorities.

(ii) Sedimentation Assessment study of Ghataprabha Reservoir (Karnataka) has been done in-house.

(xviii) Development of Water Resource Information System:

CWC & ISRO has jointly undertaken the work of development of Water Resources Information System (India-WRIS) during 11thPlan. 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. 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 105 GIS layers grouped in five heads: 1) Watershed atlas, 2) administrative layers, 3) Water resources projects, 4) thematic layers and 5) environmental data. The major GIS layer generated are basin/sub-basin/watershed, river network, canal network, water body, major and medium irrigation project (dam, barrage etc), road network, town and village extent, CWC HO network and CGWB well data. 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 2016-17 (till 31st December):

1. Command boundaries and canal layer refinement for 1700 MMI projects completed.
2. Crop area assessment study for forty five (45) AIBP commands for assessing gap in irrigation potential & actual utilization.
3. PMP Atlas integration.
4. Uploading of H.O. data of CWC for 2014-15.
5. Reservoir module for 91 reservoirs which are being monitored by CWC have been operationalized.

During the current financial year, the centre has also imparted training to 30 CWC officers from various regional offices for conducting "Crop Area Assessment Study using Remote Sensing Technique to assess the gap in irrigation potential creation and utilization.

(xix) 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.

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:

Seminar on "Second Green Revolution: Role of Irrigation and Drainage", 24th June 2016 at New Delhi

(xx) 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 2016-17, 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) Gunta Nala 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

(xxi) 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 2016-17, the Water Use Efficiency studies of following four major/medium irrigation projects are ongoing.

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

(xxii) 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 awarding work for capacity survey of 8 reservoirs in under progress.

(xxiii) 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.ofAgr., WALMIs, IIT, NGOs etc. Director, WS&RS Directorate, CWC is the Member Secretary of the Committee.

R&D Session of INCSW, 5th September 2016 at New Delhi

The important activities conducted under the aegis of INCSW are given below:

- A one day event "India Irrigation Forum" was organised in collaboration with ICID as a special event during the India Water Week 2016. The event had participation from Asian Development Bank, FAO, IWMI, World Bank and various Central and State organisations.
- A seminar on "Second Green Revolution: Role of Irrigation and Drainage" was organised in collaboration with ICID on ICID Foundation Day on 24.06.2016 at New Delhi. Many distinguished international delegates also attended the function.
- A special R&D Session of INCSW was organised on 5th September 2016 at New Delhi. The Principal Investigators and Researchers of ongoing research schemes of INCSW and officers of various organisations including CWC attended the session. The various aspects including R&D in water sector in developed countries, requirement of environmental flows in water resources projects and water conflict management were discussed during the session.
- An Interactive Session was organised on 2.12.2016 at New Delhi on the theme "Storm Water Hydraulics". Eminent experts namely, Prof. Hager, Department of Civil Environment & Geomatics Engineering, ETH, Zurich, Switzerland and Prof. S. Majumdar, Emeritus Professor, Delhi Technological University attended the session and delivered lectures on related topics.
- An Innovation Session was organized in collaboration with TERI and M/s Yellow Tropus Pvt. Ltd. on the topic "Evaporation Control from Reservoirs using Floating Solar Panels" on 21.12.2016 at New Delhi. The role of Floating Solar Panels in water savings and energy production was highlighted during the session.
- About 92 research schemes are presently ongoing in various organisations in the country with funding from the MoWR,RD&GR under the R&D Programme. A total grant of about 12.30 Cr has been released so far. Further, a proposal for establishment of INCSW-Research Chair on "Water Sector Conflicts and Governance" at Centre for Policy Research (CPR), New Delhi with a corpus fund of Rs. 3 Crore is under consideration in the Ministry.

(xxiv) 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 2016-17 (up to December, 2016) NWA conducted 25 training programs in which 758 (1535 manweeks) officers participated.

National Water Academy (Pune)

Some of the notable program organised by NWA are as under:

(i) Two Training Programmes for the officials of Flood Warning Section, Royal Government of Bhutan were conducted during July 2016 (one during 18-22 July 2016 and another during 25-29 July 2016).

(ii) Two Weeks Core Area Training (CAT) on Basin Planning Management for middle level CWES officers were conducted during the period from 22nd August to 2nd September, 2016.

(iii) As Regional Training Centre of WMO, one Distance Learning Programs on Basic Hydrological Sciences for Asian Region Countries was conducted in which 52 officers have been trained.

(iv) Management Development Program for senior officers of DRIP was conducted during 25-29 April 2016. This series program for Non Technical Officers of MoWR, RD&GR and CWC officers was conducted during 16-20 August 2016.

(v) ToT Program on Climate Change was conducted during 25-27 July 2016. Second such program for media personnel was conducted during 28-29 July 2016.

(vi) During this financial year, a 26 weeks 28th Induction Training Program for newly appointed CWES officers has been concluded in June 2016. The 29th Induction Training Program has been started from 3rd October 2016. 17 Group 'A' CWES Officers are participating in this program.

During 2016-17 (up to December, 2016), CWC-HQ / Field Office also conducted 26 programs in which 633 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 2016-17 (up to December 2016) CWC has sent 244 officers to 37 programs / workshops/ seminars. This includes 11programs conducted abroad in which 24 officers participated.

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' characterization.

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 Modeling 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 modeling
- Rock Mechanics (II) including rock mechanics laboratory investigations, workshop & instrumentation and electronics

INVESTIGATIONS FOR PROJECTS

Thirty three projects, including four abroad and seven 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.

Uniaxial Jacking Test at Pancheshwar Multipurpose Project, Nepal/ India

The investigate projects are as under:

(i) 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

(ii) Indian Projects:

<u>Projects in North-East India</u>

5. Doimukh HE Project, Arunachal Pradesh
6. Kalej Khola H.E.P, Sikkim
7. Lower Kopili HE Project, Assam
8. Mawphu HE Project, Meghalaya
9. Rukni Irrigation Project, Assam

10. Subansiri Downstream Works Guwahati, Assam
11. Tlawng Hydroelectric Project, Aizwal, Mizoram

Projects in other parts of India

12. Bhaunrat Dam Project, Uttar Pradesh
13. Bist Doab Canal , Punjab
14. Devsari HE Project, Uttarakhand
15. Eastern Kosi Canal System, Water Resources deptt., Flying Squad circle-1, Patna, Bihar
16. Gosikhurd Project, Maharashtra
17. Hail HE Project, H.P.
18. Hirakud Dam Project, Odisha
19. Indirasagar Power Station Project, Madhya Pradesh
20. Kanhar irrigation project UP
21. Kharkai Barrage Project, Jharkhand
22. Kirthai-I HE Project, J&K.
23. Konar Dam, Jharkhand
24. Luhri Hydro Electric Project Stage-I, Himachal Pradesh
25. Parichha Thermal Power Project, Jhansi, Uttar Pradesh
26. Polavaram Head Works, Polavaram, Andhra Pradesh
27. SirkariBhyol-Rupsiabagr HE Project, Uttarakhand
28. Subarnarekha Multipurpose Project (Kharkai Barrage) Jharkhand
29. Upper Indravati Pumped storage Project, Orissa
30. Vindhyachal Super Thermal Power Project, Madhya Pradesh
31. Vishnugadh Pipalkoti Project, Uttarakhand
32. Vyasi HE Project, Uttarakhand
33. Wainganga-Nalganga Link Canal Project (NWDA), Maharashtra
34. Kalpong river, Diglipur, Andaman and Nicobar Islands
35. Nathpa Jhakri HE Project, Jhakri, HP

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 Standing Technical Advisory Committee (STAC) of CSMRS is a advisory body for guidance, scrutiny and review of technical matters of CSMRS. This committee also provides technical input to the Governing Council. The committee is headed by Member (D&R), Central Water Commission, New Delhi, and has a total strength of 15 members.

Important achievements of CMSRS during 2016-17

Success Indicators	Achievements (Anticipated)
Technical reports brought out / published	75 Nos.
Publication of research papers in International journals	08 Nos.
Publication of research papers in National and International level conferences seminars/ Symposium	34 Nos.
No. of Detailed Project Reports (DPRs) cleared	07 Nos.
Training programme organized	13 Nos.

SELF- SPONSORED RESEARCH SCHEMES

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

1. Leaching studies on fly ash both under laminar and vertical percolation on a fixed flow rate for different solid/liquid ratio.
2. Performance of mortar cubes mixed with different sulphate concentration and allowed to remain in different curing conditions for assessment of

effect on its engineering and physical parameters.

3. Study on the aspects related to Acidification of Kopili River due to Coal Mining to provide the viable solutions to the problem using locally available algal blooms.
4. Effect of water quality of Yamuna River on upcoming civil engineering structures along river side with reference to its effect on concrete & steel.
5. Deformability characteristics of rock mass
6. In-situ Stress Measurement in rock mass
7. Shear Strength Parameters of rock mass
8. Comparison of Uniaxial Compressive Strength and Indirect Tensile Strength (Brazilian method) of Rock in Laboratory
9. Compilation and interpretation of properties and parameters of 25 variants of Basalt
10. Compilation and Interpretation of 20 Variants of Gneiss
11. Data base on different rock tests on laboratory investigations - referred to CSMRS for DPR review (10 Projects)
12. Prediction of stress-strain-volume change behaviour using Hardening Soil (HS) model
13. Effect of fines on strength and deformability characteristics of rockfill material
14. Research Scheme on Effect of dump waste material on soil properties
15. Research Scheme on Improvement of Expansive Soil using Fly ash
16. Research Scheme on Modification of properties of fine grained soils using Organic materials
17. Self sponsored Research Scheme: Mitigation of ASR by using Lithium Nitrate
18. A self sponsored research scheme titled "Use of Artificial Aggregates (Iron & Steel Slag) as Partial Replacement of Natural Aggregates in Concrete"
19. Strength and durability aspects of multi blend concrete with particular reference to underwater abrasion.
20. Influence of mica content on strength and durability of concrete
21. Study on batch to batch variation in properties of chemical admixtures and ageing effect on using in concrete

Collection of UD Samples at Kharkai Barrage Project, Jharkhand

TRAINING PROGRAMMES

A) Scheduled Training Programmes

1. Organized training course on "Geotechnical Investigation and Quality Control Testing for Earthen Dams & Canals" for Quality Control Engineers, Water Resources Department, Maharashtra 6th - 8th June, 2016 at CSMRS, New Delhi.
2. Organized training course on "Use of Geosynthetics for Water Resources Projects "on 29th & 30th September, 2016 at CSMRS, New Delhi.
3. Organized Training course on "Concrete Construction Materials and Quality Control for Hydraulic Structures" on 7-8th Sep, 2016 in CSMRS.
4. Organized training course on "Surface and Sub Surface Assessment of Rock Mass" at CSMRS on 24-25 October 2016.
5. Organized Training Programme on "Civil Quality Aspects and Concrete Mix Design - Hydropower Project Construction", 16-18th November 2016, jointly by CSMRS and CBIP, New Delhi

6. Organized training course on "Chemical aspects of water quality and its effect on durability of concrete" during 8-9 December, 2016 at CSMRS

B) Training Programme to the Students from Different Colleges/ Universities/ Institutions on laboratory testing in the field of Soil Mechanics, Rock Mechanics and Concrete Technology

1. Gurgaon College of Engineering (03 Students)
2. Northen India Engineering College (05 Students)
3. Sikkim Manipal Institute of Technology (02 students)
4. Gautam Budha University, Noida (04 students)
5. Ch. Braham Prakash Government Engineering College (06 Students)
6. P.M. College of Engineering (01 Student)
7. RCM Polytechnic College , Haryana

FINANCIAL ACHIEVEMENTS

Financial Outlays:

a) Under Plan

- Outlays for the F. Y. 2016-17 : Rs.16.20Crore
- Expenditure incurred : Rs.14.07Crore (tentative)
- Revised Estimate : Rs.14.077Crore

b) Under Non Plan

- Outlays for the F. Y. 2016-17 : Rs.12.37Crore
- Expenditure incurred : Rs.13.98Crore (tentative)
- Revised Estimate : Rs.13.98Crore

NEW INITIATIVES TAKEN DURING 2016-17

Following new initiatives were taken during 2016-17:

- Investigations for Water resources projects : 6 Nos.
- Publication of research review papers/ documents : 1 Nos.
- Completion of self sponsored research schemes : 2Nos.
- Evaluation of Detailed Project Reports : 7 Nos.

SUB-ORDINATE OFFICES

CENTRAL GROUND WATER BOARD (CGWB)

Central Ground Water Board (CGWB), under the Ministry of Water Resources, RD & GR is a multidisciplinary Scientific Organization. The Board is headed by the Chairman and has following wings, each headed by a Member:

- Sustainable Management & Liaison
- Survey, Assessment & Monitoring
- Exploratory Drilling & Materials Management
- Technology Transfer & Water Quality
- Finance Wing

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.

Mandate of CGWB:

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.

Main Activities of Central Ground Water Board are:-

1. National Aquifer Mapping.
2. Monitoring of Ground Water Regime in the Country.
3. Estimation of Ground Water Resource.
4. Training under Rajiv Gandhi National Ground Water Training and Research Institute.
5. National Hydrology Project.
6. Demonstrative Project on Artificial recharge to Ground Water.
7. Regulation of Ground Water

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 broachers, Ground Water Information System (GWIS) and RTI etc.

ACHIEVEMENTS OF CGWB DURING THE YEAR 2016-17 AS ON 31ST DECEMBER, 2016

(i) 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 been taken up in priority areas on 1:50,000 scale during XII Plan period (2012-17)

Out of 23 lakh sq.km map-able area of the Country, CGWB has initiated the Aquifer Mapping and Management Programme to cover around 8.89 lakh sq.km area in the first phase. However, an area of 5.25 lakh sq.km have been re-prioritized, by providing priority to regions of high level of ground water extraction, water quality deterioration etc. in the States of Haryana, Punjab, Rajasthan, Gujarat, Andhra Pradesh, Telangana, Karnataka, Tamil Nadu and Bundelkhand Region of the States of Uttar Pradesh and Madhya Pradesh. Besides, various activities in other States (covering an area of 3.64 lakh sq.km) has also been initiated.

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.

Uttamsara OW, Tal. Bhatukli, Amravati District

(ii) Data generation for Aquifer Mapping:

Various Data Generation activities viz. exploratory drilling, geophysical surveys, chemical quality studies and other hydro geological surveys are taken up during the year 2016-17 for value addition

to aquifer maps. The individual achievements of data generation activities are as follows:

(1) Ground Water Exploration:

The exploration is aimed at generation of precise demarcation of aquifer disposition and determining their hydrological parameters It is being carried out by the Board through a fleet of 84 drilling rigs (28 Direct Rotary, 53 Down the Hole and3 Percussion Combination types). During financial year 2016-17 (up to31.12.2016), the Central Ground Water Board has constructed 509 wells (EW-352, OW-124, PZ-33) including 64 high yielding wells to assess the ground water potential in different hydro geological set up. 750 wells are likely to be completed by 31st March, 2017.

(2) Geophysical Studies**:**

Geophysical studies are undertaken as an integral part of aquifer mapping and short-term water supply investigations. During 2016-17 up to 31st December, 2016, Central Ground water Board has carried out 1126 Vertical Electrical Soundings, 73.70 line kilometer resistively profiling and geophysical logging of 48 bore holes in various parts of the country. In all, 2000 Vertical Electrical Soundings and geophysical logging of 100 bore holes is likely to be achieved by 31st March, 2017.

(3) Water Quality Analysis:

24388 nos of water samples were analyzed for the basic constituents, heavy metals (such as Cu, Zn, Fe, Mn, CO, Cd, Cr, Ni, Pb etc.), organic and specific constituents during year 2016-17 up to 31st December, 2016. Chemical analysis of 30,000 water samples is likely to be completed by 31st March, 2017.

(iii) Aquifer Maps and Management Plan:

Preparation of Aquifer Map and Aquifer Management Plan under National Aquifer Mapping and Management Programme has been completed for 2.92 lakh sq.km during 2016-17 till 31st December, 2016. During XII Plan, the total area covered under NAQUIM is 5.20 lakh sq km up to December 2016. During XII Plan up to31st March 2017, Preparation of Aquifer Map and Aquifer Management Plan will be completed for 5.65 Lakh Sq.km

(iv) Water Supply Investigations:

The Board provides assistance to defense and government agencies to solve their immediate water supply problems by selecting suitable sites for construction of ground water abstraction structures. The Board has carried out a total of 140 investigations during this year up to 31st December, 2016. 180 investigations are likely to be completed by 31st March, 2017.

High Yielding Exploratory Well at Pohregaon EW, Renapur Taluka, Latur District

(v) Ground Water Regime Monitoring:

The Board has monitored the ground water levels in the country through a network of about 23000 Ground Water Observation Wells for month of April/May 2016, August 2016 and November 2016 in all Regions. Additional 502 observation wells have been established to enhance the density of existing observation wells. Water Quality of the wells is monitored during pre-monsoon period. In all, 1900 monitoring wells are likely to be

established by 31st March, 2017.

(vi) Estimation of Ground Water Resource of the Country:

The Dynamic Ground Water Resources 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 2013 has been computed .

(vii) Rajiv Gandhi National Ground Water Training and Research Institute (RGNTRI):

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.

Dynamic Ground Water Resources of India As On 2013		
1	Annual Replenishable Ground Water Resources	447 (bcm/yr)
2	Net Annual Ground Water Availability	411 (bcm/yr)
3	Annual ground water draft for irrigation, Domestic & Industrial uses	253 (bcm/yr)
4	Stage of Ground Water Development	62%
5	Categorization of Blocks/Mandals/Talukas	
	Total Assessment Units	6584
	Safe	4520
	Semi-critical	681
	Critical	253
	Over-exploited	1034
	Saline	96

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 Crore.

Participants from Nepal during field demo on Geophysical Survey (Ground Water Technology and Management, November 216)

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 2016-17 (as on 31st December, 2016) are:

- RGNGWTRI has organized 61 training programmes including 27 tier I (National Level) and 13 tier II (State Level) and 21 Tier III (block Level) training programmes. As a part of these training programmes a total of **4234** participants including more than 900 female participants were imparted training on various aspects of ground water.

- During the remaining part of ongoing AAP , the target of 35 nos tier I, 17 nos tier II and 35 nos Tier III training programmes are likely to be completed by 31st March, 2017 and 6264 participants are likely to be trained in various training courses.

(viii) 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, Maharastra, Nagaland, Orissa, Punjab, Rajasthan, Tamil Nadu, Telengana, 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, 2016**.** During 2016-17, no spillover balance funds was released as second installment for the ongoing projects. A total of 26 artificial recharge structures were constructed during 2016-17 and total structures constructed under the scheme are 1460 (as on 30th November, 2016). A total of 1480 artificial recharge structures *are* likely to be completed by 31st March, 2017.

(ix) Fourth Meeting of National Inter-departmental Steering Committee (NISC):

Fourth 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, River Development and Ganga Rejuvenation at MoWR, Shram Shakti Bhawan, New Delhi on 26th September, 2016. The agenda items like Achievements made in Aquifer Mapping and Management Plan Programme, Sharing of information with States for Aquifer Mapping and Management Plan, Proposal for Aquifer Mapping and Management Plan Programme for 2017-22 etc has been discussed during meeting.

Boulder Check dam at Podi artificial Recharge to Ground Water in Patilah Nala, Water Shed, Block Bilha district Bilaspur

(x) 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 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. The 5 projects examined during 2016-17 (as on 31.12. 2016) are:

- Sher-Shakkar-Machharewa Complex Project, Madhya Pradesh
- Dwarakeshwar-Gandeshwari Reservoir Project(New Major), West Bengal
- Singatalur Lift Irrigation Scheme-Karnataka
- Kanhar Barrage Project, Jharkhand
- Restoration and Lining work of Western Main Canal and Ara Main canal & its system-Bihar

Observations on 1 Irrigation Project is under scrutiny at Regional office of Board as on 31.12.2016.

Check Dam At Phangeri, Kathua, Jammu & Kashmir

(xi) One Day Seminar – Bhujal Manthan-2:

Ministry of Water Resources, River Development and Ganga Rejuvenation organized one day Seminar- Bhujal Manthan-2 on 29th November, 2016 at Vigyan Bhavan, New Delhi with a theme of "Aquifer Mapping and Ground Water Management". The Bhujal Manthan program was inaugurated by Sushri Uma Bharati the Hon'ble Minister of WR, RD & GR, in presence of Shri Narendra Singh Tomar, Hon'ble Minister for Rural Development, Panchayat Raj and Drinking Water, Sh. Shashi Shekhar, Secretary, Ministry of Water Resources RD& GR, Sh. Parameswaran Iyer, Secretary, Ministry of Panchayat Raj, Dr. Amarjit Singh, then OSD, Ministry of Water Resources RD & GR, Sh. K.B. Biswas, Chairman, CGWB, Ministry of Water Resources, RD & GR. During the Program Sushri Uma Bharati the Hon'ble Minister of WR, RD & GR, released the app " Mera Bhujal" and Bhujal Manthan-2 Volume.

Bhujal Manthan-2 was attended by about 1200 experts and delegates including Officers from various Ministries, Govt. Organizations (Central as well as State Governments), Non-Government Organizations, Academicians, Scientists from Research Institutes working in the ground water domain and stakeholders like Students, Farmers & Industrialists from across the country. The Seminar was organized in following technical sessions:

- Aquifer Mapping – A National Perspective
- Advances in Science & Technology in Aquifer Mapping
- Groundwater Management: Community Involvement & Convergence
- Sustainable Management of Groundwater in Stressed Aquifer
- Aquifers in Arid Area & Palaeo-channels

(xii) Workshops/Seminars organized by CGWB:

- One day Workshop and Global Market Conference on "Emerging issues, Opportunities and Challenges in Water well drilling for Drilling Engineers, Service provider and Rig Manufactures" was organized by CGWB on 24.05.2016 at New Delhi.
- A Workshop on "Palaeochannels - Evolution and Ground Water Prospects" was organized by CGWB at CSMRS Auditorium, New Delhi. The programme was inaugurated by Honorable Minister of State, Water Resources, River Development & Ganga Rejuvenation, Prof. Sanwar Lal Jat.
- A workshop was organized on 1st September 2016 at IIT, Kharagpur under the NAQUIM. The theme of the Workshop was "Ground Water Modeling for Aquifer Management in Soft Rock Areas". Total 80 invitees had participated in the workshop.
- A workshop was organized on 15.10.2016 at CSMRS, New Delhi in which Sushri Uma Bharati the Hon'ble Minister of WR, RD & GR released the Report entitled "Palaeochannel of North India: Review & Assessment", compiled by expert Committee constituted by the Ministry. About 200

invitees had participated in the workshop.

(xiii) Activities under taken by CGWB in the North Eastern Region:

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 2016-17 up to 31st December, 2016 are given Chapter 9: Initiatives in the North East.

Discussions with the personnel of Ralegaonsiddhi watershed development works

(xiv) National Hydrology Project

CGWB had submitted Project Implementation Plan for Rs 85.0 Crore, in respect of NHP, which is spread over a period of 8 years. CGWB proposes to take up following activities under NHP:

a) Real time monitoring of water quality in coastal aquifers in Tamil Nadu & UT of Puducherry: Construction of 60 piezometers & installation of DWLR with telemetry (includes, supply, installation & maintenance for 5 years after 1 year of warranty)
b) Establishment of Center of Excellence for groundwater modeling: It will support the modeling studies of PDS, Joint study of CGWB & CWC in River Basin Modeling and also assist State Groundwater agencies & Regional Offices of CGWB to take up modeling studies.
c) eGEMS: Consultancy for Design, development and Implementation of Additional Modules, including procurement of additional licenses and hosting; data integration and training for Pan India expansion.
d) PDS: A purpose driven study proposed to be taken up in sub-basin above Ramganga confluence of Ganga Basin, for stream aquifer relationship, delineation of aquifer contamination through solute transport model & pilot study for aquifer remediation.
e) River Basin Studies: A joint collaborative study with CWC for River Basin Studies.
f) Institutions Capacity Enhancement:
   - International Trainings: As per the training calendar
   - Domain specific training: In house Trainings of 3 trainings per year for 1 week duration for a batch of 15-20 trainees at RGI, Raipur.
   - Workshops/awareness Programmes - 6 programmes per year.
   - Training in collaboration with USGS, as per the MoU to be signed with USGS by the Ministry
g) Technical Guidance & Support to States in the implementation of NHP: In 2016-17, a budget of Rs 69.5 Lakh has been allocated for CGWB. Till December 2016, bids for real time water quality monitoring in the Tamil Nadu & UT of Puducherry were under preparation and action has been initiated for conducting 3 Nos of Domain specific training and 6 Awareness raising Campaigns have been initiated. By end of march 2017, it has been envisaged to complete 3 Nos of Domain specific training at RGI, Raipur and 6 Awareness raising Campaigns in NE States (2 Nos), Jharkhand (1 No), Rajasthan (1 No), Uttarakhand (1 No) & West Bengal (1 No) would be completed. Bid is likely to be floated for construction of piezometers and bid document for supply & installation of DWLRs would be finalized.

(xv) 7th Painting Competition on Water Conservation and Water Pollution

The Painting competition is one of the activities to create awareness among students for conservation of water and spread the same in School/Society through these children. The competition is held in three stages – the School Level competition, followed by the State Level competition and finally culminating with the National Level competition held at New Delhi. Fifty winners from the school level competition were selected in each state for participation in the state level painting competition which was held in November,2016. Winner students are awarded cash prizes worth Rs. 20,000/-, the first prize winner is awarded Rs 5,000/-, 2 nd Prize Rs 3,000/-, 3 rd Prize Rs 2,000/- and ten consolation prizes of Rs 1,000/- each are also presented. Each winner student is also awarded a certificate of merit and all participating students are issued participation certificate. The National Painting competition is proposed to be held at New Delhi in Jan/Feb, 2017. This year more than 13 lakhs students from 13,447 schools participated in the school level painting competition. The theme at the school level painting competition was "Save Water- Save Life" whereas the theme for State level painting Competition was "Save Water-Save Earth".

Check Dam at Kothapallimitta Village Artificial Recharge Structures on ground water in Chittor District, Andhra Pradesh

CENTRAL GROUND WATER AUTHORITY

In pursuance of the order passed by the Hon'ble Supreme Court of India, Central Ground Water Board has been constituted as Central Ground Water Authority (CGWA) under subsection(3) of Section 3 of the Environment (Protection) Act, 1986 vide notification No. S.O. 38 (E) dated 14.1.1997 for the purpose of regulation and control of ground water management and development in the country. The Central Ground Water Authority was re-constituted vide S. O. 1121(E) dated 13th May, 2010.

During 2016-17, up to December 2016, CGWA has framed new Guidelines/Criteria for evaluation of proposals/requests for ground water abstraction by Food parks/Agro Based Industries in Notified areas. These guidelines are effective from 31.08.2016 and are available on website www.cgwa-noc.gov.in

CENTRAL WATERAND POWER RESEARCH STATION

The Central Water and Power Research Station (CWPRS), Pune, established in 1916 by the then Bombay Presidency as a Special Irrigation District, is the leading national hydraulic research institute under the Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR, RD&GR), New Delhi. In its early days of formation, this institute played important role by conducted outstanding research work for the Sukkar Barrage in Sind, the largest irrigation project in the world (1927 to 1932). Recognizing its role in the systematic study of various phases of water flow, including floods, the institution was taken over by the Government of India in 1936. With the dawn of independence, and launching of planned development of water resources of the nation, CWPRS became the principal central agency to cater to the research and development (R&D) needs of hydraulics

and allied disciplines for evolving safe and economical designs of hydraulic structures involved in water resources projects, river engineering, power generation and coastal engineering projects.

Model of Nandgaon Port

A Brief Summary of Achievements of CWPRS		
Indicators	Previous Year	Current Year (Up to 10.02.2017)
Studies Awarded (Nos.)	85	105
Amount (Rs. Crore)	13.96	24.17
Reports Submitted (Nos.)	106	76
Papers Published (Nos.)	65	83
Participation in Seminars/ Symposia/ Conferences (Nos.)	51	103
Lectures Delivered (Nos.)	74	75
Technical Committee Meetings (Nos.)	17	17
Training of Personnel (Nos.)	120	288
Training Programmes/ Conferences Organized (Nos.)	10	16

The research activities at CWPRS can be grouped into seven major disciplines as listed below.

- River Engineering
- River and Reservoir Systems Modeling
- Reservoir and Appurtenant Structures
- Coastal and Offshore Engineering
- Foundation and Structures
- Applied Earth Sciences
- Instrumentation, Calibration and Testing Facilities

GANGA FLOOD CONTROL COMMISSION

Ganga Flood Control Commission was established in 1972 with its Headquarters at Patna. 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 2016-17

(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 7th November -9th November 2016 and 17th -19thoctober, 2016 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 has also been completed. During the year the first updation of the comprehensive plan of Kosi river system is under progress and second updation of Rupnarayan-Haldi-Rusulpuris nearly complete.

(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 River Development and Ganga rejuvenation
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. 60 number of flood management schemes were received in GFCC from Ganga Basin States during 2016-17 (up to 30th December, 2016) including spill over projects from previous years, out of which 28 schemes were accorded techno-economic clearance and on 13 schemes compliance were issued, 11 schemes were dropped and 8 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. *Five* meetings of JSTC have been held so far. The last meeting was held in *New Delhi on 26.05.2016* 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

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

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, River Development & Ganga rejuvenation 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 49th meeting of Ganga Flood Control Commission (GFCC) was held on 8thJune, 2016 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.

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

The 5th 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 14.03.2016 at Sewa Bhawan, New Delhi, in which the interim guidelines were finalized.

SARDAR SAROVAR CONSTRUCTION ADVISORY COMMITTEE

The Sardar Sarovar Construction Advisory Committee (SSCAC) was constittued 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.

Sardar Sarovar Dam (Gujarat)

The Secretary, Ministry of Water Resources, is the Chairman of the SSCAC. The officers of the departments like Water Resources, Irrigation, Power, Finance and Revenue etc. concerned with the Constructionof 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 secretariatof the Committee is located at Vadodara and it has a full time secretary of the rank of Joint Secretary belonging to the Central Water Engineeing (Group – A) service. SSCAC is a very small organisation working under MoWR, RD & GR, hence there is no direct recruitement.

SARDAR SAROVAR CONSTRUCTION ADVISORY COMMITTEE (SSCAC) MEETING

The 84th meeting of the SSCAC was held on 19th December 2016 at New Delhi, under Chairmanship of Secretary, MoWR, RD & GR, New Delhi. Wherein following important issues related to Sardar Sarovar Project (SSP) were deliberated and appropriate decision taken:

- Insurance Coverage for Sardar Sarovar Power Houses.
- Real Time Data Acquisition System (RTDAS) and commissioning of Water Management System.
- Closure of contract awarded to M/s Intrax for work package IV of EMC of NCA.
- Payment of Share Cost of SSP by the Party States.
- Annual Development Plan 2016-2017 for Unit-I and Unit-III works of SSP.
- 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).
- Construction of Garudeshwar Weir
- Revised Cost Estimate of Unit-I (Dam & Appurtenant works) and Unit III (Hydro power works) of SSP at price level 2014-2015
- Construction of new high level bridge in u/s of existing Gora Bridge on river Narmada
- Supply, Installation and Commissioning of Isolated Phase Bus

Ducts, Static Frequency Convertor and Phase Reversal Switches along with all required accessories (i.e. balance items) for pumping mode operation of 6 X 200 MW T. G. Sets of River Bed Power House (RBPH) at Sardar Sarovar Hydro Electric Project (SSHEP) at Kevadia Colony.

- Taking up in PPP mode a Small Hydro Power Project at Godbole gate to Narmada River
- Continuation of temporary posts in Sardar Sarovar Construction Advisory Committee

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 are Members. The Secretary, SSCAC is the Member Secretary of the PSC.

111th& 112th meeting of PSC of SSCAC were held on 26th July 2016 & 9th November 2016 at New Delhi respectively, wherein important issues related to Sardar Sarovar Project (SSP) were deliberated and appropriate decision taken.

PHYSICAL ACHIEVEMENTS (SARDAR SAROVAR PROJECT)

All 29 piers of Sardar Sarovar Dam raised up to final level. All 30 nos. of bridge span completed at final height. All 30 nos. of pier cap raised to final height. All 30 nos. parapet wall spans completed. All 30 nos. radial gates installed and raised up to EL 134.15m during 2016-17. Fitting & alignment of wall plates are completed. Second stage concreting in wall plate and fitting of rubber seals are started and it is in completion stage.

FINANCIAL ACHIEVEMENTS

SSCAC has continuously made efforts to minimise the outstanding share cost of SSP payble by the party States. Total unsdisputed share of expenditure as on September 2016 amounting to Rs. 35038.43crore has been resolved amongst the party States. Balance undisputed share cost dues remaining is Rs. 1081.52crore.

BANSAGAR CONTROL BOARD

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 2016-17, the reservoir got filled up to Full Reservoir Level (FRL) i.e. RL 341.64 m on 17.9.2016. The dam at Full Reservoir Level envisages to provide irrigation in an area of about 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.

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.

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 budge grant of Union Ministry of Water Resources and subsequently reimbursed by the three States of Madhya Pradesh, Uttar Pradesh and Bihar.

Main features of the resolution (with amendment) leading to setting up of Bansagar Control Board:

"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."

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 crore and Land Acquisition & Rehabilitation (LA&R) Works Rs. 636.00 crore]. The cost estimate based on Madhya Pradesh Unified Civil Schedule of Rates (UCSR) 1998 was Rs. 1054.96 crore (Civil Works Rs. 391.30 crore and LA&R Works Rs. 636.66 crore). 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:-

- 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.
- 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.
- Kuteshwar Lime Stone Deposits Protection works.

BENEFIT FROM THE PROJECT

Power generation from the Project (in Madhya Pradesh) is 425 MW

Irrigation benefits of the project is given below:

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

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 BENEFICIARY STATES FROM 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 April, 2015 to March, 2016 is 2066.05 M.Cum, 904.243 M.Cum and 169.878 M.Cum respectively.

FINANCIAL ACHIVEMENT OF BANSAGAR DAM (UNIT-I) (2016-17)

The sub-head wise Expenditure during the financial year 2016-17 (up to November 2016) and cumulative expenditure up to November 2016 is as under:

Expenditure during 2016-17 (Rs. Crore)		
Sub Head	Exp. in 2016-17 (up to 11/2016)	Cumulative Expenditure up to 11/2016
Establishment	12.80	289.10
Tools & plants	-	2.078
Suspense (debit)	-	148.58
Works	08.00	1400.45
Suspense	-	(-) 143.347
Salary of Daily wages & Work Charges	15.84	102.154
Total	**36.64**	**1814.87**

STATUS OF CONTRIBUTION OF FUND

According to Bansagar Agreement of 1973 for construction of Bansagar Dam, the three participating states i.e. M.P., U.P. and Bihar have to share the cost of

construction in the ratio of 2:1:1 respectively. The details of expenditure during 2016-17 (up to Nov.2016) and the total expenditure of Rs. 1814.85 crore incurred and contribution of the participating states as on 30.11.2016 as per information provided by WRD, Govt. of MP is as given in below:

Status of Contribution (in Rs. Crore)

Total Exp.	SHARE DUE			SHARE RECEIVED			BALANCE SHARE		
	M.P.	U.P.	Bihar	M.P.	U.P.	Bihar	M.P.	U.P.	Bihar
Up to 03/2016 1778.23	889.116	444.558	444.558	925.42	409.96	419.052	(+)36.304	(-) 4.598	(-) 25.506
During 2016-17 up to 30.11.16 (36.640)	18.32	09.16	09.16	18.32	-	-		(-) 09.16	(-) 09.16
Total as on 30.11.16 (1814.87)	907.436	453.718	453.718	943.74	409.96	419.052	(+)36.304	(-)43.758	(-) 34.666

UPPER YAMUNA RIVER BOARD

Upper Yamuna River Board is a subordinate office under Ministry of Water Resources, River Development & Ganga Rejuvenation, Government of India. A memorandum of Understanding (MoU) was signed by the Chief Ministers of Himachal Pradesh, Haryana, Utter Pradesh, Rajasthan and National Capital Territory of Delhi on 12th May, 1994 regarding allocation of utilizable surface flow of River Yamuna up to Okhla Barrage (Upper Yamuna) among the co-basin States. In order to implement the said MoU, Upper Yamuna River Board (UYRB) was constituted by the Resolution No. 10(66)/71-IT dated 11th March 1995 of MoWR, RD & GR, Govt. of India in accordance with the provision of the MoU. After creation of Uttaranchal State in 2000, the resolution was modified to include Uttaranchal (now Uttarakhand) also in the Boarding 2001.

The Board consists of Member, Central Water Commission as part time Chairman and one nominee each from the States of Utter Pradesh, Uttarakhand, Haryana, Rajasthan, Himachal Pradesh, and National Capital Territory of Delhi not below the rank of the Chief Engineer, a Chief Engineer from Central Electricity Authority and representatives of Central Ground Water Board and Central Pollution Control Board as part time Members. The Board has a full time Member-Secretary who does not belong to beneficiary states. The expenditure on the Board is shared equally by the six basin States. The Board has sanctioned staff strength of 58 and all the posts of Board Secretariat are filled on deputation basis from Staff/Officers of Central/State Government.

UPPER YAMUNA REVIEW COMMITTEE

As per Resolution dated 11th March, 1995, there shall be a "Upper Yamuna Review Committee(UYRC)" comprising of the Chief Ministers (Governor in case of President's Rule) of the States of Himachal Pradesh, Haryana, Rajasthan, Utter Pradesh, Uttarakhand, and National Capital Territory of Delhi under the Chairmanship of the Hon'ble Minister, MoWR, RD & GR, Govt. of India for assessment of working of the UYRB and ensure implementation of MoU dated 12.05.1994 regarding allocation of surface flow of Yamuna and issue directions as may be necessary for the proper development and management of the upper

reaches of the Yamuna River Basin up to and including Okhla Barrage.

FUNCTIONS OF UYRB

The main function of Upper Yamuna River Board is to regulate the allocation of available flows amongst the beneficiary States and also monitoring the return flows; monitoring conserving and upgrading the quality of surface and ground water; maintaining hydro-meteorological data for the basin; over viewing plans for watershed management; monitoring and reviewing the progress of all projects up to and including Okhla barrage.

ACTIVITIES OF UYRB

The Board has been making tentative seasonal distribution of water to basin States at various distribution points. In continuation to above, Board has started the process of installation of telemetry system to observe discharge at 11 locations in the basin to ensure real-time dissemination of flow data amongst participating States. UYRB finalized the 'Water Accounting Manual' for Upper Yamuna Basin and had been circulated to all basin States for its implementation.

In MoU dated 12th May, 1995, the States have agreed that a minimum flow in proportion of completion of upstream storages going up to10 cumec shall be maintained downstream of Tajewala/ Hathnikund and downstream of Okhla Headwork throughout the year from ecological considerations as upstream storages are built up progressively in a phased manner. Meanwhile, Hon'ble NGT ordered vide order dated 11.06.2015 that "The state of Haryana shall release of 10 cumec water directly into main stream of river Yamuna from Hathnikund Barrage and maintain e-flow of the river till Wazirabad. Accordingly, UYRB asked Haryana State to comply the aforesaid order and at present,10 cumec water is being released from Hathnikund Barrage directly into the river in compliance of the aforesaid order.

Government of India has included the three proposed storage projects in the upper reaches of Yamuna and its tributaries known as Renukaji Dam, Kishau Dam and Lakhwar-Vyasi Projects as National Projects for which 90% of the cost of irrigation and drinking water supply component of the project shall be provided by the Government of India. Investment clearance for Lakhwar project on River Yamuna was accorded by Govt. of India in April, 2016 and further activities regarding the development of the project are in progress. Vyasi Project on River Yamuna is under construction and 40% work has been completed. The project is scheduled for commissioning by December, 2018. An MoU has been signed between Govt. of Uttarakhand and Govt. of Himachal Pradesh on dated 20th June, 2015 for the execution of Kishau MPP on River Tons, tributary of River Yamuna in Sirmaur Distt., HP and in Dehradun Distt., Uttarakhand as the project is to be executed through a joint venture between Govt. of both the States.

Memorandum of Association (MoA), Article of Association (AoA) and Memorandum of Understanding (MoU) between Uttarakhand & Himachal Pradesh for the execution of Kishau MPP has been approved by the Government of Uttarakhand vide letter dated 27.07.2016 of Secretary, Power, Govt. of Uttarakhand, Dehradun. Land acquisition and other activities for the Renukaji Dam Project on river Giri, tributary of River Yamuna are in progress.

UYRB has continuously been engaged itself in resolving the inter- State issues amongst the basin States and signing of Agreements related to water distribution and related to benefits and cost sharing from the proposed above three projects in Upper Yamuna Basin.

UYRB has been working to resolve actively on various issues amongst the Basin States of Upper Yamuna reaches viz. Share of Yamuna Water to Rajasthan at Ex-Tajewala, Short supply of Yamuna water to Rajasthan from Okhla headwork, Interceptor Sewer Scheme for Yamuna River, Schemes for Gurgaon Feeder Canal and Agra Canal, Pollution of Yamuna raw water at Wazirabad, Division of Utilizable Water Resources of Yamuna River between Uttar Pradesh and Uttarakhand etc. UYRB has also started the process of construction of its office building at Board's land namely Plot No. C-56/3, Sector – 62, NOIDA.

Board has organized 49 meetings of the Board and 6 meetings of the UYRC since its constitution to till date and 50th meeting is scheduled to be held in Feb., 2017.

REGISTERED SOCIETIES

NATIONAL WATER DEVELOPMENT AGENCY

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 Reports (DPRs) 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. Further, two new Functions in the mandate of NWDA were added vide Gazette notification dated 07.10.2016.

FUNCTIONS OF NWDA

The Agency functions with the following main objectives:

- To carry out detailed survey and investigations of possible reservoir sites and inter-connecting links in order to establish feasibility of the proposal of Peninsular Rivers Development and Himalayan Rivers Development Components forming part of the National Perspective for Water Resources Development prepared by the then Ministry of Irrigation (now Ministry of Water Resources, RD & GR) and Central Water Commission.
- 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.
- To prepare Feasibility Report (FR) of the various components of the scheme relating to Peninsular Rivers development and Himalayan Rivers development.
- To prepare DPR of river link proposals under National Perspective Plan for Water Resources Development after concurrence of the concerned States.
- To prepare Pre – Feasibility / Feasibility / Detailed Project Reports of the Intra-State links as may be proposed by the States. The

concurrence of the concerned co-basin States for such proposals may be obtained before taking up their FRs / DPRs.

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

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.

(i) 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.

(ii) 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.

PREPARATION OF DETAILED PROJECT REPORT (DPR)

(i) 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.

(a) Ken-Betwa link Project Phase-I:

The Ken-Betwa Link Project-Phase-I was considered by the Advisory Committee on Irrigation, Flood Control & Multipurpose Projects of Ministry of Water Resources, RD & GR chaired by the Secretary (WR, RD & GR) in its 129th meeting held on 8th July, 2016. The Advisory Committee has accorded the

techno-economic clearance subjected to Statutory Clearances.

Ken-Betwa Link Project, Phase-I was considered by Expert Appraisal Committee (EAC) of MOEF&CC for Environmental Clearance (EC) in its various meetings. Newly constituted Expert Appraisal Committee again considered the environmental clearance in its first meeting held on 30.12.2016 and recommended for accord of environmental clearance.

The proposal for wildlife clearance was considered by the Standing Committee of National Board of Wild Life (NBWL) in its 39th meeting held on 23.8.2016 and recommended for accord of Wild Life Clearance of the project with the condition that landscape plan for the area will be finalized with National Tiger Conservation Authority (NTCA) in lead, assisted by WII, State Forest Department and Project Proponent.

NWDA had submitted the proposal for forest land diversion clearance to MoEF & CC and made all the compliance of queries raised by them. The Forest Department of Madhya Pradesh State has completed all the activities related to forest land diversion clearance and submitted the proposal to MOEF&CC on 10th October, 2016. MOEF&CC vide letter dated 18th October, 2016 directed ACCF (C), Bhopal for site inspection of forest for diversion. The proposal of according forest land diversion clearance for the project was considered in Forest Advisory Committee (FAC) in its 6th meeting held on 9-10 November, 2016 and constituted a committee with a direction to inspect the site, verify relevant documents/reports and furnish its report to MoEF & CC which would be placed before FAC.

The proposal seeking clearance from Ministry of Tribal Affairs (MoTA), GoI for Resettlement and Rehabilitation (R&R) plan for Scheduled Tribe Project Affected Families (STPFs) in respect of Ken-Betwa Link Project, Phase-I has been submitted to the Ministry of Tribal Affairs, New Delhi in prescribed format along with other documents on 7.06.2016. MoTA has accorded the clearance vide letter dated 04.01.2017.

The proposal was considered in the 2nd meeting of Investment Clearance committee of MoWR, RD & GR held on 24.10.2016 under the Chairmanship of Secretary (WR, RD & GR). Finance Ministry has been requested on 08.12.2016 to consider funding at 90:10.

(b) Ken-Betwa link Project Phase-II:

The Environmental Clearance for Lower Orr dam has been considered by EAC of MoEF & CC in its 93rd meeting held on 2nd May, 2016 and recommended the project proposal for grant of Environmental Clearance (EC).

Application of forest clearance of Lower Orr dam under Ken-Betwa Link Project Phase-II has been submitted online to MoEF & CC on 02.10.2014. Approval of CAT plan from CCF, Shivpuri and Ashok Nagar, MP has been received and uploaded on website of MoEF & CC. The proposal of Forest Land diversion clearance in respect of Lower Orr dam has been submitted by Government of Madhya Pradesh along with its recommendations to MoEF&CC, Forest Division for forest land diversion clearance. The Forest Advisory Committee (FAC) of MoWR, RD & GR has discussed the proposal in its 6th meeting held on 10.11.2016.

(ii) Damanganga-Pinjal Link Project:

The Detailed Project Report (DPR) of Damanganga - Pinjal link project has been completed by NWDA during March, 2014. The matter regarding sharing of water is under discussions amongst the officials of the Governments of Maharashtra and Gujarat States and

NWDA. Municipal Corporation of Greater Mumbai (MCGM) has submitted the application for forest land diversion clearance online to MoEF & CC on 30th June 2016.

The proposal seeking clearance from Ministry of Tribal Affairs (MoTA), Government of India for Resettlement and Rehabilitation (R&R) Plan for Scheduled Tribe Project Affected Families in respect of Damanganga-Pinjal Link Project has been submitted by Municipal Corporation of Greater Mumbai (MCGM) to the Ministry of Tribal Affairs, New Delhi in prescribed format along with other documents on 30th June, 2016. The proposal is under examination in MoTA.

The Water Resources Department of Government of Gujarat vide their letter dated 3rd August 2016 requested NWDA not to proceed for forest land diversion clearance and clearance of Rehabilitation & Resettlement plan for schedule tribe project affected families of Gujarat State without approval/consent of Government of Gujarat.

Damanganga-Pinjal Link Project was considered by the Advisory Committee on Irrigation, Flood Control & Multipurpose Projects of Ministry of Water Resources, RD & GR chaired by the Secretary (WR, RD & GR) in its 129th meeting held on 8th July, 2016. The Advisory Committee has accorded the techno-economic clearance to the project subject to submission of Forest land diversion clearance from MoEF & CC and clearance for the R&R of project affected tribal population from MoTA.

(iii) Par-Tapi-Narmada Link Project

The DPR of Par-Tapi-Narmada Link Project has been completed by NWDA and submitted to Water Resources Departments of Government of Gujarat and Maharashtra in August, 2015. The matter regarding sharing of water has been discussed in the last four meetings of the Special Committee.

As Par-Tapi-Narmada and Damanganga-Pinjal Projects are linked, it was decided in the earlier meetings that the issue of water sharing in both the projects would be discussed first at the senior officers level of the two States and MoWR, RD & GR.

Hon'ble Union Minister for WR, RD & GR held a meeting with Hon'ble Chief Minister, Maharashtra at Mumbai on 3rd May, 2016 where in Damanganga-Pinjal and Par-Tapi-Narmada link projects were discussed among other issues. Government of Gujarat has submitted their observations on the DPR of Par-Tapi-Narmada Link Project. The DPR is under revision considering the observations of Government of Gujarat.

As suggested by Chief Secretary, Govt. of Gujarat during discussions with OSD, MoWR, RD & GR on 16.11.2016, NWDA has now explored possibilities of adding additional tribal areas as follows:

- Projects proposed by Govt. of Gujarat on the left side of the Canal in south Gujarat(57489 ha Annual irrigation).
- Tribal areas in enroute right side by lift (36200 ha Annual irrigation).
- Tribal areas in vicinity of reservoirs in Valsad and Dang districts(by lift) (12514 ha Annual irrigation).
- Tribal areas right side of Narmada Main Canal in Chhota Udepur and Panchmahal districts (by lift) (27470 ha Annual irrigation).
- Target Command in Saurashtra (18000 ha Annual irrigation).

Thus there is a proposal to retain the originally proposed enroute command of 76500 ha (about 33% of total command), reduce the target command in Saurashtra from 1.51 Lakh ha to 18000 ha (about 8 % of total command area), include command of about 45000 ha of 5

medium schemes (about 25% of total command) and provide Irrigation to Tribal areas in Chhota Udepur, Panchmahal, Valsad and Dangs districts for about 76000 ha (about 33% of total command). The Secretary (WR, RD & GR) held a meeting with Hon'ble Chief Minister of Gujarat on 31.12.2016 at Gandhinagar and made presentation on the revised scenario of this link. Response from Govt. of Gujarat was positive.

(iv) Intra-State links:

NWDA so far has received 46 proposals of Intra-State links from 9 States viz; Maharashtra, Gujarat, Jharkhand, Odisha, Bihar, Rajasthan, Tamil Nadu, Karnataka and Chhattisgarh. The Pre-feasibility Reports (PFRs) of 36 Intra-State links have been completed. The DPR of 2 Intra-State links namely (i) Burhi Gandak-Noon-Baya-Ganga and (ii) Kosi - Mechi of Bihar were earlier completed and submitted to Govt. of Bihar in December, 2013 and March, 2014 respectively. These are under appraisal in Central Water Commission. The Ponnaiyar - Palar link of Tamil Nadu, Wainganga-Nalganga link of Maharashtra, Barakar-Damodar-Subarnarekha link of Jharkhand and Vamsadhara-Rushikulya of Odisha have been taken up for preparation of DPR by NWDA on the request made by the concerned States.

The Detailed Project Report of Kosi-Mechi Intra-State link project was submitted to CWC for examination. After establishing technical viability, the Kosi-Mechi link project was considered by the Advisory Committee on Irrigation, Flood Control & Multipurpose Projects of Ministry of Water Resources, RD & GR chaired by the Secretary (WR, RD & GR) in its meeting held on 8th July, 2016. After deliberation, the Advisory Committee accepted the Kosi-Mechi link project proposal subject to the Statutory Clearances.

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 along with 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.

Extract (Para 63) of Supreme Court's Judgment on Networking of Rivers:

"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".

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 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, River Development and Ganga Rejuvenation for carrying forward the inter-linking of rivers programme.

In compliance MoWR, RD and GR has constituted a committee called Special Committee on Interlinking of Rivers under the Chairpersonship of Hon'ble Minister

for WR, RD & GR vide Gazette Notification dated 23rd September, 2014.

Eleven 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, 29.04.2016, 26.07.2016 and 09.11.2016 respectively at New Delhi. 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 restructuring of National Water Development Agency and (iv) Sub-Committee for consensus building through negotiations and arriving at agreement between concerned States. The three Sub-Committees (i-iii) have been constituted vide MoWR, RD&GR O.M. dated 13.02.2015. Seven meetings of the Sub-Committee –I have been held so far on 26.02.2015, 11.03.2015, 07.04.2015, 30.06.2015, 21.08.2015, 29.09.2015 and 26.07.2016. Nine meetings of the Sub-Committee –II have been held so far on 26.02.2015, 12.03.2015, 07.04.2015, 11.05.2015, 28.07.2015, 21.08.2015, 29.09.2015, 13.05.2016 and 30.08.2016.

A Consensus Group has been constituted by Ministry of Water Resources in June, 2002, under the Chairmanship of Chairman, Central Water Commission with DG, NWDA as Member Secretary. 11 meetings of the Group were held. This group has been renamed as 'Sub-Committee for consensus building through negotiations and arriving at agreements between the concerned states'. This Sub-Committee-IV has held two meetings on 17.04.2015 and 30.10.2015.

The Sub-Committee-III for Restructuring of National Water Development Agency had completed the assigned work and submitted its Report to Hon'ble Minister (WR, RD & GR) and Chairperson, Special Committee on 21.09.2015. Cabinet in its meeting held on 15.11.2016 had reviewed the status-cum-progress report of ILR projects.

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.

SPECIAL GENERAL MEETING (SGM) & ANNUAL GENERAL MEETING (AGM)

Fifth (5th) Special General Meeting (SGM) &thirtieth (30th) Annual General Meeting (AGM) of National Water Development Agency (NWDA) Society were held under the Chairpersonship of Sushri Uma Bharti, Hon'ble Minister for Water Resources, River Development and Ganga Rejuvenation on 22nd June, 2016 at New Delhi. Shri Sanwar Lal Jat, Hon'ble Minister of State for WR, RD & GR; Shri Mathew T. Thomas, Hon'ble Minister, Water Resources Department, Govt. of Kerala; Shri Girish Mahajan, Hon'ble Minister of Water Resources, Govt. of Maharashtra; Shri Surender Singh Patel, Hon'ble Minister of State for Irrigation, Govt. of Uttar Pradesh; Shri T. Harish Rao, Hon'ble Minister of Irrigation, Govt.of Telangana; Shri Devineni Uma Maheshwar Rao, Hon'ble Minister of Water Resources, Govt. of Andhra Pradesh; Shri Rajiv Ranjan Singh, Hon'ble Minister, WRD, Bihar and Shri Babubhai Bokhiriya, Hon'ble Minister, Water Resources, Government of Gujarat and Members/representatives from various Central Government and State Government Organisations attended the meeting.

GOVERNING BODY (GB) MEETING

63rd Governing Body Meeting of NWDA was held under the chairmanship of Secretary (WR, RD & GR) on 13.06.2016 at New Delhi. Principal Secretaries or representatives of State and Senior Officers of MoWR, RD & GR, CWC and NWDA attended the meeting.

62nd Meeting of Governing Body, 27th January, 2016 at New Delhi

FORTY SECOND (42ND) MEETING OF TECHNICAL ADVISORY COMMITTEE (TAC)

The Forty second (42nd) meeting of TAC of NWDA was held on 23rd May, 2016 at New Delhi under the Chairmanship of Chairman, CWC. TAC considered and approved the modified guidelines regarding the preparation of Preliminary Water Balance Study report.

NABARD FUNDING UNDER PMKSY-AIBP

A Project Monitoring Unit (PMU) will be established under NWDA to work in coordination with CWC for monitoring as well as updation of information under PMKSY. This will help NWDA to process and recommend the process for NABARD funding and release of Central Assistance to the State under PMKSY-AIBP. PMU shall be headed by an officer of the rank of Chief Engineer with supporting units comprising of experts.

PMU shall prepare a comprehensive note based upon monitoring reports of Third Party & CWC regarding eligibility of further release of CA. Further, recommendation to NABARD shall also be given regarding release of State share.

NWDA shall act as pass through window for CA to be provided to States through NABARD funding. It shall ensure that funds received from NABARD are released for projects within 1 day of its receipt from NABARD so as to avoid any parking of funds.

Based on joint proposals received in mission, Third party monitoring visits would be planned in such a way that such reports are available before release of next installment. Further, the visits of third party shall be planned keeping in view of the visits that shall be made by the CWC.

NWDA has been identified to act as an agency for borrowing resources from LTIF and release Central Assistance to the State Governments towards the prioritized PMKSY-AIBP (Major & Medium Irrigation) Projects and their CADWM works, for their completion in time bound manner. Memorandum of Agreement for borrowing from NABARD to fund Central share in these projects was signed by this Ministry of Water Resources, RD & GR, NWDA and NABARD on 6th September, 2016.

INDIA WATER WEEK-2016.

The Ministry of Water Resources, River Development and Ganga Rejuvenation, Govt. of India has been organizing India Water Week (IWW) as an international conference cum exhibition event since 2012. NWDA has been entrusted with the task of organizing the India Water Week by the MoWR, RD & GR.

The fourth India Water Week-2016 with the theme “Water for All-Striving Together” was organized during 4- 8 April, 2016 at New Delhi comprising of an

International Conference and Exhibition. Israel was associated as Partner Country in the organization of IWW-2016. The Hon'ble President of India was the Chief Guest for the valedictory function of the Conference on 8th April, 2016.

The conference encompassed all major topics related to water resources development and management and thus provided the right platform for the Water Resources fraternity for coming out with pragmatic strategies towards achieving the goal of 'Water for All' in line with Government of India's vision, "*Sab Ka Sath, Sab Ka Vikaas*". The issue of water scarcity was also discussed and covered in the relevant session of the conference.

The entire event was organized by NWDA in association with CWC and other organizations of MoWR, RD &GR. About 1500 delegates from India and abroad participated in the conference.

PARTICIPATION IN INDIA INTERNATIONAL TRADE FAIR – 2016 AND OTHER WATER EXPO

NWDA participated in following events:

- India International Trade Fair during 14-27 November, 2016 at New Delhi
- India International Science Festival during 7-11 December, 2016 at New Delhi.

NATIONAL INSTITUTE OF HYDROLOGY (NIH)

The National Institute of Hydrology, a Govt. of India Society under the Ministry of Water Resources, River Development & Ganga Rejuvenation, 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. The objectives of NIH are:

- 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.

Er R D Singh, Director NIH was awarded Rajbhasha Kirti Purskar by the Hon'ble President of India on September 14, 2016 at Rashtrapati Bhawan, New Delhi.

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 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.

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: (1) Hard Rock Regional Centre (Belgaum), (2) Western Himalayan Regional Centre (Jammu), (3) Deltaic Regional Centre (Kakinada); (4) Central India Hydrology Regional Centre (Bhopal), (5) Centre for Flood Management Studies for Brahmaputra basin (Guwahati), and (6) Centre for Flood Management Studies for Ganga basin (Patna).

MAJOR RESEARCH AREAS

The major research areas identified under 12th Plan are:

- 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

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

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
- Water Quality
- Snow & Glacier
- Centre of Excellence for Advanced Groundwater Research
- 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 2016-17, the Institute has published 162 papers in reputed international and national journals and proceedings of international and national conferences and symposia. During the year, 59 studies were going on.

India Water Week Exhibition-2016 on the theme: Water for All – Striving Together at Pragati Maidan org. by MOWR during April 4-8, 2016

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 21 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 state. Thirty-one Scientists and scientific staff of the Institute were trained at various places in the country.

IMPORTANT EVENTS

The Institute participated in the 36th India International Trade Fair (IITF-2016), held at New Delhi during Nov 14-27, 2016, by putting up a stall in the pavilion of Ministry of Water Resources showcasing activities of the Institute - Physical models of Hydrologic Cycle and Working Model of Sewage Treatment based on Constructed Wetland Technology during the exhibition.

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

North Eastern Regional Institute of Water and Land Management (NERIWALM) is a Registered Society under the administrative control of the Ministry of Water Resources, RD & GR, Government of India. This is only Water and Land Management Institute (WLMI) established and governed by Government of India and serving eight states of North East. It was established by North Eastern Council (NEC), Shillong, Ministry of Home Affairs during December, 1989. It was transferred to Ministry of Water Resources, RD & GR by the NEC, Ministry of Development of North Eastern Region (DoNER) w.e.f. 1st April, 2012. NERIWALM 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, MoWR, RD & GR.

ACHIEVEMENT OF ACTIVITIES

The Institute has been conducting different capacity building activities based on an approved Training Calendar, 2016-17. The capacity building activities include training programmes, conferences, workshop and seminars covering various subjects and issues related to water and land resources management and fulfilling objectives of National Water Policy and National Water Mission, Government of India. Physical and financial achievements and new initiative taken up from April to December, 2016 and likely/anticipated achievements from January, 2017 to March, 2017 are given below:

Physical and financial achievement and new initiatives of activities during 2016-17

Activity	Achievement from 1st April, 2016 to 31st December, 2016		Anticipated achievement 1st January to 31st March, 2017	
	Physical (Nos.)	Financial (Rs. lakh)	Physical (Nos.)	Financial (Rs. lakh)
Capacity building activities (training/workshop/conferences)	40	6.40	15	5.60
Programme sponsored by National Water Mission				
a) Training programmes	01	0.88	03	3.69
b) R&D on Base line study on Water Use Efficiency of five irrigation projects	04	12.95	04(continued) 01(new)	4.70
c) As Nodal Agency of NWM for preparation of State Specific Action Plan (SSAP) of Water Sector (Phase-I) : 12 states	09 States	175.44	03 States	60.00
d) Phase-II Seven NE Region States	--	--	07 states (under process)	*84.00 (*subject to release)
New Initiatives				
a) Collaborative programme with Assam Agricultural University on "In –situ Water Management in different Crops"	04	0.80	01	0.20
b) Collaborative programme with ICAR NE Hills Centre, Umium, Shillong on " Rain water Harvesting"	01	0.25	02	0.50

NATIONAL GANGA RIVER BASIN AUTHORITY (NGRBA)

NATIONAL MISSION FOR CLEAN GANGA

National Mission for Clean Ganga (NMCG), registered as a society on 12.8.2011 under the Societies Registration Act'1860. It acted as implementation arm of National Ganga River Basin Authority (NGRBA) which was constituted under the provisions of the Environment (Protection) Act (EPA), 1986. NGRBA thereafter, has been dissolved with effect from the 7.10.2016, since constitution of National Council for Rejuvenation, Protection and Management of River Ganga (referred as National Ganga Council) vide notification no. S.O. 3187(E) dt. 7-10-2016 under EPA'1986.

The Act envisages five tier structure at national, state and district level to take measures for prevention, control and abatement of environmental pollution in river Ganga and to ensure continuous adequate flow of water so as to rejuvenate the river Ganga as below:

- National Ganga Council under chairmanship of Hon'ble Prime Minister of India,
- Empowered Task Force (ETF) on river Ganga under chairmanship of Hon'ble Union Minister of Water Resources, River Development and Ganga Rejuvenation,

- National Mission for Clean Ganga (NMCG),
- State Ganga Committees, and
- District Ganga Committees in every specified district abutting river Ganga and its tributaries in the states.

NMCG has a two-tier management structure and comprises of Governing Council and Executive Committee. Both of them are headed by Director General, NMCG. Executive Committee has been authorized to accord approval for all projects up to Rs.1000 crore. Similar to structure at national level, State Programme Management Groups (SPMGs) acts as implementing arm of State Ganga Committees. Thus the newly created structure attempts to bring all stakeholders on one platform to take a holistic approach towards the task of Ganga cleaning and rejuvenation.

The first Meeting of ETF, chaired by Hon'ble Union Minister of Water Resources, River Development and Ganga Rejuvenation, was held on 8.2.2017.

Cleaning of Ghats

FUNDING & SANCTION OF PROJECTS

NMCG receives grants from Government of India for implementing the *Namami Gange* Program. The allocation for this program for the current financial year of 2016 – 17 is BE Rs. 2,500 crore divided into four components viz.: (i) NRCP-Externally Aided Program, (ii) NRCP- Non Externally Aided Program, (iii) National Ganga Plan, and (iv) Ghat Works and Beautification of River Fronts.

During FY:2061-17, an amount of Rs. 735.40 crore was released to State Programme Management Groups (SPMGs) for the implementation of the projects under NGRBA till end of December 2016.

Financial achievement (Rs. Crore)

Particulars	Amount
01.04.2016 to 31.12.2016	735.40
Anticipated achievement/ released against various projects for the period from January to March,2017	105.00

POLLUTION MANAGEMENT

Cleaning of river Ganga is being carried out through various activities focusing on point and non-point sources for abatement of pollution, including treatment of municipal sewage, treatment of industrial effluent, river surface cleaning, rural sanitation, afforestation & bio-diversity etc. The details are given in following paras.

(i) Municipal Pollution:

The municipal sewage being generated in cities on banks of Ganga is being managed by a mix of Interception & Diversion projects, sewerage network and Sewage Treatment Plant (STP) projects. As on 31.12.2016 aggregate of 145 MLD capacity and sewerage network of 1050 km has been completed and made operational under NGRBA/ Namami Gange. Further, STP projects with additional treatment capacity of 728 MLD and sewerage network projects of 3960 km have been sanctioned and are in various stages of implementation.

NMCG has so far sanctioned 86 Sewerage Infrastructure projects in 57 towns in Ganga River Basin at Rs. 8558.65 Crore under Namami Gange Program including Externally Aided projects (EAP)

component with the assistance of Japan International Agency (JICA) and the World Bank. Details are as under:

EAP Components under Namami Gange

State	No. of towns	No. of Projects	Total Sanctioned Cost (Rs. Crore)	Total Exp. (Rs. Crore)	No. of projects completed
Uttarakhand	11	20	287.16	100.05	7
Uttar Pradesh	11	18	2742.99	1044.12	4
Bihar	7	14	2155.62	160.61	
Jharkhand	1	1	146.59	12.57	
West Bengal	24	30	1352.51	682.82	24
Haryana	2	2	217.87	188.23	
Delhi	1	1	1655.91	17.18	
Total	**57**	**86**	**8558.65**	**2205.58**	**35**

(ii) Industrial Pollution:

In context of industrial pollution, besides others, tannery, textile, sugar, paper & pulp and distillery have been identified as polluting industries. For prevention of pollution from industrial units in Ganga Basin, out of 27 molasses based distilleries, Zero Liquid Discharge (ZLD) has been achieved in 17. Further, out of 67 paper and pulp industries, water conservation norms have been achieved in 55 and effluent treatment to the tertiary level has been achieved in 58 of them. Verification of compliance status to the latest standards notified by Ministry of Environment & Forest & Climate Change (MoEF&CC) in respect of sugar industry is under progress and wastewater generation norms of 200 liters/ton has been achieved in 45 out of 67 of such sugar units.

Tannery and textile sectors are dominated by small scale units and adoption of CETPs is a viable and environmentally sound option for management of their effluent. DiagNos.tic and feasibility studies have been carried out by NMCG and it suggests Zero Liquid discharge (ZLD) based CETP as a reliable and environmentally sound option for effluent management from small scale industries in Ganga Basin. Towards this, following initiatives have been taken.

- Preparation of Detailed Project Report (DPR) for Zero Liquid discharge (ZLD) based system for tannery cluster at Jajmau, Kanpur.
- DiagNos.tic Study and Feasibility Report (DS&FR) and DPR preparation for 5 Textile cluster namely Pilkhua, Farukhabad, Mathura, Ruma and Bhadoi.

(a) Tanneries: Out of total 456 existing tannery units located in U.P, 14 have been dismantled and 442 remain functional. Amongst these functional 442 units, 437 units comprising into 3 clusters in U.P. viz., Kanpur (400 units), Banther (23 units), and Unnao (14 units) are connected to CETPs. All the three CETPs are non-compliant so far as Central Pollution Control Board (CPCB) norms are concerned and directions have been issue for their up-gradation. Accordingly, DPR has been prepared for ZLD based CETP for tannery cluster at Jajmau, Kanpur. However, functional ETPs exists for balance 5 units located in UP.

(b) Textile: DiagNos.tic Study and Feasibility Report (DSFR) for CETP at 4 textile cluster (Philkua, Mathura, Farukhabad, and Ruma) have been completed. Tamil Nadu Water Investment Company Ltd. (TWIC) has been asked to prepare DPR in respect of these 4 clusters.

Preparation of DSFR in respect of Badohi Textile cluster is in progress.

(iii) Monitoring of Pollution:

Towards monitoring of industrial pollution, effluent monitoring stations (EMS) have been installed in 572 out of 760 GPIs and real time reports are being captured at dashboard from 266 such installations. 135 GPIs have been closed for non-compliance to stipulated norms and 17 have been exempted as ZLD has been achieved in them. Balance 36 units are under process of installation of online EMS. Further, monitoring data connectivity to MoWR, RD & GR, CPCB, State and SPCBs is being undertaken on priority.

Monitoring of River Pollution

Water quality monitoring is being carried out by manual monitoring at 57 locations. Beside 8 existing real time water quality monitoring station (RTWQMS), a network of 71 such stations has been planned. Installation of 36 RTWQMS planned in Phase – 1 is under progress out of 5 stations have been operationalised. Installation and operationalization of balance station are under process.

(iv) Entry Level Activities:

The entry level activities have been initiated through Central Public Sector Units (CPSUs) for providing visible impact in short term. The entry level activities include river surface cleaning, repair / modernization / development of ghats and crematoria.

(a) River Surface Cleaning: River surface cleaning services through trash skimmers have been hired for 11 towns. These trash skimmers are operational in Patna (Bihar) and Sahibganj (Jharkhand). Mobilization is under progress for the remaining towns. However, manual cleaning operations have started from 1.1.2017.

River surface cleaning through trash skimmers

(b) Ghat Cleaning: IL&FS Environmental Infrastructure and Services Ltd. (IEISL) has been engaged for cleaning of 84 ghats in Varanasi for 3 years and a tripartite agreement between NMCG, Varanasi Nagar Nigam and IEISL has been signed and work has commenced from 17/10/2016.

(c) Ghats/ Crematoria: Details of Ghats/ Crematoria taken up in states are as under:

Ghats / Crematorium Cleaning

State	No. of towns	Total Sanctioned Cost (Rs. Crore)	No. of Ghats to be created	No. of crematoria to be created
Uttarakhand	5	207.36	35	35
Uttar Pradesh	7	697.73	97	66
Bihar	4	134.06	21	5
Jharkhand	2	70.76	15	4
West Bengal	3	21	11	6
Total	**21**	**1130.91**	**179**	**116**

RURAL SANITATION AND GANGA GRAM

Ganga Gram initiative has been conceptualized to promote rural sanitation in the villages located on the banks of river Ganga with an aim to reduce the pollution load on river Ganga from such villages. Major activities of Ganga Gram are:

- Making villages open defecation free.
- Management of village solid and liquid wastes entering in the river and increasing pollution load.
- Promotion of organic farming to control pollution from use of pesticides and fertilizers in agriculture.
- Plantation of medicinal plants.
- Rejuvenation of village ponds and ground water recharging.
- Setting up crematoria etc.

Ministry of Drinking Water and Sanitation has been provided Rs. 578 Crore to undertake rural sanitation activities in 1651 Gram Panchayats. Ministry of Drinking Water and Sanitation has completed construction of 8,53,397 toilets out of targeted 15,27,105 units.

Project on Rural Sanitation initiatives for Ganga Rejuvenation in Jharkhand amounting to Rs. 127 Crore is being implemented by United Nations Development Program (UNDP). The projects covers 78 villages (46100 Households) in Sahibganj District of Jharkhand and aims at following:

(i) Biodiversity Conservation:

Initiatives through Wildlife Institute of India (WII), Dehradun, a science based aquatic species restoration plan by involving multiple stakeholders has been initiated. Similarly, initiatives through Central Institute for Inland Fisheries (CIFRI) to assess fish composition, diversity, fish production and habitat alteration to develop a comprehensive conservation and restoration plan for fisheries was initiated. Initiatives through CEE, aqua life conservation education programme on educating school children and village community for sustainable actions was also carried out.

(ii) Afforestation:

Forest Research Institute (FRI), Dehradun was entrusted an assignment to prepare Detailed Project Report (DPR) on "Forestry Intervention for Ganga". The DPR includes the proposals for various forestry interventions of the 5 participating states of Uttarakhand, UP, Bihar, Jharkhand and West Bengal with a total cost of 2300 Crore and implementation period of 5 years w.e.f FY: 2016-17 to 2020-21. Rs.50.8 Crore was released in this financial year against action plan of States.

SYNERGY WITH CENTRAL MINISTRIES

Signing of Memorandum of Undertakings (MoUs) with Central Ministries has been carried out as per details below for effective coordination

and establishing synergy with various government ministries. These ministries are Shipping, Human Resource Development, Rural Development, Railways, Tourism, AYUSH, Petroleum (Indian Oil Corporation Limited for Mathura Refinery), Department of Youth Affairs, Drinking Water & Sanitation, Agriculture.

ECO TASK FORCE/ GANGA TASK FORCE

For awareness, monitoring, organized participation and crowd management etc. one Battalion Ganga Eco-Task Force, a Territorial Army unit, was deployed. Composite Eco Task Force has been deployed in various locations along the main stem of the river, with the objective to guard Ghats, plantation, manage mass congregations, lead public participation and mass mobilization, public awareness and strengthening public involvement etc. Territorial Army was engaged for one year initially and their period of engagement has been now extended for next seven months.

INTERNATIONAL COOPERATION

NMCG endeavors to deploy best available knowledge and resources across the world for Ganga rejuvenation. Clean Ganga has been a perennial attraction for many international countries that have expertise in river rejuvenation. Countries such as Australia, United Kingdom, Germany, Finland, Israel etc. have shown interest in collaborating with India for Ganga rejuvenation. Germany has signed an implementation agreement with National Mission for Clean Ganga for technical cooperation worth of 3 million Euros. The main focus of this cooperation is on Indo-German knowledge exchange, information & data management, and public outreach both at national level and Uttarakhand State level. KfW, the German Development Bank, has offered a financial cooperation for Euro 120 million for the State of Uttarakhand. Ganga rejuvenation has also attracted funding from multilateral agencies such as World Bank (Us $ 1 billion) and Japan International Cooperation Agency (Rs.496.90 Cr).

PUBLIC OUTREACH

The following important media activities were organized:

- **Sarpanch Sammelan:** This programme was conducted in Allahabad on 20th August 2016 during which Hon. Union Minister for Water Resources, River Development and Ganga Rejuvenation addressed 1651 Sarpanchs of villages along river Ganga. During this programme, Seechewal model for rural sanitation was apprised for waste water management in villages along the river.
- **NMCG pavilion at International Trade Fair-2016:** In an attempt to popularize Namami Gange programme and showcase the activities and steps taken to cleanse river Ganga, a pavilion was put up at International Trade Fair in November 2016 in New Delhi, which was awarded.
- **India International Science Festival-2016:** NMCG also participated in IISF in December 2016 in New Delhi to evoke the interests of technocrats to contribute in the Namami Gange programme.
- **Pravasi Bharatiya Divas-2017:** NMCG participated in the Pravasi Bharatiya Divas in January 2017 in Bangalore and was benefitted by invaluable suggestions of the NRI community from across the globe. The participation proved fruitful as several overseas residents showed interest in Namami Gange programme and extended assistance. Minister of State for Water Resources, River Development and Ganga Rejuvenation Mr. Vijay Goel visited the NMCG stall and applauded the NMCG efforts.

STATUTORY BODIES

BRAHMAPUTRA BOARD

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 West Bengal (Jalpaiguri, Coochbehar, Alipurduar and Darjeeling districts falling in Brahmaputra Basin).

The proposal of restructuring of Brahmaputra Board is under active consideration of the Ministry so as to enable the Board to address various Water Resources Development issues of all North-Eastern States.

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; 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 Modeling, 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 Governments 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:

(i) Master Plans:

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 as under in Table below:

Master Plans at Main Stem of the Brahmaputra and Barak

Part	River	No.	Status
Part-I	Main stem Brahmaputra River	1	Approved by Government of India
Part-II	Master Plan on Barak River and its tributaries except Dhaleswari	1	Approved by Government of India
Part-III	Master Plan on tributaries of the Brahmaputra and rivers of Tripura including Majuli Island and Dhaleswari	68	○ Approved by Government of India-47 Master Plans ○ Approved by the Board and submitted to MoWR,RD&GR for approval. Further observations of MoWR,RD&GR, Further updated as per suggestion of MoWR,RD&GR utilising tools of modern technology- 8 Master Plans ○ Draft Master Plan completed and under process of submission to MoWR,RD&GR, for Approval of Government of India-5 Master Plans ○ New Master Plans identified - 8 Sub-basins
Total		70	

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 2016-17: 8 Master Plans approved by the Board were submitted for approval of MoWR,RD&GR. These Master Plans are further modified incorporating some additional data collected utilizing tools of modern technology.

Master Plan of Imphal River in Manipur, Feni River in Tripura and 2 Master Plans in the State of Mizoram, namely, Tuichang and Kaladan (Kolodyne) are identified for preparation of Master Plans during XII Plan.

(ii) '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. Status of Projects currently under S & I and DPR preparation is given below:

Survey & Investigation' of 14 of Multipurpose Projects in Brahmaputra & Barak Basin

Sl No.	Name of Project	Basin	Installed Capacity (MW)	Status
A- Completed DPR				
1	Dihang (Siang) Dam Project	Brahmaputra	20000	Single- stage project DPR was completed in 1983 by the Board. Handed over to NHPC under 3 stage development in 2000
2	Subansiri Dam Project	Brahmaputra	4800	Single stage project DPR was completed in 1983 by the Board. Handed over to NHPC under 3 stage development in 2000
3	Tipaimukh Dam Project	Barak	1500	DPR completed in 1995.Handed over to NEEPCO in 1999
4	Bairabi Dam Project	Barak	75	Handed over to Govt. of Mizoram in 2000
5	Pagladiya Dam Project	Brahmaputra	3	Under Implementation of Brahmaputra Board. Field activities halted due to non completion of zirath survey by Government of Assam.
B- DPR Partially completed				
1	Dibang Dam Project	Brahmaputra	4900	S & I Executed by the Board and DPR partially completed. Handed over to NHPC in 2006.
2	Lohit Dam Project	Brahmaputra	3000	S & I completed. Project entrusted to Private Developer by Govt. of Arunachal Pradesh in 2009
3	Kynshi Stage-I Dam Project	Others	450	S & I was under final stage of completion. Govt of Meghalaya assigned the Project private developers in 2011
4	Kynshi Stage-II Dam Project	Others	450	

Status of Projects currently under S & I and DPR preparation

Name of Project	State	Basin	Installed Capacity (MW)	Status
Kulsi Multi-Purpose Project(Identified as National Project)	Assam & Meghalaya	Brahmaputra	55	DPR Completed in June 2014 is under appraisal of CWC for techno-economic clearance
Noa-Dehing Dam Project(Identified as National Project)	Arunachal Pradesh	Brahmaputra	71	DPR Completed in March 2014 is under appraisal of CWC for techno-economic clearance
Simsang Dam Project	Meghalaya	Others	65	DPR to be completed by March 2019
Killing Dam Project	Assam & Meghalaya	Brahmaputra	85	DPR to be completed by December 2017
Jiadhal Dam Project	Arunachal Pradesh	Brahmaputra	70	DPR to be completed by March 2018

ANTI-EROSION AND FLOOD MANAGEMENT SCHEMES

(i) Protection of Majuli Island from Flood and Erosion:

Majuli is the largest inhabited fresh water River Island in the world. It is situated between latitudes 26º45'N and 27º10'N, and longitudes between 93º40'E and 94º35'E. Majuli has been the cultural capital and the cradle of Assamese civilization since the 16th century. Sankardeva, a pioneer of the medieval-age neo-vaishnavite movement, preached a monotheist form of Hinduism called as Vaishnavism and established monasteries and hermitages known as sattras. The sattras preserve antiques like weapons, utensils, jewellery and other items of cultural significance. The inhabitants of Majuli are mostly tribals - predominantly from the Mising, Deori and Sonowal Kachari tribes. Majuli is also famous for pottery.

Majuli Island has constantly been subjected to erosion by the mighty Brahmaputra. Responsibility for undertaking anti-erosion works for protection of certain spots in 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 524.29 sq km till the year 2016. Currently, works under Phase-II &III are under execution. Construction of 4 out of 5 spurs, river bank revetments, laying permeable RCC porcupine screens, construction of 'Raised Platforms' in low lying flood vulnerable areas completed. Remaining works of Spur No. 2 will be completed by March 2017.

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. MoDoNER accorded approval for funding Rs. 207.00crore to implement works for Protection of Majuli Island from flood and erosion under NLCP in the phasing of three years from 2016-17 to 2018-19.

Measures for Protection of Majuli Island From Floods and Erosion Phase-II & III

Sl. No.	Description	Estimated Cost	Actual Expenditure	Remarks
1	Phase-II & Phase-III	115.99cr	117.50 cr (up to31.12.206	96.27% of physical progress has been achieved. Targeted to be completed by March, 2017.
2	Phase-IV	MoWR,RD&GR accorded approval of Rs. 35.00 crore to implement additional works.		

(ii) Restoration of Dibang and Lohit Rivers at Dhola-Hatighuli:

Avulsion of left bank of River Lohit occurred at confluence of Lohit with Dibang - near Dhola-Hatighuli located in Dumdooma, Civil Sub-division of Tinsukia district in 1989 due to breach in Saikhowa Bund. Gradual widening of the channel with time was threatening the existence of more areas of Tinsukia and Dibrugarh Districts of Assam situated all along the newly developed channel. Initially significant combined flow of Dibang and Lohit rivers started to pass through Ananta Nala to Dangari – a tributary of river Dibru. Since the year 2000, the Balu Nala became dominant and almost entire diverted flow of Lohit and

Dibang Rivers started passing through Balu Nala. Gradual widening of the channel with time was the threatening existence of more areas of Tinsukia and Dibrugarh Districts of Assam, situated along the newly developed channel.

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 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 which hitherto were part of main channel of Dibang River are now completely protected from floods and erosion. The desertees from the 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. Phase – IV works completed in March 2016 as below:

Construction of Retirement Bund at Hatighuli Area on Left Bank of Lohit River

Sl. No.	Description	Estimated Cost (Rs. in crore)	Actual Expenditure (Rs. in crore)	Remarks
1	Phase-IV (December 2013)	54.43	56.50 (up to December'16)	Completed in March 2016.

(iii) Other Schemes:

a) Protection of Balat Village in Meghalaya on River Umngi. Part –I of scheme amounting Rs. 5.63 crore was taken up for implementation and completed with an expenditure of Rs. 4.82 crore.

b) Anti-erosion works for protection of Mankachar, Kalair-Alga International Border area from erosion of river Brahmaputra, Assam- Implementation of the scheme started in March 2015.Work of bank revetment works with boulder spur has to be modified substituting boulder with Geo-bag due to ban by Hon'ble High Court of Meghalaya on boulder extraction. The DPR has been revised substituting boulder by geobag; it was cleared by CWC for Rs. 20.25 crore. Further, due to inability of state Government to provide land, the work of construction of retirement bund is held up. Expenditure is Rs. 3.45 crore up to December 2016.

c) An anti-erosion measure in Maslabari in Assam near International Border-tender for implementation of the scheme is under process.

DRAINAGE DEVELOPMENT SCHEMES (DDS)

Brahmaputra Board identified41 drainage congested areas for preparation of Detailed Project Report (DPR)based upon the studies carried out under49 approved Master Plans. During 2016-17, the DPR of Pola DDS completed and Techno-economic clearance has been received.

Regarding Demow DDS, CWC requested to get the design of the DPR of Demow DDS to be vetted from CWC headquarters.

MONITORING OF SCHEMES UNDER FLOOD MANAGEMENT PROGRAMME

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 Five Year Plan. Details of schemes undertaken by Government of India under Flood Management Programme and monitored by Brahmaputra Board is shown below in Tables shown below:

Details of schemes undertaken by Government of India under Flood Management Programme and monitored by Brahmaputra Board during X Plan

Name of State	Nos of schemes	Central Grant released (Rs. crore)
Assam	44	78.8182
Arunachal Pradesh	7	16.3755
Manipur	4	7.911
Mizoram	3	6.1980
Tripura	7	12.7635
Meghalaya	2	2.635
Nagaland	1	3.897
Sikkim	3	8.595
West Bengal	3	9.01
Total	**74**	**146.2032**

Details of schemes undertaken by Government of India under Flood Management Programme and monitored by Brahmaputra Board during XI Plan

Name of State	**Nos of schemes**	**Central Grant released** (Rs. in crore)
Assam	100	748.860
Arunachal Pradesh	21	80.409
West Bengal	6	13.394
Sikkim	28	83.689
Nagaland	11	28.965
Manipur	22	66.3365
Tripura	11	23.625
Meghalaya	0	3.814
Mizoram	2	14.4845

Details of schemes undertaken by Government of India under Flood Management Programme and monitored by Brahmaputra Board Status during XII Plan

State	No of Scheme	Estimated Cost	Central Share	State Share	Central Share Released up to31.03.12	No of schemes completed during XI Plan	No of schemes spilled over to XII Plan	Spill over Central Share	Schemes approved in XII Plan	Central Share released
Arunachal Pradesh	21	224.68	202.21	22.47	78.77	11	10	123.44	0	64.219
Assam	100	1146.79	1032.12	114.67	744.9	77	23	287.22	41	66.14
Manipur	22	109.34	98.41	10.93	65.03	20	2	33.37		6.45
Meghalaya	0	-	-	-	-	-	-	-		0
Mizoram	2	9.13	8.22	0.91	3.4	Nil	2	4.82		0

State	No of Scheme	Estimated Cost	Central Share	State Share	Central Share Released up to31.03.12	No of schemes completed during XI Plan	No of schemes spilled over to XII Plan	Spill over Central Share	Schemes approved in XII Plan	Central Share released
Nagaland	11	49.35	44.42	4.93	28.96	9	2	15.46	3	15.59
Tripura	11	26.57	23.91	2.66	20.91	4	7	3		0
Sikkim	28	165.59	149.03	16.56	82.86	21	7	66.17	17	8.15
West Bengal	6	22.33	16.75	5.58	13.39	6	0	3.36		0
Total	201	1753.78	1575.07	178.71	1038.22	148	53	536.84	61	16.549

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.

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) is 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 (1.4.2016 to 30.12.2016) four Meetings of the Sardar Sarovar Reservoir Regulation Committee, two meetings of Power Sub–Committee, one meeting each of Narmada Main Canal (NMC) Sub-Committee, Environment Sub-Committee and Task Force of NCA were held.

PROGRESS OF SARDAR SAROVAR PROJECT

(i) SSP Dam:

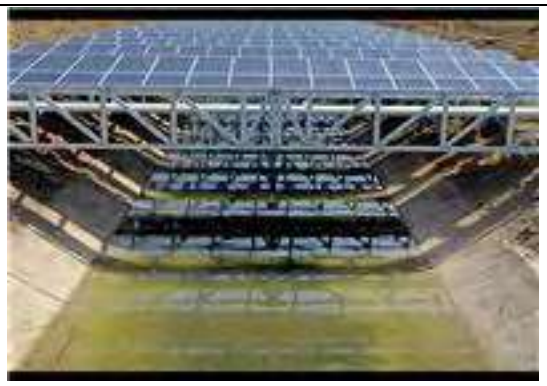
NCA in its 86th (emergency) Meeting held on 12th June, 2014 decided that "The Sardar Sarovar Narmada Nigam Limited is permitted to carry out Phase-I proposal comprising construction of piers, overhead bridge and installation of gates in open or raised position at SSP as per the approved design. The project authorities should comply with the conditions as laid down by the two Sub-groups of NCA. Particular care may be taken in preparing plan to provide timely safeguard in case of untoward / unforeseen incident,"

As per the decision, the construction of Sardar Sarovar Dam up to full height to facilitate FRL of 138.68 Meter in a phased manner,Phase-1 construction of piers, overhead bridge & installation of gates to be kept in open/raised position have been completed. 432 nos. of instrument required for installation in Dam were procured and the work is nearing completion. An expenditure ofRs.5708.05 Crore has been incurred on Dam and Appurtenant works (Unit-1) up toOctober, 2016 out of which Rs. 95.6 Crore was incurred during the year 2016-17.

(ii) Narmada Canal:

Works on Narmada Main Canal (NMC) from Head Regulator to Gujarat Rajasthan border (Ch. 0 to 458.318 km) is almost completed. Works of 74.0 km. Narmada Main Canal in Rajasthan is also completed.

In Gujarat the works on all branch canals of NMC from 0 to 458.318 km have almost been completed except Kachh Branch Canal. 95 % of distribution system in NMC from 0 KM to 144.5 km up to minor level have been completed and balance work is scheduled to be completed in the year 2016-17. 61 % of distribution system including sub minors have been completed and balance work is scheduled to be completed in the year 2016-17. The progress of Narmada Canal portion in Rajasthan is about 99.98% and only 4 km portion at sub minor level is remaining due to local issues.



Naramada Canal: 1 MW Canal Top Solar Project

UTILIZATION OF WATER

The Narmada water is being supplied to Central Gujarat/ North Gujarat and Saurashtra region of Gujarat. Partial irrigation benefits are being achieved by releasing Narmada water from the Sardar Sarovar Dam since it has been raised up to EL 121.92 m. Govt. of Gujarat has created a irrigation potential of 13.45 Lakh ha out of 17.92 Lakh ha up to minor level and the CCA development up to sub-minor level is 9.88 Lakh ha against 18.45 Lakh ha till October,2016. 1.23 Lakh ha area has been irrigated & drinking water supply to the quantity of 837.04 MCM provided till October, 2016 during the irrigation year i.e. from July, 2016 to June, 2017 in Gujarat.

Rajasthan has also created an irrigation potential of 2.46 Lakh ha to utilize Narmada water. Drinking water benefits is being provided to 1541 Villages &three Towns of Jallore & Barmer Districts in Rajasthan. 2.30 Lakh ha area has been irrigated till October,2016 during the irrigation year i.e. July,2016 to June,2017.

ENVIRONMENTAL MONITORING ACTIVITIES

Environment Sub-Group of Narmada Control Authority is 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 website: www.nca.gov.in. The NCA officers are also making field visits to assess the progress of implementation of Environment Safe Guard Measures in the party States namely: Madhya Pradesh, Maharashtra, Gujarat and Rajasthan.

In the recent past 49th meeting of Environment Sub-Group (ESG) of NCA was held on 31.08.2016 to review implementation of Environment Safeguard Measures and follow-up meeting on 18.11.2016 to review the progress of compliance of decisions of ESG meeting.

RESETTLEMENT & 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 below indicates overall cumulative progress of R&R of Project Affected Families (PAF), up to December, 2016.

Sardar Sarovar Project- Progress of R&R up to 31st December, 2016

Dam height	State	No. of Villages affected	Total PAFs	Total PAFs resettled	Balance PAFs likely to be resettled
138.68m.	Gujarat	19	4762	4758	4
	Maharashtra	33	4313	3841	472
	Madhya Pradesh	192	37754	37754**	**
Total		244	46829*	46353	476*

* This number may change after inclusion of PAFs to be declared by Grievance Redressal Authorities (GRAs) /State Governments including impact of backwater level.

** 630 PAFs are yet to be paid 2nd installments of Special Rehabilitation Package (SRP)

(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

below indicates the progress of R&R up to 31st December, 2016.

Indira Sagar Project - Progress of R&R up to 31st December, 2016

Sl No.	Description	Total Project Affected Families (PAFs)	Total PAFs resettled	Balance PAFs to be resettled
1.	Up toFRL	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) Court Cases:

Following court cases are Sub-Judice.

Sardar Sarovar Project (SSP):

- IA No.18-22 in Writ Petition No. 328 of 2002 and Contempt Petition No.18 in Hon'ble Supreme Court.
- IA No. 40-45 of 2014 in IA No.18-22 in Writ Petition No. 328 of 2002 in Hon'ble Supreme Court.
- Writ Petition No.14765 of 2007 in the Hon'ble High Court of Madhya Pradesh, Jabalpur.
- Writ Petition No.18183 of 2014 in the Hon'ble High Court of Madhya Pradesh, Jabalpur
- Contempt Petition No.843/2015in WP No.18183 of 2014 in the Hon'ble High Court of Madhya Pradesh, Jabalpur.
- Original Application (OA)No.78 of 2015 in National Green Tribunal (NGT), Central Zone, Bhopal, Madhya Pradesh.
- Writ Petition No. 14040 of 2013, WP No. 14038 of 2013, WP No. 14036 of 2013, WP No. 2152 of 2016, WP No. 2168 of 2016, WP No. 2143of 2016, WP No. 2154 of 2016, WP No. 2164 of 2016 and WP No. 4480 of 2016 in Hon'ble High Court of Madhya Pradesh bench at Indore.
- Writ Petition No. 9655 of 2016 in Hon'ble High Court of judicature of Bombay bench at Aurangabad.

Indira Sagar & Omkareshwar Canal Projects:

- Writ Petition No. 11232 of 2010 and 11233 of 2010 in the Hon'ble High Court of Madhya Pradesh, Indore Bench , (M.P.)

(iv) Meeting of R&R Sub-Group:

The 77th meeting of R&R& Sub-Group of NCA was held on 27.06.2013.

(v) Meeting of the Task Force of NCA:

The 31st meeting of the Task Force of NCA was held on 19.11.2016.

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 2791.374 MUs (*2257.024* MUs from RBPH &534.350 MUs from CHPH) during the FY 2016-17 (April, 2016to November, 2016*)*. 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 2016-17 (up to November, 2016*)* SSP machines were operated for 319 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 14th December 2016 with SSP Unit No. 2 at Sardar Sarovar Project.

(i) Performance of River Bed Power House (RBPH), SSP [6 X 200 Mw]:

The total energy generation achieved from RBPH from April 2016 to November, 2016 was2257.024 MUs. The anticipated energy generation from RBPH, SSP for remaining months / period of 1st December, 2016 to 31st March, 2017 of F.Y. 2016-17 is will be 432.00 MUs.

(ii) Performance of Canal Head Power House (CHPH), SSP [5 x 50 MW]:

The total energy generation achieved from CHPH from April 2016 to November, 2016 was 534.350MUs. The anticipated energy generation from CHPH, SSP for remaining months / period of 1st December, 2016 to 31st March, 2017 of F.Y. 2016-17 is will be 330.00 MUs.

REAL TIME DATA ACQUISITION SYSTEM IN NARMADA BASIN:

NCA was entrusted with the works of establishment of Real Time Data Acquisition System 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 these information and also analyzing manually collected data from other 14 Remote Stations, NCA issues the daily hydrological status report containing important hydrological parameters like water level, live storage, inflow / discharge for the major reservoirs operation table for monsoon period and Non monsoon period and 10 daily releases etc in the Narmada Basin. Due to deterioration of satellite KALPANA-I and ageing and obsoleteness of the equipment leading to failure of stations beyond their revival. It is decided that the second Phase of RTDAS comprising 42 stations will be installed by Madhya Pradesh in whole basin and at H.R. of NMC & Gujarat -Rajasthan in an 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. Accordingly, one cell Net Modem and the Data logger has been installed at ISP Remote Station on 1st March, 2016 on trial basis for 3 months without financial and legal implication and started getting data through M/s Stevens Water Monitoring System, USA based who has agreed to install on trial basis for three months. The data were being received through their cloud based on GSM/GPRS Technology using the user ID provided by them .The

System found working satisfactorily during the trial period. Therefore as per decision taken in 19th Hydromet Meeting to upgrade the existing 4 project station namely Bargi, Tawa , ISP and SSP, NCA as initiated for the action for up gradation by installing cell Net Modem/ E Tracker with necessary accessories after completing necessary codal formalities.NCA will develop water management software for inflow forecasting & water Accounting and also Simulation studies for integrated reservoir operation and flood forecasting etc.

WATER ACCOUNTING

NCA prepares Annual Water Account (AWA) of Narmada Basin and the draft AWA for the year 2015-16 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 at ex SSP. On the basis of inflow in to the various reservoirs, release for various purposes and change in storages, etc. during the year 2016-17, storage in the major and medium reservoirs in Narmada basin, utilization by Party States during monsoon and spillage at ex-SSP, the utilizable flow was assessed 36.27 MAF which was 29% higher 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 on 10-daily basis by issuing the O.M on the basis of approved Reservoir Operation Table and actual status of reservoirs and Key G&D stations on Narmada River.

BETWA RIVER BOARD

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.

(i) 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.

(ii) Planning and Present status of Rajghat Power House works:

The estimate of Rajghat Hydro Electric Project at 1997 price level was Rs. 131.26 crore which included Rs. 58.41 crore for the civil works. The further revised cost of the civil works of Power House is Rs. 66.89 crore at December, 1999 price level and same has been furnished by BRB to MPPGCL. MPPGCL have contributed Rs. 59.51 crore. The total expenditure incurred on civil works of Rajghat Power House till June, 2008 is Rs. 63.15 crore.

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.

(iii) 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. 107.50 crore and M.P. has paid only Rs. 53.40 crore against their due share up to December, 2016.

(iv) Utilization of present storage:

The phase-1 of the construction of Dam up to Spillway crest level was completed in 1992. Since then reservoir storage is being utilized in down stream in Betwa Canal System (U.P) and Bhander Canal System (UP & MP) the impounding of water above crest level has been started since 1999-2000.

FINANCIAL POSITION OF BETWA RIVER BOARD

The State-wise share/ financial position of Betwa River Board at the end of January 2017 is as under:

Financial position of Betwa River Board (in Rupees Crore)

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	-	-	43.15
4.	Contribution due against O&M head up to December ***, 2016***	127.975	127.975	255.95
5.	Contribution received against O&M head up to December***, 2016***	107.50	53.41	160.91
6.	Balance to be contributed against O&M head up to December***, 2016***	20.475	74.565	95.04
7.	Gross expenditure up to December***, 2016***	-	-	502.09
8.	Balance available with BRB in January***,2017***	-	-	**2.57**

TUNGABHADRA BOARD

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.

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.

NEW INITIATIVES (FROM 1ST APRIL 2016 TO 31ST DECEMBER 2016)

(i) Irrigation Wing:

The Tungabhadra Reservoir filled up to the full reservoir level 493.14 (1617.91 ft.) in this year. The inflow in to the reservoir from April2016 to December2016 was 2455.08 Million Cubic Meters (Mcum) (86.691 TMC). The utilization by the Karnataka State, Andhra Pradesh &Telangana till end of December2016 was 1460.43MCum (51.569 TMC), 595.76MCum (21.037TMC) and 46.38Mcum (1.638 TMC) respectively as against the likely abstraction of 1982.40MCum (70TMC) for the water year 2016-17. Evaporation losses from April2016 to December2016were 86.26MCum (3.046 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 2016-2017.

(ii) 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.

(iii) Mini Hydel Power Plant:

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 3.432 million units up to December 2016. The power generated is purchased by the Transmission Corporations of Karnataka and Andhra Pradesh in the agreed ratio of 20:80.

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.11.5crore. The Mini Hydel plant comprising single unit of 1.4 MW has generated 3.391 million units up to December 2016. The power generated is purchased by the GESCOM, Gulbarga

(Karnataka) and rate of power purchase is Rs.2.80 per unit.

(iv) Fisheries Wing:

The Tungabhadra reservoir has a water spread area of 378sq.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 2016-17 to a local Fishermen's Cooperative Society for Rs.90.47 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 up to December2016 is 11.89 lakhs.

BOARD MEETING

In between April to December 2016 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 taken up subject to allotment of additional funds from the GoAP

Hydro Electric Scheme: Anticipated power generation from Jan'2017 to Mar'2017 will be 3 million units.

Fisheries Wing: Likely earnings from Jan'2017 to Mar'2017 will be approximately Rs.4.00 lakhs.

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 Polavaram Irrigation Project was declared a National Project on dated 01.03.2014 vide section 90 of AP Reorganization Act, 2014 with Union Government to take under its control the regulation and development of the Polavaram Project. Central Government has created Polavaram Project Authority (PPA) with Governing Body to execute the Project and obtain all requisite clearances.

The project was accorded investment clearance by the Planning Commission for Rs 10151.04 cr (at 2005-06 price level) in 2009. The estimated cost at 2010-11 level is Rs.16010.45 crore. The project was under construction with Central Assistance under Accelerated Irrigation Benefits Programme (AIBP). An expenditure of Rs 5135.87 crore has been incurred up to31.03.2014 including Central Assistance of Rs 562.469 crore provided under AIBP. After declaration of National Project since 01.04.2014 additional Rs. 3059.51 crore have been incurred till Oct, 2016. Out of above,

Ministry of Water Resources, River Development & Ganga Rejuvenation has released Rs 950 crore to PPA from their regular budget allocation and Rs 1981.54 crore through NABARD funding.

AUTONOMOUS BODIES

KRISHNA AND GODAVARI RIVER MANAGEMENT BOARDS

APEX COUNCIL MEETING

The meeting is necessitated on account of the Hon'ble Supreme Court of India directions on the Writ Petition filed by Alla Venkata Gopala Krishna Rao and Others versus Union of India and Others with respect to construction of two new projects namely, Palamuru – Rangareddy Lift Irrigation Scheme (LIS) and Dindi LIS contemplated by Government of Telangana State. The Hon'ble Supreme Court of India in its order Dt:20.07.2016 has directed:

"…… Convening of the meeting of the Apex Council, as expeditiously as possible. The Apex Council shall examine the issues with reference to the construction of two projects after affording an opportunity of hearing, to the concerned State parties."

The first Apex council meeting was held at New Delhi on 21.09.2016 under the Chairpersonship of Hon'ble Union Minister ,M/o WR, RD & GR with Chief Ministers of Andhra Pradesh & Telangana and the agenda items discussed and decisions arrived are as follows.

(i) The issue of agenda item TAKING UP OF PROJECTS REFERRED BY THE HON'BLE SUPREME COURT IN W.P.NO.116 OF 2016 FOR RESOLUTION BY THE APEX COUNCIL was taken up for discussion and following decision taken.

Decision: Due to divergent position taken by the States on this item, convene Apex Council meeting as and when required to resolve the issues raised by both the states. (The two projects referred were Palamuru- Ranga Reddy Lift Irrigation Scheme(LIS) and Dindi LIS taken up by Telangana.

(ii) The issue of agenda item WORKING ARRAGEMENT FOR SHARING OF WATER was taken up for discussion and following decision taken.

Decision: GOI will make efforts to expedite finalization of KWDT II award.

(iii) The issue of agenda item TRANSPARENT MECHANISM FOR MEASURING OUT FLOWS AND INFLOWS AT DIFFERENT LOCATIONS AND RESERVOIRS was taken up for discussion and following decision taken.

Decision: Installation of telemetry as agreed by both the States. Both the states agreed to keep the Joint Team comprising engineers from both the states in all the projects for transparent monitoring.

(iv) The issue of agenda item MECHANISM FOR REPLENISHMENT AND OVER/UNDER DRAWAL BY THE TWO STATES IN A GIVEN WATER YEAR was taken up for discussion and following decision taken.

Decision: Both The states agreed for continuation of 2015-16 working arrangement for sharing of waters during 2016-17 also.

(v) The issue of agenda item PRINCIPLES FOR SHARING OF GODAVARI WATER DIVERTED TO KRISHNA was taken up for discussion and following decision taken.

Decision: MoWR will examine the grievance of Telangana in the constitution of the Expert Committee. MoWR will make a reference to KWDT II to expedite its award due to urgency in the matter.

BOARD MEETINGS

During 2016-17, two Board Meetings were convened by KRMB on 27-05-2016 and 26-08-2016 at Hyderabad. In

the fifth board meeting a Sub-committee comprising Chief Engineer, KRMB and Chief Engineers (Inter State) from both States has been constituted to look into modalities of accounting for utilization of water in minor irrigation scheme and related issues. The Sub-committee convened 2-meetings and referred the matter to 3-Member Committee.

THREE MEMBER COMMITTEE MEETINGS

During 2016-17, 5 meetings of three member Committee consisting of Engineer in Chief of both the States and Member Secretary, KRMB were convened (2 Meetings in Water Year 2015-16 & 3 Meetings in Water Year 2016-17) to discuss and approve the water indents placed by the States from the Common Reservoirs of Srisailam & Nagarjunasagar Project based on the availability of water and utilizations already made.

TELEMETRY

Telemetry system is proposed to be installed at Nagarjuna Sagar Project , Srisailam project and Jurala Project at selected locations in Phase-I. Total 18 Nos.. of telemetry sites have been selected for above three projects and through e-procurement system, agency for implementation of telemetry systems at all those 18 selected sites has been finalized.

KRMB team and Project Authorities visited various Projects located in Krishna River and also river locations where water level sensors/ Velocity sensors are to be installed in phase-II and tentatively finalized about 30 Nos.. of locations.

CONSTITUTION OF EXPERT COMMITTEE BY MOWR

The MoWR, RD & GR, New Delhi has constituted five member Expert Committee vide office Memorandum No.R/16011/2/2016-Pen.Riv-58 dated:09-01-2017 for addressing the following issues:

- Preparation of Manual on Operating Rules/Procedures in respect of Common projects located on River Krishna
- Allocation of Godavari waters being transferred to Krishna basin in accordance with Godavari Water Disputes Tribunal Award,1980.

PARLIAMENTARY STANDING COMMITTEE STUDY VISIT

The Parliamentary Standing Committee in the meeting convened at Hyderabad on 4th June 2016 interacted with officials of State Governments of Telangana and Andhra Pradesh and other organizations and also with Krishna River Management Board.

STAFF OF KRMB SECRETARIAT

The KRMB Secretariat is functioning with staff deputed from Government of Andhra Pradesh and Telangana. Recently, in December 2016, 3 Nos. of staff from CWC/MoWR in the cadre of Deputy Director (1 No) and AD-II (2 Nos.) Joined in KRMB on deputation.

BUDGET AND EXPENDITURE

The Budget approved by Board for KRMB for the financial year 2016-17 is Rs 1180.00 Lakhs. The funds are initially provided by the State of Andhra Pradesh. The expenditure incurred up to December,2016 is Rs 137.04 Lakhs and is towards salaries and day to day to expenditure of KRMB Secretariat.

GODAVARI RIVER MANAGEMENT BOARD

REGULATIONS

The Regulations - 2014 of GRMB *were* approved in 3,d Board meeting and was communicated to MoWR, RD & GR for further action.

PARLIAMENTARY STANDING COMMITTEE

Parliamentary Standing Committee meeting on Water Resources was held on 4th June, 2016 at Hyderabad in which officials of both the State Governments of Andhra Pradesh and Telangana and officials of GRMB participated.

APEX COUNCIL

The 1st meeting of Apex Council was held on 21-09-2016 at New Delhi in which, inter alia, the issue of 'principles of sharing of Godavari water to Krishna' was discussed and it was decided by the Apex Council that MoWR would examine the grievance of Te1angana in the constitution of Expert Committee and would make a reference to KWDT-II to expedite its award due to urgency in the matter.

EXPERT COMMITTEE BY MOWR

The MoWR, RD & GR has reconstituted five member Expert Committee vide office memorandum No.R/16011/2/2016· Pen. Riv/58. dated 09-01-2016 for addressing the allocation of Godavari waters being transferred to Krishna basin in accordance with Godavari Water Disputes Tribunal Award. 1980.

BUDGET

An expenditure of Rs.83.58,975/- was incurred by GRMB up to 31st December, 2016 during the FY 2016-17.

MINISTRY OF

WATER RESOURCES | RIVER DEVELOPMENT | GANGA REJUVENATION

8. Public sector Enterprises

WAPCOS LIMITED

WAPCOS Limited is a "Mini Ratna-I" Public Sector Enterprise under the aegis of the Union Ministry of Water Resources, River Development and Ganga Rejuvenation. The company was incorporated on June 26th 1969 under the Companies Act, 1956 to:

- share India's experience and expertise,
- facilitate Diplomatic Initiatives, and
- augment endeavors of State and Central Agencies.

WAPCOS is a technology driven consultancy and EPC organization with strong global presence in the field of Water, Power and Infrastructure sectors. WAPCOS has the requisite experience & expertise to undertake Consultancy & EPC projects of any scale and complexity in the sectors of its operation. 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.

OBJECTIVES

The objectives of the WAPCOS are:

- 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

Vision / Mission of WAPCOS

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.

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.

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
- United Nations Office for Project Services

DIVIDEND

In view of the excellent performance of the company for the year 2015-16, dividend of Rs. 25.25 Crore, which is highest-ever in the history of the company and is 72.14% of the paid-up capital of Rs. 35.00 Crore, was paid in August, 2016.

WAPCOS' spectrum of services covers a wide range of activities:

MOU SCORE FOR YEAR 2015-16

The Company's performance is adjudged based on the MOU signed by WAPCOS and Ministry of Water Resources, River Development & Ganga Rejuvenation every year based on guidelines and negotiations held with the Task Force of Department of Public Enterprises, Government of India. It covers the various Financial Performance Indicators like Sales Turnover from Consultancy and Engineering Projects, excluding interest and other income (Operating Turnover), Profitability and dynamic indicators like Order Booking, Human Resource Management, Business Development Plan 2015-2020, Brand Building, Risk Management Policy, Customer Satisfaction, Projects Implementation etc.

The Company has become eligible for "Excellent" rating under the MoU system of Company's performance evaluation by the Department of Public Enterprises. The Company is consistently

securing Excellent Rating under the MoU System as established by Department of Public Enterprises, Ministry of Heavy Industries and Public Enterprises, Government of India. Further the Company has achieved the highest achievable MoU score of 1.00 (Excellent) for the last 6 consecutive years.

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
- Zimbabwe

AWARDS AND RECOGNITION FOR WAPCOS

Hon'ble President of India presented Award for Excellence and Outstanding Contribution to the Public Sector Management-Institutionalinstituted by Standing Conference of Public Enterprises, an apex body of Central Government owned Public Enterprises to recognize the contribution of Public Enterprises to WAPCOS. The Company has received appreciations on Successful Completion of Afghan – India Friendship Dam (Salma Dam) from Hon'ble Union Minister of Water Resources, River Development & Ganga Rejuvenation, Government of India. The Company has also received appreciation from the House of People National Assembly of Afghanistan on Successful Completion of Afghan – India Friendship Dam and Honorary Appreciation issued by The Presidential Office of the Islamic Republic of Afghanistan on Successful Completion of Afghan – India Friendship Dam.

The Company has received several prestigious National/International Awards such as "Meritorious Award-Corporate Governance" instituted by Standing Conference of Public Enterprises, an apex body of Central Government owned Public Enterprises; Prestigious 'VAJRA' Award in the Category: ENERTIA- Award for "INDIA's Most Valuable Power Sector Enterprise - Making Global Impact" in "10th ENERTIA Awards – "India & South Asia's Awards for Excellence in Sustainable Energy & Power"; CBIP Award - 2016 for "Best Consultancy Organization in Water Resources Sector"; India Africa Champion-in-Biz-Awards – 2016 for "Dedicated Leadership in Infrastructure" and "Achievement in Power & Renewable Energy" supported by The ASSOCHAM; "Top Performing CPSEs' "MOU Excellence Award" instituted by Department of Public Enterprises, Government of India; "Best Consultancy Organisation" - Instituted by Central Board of Irrigation and Power, a premier Institution setup by the Government of India; Company of the Year - PSE Excellence Award instituted by Department of Public Enterprises, Ministry of Heavy Industry and Public Enterprises, Government of India and Indian Chamber of Commerce to recognize the contribution of Public Sector to the Indian Economy; Best Performing PSU Award – "Mini Ratna" instituted by India Today Group; Organization with Innovative HR Practices – by Asian Confederation of Businesses; Water Awards - Best Consultancy Company, Best Indian Water Company to

Work and Made in India – Best Water Company (Public Sector) supported by UNESCO and ASSOCHAM; PSE Excellence Award – Corporate Governance and Corporate Social Responsibility & Sustainability Award, instituted by Indian Chamber of Commerce; "National Award for Excellence in Cost Management" conferred by The Institute of Cost and Works Accountants of India, a premier professional body set up under the Act of Parliament etc.

INNOVATION AND CHANGE ORIENTATION

Over the last few years, WAPCOS has successfully diversified into Construction sector and involved in construction of projects in various sectors such as dams, buildings, STP's, Protection of Archaeology sites etc. WAPCOS now has the requisite experience & expertise to undertake EPC projects of any scale and complexity in the sectors of its operation.

Ms. Masooda Karokhi, Hon'ble Member of Parliament, Islamic Republic of Afghanistan presenting Appreciation to CMD, WAPCOS on behalf of National Assembly of Afghanistan

WAPCOS has successfully implemented Afghan-India Friendship Dam in Afghanistan in the most difficult terrain and conditions in the remote areas of Afghanistan. The dam was jointly inaugurated by the Hon'ble President of Afghanistan Dr. Mohammad Ashraf Ghani and Hon'ble Prime Minister of India Shri Narendra Modi Ji at Herat, Afghanistan on 4th June 2016. The enormity of this project and the goodwill generated by it, was reflected in the celebratory events and outpouring of euphoria by common Afghans on the streets of Herat in the run up inauguration. Streets of Herat and the dam site even decorated with the huge banners welcoming Hon'ble Prime Minister and thanking India for the dam as a symbol of timeless friendship between the two nations. The Ministry of Water Resources, River Development and Ganga Rejuvenation organized a felicitation ceremony to commemorate the successful completion of the project at New Delhi on 22nd June 2016 to felicitate the officials of the WAPCOS Limited, Officials of Govt. of Afghanistan and people representative of Afghanistan, who were involved in the successful construction of Afghan-India Friendship Dam.

WAPCOS has made significant breakthrough in various flagships of Government of India Schemes and has been able to secure projects under the following Schemes:

(i) Namami Gange, Integrated Ganga Conservation Mission - The Government of India approved the flagship "Namami Gange" Program which integrates the efforts to clean and protect the Ganga river in a comprehensive manner. WAPCOS is involved in the following Projects including preparation of DPR for Development of Chandi Ghat at Haridwar, Uttarakhand; Development of Ghats and Crematoria in the stretch from Rishikesh to Devprayag; Development of Ghats and Crematoria in the stretch from Devprayag to Rudraprayag, Uttarakhand and Infrastructure in various towns along river Ganga and its tributaries in Uttarakhand and Uttar Pradesh etc.

(ii) Atal Mission for Rejuvenation and Urban Transformation (AMRUT) - WAPCOS is the Project Development and Management Consultant (PDMC) for this Scheme in Madhya

Pradesh, Kerala, Haryana, Meghalaya and Telangana and is appointed for the preparation of DPR for Rajasthan.

(iii) Smart City Mission - WAPCOS prepared the Smart City Proposal for Guwahati City and was ranked 17th in the 1st Round. Work of preparing the Smart City Proposal for Shimla has also recently been awarded to WAPCOS.

(iv) Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) - Government of India is committed to accord high priority to water conservation and its management. WAPCOS is preparing the District Irrigation Plans for Rajasthan under this Scheme. WAPCOS is providing special emphasis on pressure irrigation, with a view to improve overall irrigation efficiency and to achieve the objective of "MORE CROP MORE DROP".

(v) Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) - WAPCOS is the REC Quality Monitor on behalf of Rural Electrification Corporation and Project Management Agency (PMA) and Third Party Inspecting Agency (TPIA) for the utilities of respective states of Bihar, Haryana, Karnataka, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh, West Bengal, Assam, Tripura, Jharkhand, Haryana, Manipur, Nagaland, Himachal Pradesh, Jammu & Kashmir, Rajasthan and Madhya Pradesh.

(vi) Integrated Power Development Scheme (IPDS) – WAPCOS is acting as the Third Party Independent Evaluation Agency – Energy Accounting (TPIA-EA) on behalf of Power Finance Corporation and Project Management Agency (PMA) under DISCOM for the states of Uttar Pradesh, Kerala, Madhya Pradesh, Assam, Tripura, Nagaland, Meghalaya, Punjab & Chandigarh, Haryana, Arunachal Pradesh, Manipur, Mizoram and Rajasthan.

CORPORATE SOCIAL RESPONSIBILITY & 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. The company is having Audit and Remuneration committee in place and has received "Nil" comments from CAG for the last 11 years.

FINANCIAL PERFORMANCE

The Company has achieved turnover of Rs. 24609 lakh from Consultancy and Engineering Projects (Unaudited) for the year ending 30.09.2016 as against the previous figure of Rs. 18337 lakh for the corresponding period.

FOREIGN PROJECTS

Asian Region

(i) Afghan-India Friendship Dam (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 funded by Ministry of External Affairs. WAPCOS is implementing the project on behalf of Ministry of External Affairs.

The Salma Dam is across Harirud river and is located in the Chist-e-Sharif district of Herat province in Afghanistan. The Project comprises construction of 107.5 meters high, 550 meter long earth & rock fill dam having 633 million cum gross capacity of reservoir**.** Other components of the project are i) surface powerhouse of installed capacity of 42 MW with three power units of 14 MW each ii) concrete spillway 36 m wide & 63 m high, 2100 cumec capacity controlled by the 3 nos radial gates iii) diversion tunnel 8.5m dia. & 630 m long on right flank iv) Irrigation sluice of 15 cumec discharge capacity v) 4.25m dia. & 523m long steel penstock vi) 157 km long, 110 Kv transmission line for evacuation of power to Herat city. Work also includes supply of all hydro-mechanical and electro-mechanical equipment from India.

The project site is located in a very remote area of Herat province and connected with the nearest commercial town of Herat by 160 km kachha road. This dilapidated kachha 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 random 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 the most adverse security conditions. The Hydro-Mechanical and Electro-Mechanical equipment were sent from India via Iran. Cement, steel, reinforcement Explosives etc. were imported to Afghanistan from neighboring countries. Steel plates for penstock ferrules were procured from Japan.

Downstream View of Spillway, Afghan-India Friendship Dam (Salma Dam), Afghanistan

Milestones Achieved in Year 2015-2016, in spite of deteriorating security conditions and accessibility constraints at the site, are as follows:

- The balance civil works of dam, spillway, power house and switchyard have been completed
- The Diversion tunnel gate was closed on 26.07.2015 and filling of reservoir had been started.
- The water level of reservoir reached up to spillway crest level (EL 1633.5 m) i.e. 93.0 m of dam height.
- After successful closure of DT gate, the Cabinet of Govt. of Afghanistan has renamed the Salma Dam Project as Afghan–India Friendship Dam as people of Afghanistan celebrated filling of reservoir and lot of Goodwill has been generated.
- The H.E. President of GoA; Governor of Herat; Ministry of Energy & Water and Ministry of Foreign Affairs of Govt. of Afghanistan appreciated the

progress of the project and contribution of WAPCOS, in particular.

- The Irrigation sluice gates were successfully commissioned on 17.03.2016 to release of water for irrigation purpose.
- The pre-commissioning testing and mechanical spinning of Units-II and Unit-I have been successfully carried out on 12.03.16 and 29.03.16 respectively.
- The balance work of transmission line comprising i) Rerouting of 4 Km transmission line including erection of 12 nos. tower & stringing ii) underground cabling works in concrete box near Herat Substation have been completed in spite of deteriorating security condition in the work area.

Hon'ble Prime Minister of India, Shri Narendra Modi and Hon'ble President of the Islamic Republic of Afghanistan, Mr. Mohammad Ashraf Ghani jointly inaugurating the Afghan-India Friendship Dam (Salma Dam), in Herat, Afghanistan on June 04, 2016

The cumulative progress of works in various fronts is as below:

- 100% construction work of 107.5 m high Earth &Rockfill main dam including curtain and consolidation grouting have been completed.
- 100% construction work Concrete Spillway including Bucket, Apron and plunge pool have been completed.
- 100% Civil construction of 42 MW powerhouse for Unit-I, Unit-II and Unit-III have been completed.
- 100% Infrastructure works including project colony, bye pass roads, Project roads, explosive magazine houses etc. have been completed.
- 100% works of fabrication and erection of 523 m long steel penstock ferrules have been completed.
- 100% erection works transmission line have been completed except testing & synchronization with Herat sub-station.
- 100% Hydro-mechanical and Electro-Mechanical equipment have been deployed to project site from India via Iran.
- 95% erection works of Hydro-mechanical equipment and 93% erection work of Electro-mechanical equipment has been completed.
- 70% Architectural and finishing works in the project area have been completed.

(ii) Bangladesh

- Techno Commercial Feasibility Study for setting up an Inland Container Port at Narayanganj

(iii) Bhutan

- Consultancy Services for Kuri Gongri HE Project
- Detailed Design Engineering for Punatsangchhu-I Hydro Electric Project (6x200MW)
- Detailed Design Engineering for Punatsangchhu-II Hydro Electric Project (6x170MW)
- Technical Services on Design & Construction of 400 KV Transmission lines Mangdechhu Hydro-Electric Project

(iv) Cambodia

- Project Management Consultancy for Construction of 230 kV Double Circuit Transmission Line between

Kratie & Stung Treng and Associated 230/22 kV Substation at Kratie in Cambodia

- Study of Groundwater Resources of Kampong Speu Province
- Siem Reap River Basin- Development of Master Plan
- Stung Tasal Water Resources Development Project

(v) Lao PDR

- Engineering, Procurement and Construction of 230KV & 115KV Transmission Line and Associated Substation Projects
- Extension of Thabok and Nabong Substation at 230KV rating, Extension of one no. of 115 KV line bay at Namgnung (Thasla) 115/22 KV Substation, 115 KV Single Circuit Transmission line from Nam Gnuang (Thasla) to Laksao, 115/22 KV Substation at Laksao
- Construction of Storage Dams & Development of Irrigation Systems
- Development of Irrigation schemes in Champassack Province

(vi) Mongolia

- Project Management Consultancy for Indian-Mongolian Joint IT Education and Outsourcing Center Project

(vii) Myanmar

- Development of Irrigation and Land Consolidation Schemes
- Feasibility and Detailed Project report for the Mytkyina –Putao Road in Kachin State

(viii) Nepal

- Detailed Project Reports and CEIA Study of Pancheshwar Multipurpose Project (4800MW)
- Construction Supervision and Construction Management for Rahughat Hydro Electric Project (32 MW)
- Construction Supervision and Construction Management for Kulekhani-III Hydro Electric Project (14 MW)
- Project Management Consultancy for Strengthening of India - Nepal Power Transmission line Interconnection at 132 KV Level.
- Designand Construction for 220 KV Koshi Corridor Transmission Line and Substation

Ferrule Erection Chamber Punatsangchhu-I Hydro-Electric Project

<u>African Region</u>

(i) Burundi

- Project Management Consultancy for the execution of Kabu-16 (20 MW) Hydro Electric Project, related Substation and Transmission Lines

(ii) D. R. Congo

- Project Management Consultancy for Grand Katende Hydro Electric Project (64MW)
- Detailed Project Report of Development of Power Transmission and Distribution System in Bandundu (Kakobola Hydro Project) Province
- Detailed Project Report of Development of Power Transmission and Distribution System in Kasai (Katende Hydro Project) Province

(iii) Liberia

- Detailed Project Report for Development of Transmission and Distribution Projects

(iv) Mozambique

- Design Services for Project of Improving the Quality of Power Supply-Distribution (Lot-1)
- Consultancy Services for Design for Project of Improving the Quality of Power Supply-Distribution (Lot-1)-Addendum-2
- Strategy Paper on Integrated Water Resource Development and Management for Limpopo River Basin
- 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 (103 km)
- Design Check and Supervision of Rehabilitation and Expansion of Cuamba City Water Supply
- Design and Construction Supervision of Rehabilitation of Road N280/281 Between Tica, Buzi And Nova Sofala In Sofala Province
- Irrigation Service Provider for Horticulture under PROIRRI Sustainable Irrigation Development Project

(v) Republic of Togo

- Assistance to Client for Engineering studies, Supervision and Control of Rural Electrification Project Phase 4
- Project Management and Construction Supervision Consultancy Services for 161kV Line Kara – Mango – Dapaong Transmission Line and Related Substation
- Control and Inspection of Agricultural Equipment and supervision of construction works in the project of operating 1000 ha of Rice, Sorghum and Maize

(vi) Rwanda

- Supervision of engineering-procurement-construction of the 15 MW peat-to-power plant
- Export Targeting Modern Irrigated Agriculture Project

(vii) Sierra Leone

- Supply and Installation of Solar Street Lights in Freetown, Lungi and 12 Districts Headquarter Towns

(viii) Tanzania

- Environmental Impact Assessment Study for the Environmental Clearance of DSM Port
- Augmentation of Water Supply Scheme in Dar es Salaam and Chalinze (Design & Construction Supervision Phase)
- Extension of Lake Victoria Pipeline to Tabora, Igunga and Nzega (Design Phase)
- Water Supply System at Igurusi Training Institute

(ix) Uganda

- Consulting Services for projects Management and Construction Supervision of 1392 Km of Medium Voltage Lines and 1482 Km of Low Voltage Network.

(x) Zimbabwe

- Skill support for Operation and Maintenance of Hwange Thermal Power Station (920 MW) for Zimbabwe Power Company
- Provision of Specialist Consultancy Services for Hwange Stages I And II Plant Improvement at Hwange Thermal Power Station
- Replacement of existing boilers with CFBC boilers for Small Thermal Power Station at Harare, Bulawayo and Munyati for Zimbabwe Power Company (ZPC)
- Supply of Custom Built Simulators for 220 MW and 120 MW units similar to Hwange Power Station and to train the trainers for Skill Development of Zimbabwean Engineers and Operators
- Project Management Consultancy Services for Gairezi Hydro Electric Project (30MW)

- Provision of Training Services in Plant Optimization at Hwange Power Station, Zimbabwe

Other Region

Fiji

Clients Representative for Design and Build Contract – Upgrading Water and Waste Water Pipe Network – Central/Eastern and Western Urban Centers

Power House (Machine Hall) Punatsangchhu-I Hydro-Electric Project

INDIAN PROJECTS

(i) Andhra Pradesh

- APPDCL-2X800 MW-SDSTPS-Sea Water Intake & Outfall System - Consultancy Studies for Filed Monitoring of Shoreline Changes and Intake Basin for SWIO System
- Detailed Project Reports, Environmental Impact Assessment Studies, Tender Preparation including Project Supervision etc. for Development of Fisheries Harbours, Fish Landing Centers and other Infrastructure Projects of Fisheries Department
- APGENCO - Srikakulam Thermal Power Project (4x1000 MW)
- Feasibility study for transportation of Barge through River Krishna Near Nagayalanka

(ii) Arunachal Pradesh

- Model Studies for Etalin Hydro Electric Project (3097 MW)

(iii) Assam

- Environmental Impact Assessment Studies for Lower Kopili Hydro Electric Project
- Proposal for Assisting Guwahati to participate in Smart Cities Challenge
- Comprehensive Development Plan for the Majuli Cultural landscape Region (MCLR)

(iv) Goa

- Environmental Impact Assessment Study for capital dredging in navigation channel at Marmugao Port
- Feasibility Report for Capital Dredging at the Mormugao Port

(v) Gujarat

- Consultancy Services for Preparation of DPR for Bhadbhut Barrage and Diversion Works
- Development of Fishing Ports in Veraval Fishery Habour Phase-II and Bhadreshvar Fishery Harbour
- Development of Fishing Ports in Porbandar Fishery Habour Phase-II and Okha Fishery Harbour
- Setting up of Project Management Cell at Gandhinagar
- Dredging of Mangrol Fishery Harbour, Porbandar Fishery Harbour and Madhwad Fish Landing Centres
- LPG Project at Okha
- Environmental Impact Assessment study for Par-Tapi-Narmada Link Project
- Providing Third party Technical Consultancy Services for supervision of Refurbishing, Restoring and installation of radial gate parts and other appurtenant parts to its full performance for main dam of Sardar Sarovar Project along with other associated hydro mechanical works
- Block contouring, planning, design and preparation of plans, estimates of

distribution of Sardar Sarovar Narmada Nigam Limited network & drainage down stream of chak for the command area under Various Canals

(vi) Haryana

- Survey and preparation of Detailed Project Reports/ Tender Document for 9 ULBs of Haryana State under AMRUT Mission
- Construction of Major Repair to Arterial Roads at NSG Garrison, Manesar
- Construction Supervision Consultancy Services for works awarded for Farrukh Nagar, Nuh, Haily Mandi, Pataudi and Sonipat Town

(vii) **Himachal Pradesh**

- Consultancy Services for preparation of prefeasibility Report & DPR for the Project providing irrigation reclaimed Area under Swan River Channelization Management Programme including adjoining Irrigable Area in District Una
- Basin Study for Chanju Basin
- Community Based Tourism Activities including Skill Development, Training, etc. in Chintpurni Cluster at Una District
- Engagement of Project Management Agency to provide management services for effectively assisting the HPSEBL in discharging its functions of timely executing the Government of India (GoI) centrally sponsored Deendayal Upadhyaya Gram Jyoti Yojana and Integrated Power Development Scheme

(viii) **Jammu & Kashmir**

- Detailed Project Reports of (i) Water Supply & Sewerage (ii) Solid Waste Management (iii) Improvement of Road & Traffic Management in District Kargil
- Project Management Consultant for Improvement of Road Networks in Leh
- Project Management Consultant for Augmentation and Re-organization of Water Supply Scheme in Leh
- Project Management Consultant for Sewerage Schemes in Leh
- Project Management Consultant for Solid Waste Management in Leh

(ix) **Jharkhand**

- Detailed Project Report for Ghat Projects in Rajmahal
- Detailed Project Report for Ghat Projects in Sahibganj

(x) Kerala

- PMC works for operation & maintenance for various facilities of Kochi SEZ.
- Environmental Impact Assessment Study for Multiuser Liquid Terminal at Cochin Port
- Environmental Impact Assessment Study for demolition and reconstruction of North Jetty at Cochin Naval Base
- KRWSA- Consulting services for Independent Construction Quality & Surveillance Batch I, II and Tribal Gramapanchayaths of Jalanidhi Phase II under RPMU Kannur, Idukki and Malappuram

(xi) **Madhya Pradesh**

- Environmental Impact Assessment study for Sonpur Medium Irrigation Project, Sagar
- Environmental Impact Assessment study for Surajpura Medium Irrigation Project, Sagar
- Environmental Impact Assessment study for Tarped Irrigation Project
- Project Development and Management Consultant for AMRUT including Project Management of other Notified Schemes in Project Area, Package – II
- Project Management Consultant for Development of Ring Road No. 4, Road Network System, Water Supply

System, Sewerage, Electrical Networks, Storm Water Drains and Reuse system including defect liability specified area at Kamal Vihar, Raipur

- Design, Project Management Consultancy& Construction of Apex Building in Naya Raipur
- Master Plan & Preliminary feasibility report for Kharun River Project Development of the Down Stream of Mahadev Ghat, Raipur
- Feasibility Report and Detailed Project Report on Sewerage and Sewage Treatment for Bhopal City
- Supervision of Project Monitoring, Supervision of Quality of Work and Preparation of Bill of Quantities under RGGVY XIIth Plan for Jabalpur, Katni, Sagar, Satna, Chhindwara

(xii) Maharashtra

- Consultancy Services for 500MW Ultra Mega Solar Power Project.
- Design Consultancy of Purna Barrage-2 (nerDhamna) Distt. Akola
- Design Consultancy of Kwatha Barrage, Distt. Akola
- Design Consultancy of Pedhi Barrage Distt. Amravti
- Con-current 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
- Techno-economic feasibility study for coastal cargo in Maharashtra and development of Vasai, Jaigad and Rajpuri Creeks for integrated transport

(xiii) Mizoram

- Detailed Project Report of Turini HE Project for the Power & Electricity Department, Govt. of Mizoram

(ix) Odisha

- Consultancy Chiplima Hydro Electric Project, Chiplima, Odisha Services for Renovation and Modernization of Unit # 3
- Comprehensive Contract Management Services for Renovation & Modernization of Hirakud HEP, Burla, Unit No. 5 & 6 (2x43.6 MW)
- Comprehensive Contract Management Services for Implementation of Renovation & Modernization of Balimela HEP, Unit No. 1 to 6 (6x60 MW)
- Proof Engineering Consultancy for Execution of Upper Indravati Irrigation Project
- Detailed Project Report for Upper Indravati Pumped Storage Project (600 MW)
- Project Management Consultancy Services for 81 nos 33/11kVSubstations & Associated Lines for Packages 4, 5, 6, 7, Phase 1(B), 3-1A(R) &4-1A(R) within Jurisdiction of DISCOMs – NESCO & WESCO Area under Segment – II Phase – I of Odisha Distribution System Strengthening Project (ODSSP)
- Project Management Consultancy for Construction Of 84 Nos 33/11KV Substations & Associated Lines For Packages 3, 4 & 5 Under Phase-II of Odisha Distribution System Strengthening Project (ODSSP) in NESCO & WESCO Area
- Project Management Consultancy (PMC) For Construction of 76 Nos. 33/11kv Substations & Associated Lines For Packages 3,4 & 5 Under Phase-III of Odisha Distribution System Strengthening Project (ODSSP) in NESCO & WESCO Area

- Project Management Consultancy for Implementation of Mega lift Projects in Cluster No.III
- Owners' Engineer for Construction of Ash Pipe Line & Ash Pond for 2 X 660 MW– IB Valley Thermal Power Project under Phase II
- Owners Proof Engineering Consultants (PEC) for Execution of Lift Canal System of Upper Indravati Irrigation Project
- Additional Survey and Investigation for setting up a riverine port on river Mahanadi near Paradip
- Project Management Consultancy for ODAFFP Fishery Feeders (Phase-I) Project
- Wave Modeling/Tranquility Study in PICT facility, at Paradip Port, Odisha for Paradip International Cargo Terminal

(x) Punjab

- Electro-Mechanical works of Shahpur kandi Hydro Electric Project (206MW), Gurdaspur

(xi) Rajasthan

- Pre-feasibility study report for development of inland port in Jalore and Barmer
- Preparation of various Thematic Layers of Watershed Projects, IWRM

(xii) Sikkim

- Detailed Design, Construction Supervision for Balance Works of 1,200MW (6*200MW) Teesta-III H.E. Project, North Sikkim
- Lender's Engineer of 400KV Teesta III Hydro Electric Project to Kishanganj Transmission Line Project
- Investigation, Design and preparation of Detailed Project Report for construction of Alternate Highway from Melli to Singtam

(xiii) Tamil Nadu

- Executing Kundah pumped Storage Hydro-Electric Project (4x125MW) in Nilgiri Hills
- Basin Study for Vennar Basin
- Environmental Impact Assessment study for Construction of Groyne at Keelavaippar, Vembar, Periyathalai, Veerapanyapattinum
- 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
- Project proposal for development of Sholinganallur to Thiruvanmiyur stretch of south Buckingham Canal of NW-4 on Engineering, Procurement and Construction mode
- Coastal Disaster Risk Reduction Project Assisted by World Bank - Detailed Project Report (Residual Work) for the Reconstruction and Modernization Fishing Harbour at Mallipattinam in Thanjavur District
- Construction quality Management & Technical supervision for IAMWARM Project
- Detailed Project Report for "Improvements and Rehabilitation of Grand Anicut Canal System in Cauvery Basin
- Detailed Project Report , Rapid Environmental Impact Assessment Report, Tender Documents / Evaluation, Project Management Consultancy Services and Post Project Evaluation Study for Desilting of Vaigai, Pechipparai, Mettur, Amaravathy Reservoirs and SrivaikuntamAnicut

(xiv) Telangana

- Detailed Project Report for two Barrages between Yellampally-Medigadda as well as the other reservoirs to increase its capacity and its integration with Kaleshwaram Lift Irrigation scheme

- Integrated Rajiv Gandhi-Indira Gandhi -Dummugudem Project

(xv) Uttrakhand

- Lender's Engineer for THDC Pumped Storage HE Project (4X250MW)
- Condition Assessment & Feasibility Study for Sewerage / STPs infrastructure / bio-digester, Entry level Activities for repair and modernization including public amenities of ghats, river surface cleaning, village drain treatment and modernization of crematoria – under Namami Gange Programme
- Design Supervision Consultancy Bhimtal, Infrastructure Development Investment Program for Tourism
- Detail Project Reports for Tourism component of Namami Gange
- Concurrent Monitoring, Quality Monitoring, Mid-term and Final Evaluation of Accelerated Irrigation Benefit Programme
- Detailed Project Report for Chandighat Project, Haridwar

(xvi) Uttar Pradesh

- Monitoring & Evaluation Study for UPSLR-III Project
- Aquifer Mapping Project-Lalitpur and Jhanshi-Bundelkhand
- Drilling and Construction of Exploratory/Observation Well in Ballia district
- Drilling and Construction of Exploratory/Observation Well in Ghazipur district

(xvii) West Bengal

- Providing Consultancy Services as local Consultant for Phase I & Phase II for Turga Pumped Storage Project (1000 MW)
- Consultancy Services for Detailed Analysis & Preparation of Reports pertaining to delayed completion of Hydro Power Project at TLDP-III, NHPC and providing technical support to legal consultant of WBSEDCL
- Engagement of consultant for the work of "Renovation/Modernization of Navigational lock at Farakka under Farakka Barrage Project"- Scoping Study
- Extension of Short Term Measure Study
- Maintenance Dredging in Hooghly Estuary in the shipping channel of Kolkata Port

(xviii) Delhi

- Appointment of Project Design & Management Agency (PDMA) for Implementation of SMART grid infrastructure including Enhancing of Existing Network in NDMC Power Distribution Area
- Preparation of Manual on Storm Water Drainage System for CPHEEO, Ministry of Urban Development, Government
- Techno-Economic Appraisal of the Detailed Project Reports of Infrastructure Project submitted by the State Government of North-Eastern Region under NLCPR Scheme
- Pre-Feasibility Study for the Ground Water Recharge through Abandoned Mines pits in Bhatti Area & North Western Region, Delhi Jal Board

(xix) Pondicherry

- PIA-Fisheries-Hiring of Consultancy Services for redesign & revising the associated documents & drawings for Slipway at the Fishing Harbours of Puducherry & Karaikal

(xx) Others

- 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.

- Two stage Detailed Project Report of Cluster -5 of Proposed 53 National Waterways
- Two stage Detailed Project Report of proposed 4 Inland Waterways in the State of Gujarat and Maharashtra
- Rural Electrification Corporation Quality Monitors for Rural Electrification Works in 17 States under DDUGJY XI/XII Plan
- Third Party Independent Evaluation Agency (TPIEA-EA) Under Restructured Accelerated Power Development And Reforms Programme in 12 States

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED (NPCC)

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 60 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 six years and now has a positive net worth.

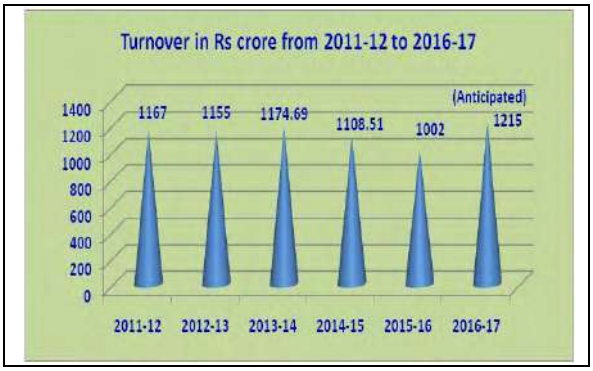
FIELDS OF SPECIALIZATION

NPCC's fields of specialization include: 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 Crore and its Paid up Capital is Rs. 94.53 Crore. The Corporation achieved a turnover (total income) of Rs. 1002 crore during 2015-16 compared to previous year's turnover (total income) of Rs 1145.25 crore. The turnover during the year 2015-16 is anticipated amount to Rs. 1215 crore, whereas the turnover of Rs. 696 crore is achieved up to December 2016. The net worth of corporation is Rs 118.36 crore with profit of Rs 10.81 crore as on 31.3.2016.

The order book position as on 1st January 2017 stand at Rs. 4487 crore. The turnover of the Corporation during last five years and the achievement for the current year 2016 - 17 is given below:



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.

NPCC's Corporate Office at Gurugram

Synthetic Hockey Turf & Automatic Sprinkler System at Sai, Bengaluru

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 Uttrakhand) & other miscellaneous projects. Some of the major projects are summarized below:-

(i) Building Works

- Construction of New Building at Kolkata for NRIADD, Ministry of AYUSH
- Renovation and Modernization of CWC (HQ) Sewa Bhawan, New Delhi
- Various works of Construction/Up gradation/ Renovation & Maintenance of IARI, Pusa Campus, New Delhi
- Construction of Academic Block, Girls and Boys Hostels at Udhampur Campus of Jammu University
- Works of Construction/Up gradation/ Renovation & Maintenance of Sports Authority of India, New Delhi
- Construction of quarters for Container Corporation of India Ltd. at New Delhi and Jaipur (Rajasthan)
- Construction of Office building for Punjab and Sindh Bank, Ranjeet Nagar, New Delhi
- Development of property for Bank of Baroda at Sion, Mumbai
- Construction of Buildings for Rajiv Gandhi national Ground Water Training & Research Institute(RGI), Raipur (Chhattisgarh)
- Construction of 3 Bed Room flats at Muthi (3 blocks of G+11 of 24 Units each) for Jammu Development Authority.
- Construction of buildings for Indira Gandhi National Tribal University Campus at Amarkanthak (M.P) and Manipur.
- Assam Rifles Quarters at different locations in the state of Nagaland, Arunachal Pradesh, Manipur, Mizoram, Meghalaya, Tripura, Sikkim & Assam.
- Construction of Building in the state of Tripura.
- Construction of Silver Jubilee Hall & Academic Block at NERIST, Itanagar
- 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 three Nos. Ekalabya Model Residential School Building for ST&SC Development Department, Odisha
- 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 CCRYN at Village Devarkhana- Distt Jhajhhar, Haryana and Nagamangala - Distt Mandya , Karnataka
- Permanent Administrative Building for NERIST at Nirjuli, Itanagar
- Construction of Bank Building at Plot No.C-1 Vedvyas Puri , Meerut (U.P.)
- Development of property for Bank of Baroda at Sion, Mumbai

(ii) Road Works & Other Projects

- Indo Bangladesh Border fencing, road works and Border out post at Assam, Tripura, Mizoram, West Bengal and Meghalaya.
- Flood lighting works of Indo Bangladesh Border Fencing in the States of Assam, Meghalaya and Tripura.
- Assam Rifles Building works in North Eastern States- Assam, Tripura, Manipur and Nagaland.
- PMGSY Roads works in Bihar, Jharkhand, Uttar Pradesh and West Bengal.
- Road and Drain Improvement works at Shimoga District, Karnataka
- Road and Drain Improvement works at Bagalkote District. Karnataka
- New Hathiari Hydro Electric Project in Uttrakhand

Road and Drain Improvement Works at Bagalkote

INITIATIVE IN NORTH EASTERN STATES DEVELOPMENT

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. It is creating further national integrity as Govt. has taken all the pain for security, safety & peaceful life of the people of these states. The details of such initiatives are covered under Section 9: Initiatives in the North East.

Indo-Bangladesh Border fencing work at Tripura

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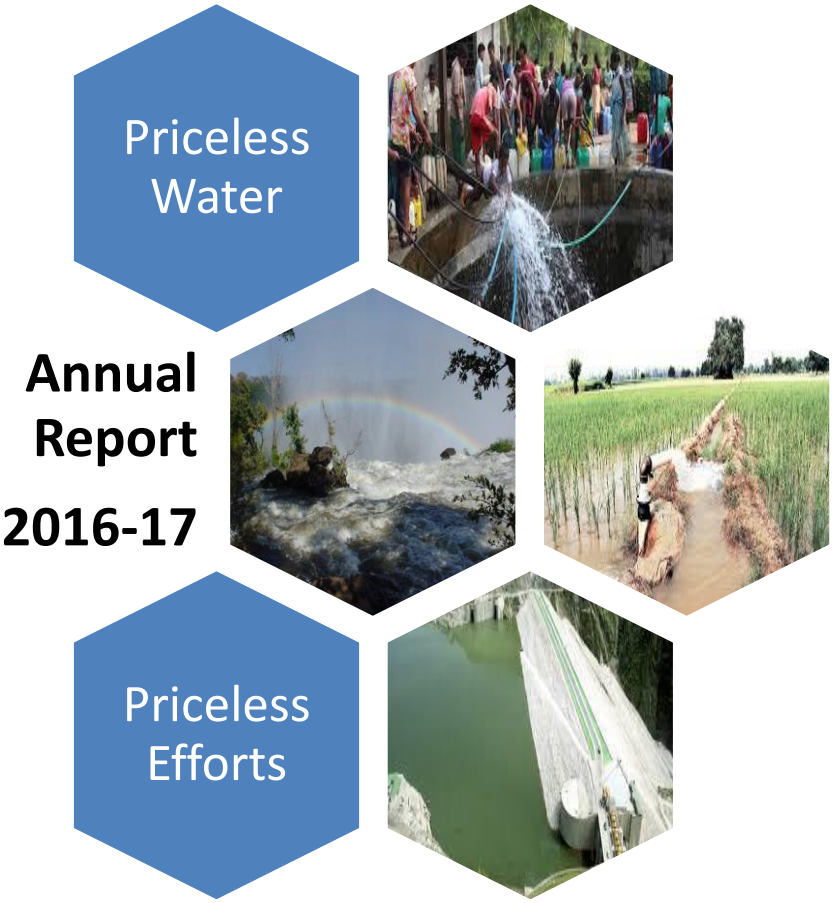

9. Initiatives In the North East

National Institute of Hydrology

The North Eastern Regional Centre (NERC), Guwahati catering for the seven N-E States, Sikkim and parts of West Bengal (Teestha 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 thrust areas of: (i) Flood estimation and routing; (ii) Structural / non structural measures for flood management; (iii) Integrated watershed management for flood control; (iv) Hydrological data base management system; (v) Drainage congestion and erosion problems; (vi) Water quality problems; (vii) Socio-economic aspect of flood disaster; and (viii) 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

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. Other projects include: Doimukh HE Project, Arunachal Pradesh, Kalej Khola H.E.P, Sikkim, Lower Kopili HE Project, Assam, Mawphu HE Project, Meghalaya, Rukni Irrigation Project, Assam, Subansiri Downstream Works Guwahati, Assam and Tlawng Hydroelectric Project, Aizwal, Mizoram.

Discussion with members of Water Users Associations

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 as detailed below:

(i) Indo-Bangladesh Border Fencing and Road Works

NPCC has completed 585.38 Km of fencing works and 437.22 Km of Road Works in the border areas of Indo-Bangladesh Border.

(ii) Indo-Bangladesh Border Flood-Lighting Works

NPCC has 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.

Indo-Bangladesh Border fencing along with Flood lighting work

(iii) Border out Post work

MHA (GoI) has awarded the construction of BOP works in extreme difficult area of Tripura (50 Numbers), Mizoram (21), Assam (6), Meghalaya (17), and West Bengal (94) for monitoring the border activities by BSF. At present NPCC has completed 59 Border out Post.

(iv) Indira Gandhi National Tribal University (IGNTU) Works

NPCC is involved in creating infrastructure & regional centre of IGNTU Manipur costing Rs. 66.0 crore, which is now completed.

(v) Jawahar Navodaya Vidyalaya (JNV) Works

NPCC is building the Infrastructure for Jawahar Navodaya Vidyalaya in the extreme difficult location of Lawngtalai Lunglei, Kolasib in the state of Mizoram & Bagmara of Meghalaya.

(v) National Institute of Electronics & Information Technology (NIELIT) Works

NPCC is playing a major role for creating infrastructure for 10 extension centers and one Centre of NIELIT in the N.E. states of Mizoram, Nagaland, Manipur, Arunachal Pradesh, Meghalaya and Assam.

(vi) Assam Rifle Works-

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.

(vii) Other activities for development of North Eastern States

NPCC has constructed the barrages & other socio-economic development project with financial support from Japan International Cooperation Agency (JICA). Works carried out by NPCC cover: Gomti Hydro Project, Maharani Barrage, Khowai Barrage, Manu Barrage, Kalashi Barrage, Tripura Tribal Area Autonomous District Council works, Khuga Dam in Manipur, College of Fisheries under Central Agriculture University, IGNOU Works, Singda Dam, Loktak river valley project, Dolaithabi river valley project etc.

Border out Post for Border Security Force at Dupli Para, Meghalaya

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 2016-17 up to 31st December, 2016 are given below:

Major achievements of the North Eastern region

Activities	Achievements
Field Activities for Aquifer Mapping:	
• Ground Water Exploration	During financial year 2016-17 (up to31.12.2016), the Central Ground Water Board has constructed 14 wells (EW-9, OW-3 and PZ-2). However, 30 wells are likely to be achieved by 31.03.2017.
• Geophysical Studies	Central Ground Water Board has carried out 53 Vertical Electrical Soundings(VES) in various parts of NER. and the figures are likely to be achieved to 80(VES) by 31.03.2017.
• Water Quality Analysis	1140 nos of water samples were analyzed for the basic constituents, heavy metals (such as Cu, Zn, Fe, Mn, CO, Cd, Cr, Ni, Pb etc. and 1300 Water Quality Analysis are likely to be achieved by 31.03.2017.
Other Activities:	
Ground Water Regime Monitoring	Monitoring of water level from GWMS for the month of March, August, November, 2016 completed. The monitoring of wells in January' 2017 will be achieved by 31.3.2017.
Short Term Water Supply Investigation.	35 nos. Short Term Water Supply Investigation has been carried out and about 50 nos. Short Term Water Supply Investigation are likely to be completed by 31.03.2017.
Ground Water Resources Assessment (No of States/ UT) (As on 31-03-2013)	Ground Water Resources Assessment (as on March, 2013) completed in all 7 states.
Preparation of State Reports.	3 State reports have been completed.
Ground Water Year Books	Ground Water Year Book of NE State Submitted

BRAHMAPUTRA BOARD

Brahmaputra Board being the nodal organization for the North-East States is going to conduct Mass Awareness activities on Water Conservation under Tribal Sub plan (IEC activities). The activities are proposed like- (a) Preparation of pamphlet, leaflet etc. (b) Specific emphasis on the need of Tribal by hoarding of banner and (c) Special awareness meeting & On-the-spot Art competition in the states of Nagaland, Mizoram, Arunachal Pradesh and Meghalaya will be conducted during January & February 2016.

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10. Administration Training and Governance

Establishment Matters

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.

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. Also deals with ISO Certification in respect of Administration & Ground Water & PP wing.

For prevention of sexual harassment of women employees, a Committee is functioning under Administration Section to look into the complaints of the women working in the Main Secretariat of the Ministry. The Scheduled Castes/ Scheduled Tribes and Other Backward Classes (SCs/STs/OBCs) Cell is also part of the Administration Section. Details of the activities of above Committee/ Cell are given in Section 14 (Staff Welfare) of this Report.

Implementation of Training Policy of the Ministry

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.

A total of 225 officers/officials of the Ministry were sent for training till December 2016. In total 25 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.

An amount of Rs. 2 crore was allocated for training of Ministry of Water Resources, RD & GR officers for the year 2016-17 out of which Rs. 76 Lakhs have been utilized till 31.12.2016.

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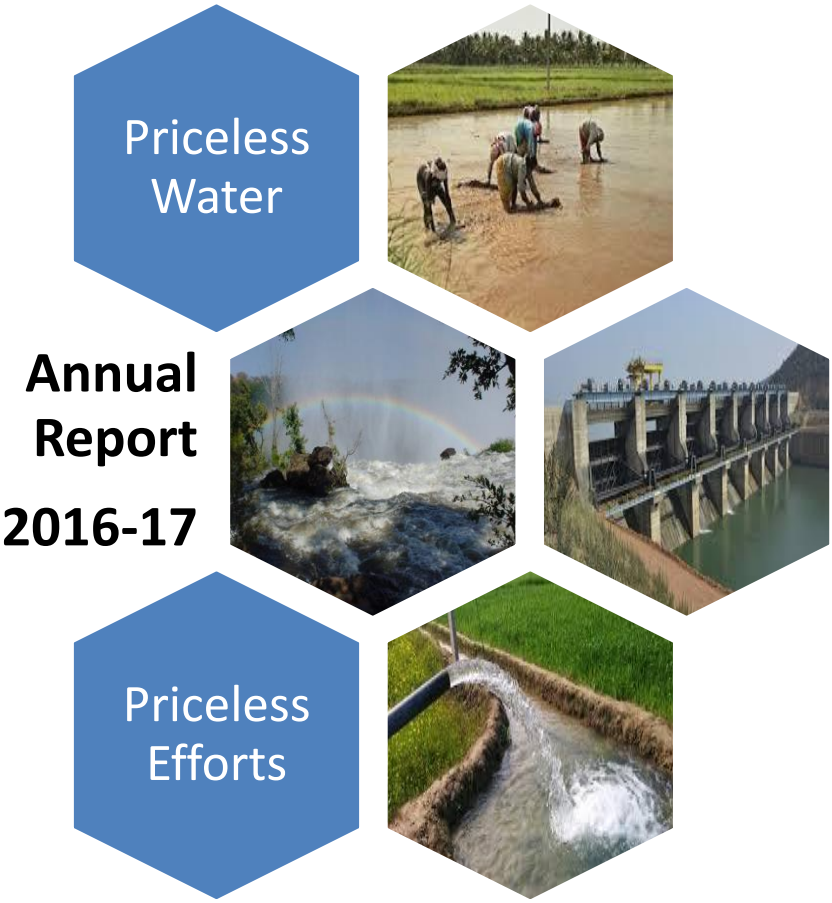

11. Transparency

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.

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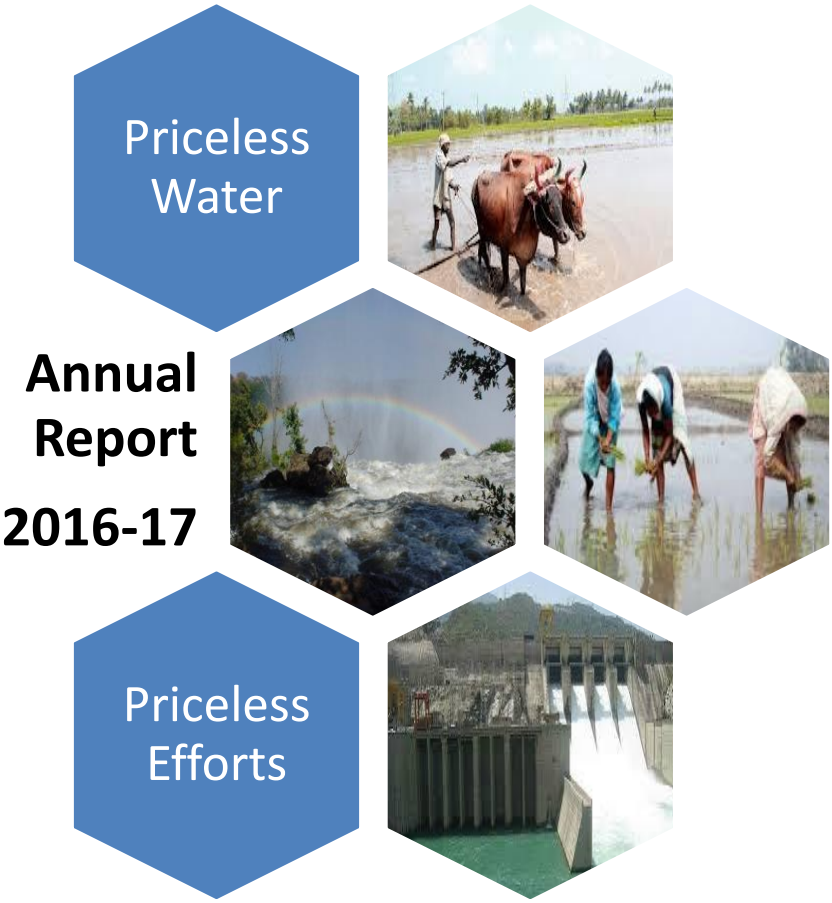

12. Role of Women in Water Resources Management

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.

Women make significant contribution to the agriculture labour force

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.

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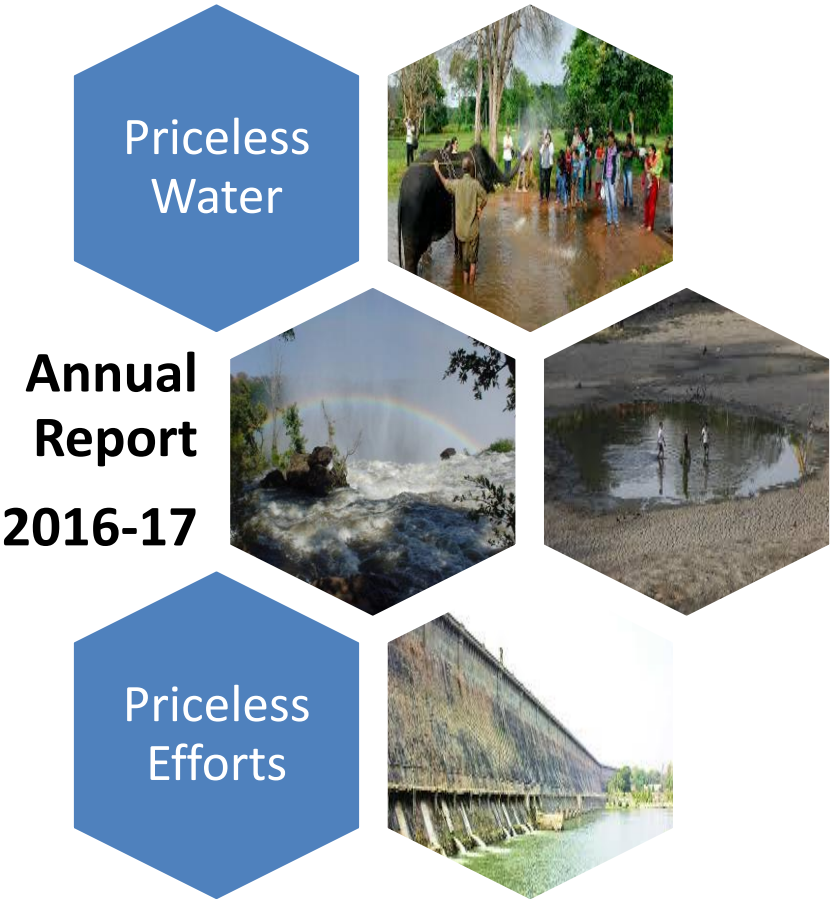


13. Progressive use of Hindi

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, Division-14, Bengaluru; (2) Narmada Central Board, Indore; (3) Central Soil and Material Research Station, New Delhi; (4) Hydrology Observation Circle, Dhanbad; (5) Central Ground Water Board, Chandigarh; (6) Central Ground Water Board (Regional Office). During these inspections the parliamentary Committee on Official Language suggested various measures for progressive use of Hindi.

Ministry's Hindi Advisory Committee constituted under the chairmanship of Hon'ble Minister, Ministry of Water Resources, River Development and Ganga Rejuvenation held its meeting on 19.07.2016 and 19.10.2016.

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 29.08.2016 and 31.08.2016 respectively.

Hindi Fortnight was organized in the Ministry from 01.09.2016 to 15.09.2016. 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 Vaijayanti Puraskar Yojana' and 'Incentive Scheme for doing work in Hindi' were implemented in the Minstry for Promoting the Implementation of Official Language Policy. 'Rajbhasha

Vaijayenti 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.

For the Officers and employees of the Ministry of Water Resources, River Development and Ganga Rejuvenation Hindi workshop was organized on 29.06.2016 and 30.06.2016 to fill quarterly report properly and on problem of computer Hindi (Unicode) typing and its solution in which 27 and 23 officers and employees participated. On 27.12.2016, a Hindi workshop was organized for the officers and employees of the Ministry of Water Resources, River Development and Ganga Rejuvenation, on 'noting drafting in government work – theoretical considerations and practical training' in which 14 officers and employees participated.

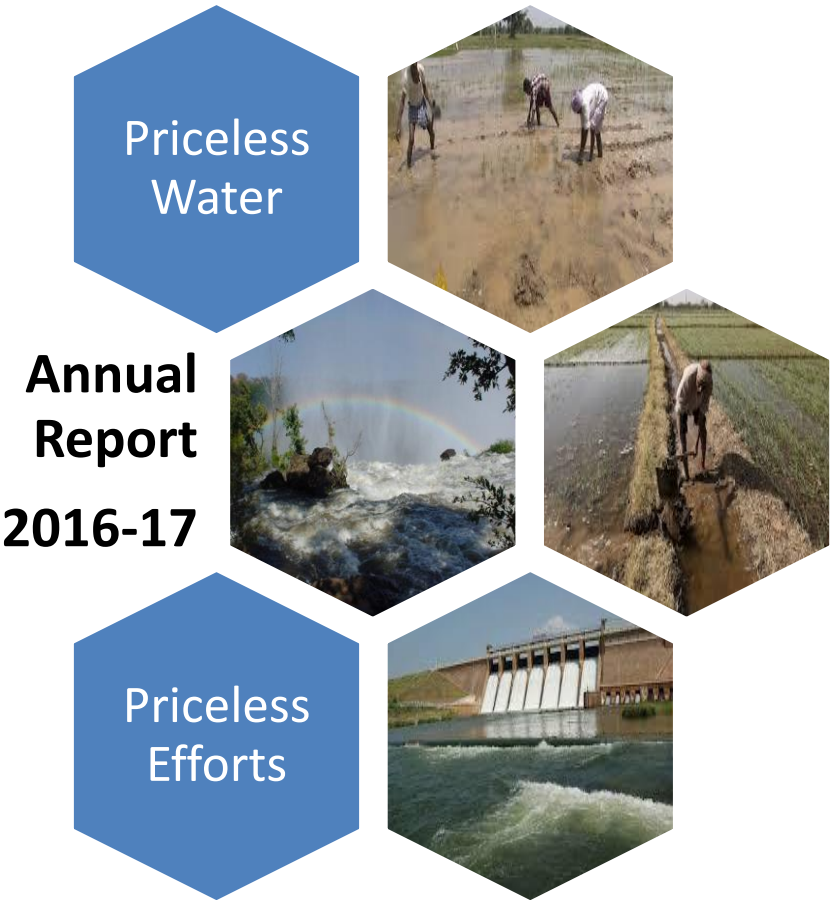
SWACHHATA PAKHWADA 2016-17

જળ સંસાધન, નદી વિકાસ તેમજ ગંગા સંરક્ષણ મંત્રાલય વડોદરા દ્વારા "સ્વચ્છ પખવાડા"ની ઉજવણી

નવી દિલ્હી, તા.૨૯
માનનીય પ્રધાનમંત્રીના "સ્વચ્છ ભારત અભિયાન" અંતર્ગત જળ સંસાધન, નદી વિકાસ તેમજ ગંગા સંરક્ષણ મંત્રાલય દ્વારા ૧૬ થી ૩૧ માર્ચ, ૨૦૧૭ "સ્વચ્છ પખવાડા"ના રૂપમાં ઉજવી રહ્યું છે. "સ્વચ્છ પખવાડા" અંતર્ગત સરદાર સરોવર નિર્માણ સલાહકાર સમિતિ, વડોદરાના અધિકારીઓ તેમજ કર્મચારીઓ દ્વારા તારીખ ૨૯ માર્ચ, ૨૦૧૭ના રોજ એક વિશેષ સ્વચ્છતા અભિયાનનું આયોજન કરાયું. પંચવટી-ગોરવા, વડોદરામાં સાયકલ (વડોદરા શાખા નહેર)ના પાંગણમાં ખાસ કરીને સફાઈ કરવામાં આવી. સરદાર સરોવર નર્મદા નિગમ લિમિટેડ, ગુજરાત સરકાર, કેન્દ્રીય જળ આયોગ, ભારત સરકાર, નર્મદા નિયંત્રણ ઓથોરીટી ભારત સરકારના અધિકારીઓ તેમજ કર્મચારીઓએ પણ આ અભિયાનમાં ઉત્સાહપુર્વક ભાગ લીધો. શ્રી એસ. કે. કંબોજ, વરિષ્ઠ સહ આયુક્ત, જળ સંસાધન, નદી વિકાસ તેમજ ગંગા સંરક્ષણ મંત્રાલય, નવી દિલ્હીએ 'સ્વચ્છતા સંકલ્પ' લેવડાવ્યા. અધિકારીઓ તેમજ કર્મચારીઓએ ખાસ સ્વચ્છતા અભિયાનને પ્રોત્સાહિત કરવા પોતાનું શ્રમદાન પ્રદાન કર્યું.

MINISTRY OF

WATER RESOURCES | RIVER DEVELOPMENT | GANGA REJUVENATION



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14. Staff Welfare

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.

Administration Section also handles other matters like filling up of posts by Direct Recruitment/ Deputation/ Promotion, Termination of Probation, Confirmation, grant of financial up gradation 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.

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 Nari Raksha Samiti, NGO (Member)

The Complains 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.

During the year ending 31st December, 2016, one complaint was received by the Committee on the recommendations of National Commission for Scheduled Casts. The Committee has agreed unanimously that the allegations do not fall under the ambit of sexual harassment and is outside the purview of 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 1st 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.

SWACHHATA PAKHWADA 2016-17

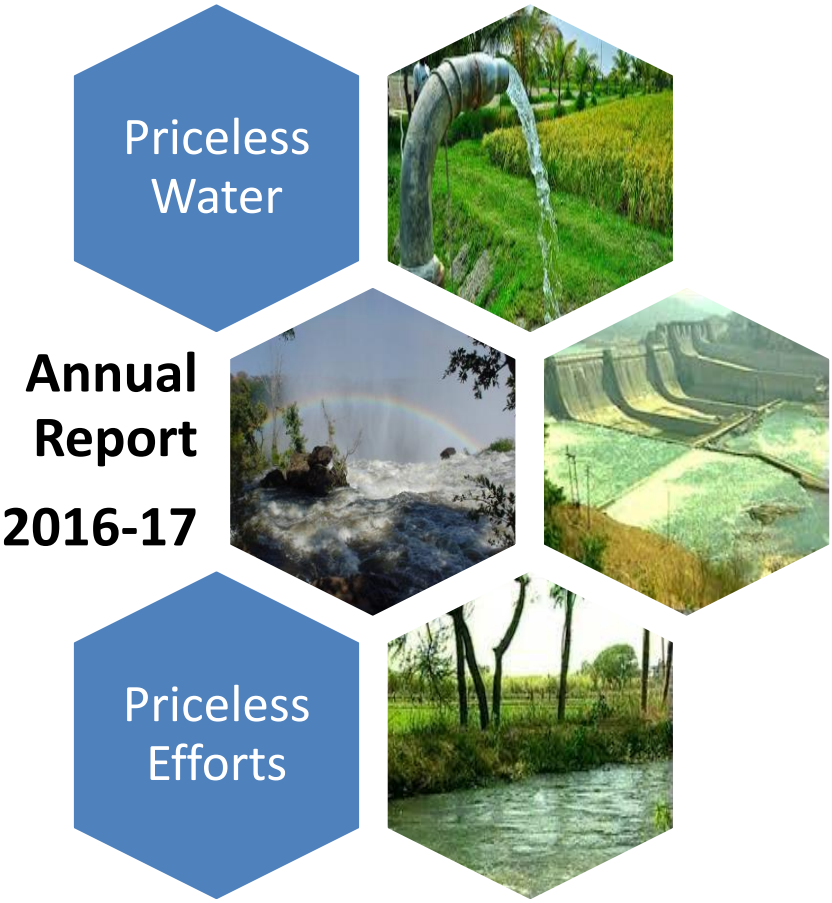
स्वच्छता रैली में शामिल हुए गंगा मंत्रालय के अफसर

इंदौर। रविवार को स्वच्छ भारत पखवाड़ा के तहत नर्मदा नियंत्रण प्राधिकरण कार्यालय से स्वच्छता संदेश रैली निकाली गई। शहर को स्वच्छ बनाए रखने के संदेश के साथ आयोजित इस रैली में जल संसाधन नदी विकास एवं गंगा संरक्षण मंत्रालय के आयुक्त जे.चंद्रशेखर अय्यर खास तौर पर शामिल हुए। बड़ी संख्या

दैनिक भास्कर 27/3/17

MINISTRY OF

WATER RESOURCES | RIVER DEVELOPMENT | GANGA REJUVENATION



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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.

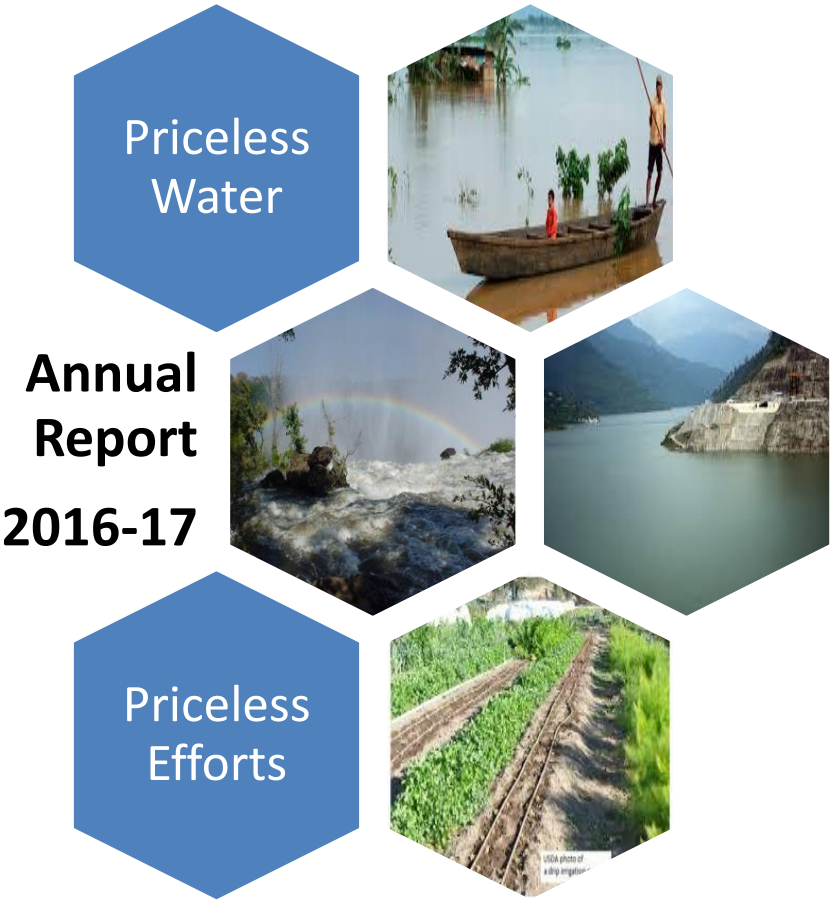
This Division monitors the disciplinary cases and related matters of the organizations under the Ministry through periodical returns prescribed by CVC, DoPT, etc. The Division prepares the "List of officers of Doubtful Integrity" and the "Agreed List" in consultation with CBI.

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.

MINISTRY OF

WATER RESOURCES	RIVER DEVELOPMENT	GANGA REJUVENATION



16. Appointment of Persons of Special Needs

MONITORING OF RESERVATION FOR PERSONS WITH SPECIAL NEEDS

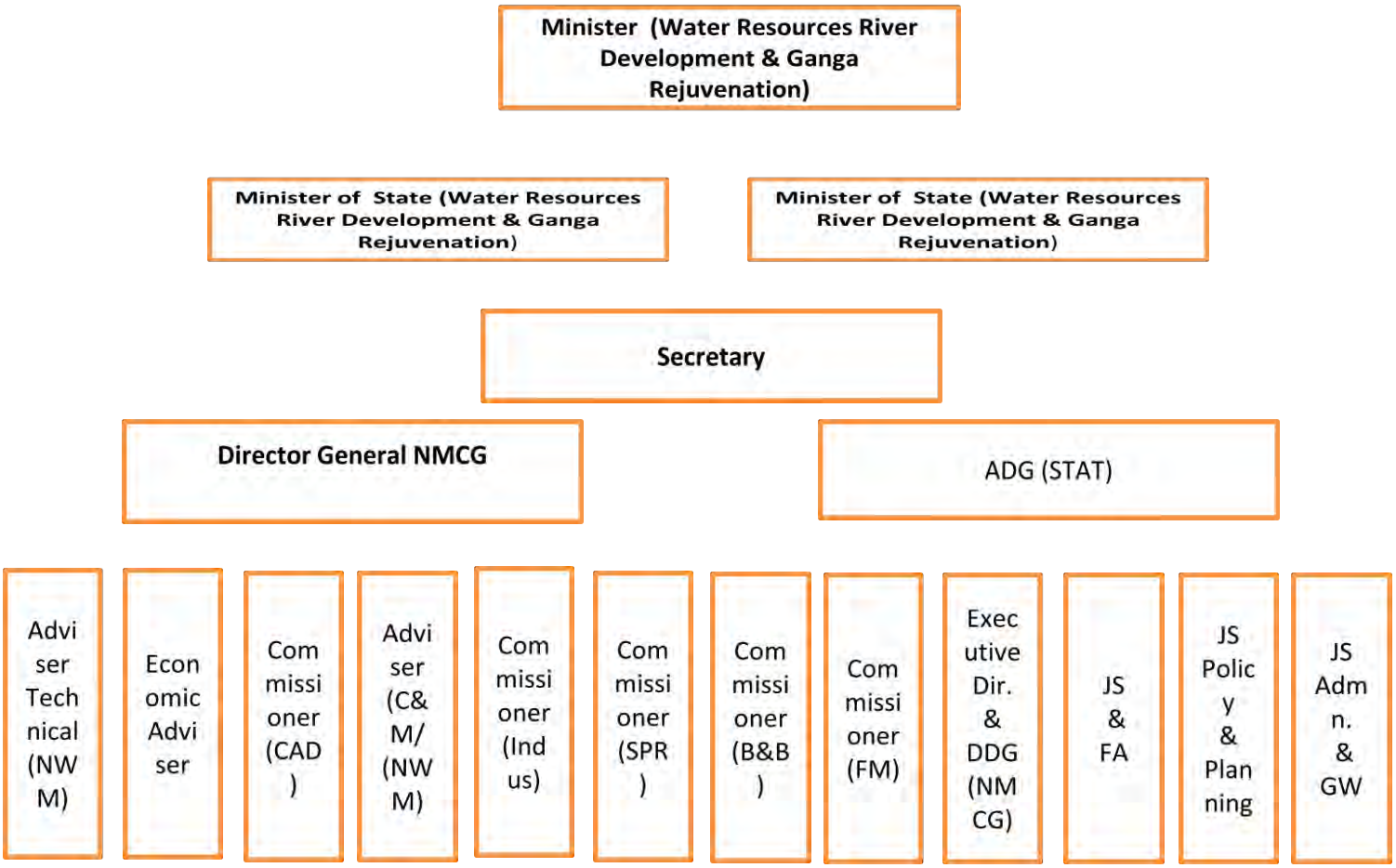
Monitoring of the recruitment of persons with Special Needs is being done to ensure fulfillment of 3% quota for the category by the Ministry as well as various organisations under it. Periodic reports on the progress made are being sent regularly to the Ministry of Social Justice & Empowerment. Accordingly, 3% of posts/vacancies (1% each for Orthopedics, 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.

SWACHHATA PAKHWADA 2016-17

Annexure – I

Organizational Chart of MoWR, RD & GR



Annexure – II

STAFF IN POSITION IN THE MINISTRY OF WATER RESOURCES, RD &GR

AS ON 31.12.2016

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	-	12	60	10	3	-	-	120	21	3	6	18	153	54	4	3	28

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
1.	Government of India Ministry of Water Resources, Room No. 412, IV Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Dr. Amarjit Singh, Secretary Tel No. 23710305, 23715919 Fax. 23731553
2.	Government of India Ministry of Water Resources, Room No. 6, 2nd Floor, B wing, Lok Nayak Bhawan, Khan Market, New Delhi.	Shri. Additional Director General (Stat) Tel No. 24691080 Fax. 24691080
3.	Government of India Ministry of Water Resources, Room No. 403, IV Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri. Akhil Kumar, Joint Secretary (Admn.&GW) Tel No. 23710343 Fax. 23730719
4.	Government of India Ministry of Water Resources, Room No.220, 2nd Floor, Block No.3,CGO Complex, Lodi Road, New Delhi.	Dr. M. Satyanarayana, Adviser (C&M/NWM) Tel No. 24366614 Fax. 24366614
5.	Government of India Ministry of Water Resources, Room No. 404, IV Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri., Sanjay Kundu Joint Secretary (PP), Tel No. 23711946 Fax. 23711946
6.	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
7.	Government of India Ministry of Water Resources, Room No. 411, IV Floor, Shram Shakti Bhavan,	Shri K Vohra, Commissioner (SPR) Tel No. 23710107 Fax. 23350051

Rafi Marg, New Delhi.

Government of India
Ministry of Water Resources,
Room No. 827, 8th Floor,
CGO Complex, Lodi Road,
New Delhi-110 001

Shri J. Chandrashekhar ,
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 P.K. Saxena,
Commissioner (Indus)
Tel No. 24361540
Fax. 24361540

Government of India
Ministry of Water Resources,
Room No. 236, 2nd Floor,
A wing, Krishi Bhavan,
Rafi Marg, New Delhi-110 001

Shri Sanjay Kundu,
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 Adviser
Tel No. 23383078
Fax. 23383078

Government of India
Ministry of Water Resources,
Room No. 236, Krishi Bhavan,
New Delhi-110 001

B.K. Pillai
Commissioner CAD
Tel No. 23382256
Fax.

Government of India
Ministry of Water Resources,
Room No. 235, II Floor,
Block III CGO Complex,
Lodhi Road
New Delhi-110 003

Shri Joginder Singh,
Adviser Technical
Tel No. 24369170
Fax.

Government of India
Ministry of Water Resources,
3rd Floor,MDSS Blg.,
Rear wing 9, CGO Complex,
Lodi Road, New Delhi-110001

Shri U.P. Singh,
Director General (NMCG)
Tel No. 23072900
Fax. 23049566

Attached Offices

1.	Central Water Commission, Room No. 326, Sewa Bhawan, R.K. Puram, New Delhi	Shri., 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 A.K. Singh, General Manager Tel. No. 03485-253644 Fax: 03485-253608
4.	Ganga Flood Control Commission, Sinchai Bhawan, III floor, Patna-800015	Shri, Arun Kumar Sinha, (Member Planning CWC) 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 S. Masood Husain, Chairman, Addl. Charge Tel. No. 26108590 Fax: 26195289

Public Sector Undertakings

10.	Water and Power Consultancy Services (India) Limited, 5th 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	Dr. M.K. Sinha, Executive Member Tel. No. 0731-2557276 Fax : 0731-2559888
15.	Brahmaputra Board, Basistha, Guwahati	Shri Sanjay Kundu, 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, Karntaka State, PIN : 583225	Shri R.K. Gupta, Chairman Tel. No. 040-29808740 Fax 040-29808742

Annexure – IV

BE, RE & Actual Expenditure under Plan schemes during 2015-16 & 2016-17

Group/ Scheme Component	Actuals 2015-16	BE 2016-17	RE 2016-17	Exp. upto 31.12.2016
I. Major Irrigation Projects				
1. Polavaram Multipurpose Project	400.00	100.00	100.00	100.00
2. Farakka Barrage Project	72.61	80.00	65.00	38.23
3. Dam Rehabilitation & Improvement Programme	14.32	23.98	45.00	15.72
4. Water Project of NCT	0.00	0.02	0.00	0.00
Total: Major Irrigation Projects	486.93	204.00	210.00	153.95
II. Namami Gange				
1. National Ganga Plan	1000.00	2150.00	1440.50	1440.50
2. Ghat Works for Beautification of River Front	100.00	100.00	67.00	67.00
Total: Namami Gange	1100.00	2250.00	1507.50	1507.50
III. River Basin Management				
1. National Water Mission	6.74	25.00	5.00	3.29
2. River Basin Management	159.02	173.60	175.00	111.41
3. Flood Forecasting	35.56	60.00	42.00	30.34
4. Interlinking of rivers	0.00	1.00	0.01	0.00
Total: River Basin Management	201.32	259.60	222.01	145.04
IV. Water Resource Management				
1. Development of Water Resources Information System	56.20	84.87	70.00	57.14
2. Ground Water Management and Regulation	138.57	303.39	115.00	85.51

3. National Hydrology Project	0.70	165.00	54.93	1.64
4. Research and Development Water Resources	41.72	55.00	35.00	28.72
5. Irrigation Management Programme	0.00	0.01	0.01	0.00
6. HRD/Capacity Building Programme	18.44	32.00	16.00	14.54
7. infrastructure Development	7.45	20.00	10.00	2.24
Total: Water Resource Management	263.08	660.27	300.94	189.79
V. Pradhan Mantri Krishi Sinchai Yojana: AIBP and PMKSY (HKKP) (State/UT Plan)				
1. Accelerated Irrigation Benefit Progamme (AIBP)	2998.77	1000.00	999.87	999.86
2. PMKSY (Har Khet Ko Pani)	1498.86	500.00	420.89	420.88
3. Impact Assessment Studies of AIBP Projects	0.04	1.00	0.05	0.02
4. Flood Management Programme	0.00	150.00	150.00	149.99
5. River Management Activities and works related to Border Areas	190.21	200.00	61.74	16.27
6. Irrigation Census	9.82	25.13	15.00	13.01
Total: Pradhan Mantri Krishi Sinchai Yojana: AIBP and PMKSY (HKKP) (State/UT Plan)	4697.70	1876.13	1647.55	1600.03
VI. National River Conservation Plan	532.00	250.00	167.50	167.50
Grand total: (I-VI)	7281.03	5500.00	4055.50	3763.81

Annexure – V

BUDGET AT A GLANCE (SECTOR-WISE)

(Rupees in crore)

Sl. No.	Sector/ Organisation/ Scheme	Actuals 2015-16		BE 2016-17		RE 2016-17	
		Plan	**Non-Plan**	**Plan**	**Non-Plan**	**Plan**	**Non-Plan**
1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**
I.	**Establishment Expenditure of the Centre**						
	1.Secretariat Economic Services						
1.	Ministry of Water Resources - Secretariat	0.00	43.54	0.00	48.00	0.00	50.96
2.	Krishna Water Dispute Tribunal	0.00	2.49	0.00	2.60	0.00	2.20
3.	Cauvery Water Dispute Tribunal	0.00	1.91	0.00	2.80	0.00	1.68
4.	Ravi-Beas Waters Tribunal	0.00	0.39	0.00	0.68	0.00	0.46
5.	Vansadhara Water Dispute Tribunal	0.00	3.83	0.00	4.52	0.00	3.90
6.	Mahadayi Water Dispute Tribunal	0.00	2.58	0.00	3.10	0.00	2.50
	Total:	**0.00**	**54.74**	**0.00**	**61.70**	**0.00**	**61.70**
	Attached, Subordinate and Other Offices						
1.	Central Water Commission	0.00	261.56	0.00	312.90	0.00	312.00
2.	Central Water and Power Research Station	0.00	45.54	0.00	52.24	0.00	52.00
3.	Central Soil and Material	0.00	11.63	0.00	12.37	0.00	12.37

Sl. No.	Sector/ Organisation/ Scheme	Actuals 2015-16		BE 2016-17		RE 2016-17	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
	Research Station						
4.	Sardar Sarovar Construction Advisory Committee	0.00	0.78	0.00	1.00	0.00	1.00
5.	Bansagar Control Board	0.00	0.33	0.00	0.40	0.00	0.40
6.	Upper Yamuna River Board	0.00	2.33	0.00	2.40	0.00	2.40
7.	Central Ground Water Board	0.00	147.13	0.00	171.80	0.00	172.00
8.	National Institute of Hydrology	0.00	15.43	0.00	19.00	0.00	19.00
	Total:	**0.00**	**484.73**	**0.00**	**572.11**	**0.00**	**571.17**
II.	**Central Sector**						
1.	National River Conservation Programme	532.00	0.00	250.00	0.00	167.50	0.00
2.	Namami Gange – National Ganga Plan	1000.00	0.00	2150.00	0.00	1440.50	0.00
3.	Ghat Works for Beautification of River Front	100.00	0.00	100.00	0.00	67.00	0.00
	Total:	**1632.00**	**0.00**	**2500.00**	**0.00**	**1675.00**	**0.00**
	Major Irrigation Projects						
1.	Polavaram Multipurpose Project	400.00	0.00	100.00	0.00	100.00	0.00
2.	Farakka Barrage Project	72.61	41.55	80.00	63.40	65.00	63.13
3.	Emergent Flood Protection	0.00	0.00	0.00	3.00	0.00	3.00

Sl. No.	Sector/ Organisation/ Scheme	Actuals 2015-16		BE 2016-17		RE 2016-17	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
	Works in Eastern and Western Sectors						
4.	Water Projects for National Capital Territory	0.00	0.00	0.02	0.00	0.00	0.00
5.	Dam Rehabilitation and Improvement Programme	14.32	0.00	23.98	0.00	45.00	0.00
	Total:	**486.93**	**41.55**	**204.00**	**66.40**	**210.00**	**66.13**
	River Basin Management						
1.	National Water Mission	6.74	0.00	25.00	0.00	5.00	0.00
2.	River Basin Management	159.02	0.00	173.60	0.00	175.00	0.00
3.	Flood Forecasting	35.56	0.00	60.00	0.00	42.00	0.00
4.	Interlinking of Rivers	0.00	0.00	1.00	0.00	0.01	0.00
	Total:	**201.32**	**0.00**	**259.60**	**0.00**	**222.01**	**0.00**
	Water Resources Management						
1.	Development of Water Resources Information System	56.20	0.00	84.87	0.00	70.00	0.00
2.	Ground Water Management and Regulation	138.57	0.00	303.39	0.00	115.00	0.00
3.	National Hydrology Project	0.70	0.00	165.00	0.00	54.93	0.00
4.	Research and Development	41.72	0.00	55.00	0.00	35.00	0.00
5.	Irrigation Management	0.00	0.00	0.01	0.00	0.01	0.00

Sl. No.	Sector/ Organisation/ Scheme	Actuals 2015-16		BE 2016-17		RE 2016-17	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
	Programme						
6.	HRD/ Capacity Building Programme	18.44	0.00	32.00	0.00	16.00	0.00
7.	Infrastructure Development	7.45	0.00	20.00	0.00	10.00	0.00
	Total:	**263.08**	**0.00**	**660.27**	**0.00**	**300.94**	**0.00**
III.	**Centrally Sponsored**						
	Pradhan Mantri Krishi Sinchai Yojana and other Schemes						
1.	Accelerated Irrigation Benefit Program	2998.77	0.00	1000.00	0.00	999.87	0.00
2.	Pradhan Mantri Krishi Sinchai Yojana: Har Khet Ko Pani	1498.86	0.00	500.00	0.00	420.89	0.00
3.	Impact Assessment Studies	0.04	0.00	1.00	0.00	0.05	0.00
4.	Assistance for Sutlej Yamuna Link Canal Project	0.00	0.00	0.00	1.00	0.00	1.00
5.	Flood Management Programme	0.00	0.00	150.00	0.00	150.00	0.00
6.	River Management Activities and Works Related to Border Areas	190.21	0.00	200.00	0.00	61.74	0.00
7.	Irrigation Census	9.82	0.00	25.13	0.00	15.00	0.00
8.	National Ground Water Management Improvement Scheme	0.00	0.00	0.00	0.00	0.00	0.00

Sl. No.	Sector/ Organisation/ Scheme	Actuals 2015-16		BE 2016-17		RE 2016-17	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
	Total:	4697.70	0.00	1876.13	1.00	1647.55	1.00
	Grand Total:	7281.03	581.03	5500.00	701.21	4055.50	700.00

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.	A.K. Kaushik, Under Secretary (Admn) Tel. No. 23738126 Email id: usadmn mowr@nic.in	Administration Section & SC/ST/OBC Cell/cash Section	Surender Kumar Garg, DS (Admn, GA and Cash) Tel. No. 23708150 Email id : dsadmn-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	Banarsi Ram, DS (Coord & ID) Tel. No. 23716747 Email id : dscoord-mowr@nic.in
A.	Ashok Kumar Gupta, Under Secretary (ID) Tel. No. 23714350 Email id: ashok.kgupta@nic.in	Infrastructure Development	

5.	R.N. Dixit, Under Secretary (E-III & Parliament) Tel. No. 23766944 Emai id: usparl mowr@nic.in	E-III & Parliament	Chandan Mukherjee (E-III & Parliament) Tel. No 23711459 Email id: chandan@nic.in
6.	Ajay Kumar, Under Secretary (CGWB) Tel. No. 23711370 Email id: usgw mowr@nic.in	Central Ground Water Board Desk	Khatchin Langel, Dir (GWE & E- II) Tel. No. 23714734
7.	S.K. Kataria, Under Secretary (E-II) Tel. No. 23716928 Email id : use2-mowr@nic.in	Establishment-II Section	
8.	S.K. Kataria, Under Secretary (PSU & PPP) Tel. No. 23716928 Email id: shashi.pal25@nic.in	Public Sector Undertakings Section and PPP Cell	L.B. Toulte, DS (PSU) Tel. No. 23382448
9.	Pratip Deb, Under Secretary (Vig) Tel. No. 23716928 Email-id:usvig-mowr@nic.in	Vigilance Section	Ms. Surinder Kaur, Director (Vigilance & Estt) Tel. No. 23711988 Email id : direst-mowr@nic.in
B.	Narendra Singh, Under Secretary (E-I) Tel. No. 237316928 Email id: use1-mowr@nic.in	E-I Section	Ms. Surinder Kaur, Director (Vigilance & Estt) Tel. No. 23711988 Email id : direst-mowr@nic.in
10.	Vinod Kumar, Under Secretary (IEC) Tel. No. 23714350 Email id: kumarv.bharti@gov.in	Information, Education & Communication Cell	Ashok Gupta, Dir(GW & IEC) Tel. No. 24363417 Email id : dirgw-mowr@nic.in

11	Anil Kumar Wahi, Under Secretary (GW) Tel. No. 23766907 Email id : usgw2-mowr@nic.in	Ground Water Desk	
12	Mukesh Kumar, Under Secretary (EA & IC and O&M) Tel. No. 23074005 Email id: m.kumar70@nic.in	External Assistance and International Cooperation Desks including Foreign Training & Bilateral issues and O&M	L.B. Toulte, DS(EA & IC and O&M) Tel. No. 23382448
13	B.L. Meena, Under Secretary (B&B) Tel. No. 24367116 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. 24367106 Email id : shraddha.mathur@nic.in	Official Language Section	M.C. Bhardwaj, Dy. Director (OL) Tel. No. 23711486 Email id: mc.bhardwaj@nic.in
15	Avanish Kanth, Sr. Hydrogeologist Tel. No. 24367081 Email id: avanish.kanth@nic.in	Hydrology Project	N.K. Manglik, SJC(NHP) Tel. No. 24367109
16.	B.L. Meena, Under Secretary (B&B) Tel. No. 24367116 Email id: bl.meena15@nic.in	Matters of Brahmaputra & Barak Wing	Ajay Kumar Gupta, Sr. Joint Commissioner (B&B) Tel. No. 24367590
17	M.S. Sahare, Sr. Joint	Flood Management Wing	J. Chandrasekhar Iyer,

	Commissioner (FM) Tel. No. 24392095 Email id: mssahare-cwc@nic.in		Commissioner (FM) Tel. No. 24368238 Email id: commer-mowr@nic.in
18	M.S. Verma, Sr. Joint Commissioner (FM) Tel. No. 24362160 Email id: mahendra.singh12@nic.in	Flood Management Wing	J. Chandrasekhar Iyer, Commissioner (FM) Tel. No. 24368238 Email id: commer-mowr@nic.in
19.	S.K. Basu, Under Secretary (PP) Tel. No. 23719627 Email id : uspp mowr@nic.in	Policy and Planning Section	S.K. Sharma, Sr. Joint Commissioner (PP) Tel. No. 23719503 Email id: sjcpp-mowr@nic.in
20.	Vinod Kumar, Under Secretary (E-IV) Tel. No. 23714350 Email id: kumarv.bharti@gov.in	Matters related to NCA, BCB, BRB, SSCAC, Tungabhadra Board and establishment matters of NWDA	
21.	Ravi Sinha, Director (CADWM) Tel. 23382481 Email id: ravi.sinha83@nic.in	CAD related matters	B.R.K. Pillai, Commissioner(CAD) Tel. No. 23382256 Email: ravi.pillai@nic.in
21	Pinki Pande, SO(BM) Tel. No. 24368344 pinki.pandey13@gov.in	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	Virender Sharma, Sr. JC (BM) Tel. No. 24367109 Email id: sjcbm-mowr@nic.in
22.	Bisny Suresh Kumar, Section Officr (Projects) Tel. No. 23711370 Email id : project1-	Project Section	Bhupinder Singh, Sr. Joint Commissioner (SPR) Tel. No. 23385186 Email id: sjcpr-mowr@nic.in

	mowr@nic.in		
23.	Manoj Kumar Sharvar, 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
24.	Kiran Pramanik, Sr. Joint Commissioner (MI) Tel. No. 23387834 Email id:	Minor Irrigation & Water Bodies	K. Vohra, Commr (SPR) Tel. No. 23710107 Email id : commpr-mowr@nic.in
25.	Rajveer Singh, DC (Indus) Tel. No. 24360332 Email id: dcindus-mowr@nic.in	Indus Wing	Rakesh Kumar, Sr. JC (Indus) Tel. No. 24361467 kumar.rakesh73@gov.in
26.	Om Prakash Gupta, SEO (MI Stat) Tel. No. 24656135 Email id: om.pgupta@gov.in	Minor Irrigation Statistics	Bindu Sreedathan, Director (MI Stats) Tel. No. 246496 Email id: dirmi-mowr@nic.in
27.	Vijay Shrivastava, Under Secretary (Finance) Tel. No. 23719302 Email id: vijayk.srivastava@nic.in	Finance Wing – Finance Desks and Budget Section	Manish Tripathi, Director (Finance) Tel. No. 23711360 Email id: dirfin-mowr@nic.in
28.	S.K. Mohiddin, Scientist 'C' (National Water Mission) Tel. No. 24362133 Email id: mohiddin.sk@nic.in	National Water Mission	Joginder Singh, Advisor (Tech) Tel. No. 24369170 Email id: j.sing25@nic.in
29.	K.K. Sapra, US (NMCG) Tel. No. 23049417	NMCG & NGRBA	Nityanand Ray, Deputy Secretary (NMCG) Tel. No. 23049506
30.	K.N. Joshi, Assistant	Matters related to Principal	

	Controller of Accounts Tel. No. 23384843	Accounts Office and Cash Section	Anil Srivastava, Controller of Accounts Tel. No. 23386644 Email id: ca-mowr@nic.in
31.	Nafe Singh, Pay & Accounts Officer (FBP) Tel. No. 03485-253648	Matters related to Pay & Accounts Office (FBP)	
32.	Sunita R. Shinde, Sr. Accounts Officer (CWPRS) Tel. No. 020-24381813	Matters related to Pay & Accounts Office (CWPRS)	
33.	Balbir Singh, Sr. Accounts Officer (CGWB) Tel. No. 0129-2410370	Matters related to Pay & Accounts Office (CGWB)	
34.	Upendra Malhotra, Sr. Accounts Officer (CWC) Tel No. 26012185	Matters related to Pay & Accounts Office (CWC)	
35.	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

The estimated fund requirement (Central Assistance as well as State share) for completion of 99 projects

Category	No. of Projects	Fund required for completion (Rs. in crore)			Central Share (Rs. in crore)	Irrigation Potential Utilisation (Lakh Ha.)
		AIBP	CAD	TOTAL		
Priority-I projects (Completion by 3/2017)	23	7956	5466	13423	6535	14.53
Priority-II projects (Completion by 3/2018)	31	8080	4825	12905	4269	12.95
Priority-III projects (Completion by 12/2019)	45	32510	18757	51268	20538	48.55
TOTAL	**99**	**48546**	**29049**	**77595**	**31342**	**76.03**

Note: Figures mentioned as per information compiled /received from States. However, while processing CA proposals, the figures considered would be as per actual and therefore may change.

Annexure-VIII

State wise summary of number of projects, their estimated balance cost, admissible Central Assistance and targeted potential utilization of 99 Projects

(Rs. In crore)

Sl. No.	State Name	No. of Projects				Balance cost as on 1.04.16	Balance CA admissible as on 1/04/2016	Balance State Share as on 1/4/16	Targeted Irrigation Potential (Th. Ha.)
		Priority-I	Priority-II	Priority-III	Total				
1	Andhra Pradesh		8		8	1818	610.6	1207.6	263.3
2	Assam	2		1	3	832	307.3	525.0	124.9
3	Bihar			2	2	459	199.0	259.7	37.3
4	Chhattisgarh			3	3	715	199.0	516.1	47.6
5	Goa			1	1	44	26.3	17.6	14.5
6	Gujarat			1	1	8107	3685.7	4421.4	1792.0
7	Jammu & Kashmir	3		1	4	356	184.0	171.5	61.4
8	Jharkhand			1	1	3426	2232.8	1193.3	236.8
9	Karnataka	2		3	5	3185	1837.3	1347.4	252.8
10	Kerala			2	2	220	98.3	121.2	38.1
11	Madhya Pradesh	2	11	1	14	11732	3624.9	8107.3	872.6
12	Maharashtra	7		19	26	19950	5503.2	14446.6	850.8
13	Manipur	2			2	602	309.9	291.7	37.0
14	Odisha	1	2	5	8	4628	2299.6	2327.9	327.7
15	Punjab	2			2	363	143.7	219.3	92.0
16	Rajasthan	1		1	2	1564	733.3	830.9	315.6
17	Telangana	1	9	1	11	7666	4226.3	3439.8	585.1
18	Uttar Pradesh		1	3	4	11929	5120.8	6808.4	1653.0
	TOTAL	**23**	**31**	**45**	**99**	**77595**	**31342**	**46253**	**7603**

Note: Figures mentioned as per information compiled /received from States. However, while processing CA proposals, the figures considered would be as per actual and therefore may change.

Annexure-IX

Completion of Priority projects during 2016-17

Sl. No.	Project Name	Targeted Irrigation Potential (Th. Ha.)	Project Completion Target(Month/ Year)	CAD Completion Target
	Andhra Pradesh			
1	Maddigedda	1.42	**Completed**	**Completed**
	Chhattisgarh			
2	Maniyari Tank	14.52	**Jun-17**	**Jun-18**
3	Kharung	10.3	**Mar-17**	**Jul-18**
	Karnataka			
4	Sri Rameswar Irrigation	13.8	**Jun-17**	**Jun-18**
	Madhya Pradesh			
5	Sindh Project Phase II	162.1	**Jun-17**	**Jun-18**
6	Singhpur Project	10.2	**Jun-17**	**Jun-18**
7	Mahuar Project	13.78	**Mar-17**	**Jun-18**
8	Indira Sagar Project Canal Phase - V (Khargone Lift)	33.14	**Jun-17**	
	Maharashtra			
9	Bawanthadi (IS)	27.71	**Jun-17**	**Jun-18**
10	Lower Panzara	6.79	**Mar-17**	**Jun-18**
11	NandurMadhmeshwarPh-II	20.5	**Jun-17**	**Jun-17**

12	Dongargaon	2.77	**Jun-17**	**Jun-17**
	Odisha			
13	Upper Indravati(KBK)	85.95	**Completed**	**Completed**
14	Rukura-Tribal	7.65	**Jun-17**	**Jun-17**
	Punjab			
15	Kandi Canal Extension (Ph.II)	23.33	**Jun-17**	**Not reqd as water made available upto 2.5 ha through underground pipelines**
16	Rehabilitation of Ist Patiala Feeder and Kotla Branch Project	68.62	**Jun-17**	**Already completed**
	Telangana			
17	Gollavagu Project	3.85	**Jun-17**	**Jun-18**
18	Rallivagu project	2.43	**Jun-17**	**Jun-18**
19	Mathadivagu Project	3.44	**Jun-17**	**Jun-18**
20	Peddavagu @ Neelwai project	6.07	**Jun-17**	**Jun-18**
21	Palemvagu project	4.1	**Jun-17**	**Jun-18**
	TOTAL	**522.47**		

Annexure –X

CA released during 2016-17 under AIBP

State	CA Release during 2016-17 (in Crores)	No of Projects
Gujarat	961.878	1
Jharkhand	145.75	1
Karnataka	131.324	2
Madhya Pradesh	265.89	18
Maharashtra	361.32	23
Manipur	89.25	2
Odisha	308.2	8
Punjab	47.17	2
Rajasthan	45.9	2
Telangana	538.8	5
Uttar Pradesh	73.6	2
Total =	**2969.082**	**66**

Annexure –XI

State-Wise Funds Released under "Flood Management Programme" during XI and XII Plans till 31.12.2016
(Rs. in crore)

Sl. No.	State	Funds Released during XIthPlan	Funds Released During XIIth Plan						Total Funds Released
			2012-13	2013-4	2014-5	2015-6	2015-7	Total (XIIth Plan)	
1	Arunachal Pradesh	78.77		16.83		47.39	23.69	87.91	166.68
2	Assam	744.90	2.51		15.25	47.14		64.85	809.79
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	27.00	50.00	221.87	387.18
9	Jammu & Kashmir	243.50	39.36	28.29	15.16	46.58	40.56	169.95	413.45
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	0.47		1.93	5.33
15	Nagaland	28.96	15.45		13.08	2.51	23.13	54.17	83.12

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	57.02		153.98	203.61
24	West Bengal	642.87	9.49	128.81	7.84		12.61	158.75	801.62
	Total	**3476.21**	**193.85**	**379.00**	**320.23**	**264.00**	**149.99**	**1307.07**	**4783.28**
Spilled over works of Xth Plan		**89.79**						**0.00**	**89.79**
Grand Total		**3566.00**						**1307.07**	**4873.07**

Annexure –XII

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**

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