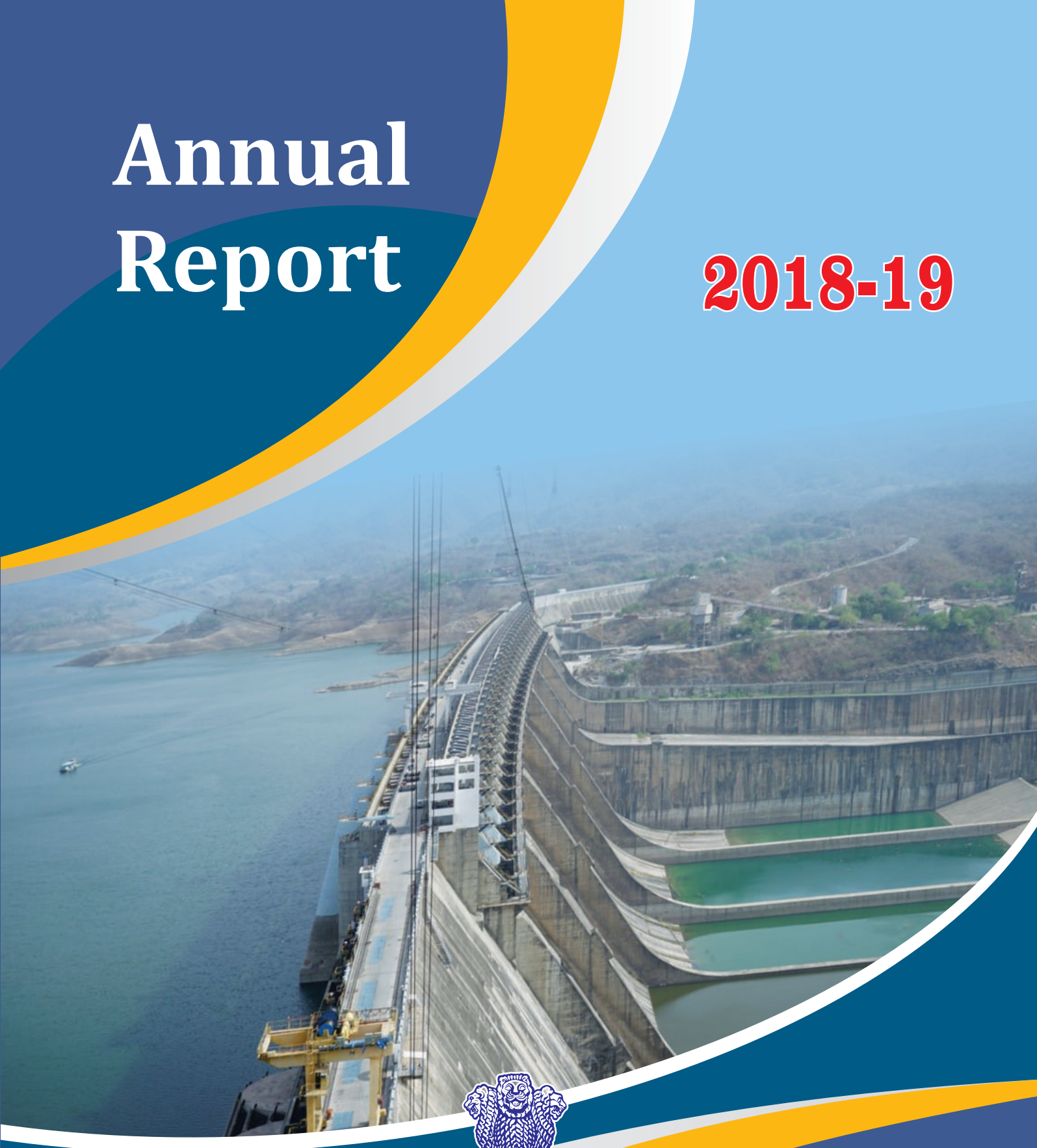
Annual Report

2018-19



सत्यमेव जयते

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



Sardar Sarovar Dam- A Panoramic view

सत्यमेव जयते

GOVERNMENT OF INDIA

MINISTRY OF WATER RESOURCES,
RIVER DEVELOPMENT AND GANGA REJUVENATION

NEW DELHI

Abbreviations

ADB	Asian Development Bank
AfDB	African Development Bank
AGGS	Association of Global Groundwater Scientists
AIBP	Accelerated Irrigation Benefits Programme
AR	Artificial Recharge
ASCI	Administrative Staff College of India
AWA	Annual Water Account
BB	Brahmaputra Board
BCB	Bansagar Control Board
BOD	Bio-chemical Oxygen Demand
BRB	Betwa River Board
CAD&WM	Command Area Development & Water Management
CCA	Culturable Command Area
CEA	Central Electricity Authority
CGWB	Central Ground Water Board
CLA	Central Loan Assistance
CMC	Cauvery Monitoring Committee
CPCB	Central Pollution Control Board
CPGRAMS	Centralized Public Grievance and Monitoring System
CPSU	Central Public Sector Units
CRA	Cauvery River Authority
CSMRS	Central Soil & Materials Research Station
CSR	Corporate Social Responsibility
Cumec	cubic metre per sec
Cusec	Cubic foot per sec
CWC	Central Water Commission
CWES	Central Water Engineering Service
CWPRS	Central Water & Power Research Station
CWDT	Cauvery Water Disputes Tribunal
DBE	Design Basic Earthquake

DDS	Drainage development Scheme
DDRP	Dam Design Review Panel
DEM	Digital Elevation Models
DHARMA	Dam Health and Rehabilitation Monitoring Application
DoNER	Department of North Eastern Region
DPR	Detailed Project Report
DRIP	Dam Rehabilitation and Improvement Project
DSB	Dam Safety Bill
DSO	Dam Safety Organisation
DVC	Damodar Valley Corporation
DWRIS	Development of Water Resources Information System
EFC	Expenditure Finance Committee
e-HRMS	Electronic-Human Resource Management
EISL	Environmental Infrastructure and Services Limited
EPA	Environment Protection Act
ETP	Effluent Treatment plant
EPC	Engineering Procurement and Construction
EPFO	Employees Provident Fund Organisation
ERM	Extension, Renovation and Modernization
FBP	Farakka Barrage Project
FMBAP	Flood Management and Border Area Programme
FMIS	Flood Management Information System
GRA	Grievances Redressal Authority
GTF	Gange Task fiorce
FR	Feasibility Report
FRL	Full Reservoir Level
GSI	Geological Survey of India
Ha	Hectare
HDPE	High Density Polyethylene
HE	Hydro-electric
HKKP	Har Khet Ko Pani
HP	Hydrology Project
HPC	High Performance Concrete
HSO	Hydrological Studies Organisation
ID	Infrastructure Development
IEC	Information, Education and Communication
IGWC	International Ground Water Conference

IITF	India International Trade Fair
ILR	Inter Linking of Rivers
IHHL	Individual Household Latrine
IMD	India Meteorological Department
INCID	Indian National Committee on Irrigation and Drainage
INCOH	Indian National Committee on Hydrology
INCSW	Indian National Committee on Surface Water
IPC	Irrigation Potential Created
IPDS	Integrated Power Development Scheme
IPU	Irrigation Potential Utilized
ISRWD	Inter-State River Water Disputes
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
IWW	India Water Week
JBIC	Japan Bank for International Cooperation
JCWR	Joint Committee on Water Resources
JET	Joint Expert Team
JGE	Joint Group of Experts
JICA	Japan International Cooperation Agency
JPO-SKSKI	Joint Project Office-Sapta Kosi & Sun Kosi Investigation
JRC	Joint Rivers Commission
KHLC	Kosi High Level Committee
KNNL	Karnataka Neeravari Nigam Limited
KWDT	Krishna Water Disputes Tribunal
LI	Lift Irrigation
LTIE	Long Term Irrigation Fund
M	Meter
MAF	Million Acre Feet
M Cum	Million Cubic Meter
MCC	Master Control Centre
MCM	Million Cubic Meter
MDDL	Minimum Drawdown Level
MEE	Multiple Effect Evaporation
M & M	Major and Medium
Mha	million hectare
MI	Minor Irrigation
MoDWS	Ministry of Drinking Water & Sanitation
MoES	Ministry of Earth Science

MoFPI	Ministry of Food Processing Industries
MoU	Memorandum of Understanding
MoWR, RD & GR	Ministry of Water Resources, River Development and Ganga Rejuvenation
NABARD	National Bank for Agriculture and Rural Development
NAPCC	National Action Plan on Climate Change
NAQUIM	National Project on Aquifer Management
NASC	National Agriculture Science Centre
NCA	Narmada Control Authority
NCDS	National Committee on Dam Safety
NCSDP	National Committee on Seismic Design Parameters
NDSAP	National Data Sharing & Accessibility Policy
NER	North Eastern Region
NEHARI	North Eastern Hydraulic & Allied Research Institute
NERIWALM	North Eastern Regional Institute of Water and Land Management
NGRBA	National Ganga River Basin Authority
NGWTRI	National Ground Water Training and Research Institute
NHDC	Narmada Hydro-electric Development Corporation
NHP	National Hydrology Project
NIH	National Institute of Hydrology
NIH-CFMS	National Institute of Hydrology- Centre for Flood Management Studies
NLEC	National Level Expert Committee
NLPMC	National Level Programme Monitoring Committee
NLSC	National Level Steering Committee
NMCG	National Mission for Clean Ganga
NPCC	National Projects Construction Corporation Ltd.
NPP	National Perspective Plan
NRLD	National Register of Large Dams
NWA	National Water Academy
NWDA	National Water Development Agency

NWP	National Water Policy
NWDT	Narmada Water Disputes Tribunal
NWIC	National Water Informatics Centre
NWM	National Water Mission
NRSC	National Remote Sensing Centre
OCEMS	Online Continuous Effluent Monitoring Stations
OFD	On Farm Development
OW	Observatory Well
PAC	Project Advisory Committee
PAF	Project Affected Families
PDS	Purpose Driven Studies
PDA	Pancheshwar Development Authority
PDMC	Project Development & Management Consultant
PFR	Pre-Feasibility Report
PES	Performance Evaluation Studies
PHED	Public Health Engineering Department
PIM	Participatory Irrigation Management
PIRC	Project Implementation Review Committee
PMA	Project Management Agency
PMC	Project Management Consultants
PMGSY	Pradhan Mantri Gram Sadak Yojana
PMP	Pancheshwar Multipurpose Project
PPA	Polavaram Project Authority
PMAY	Pradhan Mantri Awas Yojana
PMKSY	Pradahan Mantri Krishi Sinchayee Yojana
PZ	Piezometer
QPF	Quantitative Precipitation Forecast
RD	Reduced Distance
R & D	Research and Development
R&R	Rehabilitation and Resettlement
RFD	Results Framework Document
RMBA	River Management Activities & Works related to Border Areas
RMIS	Rationalisation of Minor Irrigation Statistics
RRR	Repair, Renovation and Restoration
RTDAS	Real Time Data Acquisition System
RTWQMS	Real Time Water Quality Monitoring Station

SCEC	Sub Committee on Embankment Construction
SGWCC	State Ground Water Coordination Committee
SJVN	Satluj Jal Vidyut Nigam Limited
SLWM	Solid Liquid Waste Management
SMI	Surface Minor Irrigation
SMP	Sediment Management Policy
SSCAC	Sardar Sarovar Construction Advisory Committee
SSP	Sardar Sarovar Project
SW	Surface Water
TAC	Technical Advisory Committee
TAMC	Technical Assistance and Management Consultancy
TANGEDCO	Tamil Nadu Generation and Distribution Corporation`
TB	Tungabhadra Board
Th.	Thousand
THDC	Tehri Hydro Development Corporation
TF-ILR	Task Force for Interlinking of Rivers
TMC	Thousand Million Cubic feet
ToR	Terms of Reference
TW	Tube Well
UYRB	Upper Yamuna River Board
VWDT	Vansadhara Water Dispute Tribunal
WALMI	Water and Land Management Institute
WAPCOS	Water and Power Consultancy Services Limited
WB	World Bank
WDS	Water Detention Structure
WEGWIS	Web Enabled Ground Water Information System
WALMI	Water and Land Management Institute
WQAA	Water Quality Assessment Authority
DWRIS	Development of Water Resources Information System
WUA	Water User Association
WUE	Water Use Efficiency
ZLD	Zero Liquid Discharge

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ANNUAL REPORT
2018-19



GOVERNMENT OF INDIA

MINISTRY OF WATER RESOURCES,
RIVER DEVELOPMENT AND GANGA REJUVENATION

NEW DELHI

Ministry of Water Resources, River Development & Ganga Rejuvenation

OVERVIEW



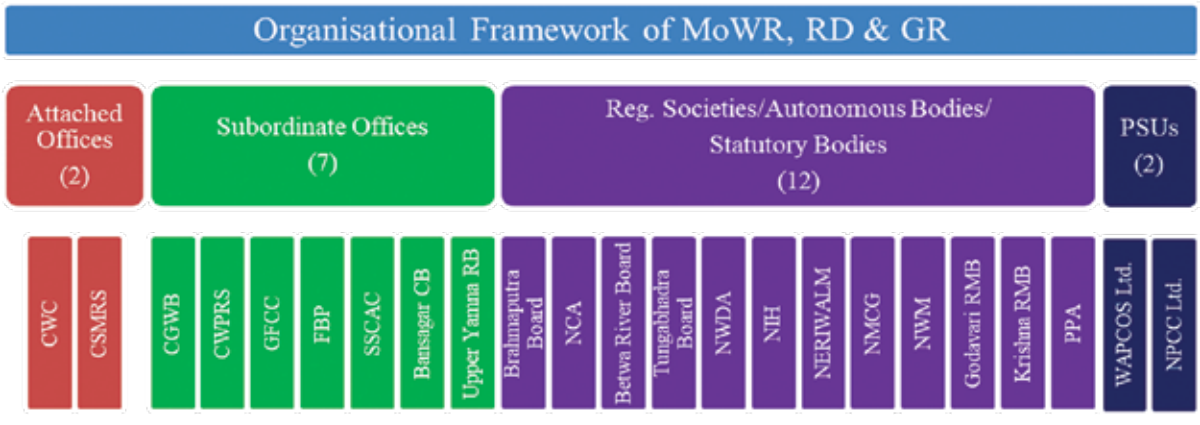
1. Overview

1.0 Introduction

Water is a natural resource, a basic necessity for all living beings on the planet. It is essential for food production, food security, alleviation of poverty and sustainable development in the country. The Union Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR, RD & GR) 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, the work relating to rejuvenation of river Ganga, command area development, flood management including drainage, flood-proofing, water logging, sea erosion and dam safety.

The Ministry is also allocated the subjects pertaining to 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), twelve Registered Societies/ Autonomous Bodies/Statutory Bodies etc. (National Mission for Clean Ganga, National Water Mission, National Institute of Hydrology, National Water Development



Agency, North Eastern Regional Institute of Water and Land Management, Narmada Control Authority, Brahmaputra Board, Betwa River Board, Tungabhadra Board, Krishna River Management Board, Godavari River Management Board and Polavaram Project 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. Shri Nitin Gadkari assumed the charge of Union Minister on 3rd September, 2017 and Dr. Satyapal Singh and Shri Arjun Ram Meghwal also assumed their charges in the Ministry as Ministers of State on the same day. Shri U.P. Singh assumed charge of Secretary on 1st December, 2017. The organizational chart of the Ministry is at ***Annexure-I.*** The present staff strength of the Ministry is indicated at ***Annexure-II.*** A list of Senior Officers & Heads of Organizations under the Ministry is at ***Annexure-III.***

At present there are 13 wings in the Ministry, namely, Brahmaputra & Barak, , Indus, State Projects, Finance, Administration, River Development & Public Policy, International Cooperation and Ground Water, Ganga Rejuvenation, National Water Mission, Command Area Development and Water Management, Economic Advisory, Flood Management and Minor Irrigation Statistics.

Finance Wing: The Budgetary allocations are essential to undertake any activity of the schemes and programmes of the Government. No expenditure can be incurred from the public revenue except on legitimate objects of public expenditure. The annual budget is accordingly presented by the Government in the Parliament. The Parliament after deliberation on the Demand for Grants of the various ministries passes the Annual Financial Statement. The Government gets authority to incur expenditure only after the Annual Financial Statement and Appropriation Bill passed by the Parliament get assent of the President. The Budget section, after compiling the information received from Subject Matter Divisions, prepares Detailed Demand for Grants and Statement of Budget Estimates and sends to the Ministry of Finance for incorporation of the same in the Annual Budget.

The Actual Expenditure on net basis in F.Y. 2017-18 was Rs. 5313.48 Cr.; Budget Estimates (B.E.) for FY 2018-19 for the ministry was Rs. 8860.00 Cr. on net basis which was reduced to Rs. 7612.52

Different Wings of the Ministry												
Brahmaputra & Barak	Indus	State Projects	Finance	Administration	River Development & Public Policy	International Cooperation & Ground Water	Ganga Rejuvenation	National Water Mission	Command Area Development & Water Management	Economic Advisory	Flood Management	Minor Irrigation- Statistics

Cr. in the Revised Estimates (R.E.) and the actual expenditure till 31.12.2018 was Rs.5250.70 Cr. The scheme wise Budget at a glance of the Ministry showing Actual Expenditure in F.Y. 2017-18, B.E. 2018-19, R.E.2018-19 and expenditure up to 31.12.2018 is given at ***Annexure-IV.***

The details of Pending C&AG Para's of 2018 is given at ***Annexure – IV(A)***.

2.0 Major Schemes and Programmes of the Ministry

Some of the achievements of the Ministry under various schemes are summarised below with further details covered under Chapter -3.

2.1 National Mission for Clean Ganga

National Mission for Clean Ganga (NMCG) was 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 has since been dissolved with effect from 7.10.2016, consequent to 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,
- 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.

NMCG has signed Memorandum of Understanding (MoUs) with various Central Ministries such as Ministry of Human Resources Development, Ministry of Rural Development, Ministry of Railways, Ministry of Shipping, Ministry of Tourism, Ministry of Ayush, Ministry of Petroleum, Ministry of Youth Affairs and Sports, Ministry of Drinking Water & Sanitation and Ministry of Agriculture for synergizing their efforts for the common cause of Ganga Rejuvenation.

2.2 Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

2.2.1 Significant Initiatives in the Implementation of PMKSY

Prioritization of 99 Projects

A large number of irrigation



Dedication of the Sardar Sarovar Dam by Hon'ble Prime Minister to the Nation

projects taken up under AIBP after its launch in 1996-97 were languishing due to, inter alia, inadequate provision of funds. Consequently, large amount of funds spent on these projects were locked up and the benefits envisaged could not be achieved.

A Committee under the chairmanship of Hon'ble Minister (WR), Chhattisgarh was constituted vide MoWR, RD & GR order dated 2nd March, 2016 to look into the issues related to implementation of PMKSY. The committee in consultation with States identified Ninety Nine (99) ongoing irrigation projects under AIBP for completion in phases up to December, 2019.

As per the proposal of this Ministry, the Cabinet on 27.07.2016 has approved establishment of the Mission for completion of 99 prioritized projects in phases by Dec., 2019 including CAD&WM works. Main initiatives under the Mission Mode proposal are summarized below:

Innovation in funding

- The arrangement of funds for CA has been made through NABARD as per year-wise requirements which would be paid back in 15 years' time keeping a grace period of 3 years. Further, the State Governments, if required, may also borrow funds from NABARD for the State Share.



Signing of Tripartite Revised MoA between MoWR, RD & GR, NABARD and NWDA

- In respect of State share, the Government has allowed NABARD to raise adequate zero cost bonds, the interest of which shall be borne by the Central Government so that overall interest rate for State share comes to about 6%, so as to make it attractive for the States and encourage them to raise requisite State share for early completion of projects.

Improvement in Process

- A Mission with the Officer of level of Additional Secretary (or above) in the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD & GR) as the Mission Director has been established for completion of 99 prioritized projects in phases by Dec., 2019 including their CAD&WM works.
- 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 constituted 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 are also members.
- 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 been constituted, 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.
- *Pari-passu* implementation of Command area development works in the commands of these projects is envisaged to ensure that the Irrigation Potential Created could be utilized by the farmers.
- Proposal for release of CA to be made by concerned officers of State Govt. and CWC jointly.
- The progress of the projects in physical as well as financial terms is monitored through the field units of Central Water Commission. In addition, third party monitoring of these projects is also being done through PMU. NABARD is also carrying out monitoring visits as per their norms.
- Social audit in 10% of the projects in each State after completion is contemplated.

Leveraging Technology

- Maximize use of pressurized pipe irrigation and micro irrigation wherever feasible would be adopted to increase efficiency.
- One nodal officer for each of the 99 priority projects has been identified who would be updating the physical and financial progress of the project regularly in the MIS developed for this purpose. Further the monitoring reports of the projects would also be uploaded in the MIS system. The progress of the projects is in public domain.

MIS of PMKSY



PMKSY (AIBP) Dashboard

- A mobile app and dashboard for monitoring the progress of the projects is also under development. The app would have the feature of uploading the geo-tagged photographs of the projects. The link of app for computer is https// *water.ncog.gov.in/WaterResource/ login* and for Mobile App: *https:// ncog.gov.in/cms.apk*.

The total Central Assistance (CA) of Rs. 9750.55 cr. has been provided for these projects so far, out of which Rs. 2849.07cr. provided during the year 2018-19.

2.2.2 Command Area Development and Participatory Irrigation 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 pogramme 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) since 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 National Water Policy emphasizes 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 (WUA) in their respective jurisdiction with effect from 2008-09. PIM is being implemented through Command Area Development & Water Management (CADWM) programme. Under this programme 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 are being paid to outlet level Water Users Associations' as incentive, the interest from which is to be used for maintenance. Each WUA is also given a one –time infrastructure grant of Rs. 3 lakh for creation of office, godown or other suitable facility. The programme also provides for training and hand-holdings support (through NGOs) to the WUAs for their capacity buiding.

2.2.3 Surface Minor Irrigation (SMI) Schemes

Since XII Plan onwards, 4928 Surface Minor Irrigation (SMI) schemes have been taken up under the programme out of which 2631 schemes have been reported to be completed. Total Central Assistance amounting to Rs. 6468.38 crore has been released for completion of these schemes out of which an amount of Rs. 725.2 crore has been released during 2018-19.

2.2.4 Repair, Renovation & Restoration (RRR) of Water Bodies

Under the scheme, a total of 1964 water bodies have been taken up for restoration since XII Plan onwards, out of which 664 water bodies have been reported to be completed. Total Central Assistance amounting to Rs. 369.12 crore has been released to the States for completion of works of these water bodies, out of which an amount of Rs. 24.80 crore has been released during 2018-19.

2.2.5 Special Package for Completion of Irrigation Projects to address agrarian distress in Vidarbha and Marathwada region and drought prone areas of rest of Maharashtra

The approval of the above scheme was given on 18. 07. 2018. The proposal aims to provide special package of Rs. 3831.41 Cr. as Central Assistance (CA) to complete 83 SMI and 8 MMI projects benefitting Vidarbha, Marathwada and drought prone areas of rest of Maharashtra. Total estimated balance cost of these projects is Rs. 13651.61 Cr. as on 1. 04. 2018. By completion of these schemes, an additional potential of 3.77 LHa. would be created in above areas. CA of Rs. 500 Cr was provided to these projects during 2018-19.

2.3 Flood Forecasting

CWC is providing Flood Forecasting service at 249 stations, of which 174 are level forecasting stations

on major rivers and 75 are inflow forecasting stations on major dams/ barrages. Out of this, Flood forecasting service at 23 stations have been started during 2018. It covers 19 major river systems in the country and 22 States viz., Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Sikkim, Telangana, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh & West Bengal and Union Territory viz., Dadra &Nagar Haveli and National Capital Territory of Delhi.

2.4 Flood Management & Border Area Programme

The Flood Management Wing deals with matters concerning flood management, technical matters related to Ganga Flood Control Commission, Farakka Barrage Project and Upper Yamuna River Board. It has also been entrusted with International aspects of cooperation and development of water resources with Nepal and Bangladesh, including implementation of the Ganga Water Sharing Treaty (1996) with Bangladesh and Mahakali Treaty (1996) with Nepal. The Wing also deals with the technical matters of Pancheshwar Multipurpose Project including matters of Pancheshwar Development Authority (PDA).

The States/UTs are provided promotional central financial assistance through Flood Management Programme (FMP) and River Management Activities & Works related to Border Areas (RMBA) schemes of Ministry, which are now merged into a single scheme titled "Flood Management and Border Areas Programme (FMBAP)" for the three year period from 2017-18 to 2019-20.

2.5 Hydrology Project

National Hydrology Project (NHP) was approved by the Cabinet in April 2016 with budgetary support of Rs. 3640 crore and Rs. 39.77 crore for National Water Informatics Centre. This eight year duration Project is being implemented through World Bank loan assistance of US$175 million. The objective of NHP are: (i) to improve the extent, quality, and accessibility of water resources information,(ii)to create decision support system for floods and basin level resource assessment/planning, and (iii)to strengthen the capacity of targeted water resources professionals and management institutions in India.

2.6 Information, Education and Communication

Various activities have been held under IEC which include:

i) India International Science Festival 2018

ii) Water India 2018 Expo

iii) 2nd Wellness India 2018 expo and Krishi India expo 2018

iv) National Conference-cum-Exhibition & Awards on "Science, Technology & Innovation in Water Management"

v) Other exhibitions.

2.7 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 MoWR, RD & GR and (iv) e-Governance of the MoWR, RD & GR.

2.8 Dam Rehabilitation and Improvement Project

Dam Rehabilitation and Improvement Project (DRIP) is the World Bank assisted project with the provision of rehabilitation of 198 dam projects 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. The project cost has been revised by the Government of India from Rs. 2100 Crore to Rs. 3466 Crore in September 2018. It has also been granted time extension of two years and now the official closing date of the program is 30th June 2020.

2.9 National Projects

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

(i) International project where usage of water in India is required by a treaty or where planning and early completion of the project is necessary in the interest of the country.

(ii) Inter-State projects which are dragging on due to non-resolution in inter- state issues relating to sharing of costs, rehabilitation, aspects of power production, etc., including river inter-linking projects.

(iii) Intra-State projects with additional potential of more than 2 lakh hectare and with no dispute regarding sharing of water and where hydrology is established.

(iv) Further, 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 are eligible for inclusion as a National Projects with certain conditions.

Sixteen Projects have been declared as national projects so far.

3.1. Organizations and Institutions

A brief description of the various Organisations and Institutions of the Ministry is presented below with elaborations covered under Chapter -7.

3.1 Attached Offices

3.1.1 Central Water Commission

Central Water Commission (CWC) with its headquarters at New Delhi is a premier technical organisation in the field of Water Resources in the country since 1945. The Commission headed by a Chairman with status of an Ex-officio Secretary to the Government of India 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.

The Commission has three technical wings, namely (i) Designs and Research Wing, (ii) Water Planning and Projects Wing (iii) River Management Wing and a water Academy.(Website: www.*cwc.gov.in)*

3.1.2. Central Soil and material 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 spheres of activities of the Research Station are covered under the three main disciplines namely Soil, Rock and Concrete. The core areas are Soil Mechanics, Rockfill Technology, Geosynthetics, Soil Dynamics, Rock Engineering, Engineering Geophysics, Geotechnical Instrumentation, Concrete Technology, Concrete Diagnostics and Numerical Modeling. (Website: www. csmrs.*gov.in)*

3.2. Subordiate Offices

3.2.1. Central Ground Water Board

Central Ground Water Board (CGWB), a subordinate office of the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD & GR), is the National Apex Agency entrusted with the responsibilities of providing scientific inputs for management, exploration, monitoring, assessment, augmentation and regulation of ground water resources of the country. The data generated from various studies taken up by CGWB provide a scientific base for water resource planning by stakeholders. Besides advising states and other user agencies on planning and management of ground water resources, Central Ground Water Board also provides technical know-how for scientific ground water exploration, development and management to various stakeholders. (Website: www.*cgwb.gov.in)*

3.2.2. Central Water and Power Research Station

Central Water and Power Research Station (CWPRS), an apex Research and Development institution in the field of hydraulics and allied research in the water and power sector, has continued to serve the needs of the nation for 100 years by catering to the research and development needs for evolving safe and economical planning and design of water resources structures, river engineering, hydropower generation, and Ports and Water ways projects fulfilling the mandate of '***Service to the Nation through Research***'. CWPRS has offered its services to a number of projects in the neighbouring countries viz., Bangladesh, Bhutan, Afghanistan, Myanmar, Nepal, Singapore, etc., as well as countries in Middle East. CWPRS provides specialized services through physical / mathematical model studies and field / laboratory investigations in river training and flood control, hydraulic structures, ports and harbours, coastal protection, foundation engineering, construction materials, pumps and turbines, ship hydrodynamics, hydraulic design of bridges, environmental studies, earth sciences, thermal and nuclear power cooling water intakes. The research activities at CWPRS can be grouped into seven major disciplines viz. River

Engineering, River and Reservoir Systems Modelling, Reservoir and Appurtenant Structures, Coastal and Offshore Engineering, Foundation and Structures, Applied Earth Sciences, Instrumentation, Calibration and Testing Facilities. (Website: www.*cwprs.gov.in)*

3.2.3. Ganga Flood Control Commission

Ganga Flood Control Commission (GFCC) was established in 1972 with its Headquarter 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 invites. The tasks of the Commission are: (i) Preparation and Updation of comprehensive plans for flood management of the river systems in the Ganga basin, (ii) Phasing/sequencing of programme of implementation of works included in the basin-wise plans and (iii) 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.(Website: www.gfcc.bif.*nic.in)*

3.2.4. Sardar Sarovar Construction Advisory Commetee

The Sardar Sarovar Construction Advisory Committee (SSCAC) was constituted in 1980 by the Government of India in accordance with the directives of the Narmada Water Disputes Tribunal (NWDT) with a view to ensure efficient, economical and early execution of Unit-I (Dam and Appurtenant works) and Unit-III (Hydropower works) of the Sardar Sarovar Project. *(Website:www. sscar.gov.in)*

3.2.5. Farakka barrage Project

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

3.2.6. Bansagar Control Boad

Bansagar Control Board (BCB) 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. (Website: www.*bcb.nic.in)*

3.2.7. 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, 1994 amongst the basin States of Himachal Pradesh, Uttar Pradesh, Haryana,

Rajasthan and National capital Territory of Delhi, for sharing the utilizable surface flows of river Yamuna up to Okhla. The MoU also provided for creation of "Upper Yamuna River Board" to implement the said agreement. Accordingly, the Central Government constituted the Upper Yamuna River Board in 1995 as a subordinate office under the Ministry of Water Resources. After creation of Uttaranchal State in 2000, the resolution was modified to include Uttaranchal (now Uttrakhand) also in the Board (Website: www.*uyrb.gov.in)*

3.3. Registered Societies/ Autonomous Bodies / Statutory Bodies etc

3.3.1. National Water Development Agency (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. (Website: www.nwda.*gov.in)*

3.3.2. 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.(Website: www.nwm.*gov.in)*

3.3.3. 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 as under:

(i) To undertake, aid, promote and coordinate systematic and scientific work on all aspects of hydrology,

(ii) To cooperate and collaborate with other national and international organizations in the field of hydrology,

(iii) 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 and

(iv) 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. *(Website: www.nihroorkee.gov.in)*

3.3.4. 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 is serving eight states of the North East. The objective of NERIWALM is to promote advancement of science and acquisition of scientific knowledge and to provide instruction and training in water and land management for irrigation and agriculture. (Website: www.neriwalm.*gov.in)*

3.3.5. 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 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. (Website: www.nca.*gov.in)*

3.3.6. 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 (BRB) was constituted in 1976 by an Act of parliament to execute the Rajghat Dam Project and the Power House. (Website: www.brb.*nic.in)*

3.3.7. 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 consists of a Chairman, appointed by the Government of India, and four Members, one each representing the States of Andhra Pradesh, Telangana, Karnataka and Government of India. The Board is regulating water for irrigation, hydro power generation and other uses from the reservoir. (Website: http://tbboard.*gov.in)*

3.3.8. Brahmaputra Board

Brahmaputra Board was constituted in the year 1980 by an Act of Parliament (No. 46 of 1980 called "The Brahmaputra Board Act") under List 56 of Schedule 7 of article 246 of the Constitution of India 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). (Website: www.brahmaputraboard.*gov.in)*

3.3.9. Apex Council and Krishna & Godavari River Management Boards

APEX COUNCIL:

In exercise of the powers conferred by sub-section (1) of Section 84 of the Andhra Pradesh Reorganisation Act, 2014 (Act 6 of 2014), the Central Government constituted the Apex Council for supervision of the functioning of the Godavari River Management Board (GRMB) and Krishna River Management Board (KRMB) vide Gazette Notification dated 29th May, 2014, consisting of (i) Minister of Water Resources, River Development and Ganga Rejuvenation, Government of India - Chairman; (ii) Chief Minister of the State of Andhra Pradesh-Member; and (iii) Chief Minister of the State of Telangana - Member.

The KRMB was constituted vide Gazette Notification No. S.O. 1391(E) dated: 28th May, 2014 and the GRMB was constituted vide Gazette Notification No. S.O.1403 (E) dated: 28th May, 2014 in accordance with sub-sections (1), (4) and (5) of Section 85 of the Andhra Pradesh Reorganization Act, 2014. (Website-KRMB: http://krmb.cgg.*gov.in and* GRMB: www.grmb.*gov.in)*

3.3.10. Polavaram Project Authority

Polavaram Irrigation Project (PIP) is a multi-purpose irrigation project which is on the river Godavari near Ramayyapeta village of Polavaram mandal about 42 km upstream of Sir Arthur Cotton Barrage, where river emerges out of last range of the Eastern Ghats and enters the plains in West Godavari District of Andhra Pradesh State. It envisages construction of a dam to create ultimate irrigation potential of 2.91 Lakh Ha. The project also envisages generation of 960 MW of hydro power, drinking water supply to a population of 28.50 Lakh in 540 villages, diversion of 80 TMC of water to Krishna river basin.

3.3.11. Cauvery Water Management Authority and Cauvery Water Regulation Committee

This Ministry notified the "Cauvery Water Management Scheme" under Section 6A of the Inter-State River Water Disputes Act, 1956 vide notification No. S.O. 2236 (E) dated 01.06.2018 *inter-alia* constituting Cauvery Water Management Authority (CWMA) and Cauvery Water Regulation Committee (CWRC) to give effect to the decision of the Cauvery Water Disputes Tribunal as modified by the Hon'ble Supreme Court vide its Order, dated 16th February, 2018. Further, the Ministry has issued orders for the constitution of CWMA and CWRC on 22.06.2018 which was further modified on 07.07.2018.

3.4. Public Sector Enterprises

3.4.1. WAPCOS Limited

WAPCOS Limited is a "MINI RATNA-I" Public Sector Enterprise under the aegis of the Ministry of Water Resources, River Development & Ganga Rejuvenation. The Company was incorporated on 26th June, 1969 under the Companies Act, 1956. The objectives of the WAPCOS include:

- 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 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. (Website: www.wapcos.*gov.in)*

3.4.2. National Projects Construction Corporation Limited

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 61 years of existence the Corporation has successfully associated itself with completion of several national projects from concept to commissioning stage. (Website: http:// npcc.*gov.in*)

Ministry of Water Resources,
River Development & Ganga Rejuvenation

WATER RESOURCES SCENARIO



2. Water Resources Scenario

1.0 Water Availability

The average annual water availability of any region or country is largely dependent upon hydro-meteorological and geological factors and is generally constant. As per National Commission on Integrated Water Resources Development (NCIWRD) Report 1999, the total water availability of India received through precipitation is about 4000 Billion Cubic Meter (BCM) per annum. After evaporation, 1869 BCM water is available as natural runoff. Due to geological and other factors, the utilizable water availability is limited to 1137 BCM per annum comprising 690 BCM of surface water and 447 BCM of replenishable ground water. Out of this, the water potential utilized is around 695 BCM, comprising of 450 BCM of surface water and 245 BCM of groundwater. Total requirement of the country for different uses for high demand scenario for the years 2025 and 2050 have been assessed at 843 BCM and 1180 BCM respectively.

Water availability per person is dependent on population of the country and for India, per capita water availability in the country is decreasing progressively due to increase in population. The average annual per capita water availability in the years 2001 and 2011 was assessed at 1816 cubic meters and 1545 cubic meters respectively which may reduce further to 1340 and 1140 in the years 2025 and 2050 respectively. As per the commomly used 'Falkenmark' measure applied on the populations of a region, the annual per-capita water availability of less than 1700 cubic meters is considered as water stressed condition, whereas annual per-capita water availability below 1000 cubic meters is considered as a water scarcity condition.

2.0 Constitutional Provisions on Management of Water Resources

Entry 56 of List I (Union List) of Seventh Schedule provides that "Regulation and development of inter-State rivers and river valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest"

Entry 17 under List II (State List) of Seventh Schedule provides that "Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to the provisions of Entry 56 of List I". As such, the Central Government is conferred with powers to regulate and develop inter-State rivers under Entry 56 of List I of the Seventh Schedule to the extent declared by the Parliament by law to be expedient in the public interest. It also has the power to make laws for the adjudication of any dispute relating to waters of Inter State

River or river valley under Article 262 of the Constitution.

3.0 National Water Policy, 2012

The National Water Policy (NWP), 2012 serves as a policy guideline for development and management of water resources in the country. The objective of the NWP, 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 NWP, 2012 has emphasized on their implementation through the National Water Board by preparing a plan of action.

The National Water Policy, 2012 has been circulated to all States/UTs and concerned Central Ministries for necessary action. The MoWR, RD & GR also got a road map for implementation of the Policy prepared through an Expert Committee headed by Dr. S.R. Hashim. There has been a Regular consultation with the State Governments for implementation of Policy and formulation of State Water Policies.

4.0 Draft National Water Frame work Bill

The NWP, 2012, inter-alia, recommended that there is a need to evolve a National Framework Law as an umbrella statement of general principles governing legislative and/or executive (or devolved) powers by the Centre, the States and the local bodies. This should lead the way for essential legislation on water governance in every State and devolution of necessary authority to the lower tiers of government to deal with the local water situation. In pursuance thereof, the Ministry constituted an Expert Committee under the Chairmanship of Dr. Y.K. Alagh to draft a National Water Bill. The Committee submitted its report in May, 2013.

Later, a Committee was constituted under the Chairmanship of Dr. Mihir Shah on 28.12.2015 to examine the provisions of the draft National Water Framework Law and suggested 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 which include a draft of National Water Framework Bill. The draft Bill was circulated to States/UTs and the concerned Central Ministries for their comments. The draft was also placed on the website of the Ministry for inviting comments from general public. After receiving the comments from various quarters, the Committee submitted its final Report on 18th July, 2016.

The final report submitted by Dr. Mihir Shah Committee was circulated to all States/UTs and concerned Central Ministries for their comments on the proposed National Water Framework Bill.

The salient features of the proposed Bill are as under:-

(1) 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) 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) 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'– non- polluted 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 also should adopt people-centred decentralized water management, for both surface and ground water, including local rainwater harvesting, watershed development and participatory irrigation management, while recognizing, encouraging and empowering local initiatives.

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

(a) Water Use and Land Use;

(b) Appropriate Treatment and Use of Waste water;

(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 term sustenance of the resource.

(6) The draft Bill proposes that high priority be given to Integrated River Basin Development and Management, wherein a river basin, including associated aquifers, shall be considered 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 establishment of a River Basin Authority for each inter-State river basin, or for a sub-basin or 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.

The draft National Water Framework Bill, 2016 was circulated in September, 2016 to States/UTs and the concerned Central Ministries for obtaining their comments. MoWR, RD & GR is regularly pursuing the State Governments for seeking their cooperation for early enactment of the National Water Framework Bill.

5.0 Data Dissamination Policy

Considering the increasing demand for data, the Government of India formulated and adopted the National Data Sharing and Accessibility Policy, 2012 (NDSAP, 2012) which envisaged that data collected with the deployment of public funds should be made more readily available to all, for facilitating rational debate, better decision making and in meeting the civil society needs. The policy established the framework for facilitating the access to Government of India owned shareable data and information in both human readable and machine readable forms.

Based on the NDSAP, 2012, Hydro-Meteorological Data Dissemination Policy, 2013 was formulated to deal with the issue of dissemination of hydro-meteorological data collected by CWC and CGWB, classification of Hydro-meteorological Data, Data User categories, custodian of Hydro-meteorological data and procedure for release of classified & unclassified hydro-meteorological data. The Hydro-meteorological Data Dissemination Policy has been further modified in November, 2018 to accommodate the technical and content upgradation of the data platform.

Ministry of Water Resources, River Development & Ganga Rejuvenation

MAJOR PROGRAMMES



3. Major Programmes

1.0 Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

PMKSY was launched during 2015-16, by the Central Government with an overarching vision to ensure access to some means of protective irrigation for all agricultural farms in the country, and to produce 'per drop more crop', thus bringing much desired rural prosperity. Some of the broad objectives of the approved programme are as under:-

(i) Achieve convergence of investments in irrigation at the field level (preparation of district level and, if required, sub district level water use plans);

(ii) Enhance the physical access of water on the farm and expand cultivable area under assured irrigation (Har Khet Ko Pani);

(iii) Promote integration of water source, distribution and its efficient use, to make best use of water through appropriate technologies and practices;

(iv) Improve on-farm water use efficiency to reduce wastage and increase availability both in duration and extent;

(v) Enhance the adoption of precision-irrigation and other water saving technologies (per drop more crop);

(vi) Introduce sustainable water conservation practices;

(vii) Ensure the integrated development of rain-fed areas using the watershed approach towards soil and water conservation, regeneration of ground water, arresting run-off, providing livelihood options and other NRM activities;

(viii) Promote extension activities relating to water harvesting, water management and crop alignment for farmers and grass-root level field functionaries;

All these objectives are expected to lead to substantial increase in agricultural production and productivity thereby enhancing farm income.



Head Works of Thoubal Irrigation Projects, Manipur

PMKSY components

(i) Accelerated Irrigation Benefits Programme (AIBP), [MoWR, RD & GR];

(ii) Har Khet Ko Pani (HKKP), [MoWR, RD & GR];

(iii) Per Drop More Crop, [MoAg & FW]

(iv) Watershed Development [DoLR].

Physical Targets and Financial Outlays

The PMKSY was initially approved during 2015-16 for implementation across the country with an indicative outlay of Rs. 50,000 crores in five years as brought out below:

Projected physical target and indicative outlay (GoI share)

Component	Implementing Ministry	Physical Target (in lakh ha)	Financial outlay (in Rs. crores)
		2015-2020	
AIBP	MoWR, RD & GR	7.50	11060
Har Khet Ko Pani	MoWR, RD & GR	21.00	9050
Per Drop, More Crop	DAC&FW	100.00	16300
Watershed Development	DoLR	11.50	13590
Total			**50000**

1.1. Accelarated Irrigation Benefits Programme (AIBP):

Since its inception, 297 Irrigation / Multi-Purpose Projects have been included for funding under AIBP. Out of this 143 projects could be completed and 5 projects were foreclosed. An irrigation potential of 24.39 Lakh ha had been created through these projects. The cumulative Central Loan Assistance / Grant provided to States under AIBP to all of above projects till 31.3.2015 was Rs. 52868.01 crore. Twenty-five States got benefited from the programme. During 2015-16, Central Assistance of Rs. 2327.82 crore was released for projects under AIBP.

Prioritization of Projects during 2016-17:

One of the major reasons for the projects to remain incomplete was inadequate provision of Central and State share funds. 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. A Committee headed by Minister (Water Resources) of Chhattisgarh was constituted during 2016-17. The issues related to implementation of projects under PMKSY including prioritization of projects were deliberated in the Committee. As per the information supplied by concerned States to the Committee, 99 projects have been identified by the Committee for completion by 2019.

In July, 2016, the proposal to complete 99 prioritized projects under AIBP, including their CADWM works, by December, 2019 was approved by the Government. Total requirement of funds for completion of identified 99 projects is estimated at Rs. 77,595 crore (Rs. 48,546 crore for project works and Rs. 29,049 crore for CAD&WM works) with Central Assistance (CA) of Rs. 31,342 crore. Utilization of 76.03 lakh ha of potential is expected with the completion of these projects.

Innovation/initiatives under the scheme:

- The arrangement of funds for Central share/Assistance (CA) has been made through NABARD as per year-wise requirements which would be paid back in 15 years time keeping a grace period of 3 years. Further, the State Governments, if required, may also borrow funds from NABARD for the State Share.
- In respect of State share, the Government has allowed NABARD to raise zero cost bonds, the interest of which shall be borne by the Central Government so that overall interest rate for State share comes to about 6% so as to make it attractive for the States and encourage them to raise requisite State share for early completion of projects. The details of the MoAs signed with states is given as under:

Details of State Availing Funds for State Share from NABARD

State	MoA signed with NABARD	Funds availed by State
Andhra Pradesh	Yes	Yes
Assam	Yes	-
Bihar	Yes	-
Chattisgarh	Yes	-
Gujarat	Yes	Yes
Jharkhand	Yes	Yes
Madhya Pradesh	Yes	Yes
Maharashtra	Yes	Yes
Manipur	Yes	Yes
Odisha	Yes	Yes
Punjab	N.R.	
Rajasthan	Yes	Yes
Telagana		
Uttar Pradesh	Yes	Yes
Total	**12**	**9**

- The progress of the projects in physical as well as financial terms is monitored through the field units of Central Water Commission. Further, One nodal officer for each of the 99 priority projects has been identified who would be updating the physical and financial progress of the project regularly in the MIS developed for this purpose.
- Monitoring through MIS system and third party is being carried out.
- Maximize use of pressurized pipe irrigation and micro irrigation wherever feasible would be adopted to increase efficiency. In Odisha & Maharashtra, land acquisition of 2970 ha & 2060 ha respectively has been avoided in distribution system by adopting underground Piped Distribution (PDN) and appx. cost saving is Rs. 1050 cr. Other States are also sensitized for adopting the same approach.
- *Pari-passu* implementation of Command area development works in the commands of these projects is envisaged to ensure that the Irrigation Potential Created could be utilized by the farmers. New Guidelines bringing focus on Participatory Irrigation Management (PIM) have been brought out. Further, transfer of control and management of irrigation system to the Water Users' Association (WUA) has been made necessary condition for the acceptance of CADWM completion.

Completion of projects:

Out of 99 prioritized projects, AIBP works of 31 Priority projects are completed/almost completed by June,

2018, the details are given at **Annexure-V**. Further 16 more projects are likely to be completed by the June -2019. The cropped area of 45.74 L Ha. during 2018 in the command of the 99 Priority Projects has been assessed by the Bhaskaracharya Institute For Space Applications And Geo-Informatics (BISAG).

Release of funds during 2016-18 & 2018-19

Sr. No.	Item	Funds Released (Rs. in cr.)		
		2016-17	2017-18	2018-19
1	AIBP	3308	3593.601	2849.07
2	CAD	854	933.134	593.21
3	Polavaram Project	2514	2000	1400
4	State Share from LTIF	3334	4825.719	8308.83
	Total	**10010**	**11352.45**	**13151.11**

State wise fund released for AIBP works under 99 Priority Project under PMKSY is given at ***Annexure-VI.***

Monitoring and Review of the progress of projects under PMKSY

The progress of the projects is being reviewed extensively at the level of Secretary (WR, RD & GR), Hon'ble Minister (WR, RD & GR), PMKSY Council under Chairmanship of CEO, NITI Aayog and Principal Secretary to Hon'ble Prime Minister. Hon'ble Prime Minister also reviewed the progress of the works. Since inception of the PMKSY during 2016, PMO has reviewed the progress of the PMKSY Projects more than 11 times.

1.2. Command Area Development and Water Management (CAD&WM)

Objective:

The Centrally Sponsored Command Area Development (CAD) Programme was launched in 1974-75 for development of adequate delivery system of irrigation water up to farmers' field with an



Secretary (WR, RD& GR) reviewing the progress of the PMKSY Projects via Video Conferencing

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 pogramme envisages integration of all activities relating to irrigated agriculture in a coordinated manner with multi-disciplinary team under a Command Area Development Authority.

Coverage:

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 AIBP since XII Five Year Plan. The programme is under implementation as a sub-component of HKKP component of 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.

Programme Components:

The activities covered under CAD component of a Project are broadly categorized as 'Structural' and 'Non-Structural' interventions as detailed below:

(a) 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.

(b) Non-Structural Intervention**:** includes activities directed at strengthening of PIM:

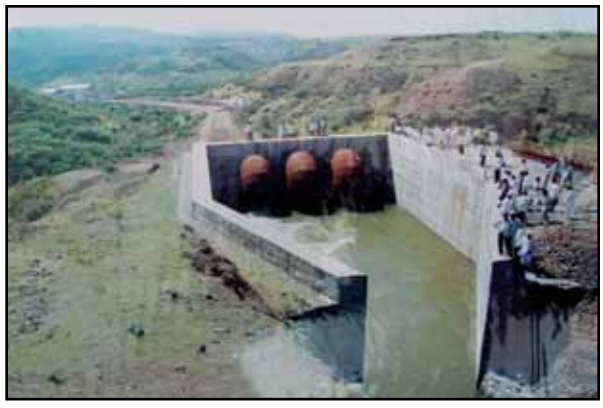
  (i) One time Functional Grant to the registered Water Users' Associations (WUAs);

  (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 levelling, 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.







Programme Implementation:

All CAD works are planned, designed, tendered and executed by the State Governments through its pertinent Departments. 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. Moreover, for monitoring of PMKSY projects, a Project Monitoring Unit has been created by MoWR, RD & GR involving an Engineering and Management Consultant; and the monitoring visits are also undertaken by the Consultant. 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. The overall Project implementation is reviewed, coordinated and guided at half yearly intervals by the Project Implementation Review Committee (PIRC).

Financing Pattern:

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

S. No.	Activities Eligible for Funding	Cost Sharing Ratio
(a)	All activities of Structural interventions	50:50 (Centre : State)
(b)	All activities of Non-Structural interventions excluding Functional Grant to WUAs	60:40 (Centre : State)
(c)	Functional Grant to registered WUAs	45:45:10 (Centre: State: Farmer)
(d)	Incremental Establishment Cost	50:50 (Centre : State)

For the eight North Eastern States and the 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.

Physical & Financial Progress:

The core components of physical works under CADWM relates to construction of field channels. Since its inception in 1974-75 up to March, 2019, CCA of about 22.8 Mha has been covered. Central Assistance of about Rs. 9476.34 crore has been released to States under the CAD Programme.

The physical and financial achievement of the projects during the given Plan periods is summarised in the Table below:-

Sl. No	Plan Period	Financial	Physical
		Central Assistance Released (in Rs. Crores)	CCA covered (in Million Ha)
1	Upto VIII Plan	1680.738	13.952
2	IX Plan	751.656	1.801
3	X Plan	818.568	2.314
4	XI Plan	1957.264	2.08
5	XII Plan		
(a)	Up to 2015-16	1887.876	1.419
(b)	2016-17 to 2018-19	2380.242	1.242
	Total	**9476.344**	**22.808**

During 2016-17 to 2018-19, Central Assistance (CA) of Rs. 2380.24 crore has been provided to prioritized projects under PMKSY (CADWM). The state – wise details of Central assistance and State share released through NABARD under CADWM program for the period 2016-17 to 2018-19 is given at ***Annexure –VII.***

1.3. 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. 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 are reported to have been formed in various States covering an area of 17.84 million hectare under various commands of irrigation projects.

PIM is implemented through CADWM program as part of it's a structural intervention. CADWM work is presently



being implemented in 99 prioritized AIBP projects under PMKSY (HKKP). As on April, 2016; total 4223 WUAs had been created. Then during 2016-17 about 1250 WUAs have been formed in State of Assam, Gujarat, J&K, Karnataka, Madhya Pradesh, Maharashtra, Odisha and Punjab. Again during 2017-18, 1372 WUAs have been formed in State of Assam, Bihar, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Maharashtra, Manipur, Odisha, Punjab and Rajasthan. Further in 2018-19 (upto 2nd Quarter) a total of 890 WUAs were formed in states of Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Karnataka, Maharashtra, Odisha and Telangana. Thus, a total of 7735 WUAs have been formed against the target set of 13936 WUAs.

Under the restructured "Command Area Development & Water Management" Programme, more emphasis is being given to participatory approach. Under this Programme, payment of Central Assistance to State is linked with the formation of Water Users' Associations. Also, a CADWM project will be considered as complete only on transfer of irrigation assets to concerned WUAs.

1.4 Relining of Sirhind Feeder from RD 119700 to 447927 and relining of Rajasthan Feeder from RD 179000 to 496000 of Punjab

Cabinet has approved the funding of Relining of Sirhind Feeder and Rajasthan Feeder of Punjab on 26.09.2018. Sirhind and Rajasthan Feeders take off upstream of Harike Head works and flow through Punjab before crossing over to Rajasthan. The twin canals run parallel have a common bank and were constructed in 1960s as lined (brick) channels to convey water to command areas in Punjab and Rajasthan. Rajasthan Feeder is exclusively meant for providing water to Indira Gandhi Nahar Project which serves the command lying in the Western Rajasthan. Seven districts of Western Rajasthan including major cities like Jodhpur, Bikaner, Jaisalmer are totally dependent on Indira Gandhi Nahar Project for drinking water. Besides it also supplies water to Power Plants at Suratgarh, Ram Garh etc. Sirhind Feeder serves the area in both Punjab & Rajasthan.

The relining of Rajasthan Feeder would save 560 cusec of water which would stabilize/ improve irrigation in 98,739 ha of area in Rajasthan to benefit the entire Western Rajasthan immensely. Relining of Sirhind Feeder would save 256 cusec of water which would stabilize/ improve irrigation in 20740 ha of area in Rajasthan and 48356 ha in Punjab and address the problem of water-logging in 84800 Ha of land in Muktsar, Faridkot and Ferozpur districts in South-West Punjab.

The approved cost of relining of Sirhind Feeder Canal is Rs. 671.478 Cr and that of relining of Rajasthan Feeder Canal is Rs. 1305.267 Cr, at 2015 PL. of the total estimated cost, Rs. 826.168 Cr

would be provided as Central Assistance (Rs. 205.758 Cr for Sirhind Feeder and Rs. 620.41 Cr for Rajasthan Feeder). This is in addition to Rs. 156 crore of Central assistance released earlier for these projects. The project would be completed in 3 working seasons (March to June) of 70 days each starting from March-June, 2019 and ending March-June, 2021. Funding for CA to the Rajasthan Feeder and Sirhind feeder shall be made through NABARD under existing system for funding of 99 PMKSY-AIBP projects under LTIF.

1.5 Surface Minor Irrigation (SMI) Scheme

Since XII Plan onwards, 4928 SMI schemes have been taken up under the programme out of which 2631 schemes have been reported to be completed. Total Central Assistance amounting to Rs. 6271.08 crore has been released for completion of these schemes out of which an amount of Rs. 527.90 crore has been released during 2018-19 till December 2018.

1.6 Repair, Rennovation & Restoration (RRR) of Water Bodies

Under the scheme, a total of 1964 water bodies have been taken up for restoration since XII Plan onwards, out of which 664 water bodies have been reported to be completed. Total Central Assistance amounting to Rs. 366.41 crore has been released to the States for completion of works of these water bodies, out of which an amount of Rs. 22.09 crore has been released during 2018-19 till December 2018.

1.7 Special Package for completion of Irrigation Projects to address agrarian distress in Vidarbha and Marathwada and other chronically drought prone areas of Rest of Maharashtra

Government of India has approved the Special Package of Rs. 3831.41 crore as Central Assistance to complete 83 Surface Minor Irrigation (SMI) projects



Hon'ble Minister (WR, RD& GR) in the function at Nagpur for announcement of Special Package for Maharashtra



Varkhede Londhe Project of Maharashtra

and 8 Major/Medium Irrigation Projects in suicide prone districts of Vidarbha and Marathwada and other chronically drought prone regions of the state of Maharashtra.

These projects are ongoing and Rs. 11552.15 crore has already been spent by the State Government as on 31.3.2018. The completion of balance works of these projects will help in creation of additional 3.77 lakh hectare of potential and reduce distress conditions in 12 districts of Vidarbha and Marathwada regions of Maharashtra and certain other drought prone areas of rest of Maharashtra.

Features of the Special Package

Under the Special Package, Central Government will provide Central Assistance (CA) @ 25% of the balance cost of these 91 projects as on 1.4.18 as well as 25% reimbursement for the expenditure incurred during 2017-18. The arrangement of State share to be borrowed by the State shall be made through NABARD within their FRBM limit, if required, for implementation of these projects (91 nos.).

The overall balance cost of the said projects as on 1.4.2018 is estimated to be Rs.13651.61 crore.

Releases during 2018-19:

During 2018-19, Central Assistance of Rs. 500 crore has been released for 07 MMI and 56 SMI projects under the Special Package.

2.0 National Projects

Sixteen Projects have been declared as national projects so far. These projects are taken up for execution after the concerned States obtain techno economic clearance, other statutory clearances and investment clearance. These projects are: Gosikhurd Irrigation Project, Shahpurkandi Dam Project, Teesta Barrage Project, Saryu Nahar Pariyojna, Indira Sagar Polavaram Project, Lakhwar Multipurpose Project, Renuka Dam Project, Kishau Multipurpose Project, Ujh Multipurpose project, Ken Betwa Link Project, Kulsi Dam Project, Noa-Dihing Dam Project, Bursar HE Project, Gyspa HE Project, 2nd Ravi Vyas Link Project and Upper Siang Project.





Out of these, five projects, namely Polavaram project of Andhra Pradesh, Saryu Nahar Pariyojana of Uttar Pradesh, Gosikhurd Irrigation Project of Maharashtra, Teesta Barrage Project of West Bengal and Shahpur Kandi Dam Project of Punjab have been taken up for execution. Gosikhurd and Saryu Nahar Pariyojna are included under 99 prioritized projects. Polavaram Project is also being funded under LTIF.

Polavaram National Project:

Polavaram Irrigation Project (PIP) is a multi-purpose irrigation project which is on the river Godavari in Andhra Pradesh State to create ultimate irrigation potential of 2.91 Lakh Ha. The Project also envisages generation of 960MW of hydro power, drinking water supply to a population of 28.50 Lakh in 540 villages, diversion of 80 TMC of water to Krishna river basin.

It has been declared as a National Project as per Section 90 of AP Reorganization Act, 2014. Central Government is funding 100% of the remaining cost of the irrigation component, as on 01.04.2014, Government of Andhra Pradesh is executing the irrigation component of the project on behalf of Government of India.

The approved cost of Polavaram Irrigation Project is Rs. 16010.45 Cr (at 2010-11 price level). The Physical & Financial Progress of Polavaram Irrigation Project up to November, 2018 is 61.81% and 67.23% respectively.

After declaration of National Project, a sum of Rs. 6764.16 Cr. has been released for execution of Polavaram Irrigation Project during 2014-19, out of which Rs. 1400 Cr has been released during 2018-Polavaram Project Authority (PPA) has engaged M/s WAPCOS and CSMRS as Project Management Consultant and Quality Consultant for the Project. Various Committees have also been formed to oversee the implementation of the project.

Saryu National Project:

Saryu Nahar Pariyojana National Project is one of the 99 priority projects under PMKSY (AIBP) and is to be







implemented in three phases. Main diversion structure and link channels are already completed. Component of the project under the scheme of National Projects are some of the balance canal works of Phase-II and Phase – III of the project which involves construction of Rapti Main Canal and its complete distribution system.

The project as a whole, envisages irrigation potential of 14.04 lakh ha out of which 4.73 Lakh ha is to be created under the scheme of National Projects. Total Central Assistance released under said National Project is Rs. 1526.59 Cr so far, Out of which Rs. 305 cr. has been released during 2018-19.

Gosikhurd National Project:

Gosikhurd Irrigation Project is one of the 99 priority projects under PMKSY (AIBP) and envisages construction of earth dam across river Wainganga in Bhandara district of Maharashtra. The project will provide irrigation benefits to 2,50,800 ha (Ultimate Irrigation potential) along with other benefits. Total Central Assistance released under this National Project is Rs. 3350.34 Cr so far, out of which Rs. 195.8 cr. has been released during 2018-19.

Teesta Barrage National Project:

Teesta Development Plan consists of three Phases. Benefits envisaged are irrigation benefit to CCA of 922 Th Ha (Phase-I), 1000MW Hydro Power (Phase-II) and Navigation Link between Brahmaputra & Ganga (Phase-III). The Sub-stage – I, on completion, would create irrigation potential of 527Th Ha over a CCA of 342 Th Ha.



The estimated cost of the Project is Rs. 2988.61 Cr [at 2008 Price level]. The total expenditure up to 04/2014 (including expenditure under the scheme of National Projects) is Rs.1459.18 Cr. The Government of India has released Central Assistance of Rs. 178.20 Cr under the scheme of National Projects. State Govt has not submitted any funding proposal since 2012-13. The progress of Teesta project has been affected due to land acquisition issue. The State Government has constituted a High Level Task Force to suggest appropriate cause of action for execution of balance works.

Shahpurkandi Dam (National Project):

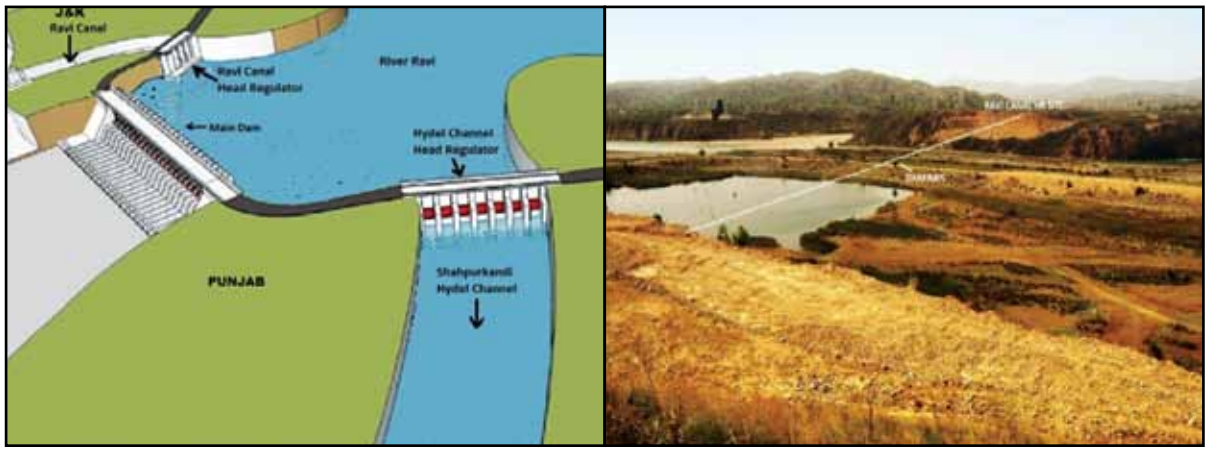
The work on the project has been suspended since 30.08.2014 following a dispute between the States of Jammu & Kashmir and Punjab. Thereafter, an agreement was reached between Punjab and Jammu & Kashmir States under the aegis of MoWR, RD & GR at New Delhi on 8th September, 2018 to resume works of Shahpur Kandi Dam project in Punjab on river Ravi. Work has been resumed w.e.f. 1st November, 2018.

Government of India has approved the "Funding of "Implementation of Shahpurkandi Dam (National Project) on River Ravi in Punjab State" with an estimated cost of the Rs. 2715.70 crore out of which, the Irrigation component (28.61% of approved cost) and Power component (71.39% of approved cost) amounts to Rs. 776.96 crore and Rs. 1938.74 crore respectively. In this regard, Central Assistance of Rs. 485.38 crore would be provided for the balance works portion of Irrigation Component of the said project amounting to Rs. 564.632 crore.

After completion of the Shahpurkandi dam Project, water would be made available through the project to the state of Punjab and J&K to provide irrigation in 5000 ha and 32173 ha respectively. In addition, water being released to provide irrigation in 1.18 Lac Hectare of area under UBDC system in Punjab at present would be managed / regulated efficiently through this project and irrigation in the area would be benefitted. The project would be completed by June 2022.

Lakhwar Multipurpose National Project:

For implementation of Lakhwar Multipurpose National Project, an agreement amongst the States of Himachal Pradesh, Uttarakhand, Uttar Pradesh, Haryana, National Capital Territory of Delhi and Rajasthan on Construction of Lakhwar Project in Upper Yamuna Basin has been signed by Hon'ble Chief Ministers of the Co Basin States on 28.08.2018.





Renukaji Dam National Project:

For implementation of the Renukaji Dam National Project, an agreement amongst the States of Himachal Pradesh, Uttarakhand, Uttar Pradesh, Haryana, National Capital Territory of Delhi and Rajasthan on Implementation on Renukaji Dam National Project in Upper Yamuna Basin has been signed by Hon'ble Chief Ministers of the Co Basin States on 11.01.2019.

3.0 Inter-linking of Rivers

On the directions of Supreme Court, a committee called "Special Committee on Interlinking of Rivers" was constituted on 23rd September, 2014 under the Chairmanship of the Union Minister of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD & GR) for the implementation of Inter-Linking of Rivers (ILR) programme. Fourteen meetings of the Special Committee for Inter-Linking of Rivers (ILR) have been held so far (last meeting held on 17.01.2018 at New Delhi), wherein State Irrigation/ Water Resources Ministers along with the Secretaries of various States participated. The Special Committee on ILR takes into consideration all the suggestions/ observations of the stakeholders while



planning and formulating the ILR projects. Details of meeting and developments taken place during 2018-19 are as under:

I. Inter-linking of Rivers under NPP

- Secretary (WR, RD & GR) held a meeting with officials of Governments of Maharashtra and Gujarat on 20.04.2018 and another meeting with Chief Secretaries of Maharashtra and Gujarat on 07.09.2018 for finalisation of Memorandum of Understanding (MoU) for implementation of Damanganga- Pinjal and Par-Tapi-Narmada Link Projects.
- Secretary (WR, RD & GR) held a meeting with officials of Governments of Uttar Pradesh and Madhya Pradesh on 23.04.2018 for finalisation of Memorandum of Agreement (MoA) for implementation of Ken-Betwa Link Project. Government of UP has conveyed the readiness to sign the MoA vide letter dated 07.08.2018.
- Draft Cabinet Note for National interlinking of Rivers Authority (NlRA) has been circulated among various Ministries/NITl Aayog. The comments of NITI Aayog, DoPT, MIIA, DoRD, DoF and PMO have been received and the replies have been sent.
- Ministry of Tribal Affairs (MoTA) accorded clearance for R & R plan of Project Affected Families (PAFs) under Lower Orr Dam.
- Comprehensive DPR of Ken-Betwa Link Project prepared and sent to Governments of UP and MP, CWC on 22.10.2018.
- Hon'ble Minister (WR,RD & GR) reviewed the status of ILR projects on 31.05.2018.
- Preparation of DPR of Godavari-Cauvery (Grand Anicut) link project has been taken up and is under progress.

II. Intra State Links:

- DPR of Ponnaiyar (Nedungal)-Palar Link Project of Tamil Nadu has been completed and sent to Governments of Karnataka and Tamil Nadu during August, 2018.
- DPR of Wainganga (Gosikhurd)-Nalganga (Puma Tapi) Link Project of Maharashtra has been completed and sent to Government of Maharashtra during November, 2018.
- Preparation of DPRs of Damanganga (Ekdare)- Godavari and Damanganga (Vagh Val)- Vaitarna-Godavari (Kadva Dev) Link Projects of Maharashtra are continued.

4.0 Flood Management and Border Area Programme (FMBAP)

The States/UTs are provided promotional financial central assistance through Flood Management Programme (FMP) and River Management Activities & Works related to Border Areas (RMBA) schemes of Ministry, which are now merged into a single scheme FMBAP for the three year period from 2017-18 to 2019-20. Grants-in-Aid amounting to Rs. 812.64crore under FMP component and Rs. 375.30 crore under RMBA component of FMBAP has been released to States/UTs between April 2017 and December 2018.

4.1. Flood Management Programme

During XI plan, Government of India launched "Flood Management Programme" for providing central assistance to the State Governments for undertaking the works related to river management, flood control, anti-erosion, drainage development, flood proofing, restoration of damaged flood management works and anti-sea erosion works which has been continued.

Under the FMP scheme, a total of 522 works were approved during XI & XII Plan. Central assistance amounting to Rs. 5685.72 crore has been released to States/ UTs under FMP/ Flood Management component of FMBAP scheme since XI Plan till December, 2018. The completed works during XI and XII Plans have provided reasonable protection to 34.663 lakh ha area and benefitted 265.793 lakh population. The details of Central Assistance released till December, 2018 and area protected during XI & XII Plans are given in ***Annexure-VIII & Annexure-IX*** respectively.

4.2. River Management Activities and Works related to Border Areas

The above central sector scheme was approved for implementation during XII Plan which has been continued. The scheme has following components:

(i) Hydrological observations and flood forecasting on common border rivers with neighboring countries

- **Flood forecasting on rivers common to India and Nepal.**

Flood Forecasting on rivers common to India & Nepal has been in operation with currently 46 meteorological/hydro-meteorological sites in the Nepalese territory.

- **Hydrological Observations on rivers originating in Bhutan.**

A comprehensive scheme for establishment of Hydro-Meteorological and Flood Forecasting Network on rivers common to India and Bhutan is also in operation for transmission of real time data to control rooms in India. The cost of operation and maintenance of these sites in Bhutan is borne by India.

- **Joint observations on rivers common to India and Bangladesh and cooperation with neighbouring countries.**

During lean season (January to May), the Ganga/ Ganges waters is being shared at Farakka with Bangladesh, as per the provisions of the Treaty signed between the two countries in 1996. The hydrological observations are being conducted jointly at Farakka (India) and Hardinge Bridge (Bangladesh) every year during the lean season.

Further, during every monsoon, hydrological data of three stations (Nugesha, Yangqen and Nuxia) on Brahmaputra and one station (Tsada) on Sutlej is provided by China to India as per existing MoUs and cost of maintenance of these stations is borne by India. The information provided by China is utilized by India in flood forecasting and advance warning.

(ii) Investigations of Water Resources projects in neighboring countries

- **Pancheshwar Multipurpose Project**

Pancheshwar Multipurpose Project is proposed along the India-Nepal border as per the provisions of the Mahakali Treaty signed in 1996 between India and Nepal for integrated development of river Mahakali (Sarada in India).

- **Surveys & Investigation of Sapta Kosi High Dam and Sun Kosi Storage cum Diversion Scheme.**

As per the bilateral Agreement, the Joint Project Office-Sapta Kosi & Sun Kosi Investigation (JPO-SKSKI) is carrying out field investigations for Sapta Kosi High Dam and Sun Kosi Storage-cum-Diversion Scheme for preparation of a comprehensive DPR.

(iii) Grant-in-Aid to States/ UTs for flood management/ anti –sea erosion:

The scheme provides for 100% grant to select boarder States and UTs for river management works. Grant-in-aid amounting to 598.50 crore has been released to States/ UTs under RMBA component of FMBAP since XII Plan till December, 2018.

5.0 National Mission for Clean Ganga (NMCG)

National Council for Rejuvenation, Protection and Management of River Ganga constituted (referred as National Ganga Council) vide notification no. S.O. 3187(E) dt. 7-10-2016 under EPA, 1986. The Order envisages five tier structures 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.

5.1. 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 below:

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 15.01.2019 aggregate of 468 MLD capacity created and 92 MLD rehabilitated and sewerage network of 2488.17 km has been completed and made operational under NGRBA/ Namami Gange.

Hybrid annuity based PPP model:

Financial model for execution of infrastructure projects under Namami Gange Programme on Hybrid Annuity based Public Private Partnership (PPP) to implement infrastructure projects under 'Namami Gange' in a financially sustainable, outcome oriented and accountable manner.

5.2. MONITORING OF POLLUTION:

It is being done by:

- Ghat Cleaning Activities
- River Surface Cleaning
- Ghat Cleaning
- River Front Development
- Development of Ghats/ Crematoria

Before Current



Ganga Barrage Ghat

5.3. RURAL SANITATION AND GANGA GRAM:

Rural Sanitation:

Ministry of Drinking Water & Sanitation has constructed 10,83,688 no. of Individual Household Latrines (IHHLs) in 4465 Ganga bank villages and declared Open Defecation Free (ODF).

Ganga Gram:

Ministry of Drinking Water & Sanitation (MoDWS) is developing 25 villages as Ganga Grams on pilot basis from across the 5 Ganga basin states.

Liquid waste management is being implemented in all the identified 4465 villages along the Ganga River. NMCG has released Rs. 123.96 Cr. to Ministry of Drinking Water & Sanitation for the implementation of the project.

5.4. BIODIVERSITY CONSERVATION:

Under this project, Functional Ganga Aqualife Conservation Monitoring Centre at WII, Dehradun has been established for data dissemination related to biodiversity work of River Ganga.

5.5. AFFORESTATION:

NMCG has sanctioned Rs. 112.141 cr. for afforestation work in 10785 ha. land during the year 2016-18.

6.0 Farakka Barrage Project(FBP)

Farakka Barrage Project (FBP) was commissioned in 1975 for preservation and maintenance of Kolkata Port and for increasing the navigational depth of the Bhagirathi- Hooghly waterways.

Major achievements of work(s) in the year for Farakka Barrage Project are listed below:-

i. Emergency Anti erosion work at upstream right bank of River Ganga near Burning Ghat to Ganga Pump House Area.

ii. Emergency Anti Erosion Work at downstream left bank of river Ganga near Hossianpur Area (working length 330.00 m).

iii. Partial restoration of 9th marginal embankment (breach portion) on Left Bank of River Ganga U/S of Farakka Barrage between Ch. 1950.00 m and Ch. 2150.00 m (Total working length 200 m).

iv. Protective measures of eroded bank at u/s left bank of Farakka Barrage near Birnagar area in between Ch. 2177 to 2229 and in between Ch. 2520 to Ch (Total working length 212.00 m).

v. Restoration of bank slope in the u/s of Farakka Barrage near village

Birnagar on Left Bank of River Ganga in between Ch. 2235.00 m and Ch. 2268 m, 2470 m and 2520 m and 2520 m and 2590 m.

vi. Restoration of bank slope in the D/S of Farakka Barrage near village Chakbahadurpur on Left Bank of River Ganga in between Ch. 3700.00 m and Ch 3880 m (Total Working length 180 m).

vii. Transfer of the Existing Navigational lock at Farakka to MoS/IWAI.

viii. The work for replacement of 35 gates is *in progress (Physical progress is 2%).*

ix. The work of Construction of walk-way Bridge over piers of Farakka Barrage.

x. Renovation/Special repair and improvement of PSC bridge road over Farakka Barrage is in *progress & ahead of schedule. (Physical progress is 20%).*

xi. Filling up of bed scour pockets up to RL (+) 3.00 by dumping nylon crates filled with sand filled HDPE bags in Feeder Canal in between RD 0.200 to RD 0.700 under Farakka Barrage Project (Phase-I) is *in progress.*

xii. Special protection work for canal bank in the left bank of Feeder Canal (total working length 1247 m) is *in progress.*

7.0 Development of Water Resources Information System (DWRIS)

The scheme "Development of Water Resources Information System" is under implementation during 14th Finance Commission period from 2017-18 to 2019-20 at an estimated cost of Rs. 682.42 crore for creation of reliable and sound database for planning and policy formulation for Water Resources Projects, timely dissemination of flood forecast, etc. The scheme comprises of 5 main components namely:

(a) Hydrological Observations including Flood Forecasting, Snow Hydrology, Water Quality and Monitoring of Glacial Lakes which has following main activities:

i. Running & Maintenance of Hydrological Stations continued during XII Plan (878 stations)

ii. Running & Maintenance of Hydrological Stations (720 stations) opened during 12th Plan Period

iii. Running and maintenance of Water Quality Laboratories for monitoring of Water Quality at existing stations

iv. Collection of Storage data on the 66 major reservoirs.

v. Coastal Management Information System (CMIS)

vi. Flood Forecasting

vii. Integrated Reservoir Operation

(b) Pilot Census of Major and Medium Irrigation Project

(c) Strengthening of Monitoring Unit in CWC

(d) Data bank and Information System

i. Reassessment of Water availability in the country

ii. Up-gradation and Modernization of Library Information Bureau

iii. Software Management in CWC

(e) Integrated Water Resources Management Studies

Water Resources Information System (India-WRIS):

CWC & ISRO has jointly developed the 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. 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.

8.0 Minor Irrigation (MI) Census

Rationalisation of Minor Irrigation Census was launched in 1987-88 in the Ministry of Water Resources, RD & GR with 100% assistance to the States/UTs. In 2017-18, the scheme was renamed as Irrigation Census and brought under the Centrally Sponsored umbrella scheme, "PMKSY and other schemes". The main objective of the Irrigation Census scheme is to build up a comprehensive and reliable database in the Minor Irrigation (MI) sector for effective planning and policy making.

Under the Scheme, each State/UT has identified a Nodal Department and a Statistical Cell for compilation of minor irrigation statistics for the entire State/UT. 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.

Database on Minor Irrigation schemes plays an important role in policy formulation for water resources available in India. Through the MI Censuses detailed information on various aspects/parameters like irrigation sources (dug well, Shallow Tube well, MediumTube well, Deep Tube well, Surface Flow and Surface Lift schemes), Irrigation potential created (IPC), Irrigation potential utilized (IPU), ownership, holding size of land by the owner, devices used for lifting water, source of energy, cost/maintenance of schemes and their funding, energy conserving devices such as sprinkler and drip irrigation, use of non-conventional energy sources such as solar pumps, windmills etc. is collected. Detailed database on minor irrigation works in the country has been generated through five censuses carried out under the scheme so far with reference years 1986-87, 1993-94, 2000-01, 2006-07 & 2013-14 respectively. The 5th Minor Irrigation Census was conducted with Reference Year 2013-14 in 33 States/UTs. The Report of 5th MI Census has been published (also available on Ministry's website).

Standing Finance Committee (SFC) under the Chairmanship of Secretary (WR, RD & GR) for 6th Minor Irrigation Census and Census of Water bodies has approved cost of Rs. 168.14 crore for 6th MI Census and Rs. 89.64 crore for Census of Water bodies respectively for the period 2017-18 to 2019-2020. The Ministry had initiated the process of conduct of 6th MI Census along with Census of Water Bodies for the first time immediately after the approval of the scheme by SFC in January, 2018.

The provision for capturing photographs along with its latitude and longitude is also kept in Census of Water bodies. Draft version of mobile friendly App/software has also been developed by NIC and the same is being tested to finalise the same. Thereafter, States would use the software/mobile app for data processing and to capture photograph, latitude/ longitude of the water body. For capturing photo/latitude/longitude of water bodies, separate funding has been provided to States/UTs for procuring two mobiles devices per block.

The next level of training on schedules / instructions for 6th MI Census & Census of Water Bodies was imparted through Six regional Training Workshops organised by the Ministry in association with six host States of Uttarakhand (21-22 June, 2018), Telangana (28-29 June, 2018), Sikkim (10 -11 July, 2018), Goa (26 - 27 July, 2018), Himachal Pradesh (8 - 9 August, 2018), Odisha (28 -29 August, 2018). Further, four Regional Workshops for Data Processing have been scheduled for organization during Dec. 2018- Jan- 2019. Out of the 4 Workshops, two Workshops covering 15 States/UTs to impart training on data processing modules of the software developed by NIC for 6th MI Census & Census of Water Bodies have already been completed at Aurangabad on 28th December, 2018 & Chennai on 4th January, 2019. Remaining two Regional Data Processing Workshops for remaining States/UTs are scheduled on 18.01.2019 at Guwahati and on 23.01.2019 at Lucknow.

An expenditure of Rs. 44.38 crores up to 31st December, 2018 has been incurred against a Revised Estimate (RE) of Rs. 49.75 crores for the financial year 2018-19 under "Irrigation Census" Scheme.

9.0 Flood Forecasting (FF)

CWC is providing Flood Forecasting service at 249 stations, of which 174 are level forecasting stations on major rivers and 75 are inflow forecasting stations on major dams/barrages. 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. Overall 510 automatic data collection stations with sensors and satellite transmission system, three Earth receiving Stations viz New Delhi, Jaipur and Burla and 21 Modeling Centers equipped with latest computer systems for analysis of data, flood forecast formulation and its dissemination to concerned agencies expeditiously have been installed till 2014 on various river basins. Further for activities of flood forecasting, modernization and expansion, another 458 stations along with 5 more modelling centres are being modernized with automatic data acquisition system with Satellite based telemetry system in various basins in the country. Out of these around 320 stations and 3 modeling centers have been installed and the remaining is in advanced stage of installation and is likely to be completed shortly.

During the flood season, CWC operates Flood Control Room on 24×7 basis at Headquarter in New Delhi and 27 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 30 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 3-day advance flood advisory.

9.1. REGULAR FLOOD FORECASTING ACTIVITY FROM 1st MAY 2018

During the flood season 2018, 6851 flood forecasts (4969 level forecast and 1882 inflow forecasts) were issued. Out of which 6495 (94.80%) 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 e SWIS since monsoon to monitor the current status of the river. A summary of flood situation observed during 1st may to 31st December 2018 is given below:

Extreme Flood situation in flood forecasting Stations:

Five flood forecasting (FF) stations that flowed in Extreme Flood Situation as detailed under:

Extreme Flood situation in monitoring Stations:

The Flood Monitoring Stations that flowed in Extreme Food Situation are as detailed under:

a) River Manu at Manughat in North Tripura district of Tripura on 13th June 2018

b) River Dhaleswari at Gharmura in Hailakhandi district of Assam on 13th and 14th June 2018.

c) River Periyar at Vandiperiyar in Idukki district of Kerala on 11th June 2018 and from 14th to 18th August 2018

d) River Meenachil at Kidangoor in Kottayam district of Kerala on 16th July 2018 and 16th to 18th August 2018.

e) River Pamba at Malakkara in Pattanamthitta district of Kerala on 15th August 2018

f) River Pamba at Kallooppara in Pattanamthitta district of Kerala on 16th August 2018.

g) River Periyar at Neeleswaram in Ernakulam district of Kerala from 15th to 17th August 2018.

Sl. No	State	District	River	Station	Period	
					From	To
Flood Forecast Stations						
1.	Tripura	North Tripura	Manu	Kailashahar	13/06/2018 08:00 hrs	14/06/2018 00:00 hrs
2.	Assam	Shivsagar	Dikhow	Shivsagar	31/07/2018 2300hrs	01/08/2018 10:00 hrs
3.		Golaghat	Dhansiri (S)	Numaligarh	02/08/2018 06:00 hrs	04/08/2018 17:00 hrs
4.	Tamilnadu	Erode	Bhavani	Savandapur	17/08/2018 01:00 hrs	18/08/2018 04:00 hrs
5.		Erode	Cauvery	Kodumudi	17/08/2018 08:00 hrs	19/08/2018 03:00 hrs

h) River Muvattupuzha at Kalampur in Ernakulam district of Kerala from 15th to 18th August 2018

i) River Muvattupuzha at Ramamangalam in Ernakulam district of Kerala on 16th August 2018

j) River Chalakudy at Arangali in Thrisur district of Kerala on 15th and 16th August 2018

k) River Pulanthodu at Pulamanthole in Palakkad district of Kerala from 16th to 17th August 2018

l) River Bharathapuzha at Mankara in Palakkad district of Kerala on 9th and 16th August 2018

m) River Bharathapuzha at Kumbidi in Palakkad district of Kerala from 16th to 18th August 2018

n) River Kadalundi at Karathodu in Malappuram district of Kerala from 16th to 18th August 2018

o) River Kuttyadi at Kuttyadi in Kozhikode district of Kerala on 16th August 2018

p) River Kabini at Muthankera in Wynadu district of Kerala from 9th to 10th August and from 16th to 18th August 2018

q) River Valapatnam at Perumannu in Kannur district of Kerala from 8th to 9th August and from 14th to 15th August 2018.

r) River Bhavani at Nellithurai in Coimbatore district of Tamil Nadu on 16th August 2018

s) River Moyar at Thengumarahada in Nilgiris district of Tamil Nadu on 17th August 2018

t) River Cauvery at Kudige in Kodagu district of Karnataka from 14th to 18th August 2018

u) River Cauvery at Chunchunkatte in Mysuru district of Karnataka from 14th to 20th August2018

v) River Bhadra at Holehonnur in Shivamogga district of Karnataka from 14th to 18th August 2018

w) River Tunga at Shimoga in Shivamogga district of Karnataka from 14th to 15th August 2018

x) River Suklai at Suklai in Baksa district of Assam on 26th and 27th September 2018.

Severe Flood situation for flood forecasting Stations:

74 FF Stations flowed in Severe Flood Situation in the States of Arunachal Pradesh, Assam, Bihar, West Bengal, Jammu & Kashmir, Jharkhand, NCT of Delhi, UP, Odisha, Chhattisgarh, Telangana, Andhra Pradesh and Tamil Nadu and during the period 1st May to 31st December 2018 as shown below:

Sl. No	State	District	River	Station
1.	Arunachal Pradesh	East Siang	Siang	Passighat
2.	Assam	Dibrugarh	Brahmaputra	Dibrugarh
3.		Shivsagar	Desang	Nanglamoraghat
4.		Jorhat	Brahmaputra	Neamatighat
5.		Lakhimpur	Ranganadi	N T Road Crossing
6.		Golaghat	Dhansiri(S)	Golaghat

Sl. No	State	District	River	Station
7.		Sonitpur	Jia-Bharali	N T Road Crossing
8.		Sonitpur	Brahmaputra	Tezpur
9.		Nagaon	Kopili	Kampur
10.		Kamrup	Brahmaputra	Guwahati
11.		Kamrup	Puthimari	N H Crossing
12.		Nalbari	Pagladiya	N T Road Crossing
13.		Barpeta	Beki	Road Bridge
14.		Dhubri	Brahmaputra	Dhubri
15.		Dhubri	Sankosh	Golokganj
16.		Cachar	Barak	Annapurnaghat
17.		Hailakhandi	Katakhal	Matizuri
18.		Cachar	Barak	Badarpurghat
19.		Karimgunj	Kushiyara	Karimgunj
20.	Bihar	Madhubani	Kamlabalan	Jhanjarpur
21.		Purnea	Mahananda	Dhengraghat
22.		Khagaria	Burhigandak	Khagaria
23.		Katihar	Mahananda	Jhawa
24.		Gopalganj	Gandak	Dumariaghat
25.		Muzzafarpur	Bagmati	Benibad
26.		Supaul	Kosi	Basua
27.		Patna	Punpun	Sripalpur
28.		Khagaria	Kosi	Baltara
29.		Katihar	Kosi	Kursela
30		Siwan	Ghaghra	Darauli
31		Siwan	Ghaghra	Gangpur Siswan
32		Darbhanga	Adhwara	Kamtaul
33		Patna	Ganga	Dighaghat
34		Patna	Ganga	Gandhighat
35		Patna	Sone	Maner
36		Patna	Ganga	Hathidah
37		Bhagalpur	Ganga	Bhagalpur
38		Bhagalpur	Ganga	Khalgaon
39	Jammu & Kashmir	Anantnag	Jhelum	Sangam
40		Srinagar	Jhelum	Rammunshibagh
41		Baramullah	Jhelum	Safapora

Sl. No	State	District	River	Station
42	Jharkhand	Sahebganj	Ganga	Sahebganj
43	Odisha	Rayagada	Vamsadhara	Gunupur
44		Gajapati	Vamsadhara	Kashinagar
45		Balasore	Burhabalang	Govindapur
46		Bhadrak	Brahmani	Akhuapada
47		Keonjhargarh	Brahmani	Ananadpur
48		Ganjam	Rishikulya	Puroshottampur
49	Uttar Pradesh	Barabanki	Ghaghra	Elgin Bridge
50		Faizabad	Ghaghra	Ayodhya
51		Ballia	Ghaghra	Turtipar
52		Balrampur	Rapti	Balrampur
53		Muzzafarnagar	Yamuna	Mawi
54		Badaun	Ganga	Kachhla Bridge
55		Farukkabad	Ganga	Fatehgarh
56		Moradabad	Ramganga	Moradabad
57		Banda	Ken	Banda
58		Ghazipur	Ganga	Ghazipur
59		Ballia	Ganga	Ballia
60		Kanpur	Ganga	Ankinghat
61		Shahjahanpur	Ramganga	Dabri
62		Rae-Bareli	Sai	Rae-Bareli
63	West Bengal	Coochbehar	Raidak	Tufanganj
64		Coochbehar	Jaldhaka	Mathabanga
65		Coochbehar	Teesta	Mekhliganj
66		Jalpaiguri	Teesta	Domohani Road Bridge
67		Murshidabad	Ganga	Farakka
68	NCT, Delhi	North	Yamuna	Delhi railway Bridge
69	Chhattisgarh	Bastar	Indravathi	Jagdalpur
70	Telangana	Adilabad	Kumaram Bheem Asifabad	Sirpur (Town)
71	Andhra Pradesh	Kurnool	Tungabhadra	Mantralayam
72		Srikakulam	Nagavali	Srikakulam
73		East Godavari	Godavari	Kunavaram
74	Tamil Nadu	Tiruchirapalli	Cauvery	Musiri

10.0 National Hydrology Project (NHP)

National Hydrology Project (NHP) was approved by the Cabinet in April 2016 with budgetary support of Rs. 3640 crore and Rs. 39.77 crore for National Water Informatics Centre. This 8 year duration Project is being implemented through World Bank loan assistance of US$175 million. Consequent upon approval of the Cabinet, Memorandum of Agreement was signed with all the Implementing Agencies (excluding Delhi) during the period October, 2016 to March 2017. Parallel action was taken for fulfilling the readiness criteria for signing the legal/ loan agreement with the World Bank. Negotiations on the agreement was held with the World Bank in February, 2017 and subsequently loan agreement was signed which became effective from 5th May, 2017. The objectives of NHP are:

- To improve the extent, quality, and accessibility of water resources information,
- To create decision support system for floods and basin level resource assessment/planning.
- To strengthen the capacity of targeted water resources professionals and management institutions in India.

Major achievements under NHP till date are as follows:

- Modification of Data Dissemination Policy to usher free data sharing regime among the implementing agencies under NHP in respect of data being monitored and acquired by Central Agencies under Mo WR, RD & GR.
- Finalization of surface and ground water network of IAs
- Finalization of specifications of majority of the Hydromet equipment
- Assisted IAs with Budgetary quotes of hydro-met system
- Execution of Rate Contract for ESRI Suites (GIS Software)
- Finalisation of Procurement manual of NHP
- Release of guidelines for RTDAS system
- Standardisation of bid documents
- Finalization of architecture for revamped India-WRIS and e-SWIS
- Development of Telemetry module to automatically capture telemetry data in e-SWIS
- Development of Ground Water module in e-SWIS
- Improvement in other modules of e-SWlS and India WRIS
- Commencement of work on development of generic State WRIS
- Collaboration Agreement between CWC and Google (signed on 2nd June, 2018) for improving flood prediction systems. Up scaling of flood forecasting activities in house as well as through Collaboration with Google.
- 1st International Conference under NHP on Sustainable Water Management successfully conducted through BBMP at Chandigarh

- Infrastructure strengthening of IAs
- Implementation Support to IAs
- Capacity building of IAs. Till date 179 trainings/Workshops and Conferences conducted with 4800 participants.
- Till now, the Rs. 283 Cr fund has been released to lAs, out of which the total Expenditure of Rs. 135.50 Cr has been incurred.

11.0 Research and Development (R&D)

11.1. COMPONENTS OF R&D SCHEME:

R&D in Apex Organisations:

It involves basic and applied research, creation & up-gradation of research facilities & training of personnel etc. and implemented through apex organizations of ministry viz. CSMRS, CWPRS, NIH and CWC.

Sponsor and Coordination Research in Water Sector.

MoWR, RD & GR sponsors research schemes by providing financial assistance to IITs, Universities, research organizations etc. for taking up research in water sector through three Indian National Committees (INCs) constituted by the Ministry and Standing Advisory Committee headed by Secretary (WR, RD & GR). The Indian National Committees (INCs) constituted by the Ministry are:

- Indian National Committee on Surface Water (INCSW),
- Indian National Committee on Ground Water (INCGW) and
- Indian National Committee on Climate Change (INCCC).

Evaluation of R&D Activities and Consultancies:

a) Evaluation of R&D activities is conducted by engaging in dependent consultants. Besides, studies are also undertaken through consultancy in priority areas such as

- Water Use Efficiency
- Post Project Performance Evaluation
- Environment Impact Assessment in respect of completed /upcoming irrigation projects and other areas
- Including impact of climate change on water resources and awareness thereof.

Dissemination of the Research output:

The output of the research is disseminated in public domain for utilization by the beneficiaries and stakeholders to make use of it. A special portal is being developed as a knowledge hub for all the water related research results at one platform. The R&D program has also helped in capacity building and creation of additional facilities, research and infrastructure at various Research institutes in India.

11.2. TARGET & ACHIEVEMENTS DURING CURRENT FY: 2018-19 (UPTO DEC, 2018)

Physical Achievements:

Particulars	Year			
T - Target A - Achievement	2017-18		2018-19 (till Dec, 2018)	
	T	A	T	A
Technical Reports Submitted (Nos.)	200	182	150	115
Research Papers Published(Nos.)	240	133	150	114
Completion of physical/ Numerical/mathematical model/desk studies/New Geotechnical investigation/ Evaluation of DPR/Compliance on DPR	115	237	140	152
Training of Personnel(Nos.)	150	977	650	579
Training Programmes/ Conferences Organized (Nos.)	34	26	25	21

Financial Achievements:

Year	B.E. (In Rs. Cr.)	R.E. (In Rs. Cr)	Expenditure		
			Actual (Cr.)	% (*w.r.t* BE)	% (*w.r.t* RE)
2017-18	40	60	49.57	124	82.62
2018-19 (till Dec, 2018)	74.9	45.00	34.39	46	76.42

11.3. PROPOSAL FOR CONTINUING THE SCHEME BEYOND XII PLAN (2017-2020)

For the period beyond XII Plan (2017-2020), the Plan Scheme 'R&D in Water Sector' has been merged with another Plan Scheme of the MoWR, RD & GR namely 'Implementation of National Water Mission'. The scheme is now approved to be continued as "R&D in Water Sector & Implementation of National Water Mission" with a total outlay of Rs. 345.0 crores. Accordingly, SFC Memo has been prepared by R&D Division and approved for total outlay of Rs. 345 Cr. Components of the Proposed Scheme R&D in Water Sector & Implementation of National Water Mission beyond XII Plan (2017-2020) are:

Part A: R&D in Water Sector

1. R&D in apex organisation at national level
2. Sponsoring and coordinating research in water sector
3. Support for dissemination of research findings and technology transfer
4. Evaluation of R&D activities and consultancies
5. Establishment of Research Chair on Water Sector Conflicts and Governance at CPR

Part B: Implementation of National Water Mission

1. National Water Mission Directorate
2. Preparation of State Specific Action Plans for water sector
3. Human Resource Development and Capacity Building and mass awareness programme
4. Setting up of National Bureau of Water Use Efficiency (NBWUE)
5. Baseline studies Demonstration / Benchmarking/Pilot projects

12.0 National Water Mission (NWM)

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. The goals are as follows:

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

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

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

Goal 4: Increasing water use efficiency by 20%

Goal 5: Promotion of basin level integrated water resources management.

13.0 Human Resources Development and Capacity Building (HRD-CB)

The Human Resource Development and Capacity Building Scheme of the MoWR, RD & GR is a new scheme formed by merging three on-going publicity and training schemes, namely (i) Information, Education & Communication (IEC), (ii) National Water Academy (NWA), (iii) Rajiv Gandhi National Ground Water Training Institute (RGI) and introducing two new components, viz. (iv) Strengthening of North Eastern Regional Institute of Water and Land Management (NERIWALM) and (v) Implementation of Training policy of Mo WR, RD &GR.

The following major activities were undertaken by IEC Section upto December, 2018:-

Participation in Fairs/Exhibitions

India International Science Festival 2018

The Ministry participated through Central Water Commission in India International Science Festival- 2018 at Lucknow from 5th to 8th October, 2018 organized by Ministry of Science and Technology and Earth Sciences through Central Water Commission.

Water India 2018 Expo

The Ministry participated through Central Water Commission in Water India 2018 expo at Pragati Maidan, New Delhi from 23rdto 25th May, 2018 organized by India Trade Promotion Organisation.

2nd Wellness India 2018 expo and Krishi India expo 2018

The Ministry participated through Central Water Commission in 2nd Wellness India 2018 expo and Krishi India expo 2018 at Pragati Maidan, New Delhi from 20th to 22nd August, 2018 organized by India Trade Promotion Organisation.

National Conference-cum-Exhibition & Awards on "Science, Technology & Innovation in Water Management"

The Ministry participated through Central Water Commission in National Conference-cum-Exhibition & Awards on "Science, Technology & Innovation in Water Management" at New Delhi on 28th June, 2018 organized by ASSOCHAM.

Other exhibitions

- The Ministry participated through Central Water Commission in (i) Vibrant North East-2018 at Guwahati from 3rd to 5th May, 2018; (ii) Vision Maharashtra 2018 expo at Pune from 3rd to 5th August, 2018; (iii) Shining Maharashtra 2018 at Solapur, Maharashtra from 26th to 28th September, 2018; (iv)Ujwal Himachal Pradesh at Dharamshala, Himachal Pradesh from 14th to 16th December, 2018. Central Water Commission on behalf of the Ministry has participated in the 9th Vibrant Gujarat Global Trade Show 2019 organised by Govt. of Gujarat from 18th to 22nd January, 2019 at Gandhinagar, Gujarat..
- Through CGWB the Ministry participated in the 10th Agro vision at Nagpur from 23rd to 26th November, 2018 and International Exhibition & Conference on "Trends & Recent Advances in Civil Engineering" (TRACE-2018) at Noida from 23rd to 24th August, 2018.
- Through WAPCOS, the Ministry participated in the India Infrastructure Expo 2018 at Mumbai from 24th to 26th June, 2018.

Organisation of Workshops /Seminars/ Conferences 9th International Micro Irrigation Conference

The Ministry through Indian National Committee on Surface Water (INCSW), Central Water Commission and WAPCOS has organized 9th International Micro Irrigation Conference & Exhibition from 16-18 January, 2019 at Aurangabad, Maharashtra. This conference yields opportunity for discussions and deliberations with eminent stakeholders through seminars, exhibition and sessions to build public awareness for use of micro-irrigation on large scale and to get support to implement key strategies for conservation, preservation, inter sectoral arrangements, advanced crop technology etc. The theme of this Conference is "Micro Irrigation for Modern Agriculture".

Organisation of Mass Awareness Programs National Water Awards 2018

The Ministry has instituted National Water Awards for various categories including Best State, Best District, Best Village panchayat, Best Municipal Corporation/other Municipal Bodies, Best Schools, Best TV Show, Best Newspaper etc. in the field of water conservation. The award carries citation and recognition of good work in water sector. The entries are being submitted on MyGov portal digitally and to Central Ground Water Board physically.

Jal Bachao Video Banao Puraskar Pao Contest

In an attempt to spread awareness about conservation of water, the Ministry launched a contest named as *"Jal Bachao, Video Banao, Puraskar Pao"* from 10th July to 4th November, 2018 in association with the MyGov portal. As per terms and conditions, the awards for the best three videos on water conservation were given on fortnightly basis. The award money was Rs. 25,000/-, 15,000/- and 10,000/- for first, second and third position holders respectively.

Logo Contest on water conservation

The Logo Contest on Water Conservation with a prize money of Rs. 51,000/- was launched on MyGov Portal on 05.12.2018 with the objective of promoting value of water in general in collaboration with MyGov Portal which is a citizen engagement platform founded by the Government of India to promote the active participation of Indian citizens in their country's governance and development.

Publicity through Print media i.e. newspapers /magazines

Monthly Magazine 'Jal Charcha'

Hon'ble Minister (WR,RD & GR) launched the first issue of the monthly magazine of the Ministry ' Jal Charcha' on 8th January 2019. The Ministry has come up with the monthly magazine to engage with the people of India which would also help in informed decision-making at the central level. The magazine will be shared with the people not just at the state level, but also at the grass root level.

The magazine is also an effort to bring best practices in water sector to the national stage and move ahead in the direction of creating water consciousness in the minds of the people of the country. Given the vastness of the subject, while the theme of the magazine would change with every issue, effective management of water resources in an integrated manner will remain at the helm. Three regular series - Rivers, Dams and Conservation- will inform readers about the country's rivers and water storage projects and best practices. The idea is to provide opportunity to all stakeholders to express themselves on pressing matters of water management.

An advertisement regarding Calling of entries for National Water Awards was published on 06.12.2018.

Electronic Media Campaign

Two Radio Jingles *Jal Ki Bachat Kare', 'Sun Kisan'* and one Radio Spot *'The Auction'* on water conservation were broadcast in Hindi and 14 other regional languages for 90 days on AIR channels and for 60 days on Private FM Channels across the country.

Organisation of Training Programmes

The trainings are being imparted by the officers of Central Ground Water Board, State Governments as well as experts from other institutions. Further, North Eastern Regional Institute of Water and Land Management (NERIWALM) with the objective of promoting advancement of science and acquisition of scientific knowledge and to provide instruction and training in water and land management for irrigation and agriculture imparts trainings to in-service personnel working in the Departments of Water Resources/ Irrigation, Soil Conservation, Agriculture & Horticulture, Rural Development etc. including Water Users Associations

(WUAs) and farmers in the NE region of India.

RGI has organized 91 training programmes including 37 tier I (National Level) and 12 tier II (State Level) and 42 Tier III (block Level) training programmes. As a part of these training programmes a total of 6477 participants including around 2047 female participants were imparted training on various aspects of ground water. Also, a total of 810 officers have been trained by CWC.

Further, NERIWALM conducted 66 programmes till 31st December, 2018 for different stakeholders like officers, farmers, Women groups/farmers and student. Out of a total number of 1889 benefited from training the number of male and female benefitted was 1376 (72.6%) and 516 (27.3%) respectively.

Implementation of Training Policy

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.

For the financial year 2018-19, an amount of Rs. 2.00 crore has been allocated for training of MoWR Officers. An expenditure to the tune of Rs. 1.20 crore has already been incurred till 31st December, 2018 under training of MoWR Officers (HRD & CB scheme). During the FY 2018-19, a total of 180 officers of the Ministry were sent for training till December 2018.

During the financial year 2018-19, 4 officers were sent for the International training programme on "Budgeting, Accounting and Financial Management" at NIFM, Faridabad with International component at University of California. More than 45 Officers from the Ministry/ CWC were sent for the training programme on "RTI Matters- Role of CPIO and AA" conducted by National Productivity Council and Mahatma Gandhi State Institute of Public Administration, Chandigarh. More than 20 officers were sent for "Leadership Training Programme" at IIM, Kolkata and ASCI, Hyderabad. Officers from Finance Division were also sent for "Finance for Non Finance Executives" programme at IIM, Kolkata. Officers of the Ministry were also sent for "Management of Water Resources" and "Over-view of Water Sector for Non Technical Officers" programmes at National Institute of Hydrology, Roorkee and National Water Academy, Pune respectively. Various officers of the cadre of CSS, CSSS and officers of Central Staffing Scheme were sent for the mandatory training programmes conducted at ISTM.

14.0 Infrastructure Development (ID)

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 MoWR, RD & GR and (iv) e-Governance of the MoWR, RD & GR.

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.

Competent Authority has approved the implementation/continuation of the Infrastructure Development Scheme for MoWR, RD & GR and its Attached and Subordinate Offices during the remaining period of 14th FC (i.e. 2017-20) with the total projects cost of Rs. 283.98 crore and an outlay of Rs. 198.23 crore. The proposed scheme of Infrastructure Development envisages provision of Rs. 198.23 crore out of which Rs. 181.83 crore is meant for Land and Building Component of the Scheme and Rs. 16.40 crore is for IT Component.

CWC – Land & Building

The renovation/modernization of CWC (HQ) at Sewa Bhawan is almost completed and works are in progress in WB-I & II and is targeted to be completed by March, 2019. The renovation work of Kalindi Bhawan, CWC, Delhi is in progress and targeted to be completed in FY 2019-20. The RCC structure of G+3 office building of CWC/GFCC at Patna has been completed. Construction of residential buildings at Guwahati is almost completed and the balance payment is also authorized to CPWD. The works of Swarnrekha Sub-Division office building at Balasore is almost completed. Works for construction of hutments at Lucknow and Varanasi are under progress.

The MoU for the work of construction of CWC portion in the building to be constructed by UYRB at Noida has been signed. The process for release of payment to UYRB as per MoU terms and conditions is in process. The work for dedicated water supply lines at CWC, Jammu is being executed by PHE Department of J&K, which is in progress.

The Administrative approval for Renovation/Modernisation of 80 Nos. Toilets at CWC(HQ) has been issued. The advance payment has also been released to NPCC Ltd. in December, 2018.

CGWB – Land & Building

The Construction of boundary wall of National Ground Water Training & Research Institute (NGWT&RI) building at Naya Raipur is completed and construction of Building is under progress and likely to be completed in the FY 2019-20. Works for the Construction of office building of CGWB in Guwahati are in progress and likely to be completed in FY 2018-19. MoA for the construction of office building at Ahmedabad and Ambala has been signed between CGWB and NPCC Ltd and advance payment has been released for the start of construction work. The Construction of boundary wall, guard room for Divisional workshop & store at Jodhpur and Chennai is under progress and likely to be completed in the financial year 2018-19.

Ministry (proper) - e-Governance

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

i. MoWR, RD & GR has completely operationalized e-Office. This Ministry has more than 90% electronic Files usage in e-Office and the percentage of Physical Files being used is less than 10% only. Moreover, the Ministry has even linked its e-Office instance with Central Ground Water Board, Ministry of Power, Department

of Expenditure, Department of Personnel & Training, Central Water Commission and Department of Legal Affairs enabling inter-departmental transfer of e-Files amongst the above Departments.

ii. Further, the Ministry has sanctioned requisite funds to NIC for operationalizing e-Office in Central Water & Power Research Station, Central Water Commission, Central Soil & Materials Research Station, Ganga Flood Control Commission. e-Office is under implementation in the above Attached Offices/ Subordinate Organizations under the Ministry.

iii. The new Website of the Ministry was launched on 22nd January, 2018. After extensive efforts the website has been made fully compliant with Guidelines for Indian Government Websites (GIGW) and Standardization Testing and Quality Certification (STQC) prescribed by Department of Administrative Reforms & Public Grievances.

iv. Social Media accounts including Facebook and Twitter of all the Attached Offices/ Subordinate Organization under the Ministry have been operationalized. Focus has been made on regular updation of websites of all these attached offices.

v. Digital Signatures have been procured and provided to most of the officials with signing authority.

vi. The MIS / Dashboard for monitoring the Physical and financial achievement of 99 projects under PMKSY has been launched in public domain and regular monitoring is being done through the Portal.

vii. The development of e-Human Resources Management System (eHRMS) for 6 Organizations viz. Central Water Commission, Central Soil & Material Research Station, Central Water & Power Research Station, National Institute of Hydrology, Central Ground Water Board & National Water Development Agency taken up in Phase-I has been completed which would facilitate the proper Human Resources Management at a single access point and shall include efficient manpower planning, recruitments, Postings, Promotion, Transfer APAR submission and review etc.

Ministry (proper) – Land & Building

Renovation of Twelve Rooms and one Toilet has been undertaken in Lok Nayak Bhawan, Krishi Bhawan and Shram Shakti Bhawan. The works for the other rooms & toilets are in process.

15.0 Dam Rehabilitation and Improvement Project (DRIP)

Dam Rehabilitation and Improvement Project (DRIP) has been taken up with the World Bank assistance at an estimated cost of Rs. 2100 Crore for a period of six years from 18th April, 2012 to June, 2018. Government of India in September 2018, approved the revised cost of DRIP amounting to Rs. 3466 Crores (US$M 533) along with two years extension with revised scheduled closure June 2020. Out of the total revised cost, the World Bank share would be Rs. 2628 Crore, while Rs. 747 Crores and Rs. 91 Crore are to be funded by concerned Implementing

Agencies (IAs) and Central Government respectively.

There are three objectives of DRIP i.e. (a) Component-I: Rehabilitation of Dams and its Appurtenant Structures, (b) Component-II: Institutional Strengthening and (c) Component-III: Project Management. About 223 Dams in seven States (namely Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Tamil Nadu and Uttarakhand) and Institutional Strengthening of Central Water Commission (CWC), selected academic institutes and other Implementing Agencies are covered under DRIP.

DRIP is being implemented and coordinated by CWC. The overall progress of DRIP is being monitored by National Level Steering Committee (NLSC) headed by Secretary (WR, RD & GR) as its Chairman. Eight meetings of the NLSC for DRIP have been conducted as on date to review the progress.

Dam Rehabilitation and Improvement Project II (DRIP-II)

In order to cover all States of India under the umbrella of DRIP, Government of India has initiated next scheme of DRIP (DRIP-II). It is scheduled to be operational from 2020. DRIP-II is divided in Phase-II and Phase-III. The Phase-II will be operational from 2020 to 2026 and Phase-III will be operational from 2024 to 2030. Under DRIP-II, 18 States and 2 Central Agencies have submitted proposals. At present DRIP-II is in stage of approval.

Achievements /Activities:

- In the year FY 2018-19 Dam Break Analysis were conducted on 28 Dams for preparation of Inundation maps. The draft 55 Emergency Action Plans (EAPs) prepared by State IAs have been reviewed and commented upon by Central Project Management Unit (CPMU).
- Total of 45 Notice Inviting Tender (NITs) worth Rs. 65.18 Cr were issued in the year FY 2018-19 and works of 29 packages worth Rs. 411 Cr were awarded till date. During this period, an expenditure of Rs. 293 Cr. was incurred.
- Second International Dam Safety Conference is scheduled to be organized in Bhubaneswar, Odisha in which 700 delegates are expected to participate. Various Indian and Foreign organizations are proposed to showcase their products, technology and services in the exhibition.
- One International Training was conducted by DELTARES, Netherlands in which 22 officials from participating States were trained. In addition, 20 National Trainings were conducted in different implementing agencies benefiting 610 officials.
- Six Guidelines on various aspects of dam safety have been prepared under the project and released during the IDSC 2018. During this FY 2018-19 in upcoming IDSC 2019, it is proposed to publish two more Guidelines along with Inspection Manual for Dam Field Engineers, After Seismic Event, for Maithon Dam of DVC, prepared by Japan Water Agency through World Bank assistance.

- DHARMA is a web based dam inventory management software. The Licenses has been shared with three Non DRIP States i.e. Rajasthan, Maharashtra and Gujarat and training also conducted.
- MoU has been signed by CWC with MANIT Bhopal amounting Rs 1.01 Crore during December 2018 and also a MoU is expected to be signed shortly with College of Engineering, Trivandrum amounting Rs. 0.8 Cr. The MoU is meant for capacity building of Academic Institutions under DRIP.
- MoU is also proposed to be signed with CSMRS and CWPRS for capacity building under DRIP, wherein procurement of laboratory equipments and some software are to be done by them along with training component.
- MoU has been signed with CWPRS Pune in January 2018 for carrying out the studies of Seismic Hazard Assessment of North and North East India and integration with SHAIS platform developed by IIT Roorkee.
- Two model Operation and Maintenance Manual for Almatti Dam, Karnataka WRD and Maithon dam, DVC has been prepared as a reference document for guiding DRIP Implementing Agencies for preparing O&M Manual for other DRIP dams.
- Model EAP of Hirakud Dam has been prepared and shared with all IAs for replicating these protocols for other DRIP dams.

Ministry of Water Resources,
River Development & Ganga Rejuvenation

INTER-STATE RIVER ISSUES



4. Inter-State River Issues

1.0 Inter-State River Water Disputes Act, 1956

The Parliament enacted Inter-State River Water Disputes (ISRWD) Act, 1956 under Article 262 of the Constitution, for adjudication of disputes relating to waters of inter-State rivers and river valley thereof. The Act was last amended in August, 2002 on the basis of the recommendations of 'Sarkaria Commission' on Centre - State relations.

In order to further streamline the adjudication of inter-State river water disputes, the Inter-State River Water Disputes (Amendment) Bill, 2017 was introduced in Lok Sabha by Minister for WR, RD & GR on 14.03.2017 during the Budget Session, 2017. The Bill envisages to establish a standalone Tribunal with permanent establishment, permanent office space and infrastructure so as to obviate with the need to set up a separate tribunal for each water dispute which is invariably a time-consuming process. The Bill was further referred by the Speaker, Lok Sabha to Parliamentary Standing Committee on Water Resources for examination on 25.05.2017. The Standing Committee held three meetings on 16.06.2017, 30.06.2017 and 10.07.2017 and submitted its recommendations on the Bill in the form of 'Nineteenth Report of Standing Committee on Water Resources on 'The Inter-State River Water Disputes (Amendment) Bill, 2017' dated 11.08.2017. On the basis of these recommendations, Cabinet Note on Official Amendments to be made in the Bill has been prepared by the Ministry and referred to Department of Legal Affairs and Legislative Department for examination and vetting.

2.0 Inter-State Water Disputes Tribunal

2.1. MAHANADI WATER DISPUTES TRIBUNAL

The Government of Odisha had filed a complaint dated 19.11.2016 with the MoWR, RD & GR under Section 3 of the Inter-State River Water Disputes (ISRWD) Act ,1956 read with Inter-State River Water Dispute Rules, 1959. Odisha requested Union Government for Constitution of a Tribunal under Section 4 (1) of the ISRWD Act, 1956 for adjudication of the water disputes in respect of the Inter-state River Mahanadi and its basin between the riparian States of Odisha and Chhattisgarh and refer the complaint to the Tribunal under Section 5 (1) of the ISRWD Act, 1956.

In this connection, the Central Government has constituted Mahanadi Water Disputes Tribunal vide Notification No. 1114 (E) dated 12.03.2018 with the following composition:-

1. Mr. Justice A.M. Khanwilkar, Judge of the Supreme Court of India : Chairman

2. Dr. Justice Ravi Ranjan, Judge of the Patna High Court : Member

3. Mrs. Justice Indermeet Kaur Kochhar, Judge of the Delhi High Court : Member

The Tribunal is taking up further action for adjudication of the dispute.

2.2. CAUVERY WATER DISPUTES TRIBUNAL (CWDT)

The Cauvery Water Disputes Tribunal (CWDT) 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 Tribunal gave its report and decision under section 5(2) of the ISRWD Act, 1956 on 5.2.2007 which was published vide Notification dated 19.2.2013. The party States filed Civil Appeals against the order of CWDT dated 5.2.2007 before the Supreme Court. In this regard, the Supreme Court has pronounced its verdict on 16.02.2018. Subsequently, The Tribunal has been dissolved vide Gazette Notification No. S.O. 3465(E) dated 16.07.2018.

Table No. 4.1. Expenditure incurred by the Tribunal upto 31.12.18

Sl. No.	Specifications	Rs. in lakh
1	Budget Allocation for 2018-19	290.00
2	Expenditure from 4/18 to 12/18	126.81
3	Cumulative Expenditure upto 31/12/18	3126.30

2.3. KRISHNA WATER DISPUTES TRIBUNAL (KWDT)

The Krishna Water Disputes Tribunal was constituted on 2nd April, 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 of 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 the hearings on same are continuing. The proceedings in the references are going on and after exchange of routine replies and rejoinders, the Party States have adduced their evidences and the statement of witnesses is being recorded. The arguments will start after the statement of all the witnesses of both parties has been recorded. The hearings are taking place every month in the Tribunal. The term of the Tribunal has been extended for a further period of one year w.e.f. 01.08.2018.

Table No. 4.2. Expenditure incurred by the Tribunal

Sl. No.	Specifications	Rs. In lakhs
1.	Budget Allocation for 2018-19	358
2.	Expenditure from 4/18 to 12/18	303
3.	Cumulative Expenditure up to 31/12/2018	2469

2.4. VANSADHARA WATER DISPUTE TRIBUNAL (VWDT)

The Supreme Court had directed Central Government to constitute the Vasandhara 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 9th December, 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.

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 same is pending for hearing.

The Tribunal has submitted its Report (03 Volumes) with the decision on the issues referred to it within the stipulated time on 13.09.2017. The State of Odisha and also the Central Government have filed explanatory/ guidance applications on 11th December, 2017 and 12th December, 2017 respectively under Section 5(3) of the ISRWD Act, 1956. As per the proviso to Section 5(3) of the ISRWD Act, 1956, the Tribunal may forward to the Central Government a further report within one year from date of such reference i.e. from 11.12.2017.

Further, Mr. Justice Ghulam Mohammad, Member VWDT passed away on 23.11.2017 in Hyderabad. The Chief Justice of India was requested by the Minister (WR, RD & GR) to nominate a sitting judge of High Court/Supreme Court as a Member, VWDT. As per Gazette Notification no. S.O. 3923(E) dated 7th August, 2018, the Central Government appoints Ms. Justice Pratibha Rani, Judge of Delhi High Court as Member of the Vansadhara Water Disputes Tribunal. Ms. Justice Pratibha Rani has assumed the charge of Member of this Tribunal on 27.08.2018.

Thereafter two sittings were held by the Tribunal on 18.09.18 and 05.12.18. In view of the appointment of new Member, the Tribunal felt to visit the site. Accordingly Tribunal visited the site with effect from 23 Dec to 28 Dec, 2018. The next hearing of the Tribunal is to be held on 22.01.19.

Table No. 4.3. Expenditure incurred by the Tribunal

Sl. No.	Specifications	Rs. in Lakh
1	Budget Allocation for 2018-19	532.00
2	Expenditure upto 31 December,2018	431.54
3	Cumulative Expenditure upto 31/12/18	2673.27

2.5. MAHADAYI /MANDOVI WATER DISPUTES TRIBUNAL

The Government of India on 16.11.2010 under Section 3 of the Inter-State River Water Disputes Act 1956 (as amended) constituted a Tribunal known as Mahadayi Water Disputes Tribunal (MWDT) for adjudication of the water disputes relating to the inter-state river Mahadayi and the river valley thereof among the States of Goa, Karnataka and Maharashtra. The constitution of the Tribunal consists of a Chairman and two Members. The Chairman of the Tribunal is a former Judge of the Supreme Court of India and the other two Members are former Judges of the High Courts. Hon'ble Mr. Justice J.M. Panchal, Chairman of the Tribunal took over the charge of the post of Chairman on 1.11.2011 after His Lordship's superannuation as Judge from the Supreme Court of India and Hon'ble Mr. Justice Viney Mittal and Hon'ble Mr. Justice P.S. Narayana former Judges of the Punjab & Haryana High Court and Andhra Pradesh High Court had taken charge as Members on 16.11.2010 and 1.12.2010 respectively.

The Hon'ble Tribunal after completion of the procedure for examination of all the evidence, the award was reserved on 21.2.2018. Thereafter, in the course of time the Tribunal prepared

its award containing 12 Volumes running into about 2900 pages and forwarded the same to the Hon'ble Union Minister for the MoWR, RD & GR on 14.8.2018. Thus the Tribunal has accomplished with the very task for which it has been constituted. However, on 20.8.2018 the State of Goa has filed an application under Section 5(3) of Inter-State Water Disputes Act with additional affidavit. The State of Goa thereafter on 20.9.2018 has also filed a detailed application under Section 5(3) of the Act ibid seeking clarifications on certain points in the Award dated 14.8.2018. The States of Maharashtra and Karnataka have also filed their respective applications under Section 5(3) of the Act ibid on 5.11.2018 and 13.11.2018 respectively. All the aforesaid applications filed by the three party States are pending adjudication before the Hon'ble Tribunal.

Table No. 4.4. The financial expenditure of the Tribunal for the year 2018-19

Sl. No.	Specifications	Rs. in Lakh
1	Budget allocation for 2018-19	490
2	Expenditure incurred by the Tribunal from 1.4.2018 to 31.12.2018	310
3	Anticipated expenditure of the Tribunal from 1.1.2019 to 31.3.2019	109

2.6. RAVI & BEAS WATERS TRIBUNAL

The Ravi and Beas Waters Tribunal was set up in the year 1986 as per subsection (1) and sub-section (2) of section 14 of the Inter State River Water Disputes Act, 1956 (33 of 1956) to resolve the water dispute among the three states Punjab, Rajasthan and Haryana. The Tribunal had already submitted its report on 30.1.1987.

Thereafter, various references were issued to concerned state Governments. The Punjab Government was not satisfied with the award and in the year 2004, the Punjab legislative Assembly passed the Punjab Termination of Agreement Act 2004, consequently, the president of India has issued a reference to Hon'ble Supreme Court of India regarding the constitutionality / validity of the Act. It is also stated that the presidential reference No.1 of 2004 UlA 143(1) of the constitution-of India has since been disposed off by the Hon'ble supreme court of India vide judgment dated 10.11.2016. In its Order the Supreme Court has answered negative in regard to the Punjab Termination of Agreement Act 2004. Thus, court has transmitted its opinion to-the president of India in accordance with the procedure prescribed in Part V of the Supreme Court Rules, 2013.

Consequent upon the above development the President of lndia for passing further order on the reference pending before the Tribunal has been extended upto 5th August 2019.

Table No. 4.5. Expenditure incurred by the Tribunal

Sl. No.	Specifications	Rs. in Lakh
1	Budget Allocation for 2018-19 (BE)	213.00
2	Budget Allocation for 2018-19 (RE)	151.00
3	Expenditure incurred during 2018-19 (upto 31.12.2018)	123.00

Ministry of Water Resources,
River Development & Ganga Rejuvenation

INTERNATIONAL COOPERATION



5. International Cooperation

1.0 Bilataral Cooperation

The Ministry has signed Memorandum of Understanding (MoU) with different countries on cooperation in the field of water resources management and development. Brief of the MoUs signed during 2018 and their implementation progress is given below:

1.1. MEMORANDUM OF UNDER-STANDING WITH NORWEGIAN GEOTECHNICAL INSTITUTE, OSLO, NORWAY:

A Memorandum of Understanding (MoUs) between Central Soil and Materials Research Station, New Delhi and Norwegian Geotechnical Institute, Oslo, Norway has been signed on 06.06.2018 for a period of 5 years on cooperation in the field of Geo Technical Engineering and Material Sciences.

1.2. MoU BETWEEN INDIA AND THE UNITED KINGDOM ON RIVER GANGA REJUVENATION:

On rejuvenation of River Ganga, a Memorandum of Understanding (MoU) has been signed between National Mission for Clean Ganga (NMCG) and Natural Environmental Research Council (NERC), UK on 18th April, 2018 during the visit of Prime Minister to London, United Kingdom. The MoU will enable United Kingdom to support Government of India in sustainable management of water resources in the Ganga Basin.

1.3. MoU BETWEEN INDIA AND SCOTLAND ON RIVER GANGA REJUVENATION:

MoU has been signed between National Mission for Clean Ganga (NMCG) and Scottish Government: Water Industry Division has been signed on 17th April, 2018 to facilitate arrangements and understandings that lead to cooperation and coordination of all activities relating to pollution abatement & rejuvenation of river Ganga.

2.0 Foreign Visits/ Deputation

The Ministry has been regularly deputing Technical officers of Centre and State Governments for acquiring training in the various domains relating to water sector and during 2018, approx. 196 Officers from Central Govt. and State Govt. have been sent to different countries for acquiring expertise in the fields like Integrated water resources management, micro-irrigation, water use efficiency, irrigation management, enhancing crop production, flood disaster risk management, Dam safety and rehabilitation, waste water treatment, sewage treatment, Morphological modeling, Ecosystem conservation etc.

3.0 Indo-Bangladesh Joint Rivers Commission

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

3.1. TREATY ON SHARING OF GANGA/ GANGES WATERS AT FARAKKA

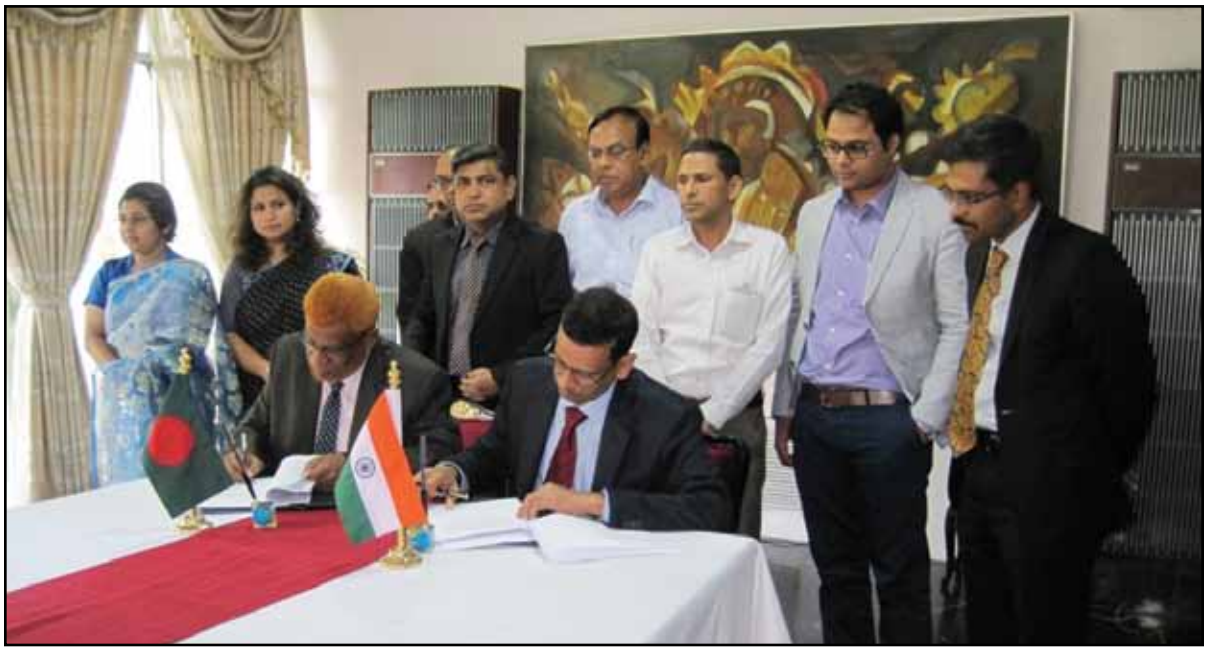
A Treaty was signed by the Prime Ministers of India and Bangladesh on 12th December, 1996 for the sharing of Ganga/ Ganges waters at Farakka during the lean season. As per the Treaty, the Ganga/ Ganges waters is being shared at Farakka (which is the last control structure on river Ganga in India) during lean period, from 1st January to 31st May every year, on 10-daily basis as per the formula provided in the Treaty. The validity of Treaty is 30 years. The sharing of water as per the Treaty is being monitored by a Joint Committee headed by Members, JRC from both sides. The 69th & 70th meeting of Joint Committee were held at Kolkata (in May, 2018) and Dhaka (in September, 2018) respectively. The "Ganga Water Treaty of 1996" with Bangladesh is being implemented to the satisfaction of both the countries since 1997.

4.0. India-Nepal Cooperation

4.1. Pancheshwar Multipurpose Project

The Pancheshwar Multipurpose Project (PMP), a bi-national project of Government of India (GoI) and Government of Nepal (GoN), has been envisaged on Mahakali River (known as Sarada in India).

In February 1996, His Majesty's Government of Nepal and Government of India had signed a Treaty (known as "Mahakali Treaty") for integrated development of the Mahakali River. Under



Signing of Record of Discussion of 70th Joint Committee meeting held in September, 2018 at Dhaka, Bangladesh

Article 3 of the Treaty, both sides agreed to build the Pancheshwar Project. The Pancheshwar Development Authority (PDA) was also set up with approval of both the Governments in September, 2014 for development, execution and operation of the Pancheshwar Project.The Project would help in not only providing hydro energy to stabilize the power grid in the region which is of value, but also, more importantly could address water deficit by long distance water transfer in due course.

The draft final DPR of Pancheshwar Multipurpose Project is ready. On the direction of the Governing Body of PDA, a joint Team of Officials/ Experts (ToE) has been constituted by both the countries which is discussing to resolve the comments on the DPR towards its finalization.

4.2. Sapta Kosi High Dam Multipurpose Project and Sun Kosi Storage cum Diversion Scheme (including Kamala Diversion)

The India-Nepal Joint Project Office has started functioning in Biratnagar, Nepal since August 2004 with the mandate of jointly carrying out field investigations and preparation of DPR for Sapta Kosi High Dam Multipurpose Project and Sun Kosi Storage cum Diversion Scheme (SSDS). Investigation of Kamla Multipurpose Project, which is now a component of SSDS, and preliminary study of the Bagmati Multipurpose Project were added to its mandate in October, 2004.

4.3. Various India-Nepals Bilateral Meetings on Water Resources

a. **Joint Ministerial Commission on Water Resources (JMCWR)** headed by Ministers of Water Resources of India and Nepal, would address bilateral cooperation on water resources.

b. **Joint Committee on Water Resources (JCWR)** headed by Secretary (WR) of the two countries, to review the work of various technical/expert groups set up for planning and implementation of water resources project as well as the work of the Joint Standing Technical Committee. It would also



Signing of minutes of 8th meeting of JCWR

ensure expeditious implementation of the decisions taken at the Ministerial Commission on Water Resources and appraise the respective governments on such matters.

The 8th meeting of India-Nepal Joint Committee on Water Resources (JCWR) was held on 11th January, 2019 at New Delhi. The Indian side of JCWR was headed by Secretary (WR, RD & GR) and the Nepalese side was headed by Secretary, Ministry of Energy, Water Resources and Irrigation.

c. **Joint Standing Technical Committee (JSTC)** headed by Chairman, GFCC, and coordinates all existing committees and subcommittees under the JCWR. The 6th India-Nepal Joint Standing Technical Committee (JSTC) was held on 9th–10th January, 2019 at New Delhi. The Indian side of JSTC was headed by Chairman, GFCC whereas the Nepalese side was headed by Joint Secretary, Ministry of Energy, Water Resources and Irrigation.

d. **Joint Committee on Inundation of Flood Management (JCIFM)** headed by Member (C), GFCC is an Umbrella Committee to implement the decisions of JSTC in inundation and flood management issues. The JCIFM addresses the issues related to flood management and inundation and can form task group(s), if required and monitor the progress of works and provide guidance to task group(s) and report to JSTC. The 12th meeting was held during 16th - 20th April, 2018 at Kathmandu, Nepal. Two meetings of Sub-Group of JCIFM have also carried out inspection of inundation area along India –Nepal borders on 26th – 30th June, 2018 and 19th – 23rd November, 2018.



Signing of minutes of 6th Meeting of JSTC

e. **Joint Committee on Kosi Gandak Projects (JCKGP)** headed by Principal Secretary, Water Resources Department, Government of Bihar held its ninth meeting on 28th - 29th November, 2018 at Kathmandu, Nepal.

5.0. India –China Cooperation

During the visit of Hon'ble President of the People's Republic of China in November, 2006, it was mutually agreed upon to set up an Expert Level Mechanism (ELM) to discuss interaction and co-operation upon provision of hydrological data in flood season, emergency management and other issues regarding trans-border Rivers as agreed between them. The ELM meeting is held yearly alternatively in both the countries. The Last (11th) meeting of ELM was held during 26-27th March, 2018 at Hangzhou, China in which it was decided that Chinese side will provide hydrological information on the Yaluzangbu/Brahmaputra River in the flood season of 2018, irrespective of the date of signing of MoU and Implementation Plan. Next Meeting (12th) of ELM is proposed to be held in March 2019 at Ahmadabad, Gujarat (India).

MoU on Hydrological information of Yaluzangbu/Brahmaputra River by China to India in Flood season was renewed and signed on 9th June 2018 during visit of Hon'ble Prime Minister of India to China. The timely information received from China as per the provisions of MoU helped to alert the concerned agencies in advance in Assam and Arunachal Pradesh in October 2018 about the impending flood and sudden rise in water level in Brahmaputra/Siang due to heavy landslide in Tibet (China).

6.0. India-Bhutan Cooperation

A scheme titled "Comprehensive Scheme for Establishment of Hydro-meteorological and Flood Forecasting Network on rivers Common to India and Bhutan" consists of hydro-meteorological/ meteorological stations network located in Bhutan and Operation & Maintenance (O&M) carried out by the Royal Government of Bhutan (RGoB) with funding from Government of India (GoI). The data received from these stations are utilised by the Central Water Commission (CWC) for formulating flood forecasts.

A Joint Group of Expert (JGE) on Flood Management has been constituted between India and Bhutan to discuss and assess the probable causes and effects of the recurring floods and erosion in the southern foothills of Bhutan and adjoining plains in India and recommend to both Governments appropriate and mutually acceptable remedial measures. Total Eight meetings of JGE have been held so far. The latest (8th) meeting of JGE was held at Guwahati during 1-2 November 2018.

A Joint Expert Team (JET) consisting of officials from the Government of India (GoI) and the Royal Government of Bhutan (RGoB) meets twice in a year to review the progress and other requirements of the scheme. The latest (34th) meeting of JET was held at Aizawl, Mizoram during 17-18, May, 2018 and 35th Meeting of JET is scheduled to be held at Thimphu on 6th -7th March 2019.

A Joint Technical Team (JTT) was formed to carry out more detailed technical examination of flood related issues in southern foothills of Bhutan and adjoining plains in India. The last (5th) meeting of reconstituted JTT was held during 26th-27th April 2018 at Phuentsholing, Bhutan.

7.0. Indus Waters Treaty, 1960

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

During the year 2018-19, the Commission held one (115th) meeting of Permanent Indus Commission (PIC) at Lahore, Pakistan in August, 2018. Commission also proposed to hold 119th Tour of PIC meeting in January, 2019 in India and 120th Tour of PIC in Pakistan in March, 2019.

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

Irrigated Cropped Area statistics for the crop year 2017-18 for the Indus, the Jhelum & the Chenab basin had been compiled and sent to Pakistan as per the provisions of Indus Waters Treaty during November, 2018.

Flood flow data for agreed sites on the rivers Ravi, Sutlej, Tawi and Chenab was also communicated by India to Pakistan as a gesture of goodwill and friendship for their benefit through telephone during 01st July to 10th October, 2018 to undertake advance flood relief measures.

Clearance of projects from Indus Waters Treaty Angle issued/ to be issued for:

1. Sawalkot HEP (1856 MW) on Chenab River (J&K)
2. Baltikulan SHP (5 MW) on Baltikulan Nallah on sub-tributary of Jhelum River (J&K)
3. Tamasha SHP (12 MW) on Tamasha Nallah on sub-tributary of Indus River (J&K)
4. Kalaroos-II SHP (10.50 MW) on Kalaroos Nallah on sub-tributary of Jhelum River (J&K)
5. Kwar HEP (540 MW) on Chenab River (J&K) to be cleared soon.
6. Luhri HEP Stage-II (172 MW) on Sutlej River (HP)

Ujh Multipurpose Project

To fast track utilization of India's rights under Indus Waters Treaty, the detailed Project Report of Ujh Project has been cleared and now in next stage of implementation. This project will store around 0.65 MAF of waters of river Ujh (a tributary of river Ravi) to irrigate 30,000 ha and produce 196 MW of hydropower. The project is a National project and eligible Central Assistance will be provided by this Ministry.

Ministry of Water Resources,
River Development & Ganga Rejuvenation

EXTERNAL ASSISTANCE IN WATER RESOURCES SECTOR



6. External Assistance in Water Resources Sector

1.0 Back Ground

The MoWR, RD & GR assists the State Governments/ Union Territories in availing external assistance from different multilateral funding agencies to fill up the resource gap and state of the art technology for water resources development and management in the country. There are 15 ongoing externally aided projects being implemented in various States of the country with the assistance from different funding agencies, viz. the World Bank (6), Asian Development Bank (5), Japan International Cooperation Agency (JICA) (3) and New Development Bank (NDB) (BRICS) (1).

Brief of these 15 ongoing externally aided projects is given in the table below:

Status of ongoing Externally Aided Project in water sector As on Jan'2019

Sl. No.	Funding Agency	Name of State	Name of Project	Agreement/ effective/ Closing date	Project cost USD in million	Loan amount USD/ XDR/YEN in million	State Govt/ USD in million	Cumulative Disburseme USD/ XDR/ YEN in million
1	WB	Andhra Pradesh & Telangana	7897-IN (IBRD): Water Sector Improvement Project	14.8.2010/ 28.7.2018	988.97	USD 450.60	529.06	USD 375.07
2	WB	Andhra Pradesh	Andhra Pradesh Integrated Irrigation and Agriculture Transformation Project	05.11.2018/ 4.11.2024	1600 cr	USD 172.20	480 cr	Nill
3	WB	CWC, Madhya Pradesh, Odisha, Kerala & Tamil Nadu	7943-IN (IBRD): Dam Rehabilitation and Improvement Project	18.4.2012/ 30.6.2020	437.50	USD 139.65	72.73	USD 55.51
			4787-IN (IDA): Dam Rehabilitation and Improvement Project			XDR 93.02		XDR 93.01

Sl. No.	Funding Agency	Name of State	Name of Project	Agreement/ effective/ Closing date	Project cost USD in million	Loan amount USD/ XDR/YEN in million	State Govt/ USD in million	Cumulative Disburseme USD/ XDR/ YEN in million
4	WB	Tamil Nadu	Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMWARM-II)	23.01.2018/ 22.01.2024	454	USD 318	136	Nill
5	WB	West Bengal	8090-IN (IBRD): West Bengal Accelerated Development of Minor Irrigation Project	19.3.2012/ 20.12.2019	205	USD 30	50	USD 1.22
			5014-IN (IDA): West Bengal Accelerated Development of Minor Irrigation Project			XDR 78.20		XDR 72.69
6	WB	Uttar Pradesh	5298 IN (IDA): Uttar Pradesh Water Sector Restructuring Project, Phase-II	24.10.2013/ 31.10.2020	515	XDR 239.40	155	XDR 96.39
7	ADB	Karnataka	Sustainable Coastal Protection and Management Investment Program-2	15.12.2017/ 28.9.2020	150	USD 65.50	84.50	Nil
8	ADB	Madhya Pradesh	Madhya Pradesh Irrigation Efficiency Improvement Project	29.8.2018/ 28.8.2026	530	USD 375	155	Nil
9	ADB	Karnataka	3172-IND: Karnataka Integrated & Sustainable Water Resources Management Investment Program-1	7.5.2015/ 31.3.2019	48	USD 31	17	USD 15.54

Sl. No.	Funding Agency	Name of State	Name of Project	Agreement/ effective/ Closing date	Project cost USD in million	Loan amount USD/ XDR/YEN in million	State Govt/ USD in million	Cumulative Disburseme USD/ XDR/ YEN in million
10	ADB	Odisha	3265-IND: Orissa Integrated Irrigated Agriculture and Water Management Investment Program Tranche-2	7.6.2016/ 17.9.2018	109.56	USD 71	38.56	USD 58.76
11	ADB	Tamil Nadu	3394-IND: Climate Adaptation in Vennar Sub-basin in Cauvery Delta Project	14.7.2016/ 30.6.2021	144	USD 100	44	USD 32.62
12	JICA	Andhra Pradesh	Andhra Pradesh Irrigation & Livelihood Improvement Project Phase-2	6.7.2018/ 13.12.2023	2000 cr	1700 cr	300 cr	Nill
13	JICA	Odisha	IDP-244: Rengali Irrigation Project Phase -2	30.3.2015/ 30.3.2023	2255 cr	YEN 32378	473 cr	YEN 2104.05
			IDP-244A: Rengali IrrigationProject Phase -2			YEN 1581		YEN 309.85
14	JICA	Rajasthan	IDP-259: Rajasthan Water Sector Livelihood Improvement Project Tranche-I	26.10.2017/ 26.10.2024	1069.40 cr	YEN 13145	160.46 cr	YEN 275.10
			IDP-259A:Rajasthan Water Sector Livelihood Improvement Project Tranche-I			YEN 580		YEN 53.87
15	NDB	Rajasthan	Rajasthan Water Sector Restructuring Project in Desert Area Tranche-I	13.2.2018/ 12.8.2023	958 cr	-	-	USD 21.38

2.0 Andhra Pradesh and Telangana Water Sector Improvement Project

Objective of the project:

The project aims to rehabilitate a dilapidated irrigation scheme i.e. Nagajuna Sagar Scheme, which covers about 8,00,000 hectares of command area (CCA). In addition, the project includes support for agriculture activities to make better use of water supplies.

Cost of the project:

US$ 988.97 million

Achievement by Andhra Pradesh:

- Increased irrigation area by bridging gap ayacut of 90,000 acres after modernization works.
- Increase in crop yields of five major crops (Paddy, Cotton, Maize, Groundnut, pulses).
- Productivity is increased in paddy from 35 bags (75 kgs/bag) per acre to 45 bags p.acre;
- The farmers have been motivated to use groundwater by digging new wells and promote conjunctive use of surface and groundwater.
- 184 farmers have sought technical advice from GWD, 124 wells constructed.

Achievement by Telangana:

- Total area irrigated under the project is increased, reducing about 80% of the gap ayacut.
- Adoption of improved agricultural and water management practices resulted in increased yield of the five major crops (paddy, maize, chillies, cotton and groundnut) by more than 25%.
- About 5% of the cropped area under the project has been diversified into high value crops such as vegetables, chillies, cotton and maize from paddy.
- Area under fodder cultivation has been increased from 3 % to 6 %.
- Calf mortality has been reduced from 20% to 10%.
- Successful implementation of "Users Centred Aquifer Level Groundwater Management Pilot".

3.0 Andhra Pradesh Integrated Irrigation and Agriculture Transformation Project

Objective of the project:

The objective is to enhance agricultural productivity and improve efficiency of 1200 minor irrigation tanks through catchment / watershed treatment approach with a total ayacut of about 1.2 lakh hectare benefitting about 2 lakh small and marginal farmers.

Cost of the project:

Rs. 1600 crore

Progress of work:

- The project recently implemented in Nov, 2018;
- Project Implementation Plan, Baseline Report, ESMF and Project Manuals are prepared;
- Selection of support organizations, training facilitating agencies are under process;

- Civil works for 364 tanks with a cost of Rs. 414.57 crore area awarded;
- Grounding of works is under progress.

4.0 Dam Rehabilitation and Improvement Project

Objective of the project:

The objective is to improve the safety and operational performance of selected existing dams in the territory of the participating States. The participating States/agencies are Jharkhand, Kerala, Madhya Pradesh, Odisha, Tamil Nadu, Karnataka, Uttarakhand, CWC (nodal) & Damodar Valley Corporation. The number of dams under this project is 223.

Cost of the project:

US$ 437.50 million

Status of progress:

1. In the FY 2018-19, Dam Break Analysis were conducted on 28 Dams for preparation of Inundation maps. The draft 55 Emergency Action Plans (EAPs) prepared by State IAs have been reviewed and commented upon by CPMU out of 63 submitted.
2. Total of 45 NITs worth Rs. 65.18 Cr were issued in the FY 2018-19 and works of 29 packages worth Rs. 411 Cr are awarded till date. During this period with in a period an expenditure of Rs. 293 Cr. was incurred.
3. One International Dam Safety Conference is scheduled to be organized in Bhubaneswar, Odisha in which 700 delegates are expected to participate. Various Indian and Foreign organizations are proposed to showcase their products, technology and services in the exhibition.
4. One International Training was conducted in which 22 officials from all participating State were trained. In addition 20 National Trainings were conducted in different implementing agencies benefitting 610 officials.
5. Six Guidelines on various aspects of dam safety have been prepared under the project and released during the IDSC 2018. During this FY 2018-19 in upcoming IDSC 2019, it is proposed to publish two more Guidelines along with Inspection Manual for Dam Field Engineers, after Seismic Event, for Maithon Dam of DVC, prepared by Japan Water Agency through World Bank assistance.
6. DHARMA, a web based dam inventory management software has been completed. Efforts are being made to capture the dam health related data on this platform. Licences shared with three Non DRIP States i.e. Rajasthan, Maharashtra and Gujarat and trainings also conducted.
7. So far twenty two meetings of Technical Committee for DRIP have been held for guiding and expediting the pace of project implementation. World Bank has also completed twelve of its Review Missions, wherein road blocks as well as way forward in project implementation have been discussed. Eight meetings of National Level Steering Committee for DRIP have also been conducted.

8. Union Cabinet has approved the proposal for the revised cost estimate of DRIP. The revised cost of the project is Rs 3466 Cr. Out of this RCE, Rs. 3053 Crore is for Eight State Implementing Agencies in six States, Rs. 270 Crore and Rs. 143 Crore for two Central Agencies i.e. for CWC and DVC respectively.

9. An MoU has been signed by CWC MANIT Bhopal amounting Rs 1.01 Crore during December 2018 and also a MoU is expected to be signed shortly with College of Engineering Trivandrum amounting Rs 0.8 Cr. The MoU is meant for capacity building of Academic Institutions under DRIP.

10. A MoU has been signed with CWPRS Pune in January 2018 for carrying out the studies of Seismic Hazard Assessment of North and North East India and integration with SHAIS platform developed by IIT Roorkee. The work of both these studies is under progress. Seismic Hazard Mapping of IIT Roorkee is almost completed, while studies by CWPRS, Pune is under progress.

11. Two models Operation and Maintenance Manual for Almatti Dam, Karnataka WRD and Maithon dam, DVC has been prepared as a reference document for guiding DRIP Implementing Agencies for preparing O&M Manual for other DRIP dams.

12. Model EAP of Hirakud Dam has been prepared and shared with all IAs for replicating these protocols for other DRIP dams.

13. 733 Dams have been proposed by 18 States under DRIP-Phase-II and III involving total cost of Rs 11487 Cr ($US 1.641 Billion) with two Central Agencies, BBMB and CWC. The proposal has received concurrence from NITI Ayog. DEA, Ministry of Finance has also agreed in-principle to pose the proposal to World Bank with a condition that loan component for each phase may be limited to USD 500 M.

5.0 Tamilnadu Irrigated Agriculture Modernisation Project Phase - 2

Objective of the project:

To increase irrigated agriculture productivity in a sustainable water resources management framework for selected Cauvery sub-basin stakeholders.

Cost of the project:

US$ 454 million

Progress of works:

The project is recently implemented in 2018.

6.0 West Bengal Accelarated Development of Minor Irrigation Project

Objective of the project:

To enhance agricultural production of small and marginal farmers in the project area by developing minor irrigation schemes, strengthening community-based irrigation management, support agriculture development, crop diversification and use of new technologies, and creating income-generating opportunities.

Cost of the project:

US$ 205 million

Implementation progress:-

Project Activities	Commitment 2012-19	Cumulative Achievement
Schemes/ structures selected (nos.)	2879	1325
Water Users Association formed (nos.)	2500	1325
Ongoing minor irrigation (MI) schemes (nos.)	NA	426
Completed minor irrigation schemes (nos.)	2879	736
Command Area Development (CAD) (in Ha)	75000	21000
Agriculture demonstrations (nos.)	20000	7760
Horticulture demonstrations (nos.)	15000	8609
Fishery demonstrations (nos.)	500	208
Beneficiaries covered (nos.)	100000	58000

Status of civil works:-

Project Component	Target Rs. in crore		Progress achieved Rs. in crore	
Strengthening community based institutions	26.33	2.5%	16.30	61.9%
Irrigation system development & improvement	828.64	79.3%	438	52.8%
Agriculture Development	45.88	4.4%	9.83	21.4%
Horticulture Development	7.5	0.7%	7.32	9.7%
Fisheries Development	18.56	1.8%	5.44	29.3%
Project Management	118.09	11.3%	86.94	73.6%

7.0 Uttar Pradesh Water Sector Restructuring Project Phase-2

Objective of the project:

The project will rehabilitate and modernize critical irrigation and drainage infrastructure in identified areas, consolidate the institutional reforms established under earlier phase-1.

Cost of the project:

US$ 515 million

Status of progress:-

- Modernization and Rehabilitation of Lower Ganga Canal System:

  Agreements signed for lining work of parallel Lower Ganga Canal in 10 packages for Rs.1104 crore. Physical progress is 49.38%. Financial progress is Rs. 545.46 cr.

- Rehabilitation of Haidergarh Branch System (Sarda Sahayak):

  An agreement for rehabilitation work worth Rs. 134.66 crore was signed in Sept, 2014. Date of start is 7.10.2014. Physical progress is 100%. Financial progress is Rs. 124.59 cr.

- Modernization/ Reh. of Rohini, Jamini & Sajnam Dam Canal System (Betwa):

  Fresh agreements have been signed for 5 packages for balance works worth Rs. 146.45 crore in Dec, 2016. Physical progress is 42.88%. Financial progress is Rs. 62.81 cr.

- Renovation and automation work of Narora Barrage is completed.

- Development of River Basin Assessments & Plans for all major

River Basins in Uttar Pradesh (Yamuna, Ganga, Ramganga, Gomti, Ghaghra, Sone Gandak) – Date of start is 10.3.2016. The work is in progress (to be completed likely by March 2019).

- Assessment of impact of climate change on water resources of the state – It is under progress, proposed cost is Rs. 143 lakh.
- Establishment of Flood Management Information System (FMIS) – Work is completed, FMIS centre has been established, requisit manpower deployed, website is launched.
- Real Time Data Acquisition System for Rapti Basin – Installation of 43 ARGs at selected sites, 13 AWLGs at river sites and 3 AWLGs at Dam & barrage site is completed. All the instruments are deployed & started sending data.
- Work of installation of 100 nos. ground water monitoring wells in 31 districts to monitor water level fluctuation in deep aquifer is completed.

8.0 Sustainable Coastal Protection and Management Investment Program – 2 (Karnataka)

Objective of the project:

The program aims to address immediate coastal protection needs and coastal instability using environmentally and socially appropriate solutions; with a focus on artificial reefs, onshore berms and beach nourishments.

Cost of the project:

US$ 150 million

Implementation progress:

The civil works includes coastal protection at Someshwara, Mangalore Taluk, Dakshina Kannada District for construction of Geotextile Revetment for shoreline protection and management at an estimated cost of Rs. 32.13 crore. But later on it was found out that Someshwara Beach was very narrow for the revetment solution. The project authority adopted compound coastal protection proposal. The modified proposal now includes construction of 10 short groynes in phase-I, and 2 offshore reefs and beach nourishment in phase-2. The revised design for 10-groynes is proposed to be implemented within the existing awarded contract. Due to change in design and scope of work, CWC requested Government of Karnataka to submit the revised DPR of Phase-I for techno-economical examination.

9.0 Madhya Pradesh Irrigation Efficiency Improvment Project (Kundalia Irrigation Project)

Objective of the project:

Kundaliya Irrigation Project will develop 1,25,000 hectares of new, highly efficient micro irrigation network in Rajgarh District in Madhya Pradesh. The Kundaliya Irrigation Project (KIP) will include the design and construction of a highly efficient and productive new pressurized irrigation system with automated volumetric control for efficient, reliable and flexible water delivery services.

Cost of the project:

US$ 530 million

Progress of work:

- CW1 Design Supply, Installation and Operation of Kundalia Irrigation Project Left Bank – Contract awarded to L&T on 18.4.2018 for Rs.1200 crore. Detailed design completed and approved by the executing agency on 6.1.2019. Pipeline manufacturing on site is initiated.
- CW2 Design Supply, Installation and Operation of Kundalia Irrigation Project Right Bank – Contract awarded to L&T on 6.9.2018 for Rs.1394 crore. Detailed design is under finalization and to be submitted to the EA for review and approval by 21.1.2019.

10.0 Karnataka Irrigated Sustainable Water Resources Management Investment Program - 1

Objective of the project:

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

Cost of the project:

US$ 48 million

Status of civil works:

- Lining of 76.95 km of Gondi Main Canal and distributaries is completed.
- Installation of 49 Flow Measurement and Telemetry stations is completed.
- Preparation of Command Area Development (CAD) packages of 3 water users' cooperative societies comprising 28 works is completed. Contract was signed on Feb, 2017. All the packages awarded are under progress in respect of CAD packages.
- Left Bank Canal (LBC) of Gondi Modernization works, in lining works achievement is 96.17%, and in structural works achievement is 100%;
- Right Bank Canal (RBC) of Gondi Modernization works, in lining works achievement is 42.69%, and in structural works achievement is 49.11%;
- Distributaties of Gondi Modernization works, in lining works achievement is 91.25%, and in structural works achievement is 64.62%;

11.0 Odisha Integrated Irrigated Agriculture and Water Management Investment Program Phase -2

Objective of the project:

The aims of the project is to enhance the productivity and sustainability of minor, medium and major irrigation schemes in the northern river basins and a part of the Mahanadi delta.

Cost of the project:

US$ 109.56 million

The progress of civil works:

Sl. No.	Name of the Project	Packages Awarded		Latest Cost (Rs. In cr)	Expr. Incurred (cr)	% of Expr.
		Nos.	Cost (Rs in cr)			
1	Machhagaon Canal	21	78.52	71.83	70.26	98%
2	Pattamundai Canal	31	145.96	147.69	142.38	96%
3	HLC Range-1 Canal	14	58.12	59.22	57.17	97%
4	MCII	17	110.43	111.33	26.65	24%
5	Ramial	9	30.8	31.93	31.84	100%
6	Kanjhari	7	30.03	31.11	30.87	99%
7	Kansbahal	7	22.13	19.01	16.7	88%
8	Saline Embankments	12	93.07	92.41	76	82%
	G. Total	**118**	**569.06**	**564.53**	**451.87**	**80%**

A. **Rehabilitation of Minor Lift Irrigation Project** (750 nos. of MLIPs) – Implementation of MLI projects have been dropped due to delay in procurement which is due to non-responsive bidding and non-participation of bidders in some cases.

B. **PP Strengthening**: Pani Panchayat Strengthening has been taken up in 135 PPs through WALMI, Odisha. Preparation of Micro-plans has been completed as per the following.

Machhagaon Canal	-	30
Kansabahal	-	9
Pattamundai Canal	-	30
Ramial	-	15
HLC Range-1	-	32
Kanjhari	-	9

C. **Command Area Development (CAD) Works**: CAD works have been completed in 11844 Ha. as per the following:

Machhagaon Canal	- 2,929Ha.
Pattamundai Canal	- 1,891 Ha.
HLC Range-1	- 4,464 Ha.
Kansabahal	- 2,560 Ha.

D. **Restoration of Saline Embankments**: Restoration of about 57 Km. of Saline Embankments in 4 costal Divisions (Aul, Puri, Khurda and Nimapara) has been taken up.

12.0 Climate Adaptation in Vennar Sub-Basin In Cauvery Delta Project

Objective of the project:

The aim of the project is to strengthen key irrigation and drainage system, build climate resilient hydraulic infrastructure and improve water management in the Vennar sub-basin of the Cauvery Delta in Tamil Nadu.

Cost of the project:

US$ 144 million

The progress of civil works:

Sl. No.	Work	Value in Rs. Crore	Date of completion	Physical progress (%)	Financial progress (%)
1	Vellaiyar	178.17	2019	22	17.79
2	Pandavayar	100.80	2019	50	33.70
3	Harichandranathi	257.74	2019	20	6.84
4	Adappar	168.35	2019	15	10
5	Valavanar Drain	44.62	2019	15	11.73
6	Vedaranyam Canal	32.18	2019	20	14.15
7	Pumping schemes	14.59	2018	50	50.50
8	Other activities	164.21	-	2	2.02

13.0 Andhra Pradesh Irrigation and Livelihood Improvement Project Phase - 2

Objective of the project:

The project aims to modernize/ renovate about 20 major and medium irrigation sub-projects and restore 445 minor irrigation sub-projects.

Cost of the project:

Rs. 2000 crore

Progress of works:

- Major irrigation sub-projects: Administrative sanctions have been accorded for 12 major/medium irrigation sub-projects. Tenders have been called for 6 major/ medium irrigation sub-projects.
- Minor irrigation sub-projects: Administrative sanction has been issued for 242, out of 445 minor irrigation sub-projects. Tenders for 144 sub-projects are under evaluation.
- Selection of NGO: Selection of NGO is under process and that NGO contracts shall be concluded by end of Jan, 2019,
- Pilot Program for Food Value Chain: The RFP for selection of Pilot Project implementation Consultant shall be issued by Jan, 19.

14.0 Rengali Irrigation Project Phase - 2

Objective of the project:

The objective of the project is to increase agriculture production by constructing irrigation systems (main canal and distribution systems), establishing water users associations and promoting livelihood support activity.

Cost of the project:

Rs. 2255 crore

Progress of civil works-

- The Construction of Main Canal works are being taken up under 17 Nos. of packages;
- 100% of private land has already been possessed for Pkg-A1, A2 & B1;

- Of the 27 civil works packages, 4 packages are under construction costing Rs.101.02 crore;
- Land acquisition - Percentage acquired land by end of Apr'18 is 45% of the total private land;

Sl. No.	Packages	Period	Phy. Progress (%)
A1	Structures along main canal (RD 71.313 km – 83.50 km)	5.12.16 – 4.12.18	69%
A2	Structures along main canal (RD 83.50 km – 100.49 km)	1.12.16 – 30.11.18	73%
A3 (A)	12 minor & sub-minor canals (RD 71.313 km – 100.49 km)	12.3.18 – 11.9.19	7%
B1	Bhuban Branch Canal (RD 0 km – 14.19 km)	7.12.16 – 6.12.18	70%
C1, C2, C3, C4	Constuction work of main canal	2018-2020	Tenderring has been delayed

15.0 Rajasthan Water Sector Livelihood Improvement Project Tranche - 2

Objective of the project:

To increase the productivity of irrigated agriculture through improved surface irrigation systems, introduction of micro irrigation systems, improving water management and strengthen agriculture support services etc.

Cost of the project (phase-I):

Rs. 1069.40 crore

Status of civil works:

- Administrative and financial sanction of trache-I for Rs.1069.40 crore issued;
- Project Management Consultant under RWSLIP has been engaged;
- Civil work order amounting to Rs.432.13 crore for 31 sub-projects has been awarded;
- Cumulative expenditure upto Dec, 18 is Rs. 89.20 crore.

16.0 Rajasthan Water Sector Restructuring Project in Desert Area Tranche - 2

Objective of the project:

The project envisage rehabilitation & modernization of Indira Gandhi Nahar Project (IGNP) system which will improve the availability of water in 1,81,618 Ha of CCA and will also reclaim 33,312 Ha of water logged area in the region;

Cost of the project:

Rs. 958 crore

Progress of works:

Name of component	Main components of the works	Total quantity as per agreement	Cumulative Achieved quantity	% achieved of total quantity
Extension, Rehabilitation Modernization (ERM) works, Indira Gandhi Feeder (IGF) and IGMC	Earthwork (unit- cum)	8717159	3475650	39.87 %
	Production of concrete (unit – cum)	243797	91486	37.53 %
	CC/PCC Block canal lining (unit–sqm)	6190274	2925469	47.26 %
	Brick masonry (unit- cum)	5355	643	12 %
	Steel (unit – MT)	946	132	14 %
	Supply, install & fixing of Sluice regulator (unit-sqm)	316	0	0

Ministry of Water Resources, River Development & Ganga Rejuvenation

ORGANISATIONS AND INSTITUTIONS



7. Organisations and Institutions

1.0 Attached Offices

1.1 CENTRAL WATER COMMISSION (CWC)

1.1.1. INTRODUCTION:

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

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

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

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

1.1.2. MAJOR ACTIVITIES

(i) Hydrological Observations:

The 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 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.

During the 12th Plan, 720 new hydro-meteorological observation stations have been opened. However, due to paucity of required manpower, these stations could not be made fully operational. The process for engagement of manpower is in progress and about 275 sites were made fully operational by the end of December 2018.

(ii) Water Quality Monitoring:

The Commission is monitoring water quality at 429 key locations covering all the major river basins of India. It is maintaining a three tier laboratory system for analysis of the physico-chemical parameters of the water. The level- I laboratories are located at 403 field water quality monitoring stations where physical parameters such as temperature, colour, 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 and Varanasi where 41 parameters including heavy metals/ toxic parameters and pesticides are analysed.

The National River Water Quality Laboratory, CWC, New Delhi is accredited with National Accreditation Board for Testing and Calibration Laboratories (NABL) in accordance with Standard ISO/IEC17025:2005 in the discipline of chemical and biological testing since April, 2016. During 2018-19, Ten (10) more Water Quality Laboratories of CWC which are functioning under different Divisional Offices of CWC located at Agra, Bangalore, Bhubaneswar, Chennai, Coimbatore, Gandhinagar, Hyderabad, Kochi, Pune and Varanasihave also obtained NABL Accreditation in chemical discipline.

(iii) Survey and Investigation:

CWC is carrying out surveys and investigations for preparation of Detailed Project Reports (DPRs) in the NE region, Sikkim, Jharkhand and J&K on the request of the respective States for development of water resources potential for irrigation, hydropower and other uses. The Survey & Investigation of Rukni Irrigation Project (Assam) was completed during 2018-19 and DPR was submitted to the State Government. The survey and investigations for four other projects namely, Kalez Khola HE Project (Sikkim), Sonai Irrigation Project (Assam),

Tarumchu HEP (Sikkim) and Kali Khola HEP (Sikkim) were continued during 2018-19. Further, the work for Berenium Project (J&K) and 31 Irrigation Projects in Jharkhand was started during 2018-19.

A Joint Project Office for 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 has been extended upto 31.8.2019.

(iv) Project Appraisal:

During the year 2018-19 (upto January 2019), technical examinations of 18 water resources projects (10 irrigation and 8 flood management) were completed and accepted by the Advisory Committee of MoWR, RD & GR. The irrigation projects accepted by the Advisory Committee would provide irrigation to 12,73,232 Ha area and flood management projects will provide protection to about 66 lakh persons and 10,29,995 Ha area land. As of now, 22 Major projects as well as 5 revised cost estimates are under different stages of appraisal.

Apart from the appraisal of Irrigation and Flood Control projects, civil components of hydroelectric projects are also appraised by Central Water Commission. The appraisal of Civil aspects including appraisal of cost estimates for 8 hydroelectric projects have been completed during the current year (upto December 2018). Other components of hydro-electric projects are appraised in Central Electricity Authority (CEA). The Techno-Economic Clearance (TEC) to these projects is also accorded by the CEA. During the year, 2018-19 (up to December, 2018), CEA has accorded TEC to 3 hydroelectric projects having total installed capacity of 2746 MW.

(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 was to ensure the achievement of physical and financial targets and achieve the targets of creation of irrigation potential.

During 2018-19, a total of 47 (20 Major and 27 Medium) projects under General Monitoring, 149 (73 Major, 55 Medium and 21 ERM) on-going projects under PMKSY-AIBP are targeted by CWC field units. During 2018-19 (up to December, 2018), 2 monitoring visits were undertaken in respect of projects under General Monitoring. Similarly, 63 visits were undertaken and 49 Status Reports were issued (up to March, 2018) for projects under PMKSY-AIBP.

It has been decided to take services of Bhaskaracharya Institute for Space Application and Geoinfomatics (BISAG) under Department of Science & Technology, Government of Gujarat for assessing the details of year-wise/ season-wise cropped area in the command of these 99 projects from 2012-13 onwards. BISAG has agreed to make a GIS based application for the monitoring of projects for the Ministry from their own resources.

(vi) Morphological Studies:

Every year Floods 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.

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

During the 12th Plan period, 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 was awarded to IITs /NITs under the Plan Scheme "R&D Programme in Water Sector". The above studies have been spilled over beyond 12th Plan. The remaining part of the above studies have been included in the EFC of Plan scheme "Research and Development programme in water sector and implementation of National Water Mission" during the remaining period of 14th Finance Commission i.e. 2019-20.

The details and status of these studies are given below:-

Sl. No.	Institute	Name of Rivers	Status
1.	IIT Roorkee	Ganga, Sharda, Rapti	Final Report Submitted
2.	IIT Delhi	Kosi, Bagmati, Yamuna	Draft Report for Yamuna Submitted
3.	IIT Guwahati	Bramhaputra, Subansiri, Pagladiya	Draft Report Submitted
4.	IIT Madras	Krishna, Tungbhadra	Draft Report Submitted
5.	IIT Kharagpur	Mahananda, Mahanadi, Hoogly	Draft Report Submitted
6.	SVNIT Surat	Tapi	Final Report Submitted

(vii) National Water Mission and Climate Change Issues:

Climate Change cell was created in CWC in August, 2007 to provide inputs and assistance to NWM secretariat in examining the research proposals related to climate change received in NWM Secretariat.

Monitoring of Glacial lakes/Water bodies in the Himalayan Region of Indian river basin are being carried out on monthly basis from June to October every year. 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. The Monitoring has been done during the year and monthly Monitoring Reports have been sent to Central/State Govt agencies and other stakeholders.

CWC has developed a model for Snow Melt Runoff Forecasting in Himalayan River Basin namely, Satluj, Beas, Chenab, Yamuna and Ganga in association with NRSC, Hyderabad. Using the model, CWC has issued Seasonal and Short Term Snowmelt Runoff forecast in Himalayan river basins during 2018. The forecast were issued to Irrigation Department and Hydro-Power Development agencies in all concerned States.

(viii) Hydrological Studies:

The Hydrological Studies Organization (HSO), a specialized unit under D&R Wing of Central Water Commission, carries out hydrological studies in respect of the Water Resources projects in the country. The success of a project is largely governed by the hydrological inputs. The inputs in 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.

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 being carried out whenever additional data is available. During 2018-19, Flood Estimation Report for "Luni Sub-Zone 1(a)" has been revised.

During the year 2018-19 (up to December, 2018), Technical examination of hydrological aspects of DPRs in respect of 53 projects have been carried out in CWC. Out of this, 26 projects have been cleared. Further, during the year 2018-19, CWC has also carried out Design Flood Review Studies of the 14 projects of Rajasthan namely, Jaisamand Dam, Rana Pratap Sagar Dam, Jawahar Sagar Dam, Mahi Bajaj Sagar Dam, Som Kamla Amba Dam, Kanota Project, Murliya Project, Swaroop Sagar Dam, Galwa Dam, Raipur Luni Dam, Somkagdar Dam, Saithal Sagar Dam, Chapparwar Dam and Sulki Selwera Dam. These dams are likely to be included for rehabilitation under the proposed Phase-II of DRIP.

(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, Sri Lanka and African countries by way of design consultancy or in the technical appraisal of the projects.

At present CWC is providing design consultancy to 82 projects. Out of this, 26 projects (including 3 from neighbouring countries) are at construction stage; 40 projects (including 3 from neighbouring countries) are at DPR stage and 16 projects (including 2 from neighbouring countries) involve special problems.

In addition to above, technical examinations of design aspects of DPRs of 70 nos. of Hydro-electric/ Irrigation/ Flood Management/ Multi-Purpose Projects were also carried out during the year (till Dec 2018). These include 5 projects from neighbouring countries, namely, Indo-Nepal (1), Nepal (1), Afghanistan (2) and Bhutan (1). Out of these, DPRs of 17 nos. of projects have been cleared. Remaining DPRs of 53 nos. of projects are at various stage of examination.

(x) 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, 2018. Out of this, 5264 large dams have been completed and 437 large dams are under construction. The NRLD is available on CWC's Website. The compilation of NRLD is expected to prove useful/ handy to all engineers, planners and policy makers associated with Water resources sectors

(xi) 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. The 38th meeting of NCDS was held on 22nd January 2018 at Thiruvananthapuram, Kerala. The 39th meeting of NCDS was held on 12th February, 2019 at Bhubaneshwar.

(xii) 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.

During 2018-19, 33rd meeting of NCSDP was held on 25th April, 2018, wherein the site specific seismic study reports of 3 projects were finalized by the Committee.

(xiii) 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. During the year, the GLOF Study Report of Tiuni-Plasu Hydro-Electric Project, Uttarakhand has been examined and observations of CWC were communicated to Project Authority.

(xiv) Environmental Management:

(a) Environmental Evaluation/ Impact Assessment Study

The Commission undertakes Environmental Evaluation/Impact Assessment Study. 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.

During 2018-19, Environmental Impact Assessment Studies for 3 projects have been initiated through consultancy. The details of these studies are as under:

No.	Name of the Project	State	Agency conducting the study
1.	Ukai Project	Gujarat	M/s IRG Systems South Asia Pvt Ltd.
2.	Eastern Kosi Canal Project	Bihar	M/s AFC India Limited
3.	Tawa Project	Madhya Pradesh	M/s AFC India Limited

(b) National Environmental Monitoring Committee for River Valley Projects (NEMCRVP)

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 65th meeting NEMCRVP was held on 6th December, 2018 at Imphal. The Secretary, Water Resources Department (WRD), Govt. of Manipur, Principal Chief Conservator of Forests, Govt. of Manipur and Deputy Secretary (Revenue), Govt. of Manipur along with Chief Engineer (WRD), Govt. of Manipur and other officers of WRD, Govt. of Manipur also attended the meeting. The Committee also visited Thoubal Multipurpose Project and Dolaithabi Project, Manipur in Manipur during 4th to 7th December, 2018. Environmental Monitoring Report of Thoubal Multipurpose Project was submitted to Secretary, WRD, Govt. of Manipur, for further necessary action.

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

It is proposed to carry out Sedimentation Assessment Study in respect of 40 reservoirs using Remote Sensing Technique through consultancy. CWC also conducts in house Sedimentation Assessment Study of reservoirs using Remote Sensing Technique. The Sedimentation Assessment Study for Tandula Reservoir (Chhattisgarh) was completed during the year 2018-19(upto December 2018). The study in respect of following reservoirs are under progress:

i) Kabini Reservoir (Karnataka)

ii) Tungbhadra Reservoir (Karnataka)

iii) Matatila Reservoir (UP)

iv) Dudhganga (Maharshtra)

v) Massanjore Reservoir (Jharkhand)

(xvi) 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:

(a) Performance Evaluation Studies 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 2018-19, The Post Project Performance Evaluation Studies (PES) of Giri Medium Irrigation Project, Himachal Pradesh was completed through consultancy.

(xvii) 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 the period 2017-20, the capacity survey work of 20 reservoirs has been targeted. Process for awarding work for capacity survey of 8 reservoirs is under progress.

(xviii) 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, RD & GR, CWC, CSMRS, CWPRS, NIH, DST, MoAgr., WALMIs, IIT, NGO's etc. Director, WS&RS Directorate, CWC is the Member Secretary of the Committee.

The important activities conducted under the aegis of INCSW during the year 2018-19 are given below:

- 92 research schemes presently under progress in various organisations in the country with funding from the MoWR, RD & GR under the R&D Programme. A master database of all these R&D Schemes that are currently handled by INCSW has been created and updated on regular basis. In this regard, amount totalling to about Rs. 78.00 Lakhs has been released to various research institutes for above research scheme.
- The 9th International Micro Irrigation Conference was organised by Indian National Committee on Surface Water, Central Water Commission (INCSW-CWC), MoWR, RD &GR under the aegis of International Commission on Irrigation and Drainage (ICID) during 15th to 18th January, 2019 at Aurangabad, Maharashtra.

1.2. CENTRAL SOIL AND MATERIAL RESEARCH STATION (CSMRS)

1.2.1. Introduction:

CSMRS 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 Undertakings.

The spheres of activities of the Research Station are covered under the three main disciplines namely Soil, Rock and Concrete. The core areas are Soil Mechanics, Rockfill Technology, Geosynthetics, Soil Dynamics, Rock Engineering, Engineering Geophysics, Geotechnical Instrumentation, Concrete Technology, Concrete Diagnostics and Numerical Modeling.

1.2.2. Investigations for Projects

The investigations comprised field and laboratory investigations in the areas of Soil, Rock, Rockfill, Geosynthetics, Concrete and its constituents.

The details of projects investigated/ under investigation during 2018-19 are as under:

Sl. No	Project Name	Cost of Consultancy for the Year 2018-19	Date of commission / initiation	Likely completion date
International Projects:				
1	Kholongchhu HE project, Bhutan	8,59,373 Concrete 51,33,661 Rock	24.11.2017 17.03.2017	31.05.2019 31.03.2020
2	Kuri Gongri Project, Bhutan	27,01,691 Concrete 51,05,910 Rock 12,27,026 EG	01.07.2018 16.05.2018 29.01.2018	31.05.2019 31.12.2019 23.07.2018
3	Punatsangchhu-I & II H.E. Project, stage II, Bhutan	66,00,000	01.01.2018	31.05.2019
Indian Projects- in North-East India				
4	Umangot HEP, Meghalaya	21,44,258	23.01.2018	07.02.2019
Projects in other parts of India				
5	Adi Badri (Yamuna Nagar) Haryana	24,82,943	20.07.2018	31.03.2020
6	Bagaha Town Protection Phase-III, Gandak River Project, Bihar	26,76,719	07.05.2018	18.07.2018
7	Bhaunrat Dam Project, UP	10,01,588 Concrete	12.01.2018	31.05.2019
8	Bina Complex Irrigation Project, Madhya Pradesh	23,64,120	01.03.2018	30.04.2019
9	Construction project near Visakhapatnam, Andhra Pradesh	36,37,453	12.03.2018	14.06.2018
10	Damanganga-Vaitarna-Godavari intrastate link Project, Maharashtra	24,46,165 Concrete 21,67,820 Soil	01.02.2019 01.01.2019	31.07.2019 31.03.2020

Sl. No	Project Name	Cost of Consultancy for the Year 2018-19	Date of commission / initiation	Likely completion date
11	Devsari HE Project, Uttarakhand	29,92,552	04.05.2016	22.11.2018
12	Jawharpur Thermal Power Project, Etah, UP	10,52,042	22.08.2017	30.08.2018
13	Lower Tapi Project, Maharashtra	8,92,033	01.05.2018	02.11.2018
14	North Koel Project, Jharkhand	39,75,389	22.11.2018	--
15	Polavaram Project, Andhra Pradesh	43,01,934 Concrete	12.02.2018	31.01.2020
16	Pump Storage Project, Tehri, Uttarakhand	19,72,776	01.05.2018	31.10.2019
17	Rihand Dam Project, U.P	4,24,728.00	24.04.2018	02.04.2019
18	Sardar Sarovar project, Gujarat	4,95,825.00	13.04.2018	11.04.2019
19	Sharavathy PSP, Karnataka	15,27,157	14.09.2017	31.05.2019
20	Sirkari Bhyol Rupsiabagar HEP, Uttarakhand	59,03,891 Concrete 24,50,000 Rock	11.05.2016 11.05.2016	30.06.2019 31.03.2020
21	Sunni Dam Project, HP	7,85,449 Concrete 56,82,572 Rock 11,60,604	01.03.2018 14.09.2018 01.06.2018	30.06.2019 31.12.2019 30.09.2018
22	Thana Plaun HEP, HP	7,88,514 Concrete 30,88,387 Rock	01.08.18 12.04.2018	30.05.2019 30.04.2019
23	Turga Pumped Storage Project, West Bengal	28,88,497	27.03.2018	31.03.2020
24	Vishnugad Pipalkoti HE Project, Uttarakhand	19,98,240	06.11.2017	05.11.2019
25	Vyasi HE Project, Uttarakhand	14,12,885	26.09.2017	31.05.2019
26	Wainganga-Nalganga Link Canal Project (Ph-II), NWDA Maharashtra	25,47,804	08.01.2018	08.07.2018
27	Phina Singh medium Irrigation Project, Himachal Pradesh	15,21,558	31.10.2018	12.03.2019
28	Geophysical investigation of Iconic Bridge Site, Vijaywada	9,17,284	03.02.2018	31.03.2019



Goodman Jack Tests to determine modulus of deformation and elasticity, Kuri Gongri H. E. Project, Bhutan



Plate Load Tests to determine modulus of deformation and elasticity, Devsari H. E. Project, Himachal Pradesh



Concreting and progress of spillway at Polavaram Head Works, Andhra Pradesh



Drilling & Grouting work and construction activities at Vyasi H E Project, Uttarakhand site

1.2.3. OTHER ACHIEVEMENTS OF CSMRS DURING 2018-19

Success Indicators	Achievements (Anticipated)
Technical reports brought out / published	42 Nos.
Publication of Research Papers	47 Nos.
Evaluation of Detailed Project Reports and technical comments on compliance to DPR	05 Nos. 45 Nos.
Training programme organized	05 Nos.
Acquired ISO 9001:2015Certification	(on 26. 10. 2018)

1.2.4. SELF- SPONSORED RESEARCH SCHEMES:

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

- Research Scheme on "Improvement of Expansive Soil using Flyash and Lime (Expansive Soil from Gosikhurd Project, Maharashtra)".
- Research Scheme on "Effect of Chemical Constituents on Physical and Engineering Properties of Soil
- Research Scheme on "Effect of molding water and compaction densities on the Permeability Characteristics of Soils"
- Research Scheme on "Effect of molding water content on the Shear Strength Characteristics of Soils
- Research Scheme on "Comparison of theoretical and laboratory permeability for coarse grained soil"
- Research Scheme on "Remediation of Expansive Soil by using Polymer
- Research Scheme on "Effect of molding water on Swelling Pressure of Expansive Soils
- Research scheme: "Use of Artificial Aggregates (Iron & Steel Slag) as Partial Replacement of Natural Aggregates in Concrete"
- Research Scheme on the subject "Effect of alkalinity on setting time of cement" is under evaluation
- Proposal of self-sponsored research scheme to study the aspects related to "Self-Healing of Concrete for Repair of Cracks" approved by the competent authority
- Properties and parameters of Gneiss
- Properties and parameters of Basalt
- Data base on different tests related to laboratory investigations-referred to CSMRS for DPR review

2.0 Subordinate Offices

2.1. CENTRAL GROUND WATER BOARD (CGWB)

2.1.1. INTRODUCTION

CGWB is a subordinate office of the MoWR, RD & GR and it is the National Apex Agency entrusted with the responsibilities of providing scientific inputs for management, exploration, monitoring, assessment, augmentation and regulation of ground water resources of the country. The data generated from various studies taken up by CGWB provide a scientific base for water resource planning by stakeholders. Besides advising states and other user agencies on planning and

management of ground water resources, Central Ground Water Board also provides technical know-how for scientific ground water exploration, development and management to various stakeholders.

Mandate of Central Ground Water Board:

"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."



2.1.2. MAJOR ACTIVITIES OF CENTRAL GROUND WATER BOARD

The Central Ground Water Board undertakes many scientific activities for finding groundwater sources, disposition of aquifers, assessment of groundwater resources, monitoring of water levels and quality and issues related to groundwater management through demand and supply side interventions. Main activities of the Board are following:

- National Aquifer Mapping and Management Programme (NAQUIM)
- Water Supply Investigations
- Ground Water Regime Monitoring
- Estimation of Ground Water Resources.
- Water Conservation / Artificial Recharge initiatives in identified water stressed blocks under MGNREGA
- Training under Rajiv Gandhi National Ground Water Training and Research Institute (RGI).
- Scrutiny of Major / Medium Irrigation Projects
- Activities under taken by CGWB in the North Eastern Region
- National Hydrology Project
- Accreditation of CGWB Labs by NABL as per ISO/IEC 17025: 2005
- Central Ground Water Authority

(i) Aquifer Mapping and Management (NAQUIM) Programme

Aquifer Mapping and Management Programme (NAQUIM) was initiated in 2012 under the ground water management and regulation plan scheme GWMR with an objectives to delineate and characterize the aquifers and develop management plans to ensure sustainability of ground water resources. Out of ~32 lakh km^2 of the entire country, an area of ~25 lakh km^2 has been identified to be covered under aquifer mapping in phases. Four major sets of activities being undertaken under are (i) Data Compilation & Data Gap Analysis (ii) Generation and integration of data (iii) Preparation of aquifer maps and (iv) Formulation of aquifer management plans

(a) Data generation for Aquifer Mapping

Various Data Generation activities *viz.*, exploratory drilling, geophysical surveys, chemical quality studies

and other hydrogeological surveys are taken up during the year 2018-19 for preparation of aquifer maps and management plan. The individual achievements of data generation activities are as follows:

- **Ground Water Exploration:** The exploration is aimed at 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. During financial year 2018-19 (up to 31.12.2018), the Central Ground Water Board has constructed 518 exploratory boreholes for generation of data. In addition to these, around 3457 boreholes have been constructed through outsourcing for generation of data for Aquifer mapping in various states.
- **Geophysical Studies:** During 2018-19 up to 31st December, 2018, Central Ground Water Board has carried out 815 Vertical Electrical Soundings (VES), 12.31 line kilometres of resistivity profiling and geophysical logging of 30 bore holes in various parts of the country. In addition to these, around 447 Vertical Electrical Soundings (VES) and 528 Gradient Resistivity Profiling (GRP) with VES have been done through outsourcing for generation of data for Aquifer mapping.
- **Water Quality Analysis:** About 20330 ground water samples have been collected and analyzed for basic constituents, heavy metals (such as Cu, Zn, Fe, Mn, Co, Cd, Cr, Ni, Pb etc.), and pesticides during the year 2018-19 up to December, 2018. .
- **Other Studies:** i) periodic monitoring of water levels; ii) aquifer performance tests (pumping tests) and slug tests for estimation of storage and transimissive properties of aquifers; iii) infiltrometer tests for estimating infiltration rate; iv) stable isotope studies for analyzing mode, mechanism and sources of recharge etc. Findings of all studies are integrated for developing aquifer maps and management plans. Ground water flow models have also been developed for a few priority areas.

(b) Aquifer Maps and Management Plan Preparation

Aquifer maps and management plans are subject to a three tier review including review by a National Level Expert Committee (NLEC) before finalization. The NLEC comprises domain experts from CGWB; IIT, Roorkee; IIT, Delhi; JNU; IWMI etc. The maps and management plans developed as a part of this programme are shared with the concerned state governments through the State Ground Water Coordination Committees (SGWCC), which are headed by the Secretary/ Principal Secretary in-charge of ground water departments in the

respective States. Aquifer Maps and Management plans are also shared with the respective District Authorities for implementation of ground water management plans and intergration of the information in other programs.

By the end of March 2018, aquifer maps and management plans were developed for an area of ~8.67 lakh km^2. An additional area of nearly 40,000 km^2 has been covered under aquifer mapping and management plan making the total coverage as ~9.1 lakh km^2.

- **Seventh Meeting of National Inter - departmental Steering Committee (NISC):** National Inter-departmental Steering Committee (NISC) on Aquifer Mapping & Management Program (NAQUIM) has been constituted by the MoWR, RD & GR with Secretary (WR, RD & GR) as the Chairman and Additional Secretary (WR, RD & GR) as Vice Chairman. NISC draws Members from various Central Ministries/ Departments related to Water Resources such as NWM, MoDW&S, MoES, MoRD, MoUD, MoS&T, CWC, CGWB, CSIR, JS (A&GW), Planning Commission etc. Principal Secretaries of related departments from States of Uttar Pradesh, Rajasthan, Punjab, Haryana, Gujarat, Tamil Nadu, Maharashtra, Andhra Pradesh (Undivided) are also Members of NISC. Starting from the first meeting on 21.11.2013 six meetings had been held and the Seventh meeting of NISC was held on 9th August 2018. The meeting was chaired by Secretary (WR,RD & GR) and was attended by representatives of MoWR,RD & GR, other Central Ministries, CGWB and State Governments.

- **Dissemination of NAQUIM outputs:** Aquifer maps and management plans prepared as a part of this programme have been shared with the respective State Governments through the State Ground Water Coordination Committees (SGWCC), which are headed by the concerned Principal Secretaries of the respective States. The maps and management plans are also shared with district authorities. To improve the outreach, CGWB also carries out Public Interaction Programmes (PIP) and block level training programmes (tier-III training under the aegis of RGNGWTRI). The maps and management plans are helping the agencies (State Govts.) involved in water management in better decision making. Aquifer mapping programme has provided detailed information on the aquifer dispositions and their characteristics, which are necessary inputs for groundwater management. As a part of this programme, region specific groundwater management plans have been prepared which suggest

appropriate demand and supply side management interventions to improve sustainability of ground water resources.

- **Facilitating Public Interaction on Aquifer Maps and Management Plans:** Central Ground Water Board has initiated public interaction programmes to disseminate outputs of NAQUIM studies to the stakeholders at grassroots level. A total of 40 such interaction programmes are proposed to be carried out upto to March, 2019 with the target of 100-150 participants in each, with representation from Panchayats, block and district level administrations, NGOs, farmers, health and sanitation workers and other stakeholders. So far, 22 public interaction programs (PIP) have been organized, with participation of around 3500 persons, in different parts of the country.

(c) Institutional Collaboration

- CGWB has undertaken collaborative study with **Indian Institute of Remote Sensing, Dehradun on "Mapping, Modelling and Impact assessment of Land Subsidence in North India"**to include Advanced research and development of innovative geospatial tools & techniques for management and monitoring of groundwater resources and impact assessment due to large scale ground water depletion in the country on regional scale. On local scale, the major cities of NW India with records of significant groundwater depletion such as Delhi, Chandigarh, Mehsana (Gujarat), Hisar (Haryana), Ludhiana (Punjab) and Jaipur (Rajasthan) were studied to identify groundwater depletion induced land subsidence and collateral observations have been collected and analysed for Delhi and Chandigarh test sites. Besides, collateral multi-temporal long-duration classical static DGNSS survey is being done by IIRS for comparison with precision levelling results and validation of differential interferometric synthetic aperture radar (DInSAR) based results.
- CGWB has undertaken collaborative study with **National Remote Sensing Centre, Hyderabad on "Joint use of Geospatial Technology in Aquifer Mapping and Management"** to includes Satellite data interpretation and capacity building of officers from CGWB and MDWS on application of space technology in groundwater management, use of geospatial and other data. Under the collaborative project, NRSC has provided the GIS layers for Lithgeom, geology & structure to CGWB for the priority States which are being used for Aquifer

Mapping. Besides, one training Programme has also been conducted by NRSC for capacity building of officers from CGWB. A pilot area in Madhugiri Taluk of Karnataka Districts has been taken up for detailed study as a part of this collaboration.

- CGWB has undertaken collaboration with **Geological Survey of India, Ministry of Mines, Government of India on Sharing of 1:50,000 Scale Geological Map Data, Hydrogeological Maps for National Project on Aquifer Management."** The objective of the collaboration includes sharing of available 1:50,000 Scale map data (comprising of Lithological and structure layers), Ground water quality and aquifer mapping data generated out of NAQUIM with GSI.

- CGWB and NGRI entered into **an agreement for carrying out Data generation for Aquifer Mapping with focus on palaeo-channels in parts of Ganga-Yamuna Doab, Allahabad and Kaushambi districts**, **Uttar Pradesh.** The major objectives of the study include delineation of the geometry and aquifer set-up in the study area, determining Geophysical Characteristics of various litho-units, identification of Major palaeo-channels in the inter - fluve region, preparing lithological model of the area, delineation & possible understanding of the Aquifer system with lithological model developed. A paleochannels approximately 4 km wide and 14 km long with thickness varying upto 40 m within the study domain has been delineated. The study has been completed and the final report is under preparation.

- **Collaborative study with IIT, Kanpur for ground water modeling:**CGWB has entered into an MoA with Indian Institute of Technology (IIT), Kanpur for development of groundwater flow models and preparation of aquifer management plans for parts of Haryana and Punjab and for the entire Bundelkhand region covering parts of Madhya Pradesh and Uttar Pradesh. IIT, Kanpur has compiled the data avialable with CGWB and other agencies and has developed the flow model for the state of Haryana and Punjab. It has been presented before the evaluation committee. The committee has suggested certain changes and asked to give the aquifer management plans. The work for the same is under progress with IIT, Kanpur.

- CGWB has entered into an MoA with National Institute of Hydrology (NIH), Roorkee, Uttarakhand for analysis of stable isotopes of hydrogen and oxygen in water samples collected from different parts of the country. So far, about 1000 groundwater samples

have been analysed. During 2018-19, two workshops of one week duration were organised at NIH Roorkee on isotopic data interpretation.

(ii) Water Supply Investigations:

The Board provides assistance to defense establishments and other 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 122 investigations during this year up to 31st December 2018.

(iii) Ground Water Regime Monitoring:

Ground water levels in the country are monitored through a network of about 23196 Ground Water Observation Wells four times a year. During the current year water levels monitoring as per the schedule has been carried out during the months of April/May 2018, August 2018 and November 2018.

(iv) Estimation of Ground Water Resources:

The Dynamic Ground Water Resources of the country are assessed jointly by respective state ground water departments and Central Ground Water Board. The Dynamic Ground Water Resources assessment with reference to the base year 2013 has been completed. The ground water resource assessment methodology has been revised (GEC 2015) and Ground water resources assessment for the base year 2017 based on the new methodology has been initiated.

(v) Water Conservation / Artificial Recharge initiatives

(a) Water Conservation / Artificial Recharge initiatives in identified water stressed areas of 9 overexploited blocks falling in eight States i.e. Andhra Pradesh, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Telangana & Tamil Nadu have been taken up on pilot basis. The programme is being implemented by MGNREGA with technical support from CGWB, MoWR, RD & GR in convergence with the activities.

(b) Aquifer Rejuvenation through construction of suitable area specific Artificial Recharge structures in Aspirational districts-Agriculture and water resources have been identified as critical sectors for the transformation of the Aspirational Districts. The main objective of the project is Aquifer Rejuvenation through construction of suitable area specific Artificial Recharge structures to establish successful & replicable site specific techniques for similar water stressed/ over exploited/ semi critical areas and projecting the impact in terms of sustainability of resources on a long term basis. In this study artificial recharge structures will be constructed in parts of following three blocks of three Aspirational Districts of

Maharashtra, Andhra Pradesh and Telangana state.

State	District	Name of the Block	Category of Block/ Water-shed
Maha-rashtra	Os-manabad	Os-manabad	Semi Criti-cal
Andhra Pradesh	YSR Ka-dapa	Puliven-dula	Over Ex-ploited
Telangana	Erstwhile Warangal	Bachan-napet	

(c) Status of Bridge cum Bandhara sites' in parts of Amrawati and Wardha districts, Eastern Region of Maharashtra- The Ministry of Water Resources, RD & GR, Government of India has taken a policy decision for construction of Bridges cum Bandharas (BCB) on pilot basis that serves as dual purpose of transportation as well a storage of water in the upstream side for drinking and irrigation al needs besides other purposes such as ground water recharge. In order to store water immediately after the monsoon season, which can be utilized during lean period, Bandharas in the vicinity of existing Bridges are proposed to be constructed to address the water scarcity problem of water scarce areas.

In this study Bridges cum Bandharas (BCB) structures will be constructed in the eastern region of Maharashtra covering districts of Wardha and Amravati at the following locations:

i) On Jamb river of Sarwadi Village (NH-6), Tehsil: Karanja, District: Wardha

ii) On Nala near Ajra Phata Village, Tehsil: Samhdrapur, Distrcct: Wardha

iii) On Pigdi River, Tiwasa village, Tehsil: Tiwasa, District: Amravati

iv) On Yasoda River, near Deoli village, Tehsil: Deoli, District: Wardha

v) On Wagholi River, near village Jamni, Tehsil: Selu, District: Wardha



For smooth and timely execution of the work, a tripartite 'Memorandum of Understanding (MoU)' of BCB has been entered by CGWB and it is signed by the Regional Director, CGWB, CR, Vidarbha Irrigation Development Corporation (VIDC), WRD, Nagpur and WAPCOS Ltd. in the presence of Hon›ble Minister (MoWR, RD& GR) Sh. Nitin Gadkari at Nagpur on 6th October 2018.



The inspection of the sites identified for construction of these Bandhara was carried out by a team of officers, headed by Dr E. Sampath Kumar, Member (South), CGWB, Faridabad, from CGWB and WAPCOS on 08/10/2018 and 09/10/2018.

(vi) Rajiv Gandhi National Ground Water Training and Research Institute (RGI):

Rajiv Gandhi National Ground Water Training and Research Institute located at Raipur, Chhattisgarh caters to the training requirements of Central Ground Water Board and other Central and State Government Organizations, Academic Institutes, NGOs etc. in the field of ground water.

During 2017-20, RGI under Human Resource Development (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 RGI component is Rs14.99 Crores.

(vii) Scrutiny of Major/ Medium Irrigation Projects:

As per the directives of NITI Aayog 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. Three projects were examined during 2018-19 as on 31.12. 2018 and are listed below:

Sr. No.	Project
1	Upper Pravara Irrigation Project, Nilwande-2, Maharashtra
2	Jihe Katharpur Lift irrigation Project, Maharashtra
3	Bembla River Project, Maharashtra

(viii) CGWB activities under National Hydrology Project (NHP)

Under the National Hydrology Project (NHP), CGWB proposes to take up various activities with an estimated overlay of Rs 85.0 crore spread over a period of eight years starting from 2016. Real-time monitoring of water quality in coastal aquifers, Institutional Capacity Enhancement, Technical support to state agencies etc are some of the major activities under the project. During the current year (upto Dec 2018), the following activities were taken up.

- The Center of Excellence for Ground Water Modelling has been established at CHQ Faridabad with 04 Regional Hub for facilitating and supporting activities related to Ground Water Modelling in CGWB and also for State Implementing Agencies under NHP.
- Under Centre of Excellence a two-day workshop '1st Modellers' meet' has been organized at CHQ Faridabad for officers of CGWB.
- One awareness raising campaign on State specific ground water issues has been organized at Agartala, Tripura.
- Six officers of CGWB participated in the 1st International Conference on Sustainable Water Management at Chandigarh in which CGWB presented two technical papers
- Five officers of CGWB participated in the two-day Workshop on Water Information System by Australian Water Partnership (AWP) held at New Delhi.

(ix) Accreditation of CGWB Labs by NABL as per ISO/IEC 17025: 2005

Eight Regional Chemical Laboratories of CGWB located at Lucknow, Guwahati, Chandigarh, Bhopal, Nagpur, Hyderabad, Bhubaneswar and Jaipur have been accredited by NABL as per ISO/ IEC 17025: 2005 for analysis of Chemical Parameters conforming to international standards.

2.2. Central Water and Power Reserch Station (CWPRS)

2.2.1. INTRODUCTION:

CWPRS, Pune an apex Research and Development institution in the field of hydraulics and allied research in the water and power sector has continued to serve the needs of the nation for 100 years by catering to the research and development needs for evolving safe and economical planning and design of water resources structures, river engineering, hydropower generation, and Ports and Water ways projects fulfilling the mandate of '***Service to the Nation through Research***'. CWPRS has offered its services to a number of projects in the neighbouring countries viz., Bangladesh, Bhutan, Afghanistan, Myanmar, Nepal, Singapore, etc., as well as countries in Middle East. From its inception, CWPRS has been unstintingly working and providing specialized services through physical / mathematical model studies and field / laboratory investigations in river training and flood

control, hydraulic structures, ports and harbors, coastal protection, foundation engineering, construction materials, pumps and turbines, ship hydrodynamics, hydraulic design of bridges, environmental studies, earth sciences, thermal and nuclear power cooling water intakes. The research activities at CWPRS can be grouped into seven major disciplines viz. River Engineering, River and Reservoir Systems Modelling, Reservoir and Appurtenant Structures, Coastal and Offshore Engineering, Foundation and Structures, Applied Earth Sciences, Instrumentation, Calibration and Testing Facilities.

Years	Jobs Awarded		Reports Submitted	Papers Published	Training of Personnel	Training Programmes/ Conferences organized
	Nos.	Amount (Rs.)				
2017-2018	147	33,97,19,710	105	58	823	18
2018-2019 (upto Dec'18)	89	17,02,82,586	51	51	304	11

2.2.2. AREAS OF EXPERTISE

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

a. **River Engineering**: River Engineering mainly deals with river training and bank protection works, hydraulic design of barrages and bridges, and location and design of water intakes using morphological studies. Significant studies during the period include

- Protection and restoration of Eastern Kosi Embankment
- Proposed road and railway bridges across River Yamuna
- Bank protection of River Ganga near Bhagalpur, Bihar

b. **River and Reservoir Systems Modelling**: Hydrologic and meteorological studies are conducted to estimate extreme values of various parameters such as rainfall, temperature and humidity. Flood estimation and forecast, reservoir sedimentation and water quality studies are carried out using mathematical models and field surveys.

- Estimation of design discharges of River Alaknanda at Govindghat, Uttarakhand
- Assessment of water quality of Sardar Sarovar and Khadakwasla Dams
- River Rejuvenation of Mutha River flowing through Pune City

c. **Reservoir and Appurtenant Structures:** Spillways and Energy Dissipators are studied on physical models. Studies are carried out on physical models for desilting basins, sedimentation and flushing through reservoirs, sediment exclusion devices. Sedimentation in reservoirs is also assessed through remote sensing.

Hydraulic design for spillway profile and energy dissipation systems for

Mangdechuu, Punatsangchuu and Kholangchuu in Bhutan, Teesta Stage IV & V Project, Salma Dam, Afghanistan , Lower Siang H.E, Project, Etalin H.E. Project, Arunanchal Pradesh, Polavaram Dam in Andhra Pradesh are the significant projects carried out in the recent past.

d. **Coastal and Offshore Engineering**: This discipline deals with optimization of location, length and alignment of breakwaters, jetties, berths, approach channel, turning circle etc. for development of ports and harbours. Major projects carried out for the port development schemes of Project Varsha, Mumbai port, Kamarajar Port, Vishkhapatnam port, Cochin port, Mormugao port, JNPT, ALHW port in Campbell bay, Andman and Nicobar Islands, Kolkatta port, V. O. Chidambarnar, Paradip port, Vadhwan port, Kudamkulam port and various fishing harbours in Kerala and Tamilnadu states.

e. **Foundation and Structures**: Laboratory and field tests are carried out to determine soil, rock and concrete properties. Field studies are carried out for assessing the health of hydraulic structures and suggesting suitable repairing measures. Some of the major studies include:

- Studies for design of cementitious concrete mix through Laboratory studies for controlling seepage through upstream face of Temghar Dam, Pune, Maharashtra.
- Studies of determining in-situ properties of Shirota Dam, Tata Power Company Lonavala. Dist-PuneMaharashtra.

f. **Applied Earth Sciences**: Seismic surveillance of river-valley projects, assessment of site-specific design seismic parameters, controlled blasting studies for civil engineering construction sites, evaluation of quality of concrete and masonry is done by non-destructive methods and estimation of elastic properties for foundation of massive structures using geophysical methods are the main activities of this group. Some of the major studies carried out are indicated below :

- Site specific Design Parameters for Damanganga (Vagh/Val) - Vaitarna (Upper Vaitarna)- Godavari (Kadva-Dev Nadi) Link project an intra-state link of Maharashtra
- Vibration measurement studies on concrete Gravity Dam of Umiam Stage-I Hydro Electric Project, Meghalaya
- Borehole Logging for seepage studies at Bhatsa Dam, Maharashtra.
- Seismic Hazard Assessment of North East India.
- Micro earthquake study for kirthai HEP, Kishtwar, J & K.
- Site specific Seismic Design Parameters for Kuri-Gongri H.E. Project, Bhutan for WAPCOS (1) Ltd.

g. **Instrumentation, Calibration and Testing Facilities**: Hydraulic Instrumentation is used for data collection on physical hydraulic models. Field data collection is

carried out on coastal parameters like water level, velocity, wave-height etc. A Random Sea Wave Generation (RSWG) system is used for wave flumes and basins. Dam instrumentation is provided on prototype. Few important studies include:

- Measurement of water discharge through penstocks of Koyna stage IV generating units for MAHAGENCO, Pophali.
- Efficiency evaluation of turbine units (2x40 MW) of Bhiru Toil Race hydro Power Station Dist Raigad, Maharashtra.
- Conducting Bathymetric survey of River Dibang at Gauge and Discharge site, Arunachal Pradesh.

2.2.3. SIGNIFICANT ACHIEVEMNTS

(i) Collaboration through MoU & MoA:

a) MoA between CWPRS & EIL : A MoA has been signed between CWPRS and Engineering India Limited (EIL) to collaborate in offering consultancy services including studies, assignments & research in India & abroad.

b) MoU between CWPRS & DVC: MoU has been signed between Damodar Valley Corporation (DVC) and CWPRS during 11th World Bank review mission to promote mutual cooperation in establishing seismological instrumentation network and for collecting, processing, monitoring, analyzing and archiving the data generated at seismological instrument station of the specified dams.

c) MoU between CWPRS and CWC: MoU has been signed between Central Water Commission (CWC) and Central Water and Power Research Station (CWPRS) under the DRIP program, to carry out the study on "Seismic Hazard Assessment of North and North-East India".

d) MoU between CWPRS and CWC: MoU has been signed between Central Water Commission (CWC), State Government (Maharashtra & Gujarat) and Central Water and Power Research Station (CWPRS) to carry out the study on "Field observation and data collection under the scheme of ***Coastal Management Information System*** **(CMIS)**".

(ii) Letter of Appreciation:

- Root cause analysis of pre mature damage of turbine runner blades and suggest remedial measures and efficiency evaluation of Dudhganga Hydro Power Station, Dist Kolhapur, Maharashtra:

Runner blades of Unit I Kaplan Turbine of Dudhganga Hydro Power Station had experienced cracks/ damages. During the course of regular operation, the unit I had experienced instantaneous abnormal heavy noise/ water hammer whereas the unit II of the Dudh Ganga HEP was functioning normal. CWPRS had undertaken the studies and

the misalignment of blade angle were successfully corrected with the help of the washers which are fitted with piston assembly. The openings between the runner blades have been verified with prepared templates.



(iii) Major Events Organized:

- 6th Indian National Conference on Coastal, Harbour and Ocean Engineering "INCHOE" organized during 26th – 28th September 2018 at CWPRS, Pune.





- 35th Technical Advisory Committee Meeting on 12 November 2018 at CWPRS, Pune.





2.3. GANGA FLOOD CONTROL COMMISSION (GFCC)

2.3.1. INTRODUCTION

GFCC was established in 1972 with its Headquarter 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 invites.

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, Chhatisgarh, 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 management schemes particularly those receiving Central Assistance under Flood Management and Border Area 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 management measures executed by the States including the Inter-State Flood Management Schemes.

2.3.2. ACHIEVEMENTS DURING 2018-19

(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 being 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 22th October – 25th October 2018 and 4th -7th October, 2018 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 & 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 6 plans have also been completed. During the current year the first updation of the comprehensive plan of Kosi River System and second updation of Damodar river system are under progress.

(iii) Assessment of the adequacy of existing waterways under road and rail bridges

Assessment of the adequacy of existing waterways activity commenced during the later half of the eighties has been completed except for some stretches of the Ganga main stem. Main stem Ganga was divided in to 5 reaches a) Outfall to Sahebganj b) Sahebganj to Buxar c) Buxar to Haridwar d) Haridwar to Rudraprayag e) Rudraprayag to Badrinath & Rudraprayag to Kedarnath.

Out of 5 reaches the assessment study has been completed for 3 reaches. Survey and data collection work for Rudrapryag to Kedarnath has been completed in current financial year. Assessment study report for Haridwar to Rudraprayag, Rudraprayag to Badrinath & Rudraprayag to Kedarnath is under progress.

(iv) 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 MoWR, RD & GR

b) Two schemes of maintenance of flood protection works of Kosi and Gandak Projects in Nepal;

c) Three schemes viz; extension of embankment along Lalbakey, 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 Schemes" River Management Activities and Works related to Border Areas".

(v) Techno-economic Appraisal of Flood Management Schemes:

Techno-economic appraisal of flood management schemes of Ganga basin States is a continuing activity of GFCC. 45 number of Flood management schemes were received in GFCC from Ganga Basin States during 2018-19 including

spill over projects from previous years, out of which 19 schemes received in current financial year. 09 schemes were accorded techno-economic clearance, 10 schemes were dropped and 26 schemes are under examination in GFCC.

2.3.3. 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. Eight meetings of JCWR have been held so far. The last meeting was held in Delhi on 11th January, 2019.

(ii) Joint Standing Technical Committee (JSTC):

The main function of JSTC is to coordinate with existing committees and sub-committees under the JCWR. Six meetings of JSTC have been held so far. The last meeting was held in New Delhi on 09.01.2019 and 10.01.2019 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:

Twelve meetings of JCIFM have been held. The 12th meeting of the Committee was held during 16th -20th April, 2018 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 51st meeting of Ganga Flood Control Commission (GFCC) was held on 22nd June, 2018 at Delhi under the Chairmanship of Shri A.K. Sinha, 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 and submitted to MoWR, RD & GR.

2.4. SARDAR SAROVAR CONSTRUCTION ADVISORY COMMITTEE (SSCAC)

2.4.1. INTRODUCTION

The Sardar Sarovar Construction Advisory Committee (SSCAC) was constituted in 1980 by the Government of India in accordance with the directives of the Narmada Water Disputes Tribunal (NWDT) with a view to ensure efficient, economical and early execution of Unit-I (Dam and Appurtenant works) and Unit-III (Hydropower works) of the Sardar Sarovar Project.

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

2.4.2. ACHIEVEMENTS:

The work of Unit - I and Unit-II has been almost completed by the Government of Gujarat. The residual work, which is very nominal, is being looked after by SSCAC.

2.5. BANSAGAR CONTROL BOARD (BCB)

2.5.1. INTRODUCTION

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

2.5.2. 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 Resources Department, Government of Madhya Pradesh under direction of Bansagar Control Board. The party States

are carrying out the execution of the canals and power systems independently under their jurisdiction. Bansagar Dam was raised to its full height along with erection of 18 nos. Radial Crest Gates in June, 2006. In 2018-19, the reservoir got filled up to Reservoir Level 341.64m on 12.09.2018.

2.5.3. STATUS OF RELEASE OF WATER TO THE BENEFICIARY STATES FROM BANSAGAR DAM (2018-19):

The total water released to the States of Madhya Pradesh, Uttar Pradesh and Bihar from April, 2018 to 7th January, 2019 is 1051.842 M.Cum., 31.914 M. Cum and 766.471 M.Cum respectively.

2.6. UPPER YAMUNA RIVER BOARD (UYRB)

2.6.1. INTRODUCTION

A memorandum of Understanding (MoU) was signed by the Chief Ministers of Himachal Pradesh, Haryana, Uttar Pradesh, Rajasthan and National Capital Territory of Delhi on 12th May, 1994 regarding allocation of utilizable surface flow of River Yamuna upto 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 Board in 2001.

Three storage projects viz. Lakhwar (on the river Yamuna with 330 MCM live storage & 300 MW power generation in the State of Uttarakhand), Kishau (on the river Tons, a tributary of river Yamuna with 1324 MCM live storage & 660 MW power generationin the States of Uttarakhand & HP) & Renukaji (on the river Giri, a tributary of river Yamuna with 498 MCM live storage &40 MW power generationin the State of HP) MPPs are identified to be constructed in Upper Yamuna basin. All the three projects have been declared as National Projects in 2008 under which 90% funding of the irrigation/drinking water component of the projects shall be provided by the Central Govt. as central assistance and rest amount will be borne by the basin States.

2.6.2. 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, Uttar 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 uptoand including Okhla Barrage.

2.6.3. 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 upto and including Okhla barrage.

2.6.4. ACTIVITES OF UYRB:

(a) 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.

(b) Investigation works of above three projects were started in around 1976 and the same were declared as National Projects in 2008. In spite of these, the construction of these projects could not be started. Signing of agreement for the construction of Lakhwar & Renukaji MPPs amongst basin States could only be done by the Hon'ble Chief Ministers of the basin States of Uttar Pradesh, Himachal Pradesh, Uttarakhand, Haryana, Rajasthan and NCT of Delhi on 28th August, 2018 & 11th January, 2019 respectively after consistent efforts of Ministry of WR, RD & GR, GoI.

(c) UYRB has continuously been engaged itself in resolving inter-State issues amongst the basin States and signing of agreements related to water distribution. The matter related to division of Yamuna water between UP & Uttarakhand from the share of erstwhile UP as per MoU dated 12.05.1994 is in final stage.

(d) To sort out the issues related to consent/NOC on amended draft agreement from the States of Himachal Pradesh and Uttarakhand in respect of Kishau MPP, a meeting was taken by Hon'ble Minister (WR, RD & GR), GoI on 11th January, 2019 with the Hon'ble Chief Ministers of both the States.

(e) UYRB worked 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.

(f) Pre-construction activities of office building of UYRB at Board's land namely Plot No. C-56/3, Sector – 62, NOIDA are in progress.

(g) Board has organized 54 meetings of the Board and 7 meetings of the UYRC since its constitution to till date. In the year 2018-19, 03 Board meetings viz. 52nd, 53rd& 54th and were held on 14.05.2018, 28.05.2018 & 28.06.2018 respectively under the Chairmanship of Chairman, UYRB & Member (WP & P), CWC in which various important decisions were taken. Next UYRB Board meeting was held on 25.02.2019.

2.7. FARAKKA BARRAGE PROJECT (FBP)

2.7.1. INTRODUCTION

FBP was commissioned in 1975 for preservation and maintenance of Kolkata Port and for increasing the navigational depth of the Bhagirathi-Hooghly waterways. The Farakka Barrage comprises of a 2245m long barrage across river Ganga at Farakka in Murhsidabad district of West Bengal, a canal Head Regulator at Farakka for diverting 40,000 cusec water to 38.38 km long feeder canal and Jangipur barrage, besides the rail-cum-road bridge built across river Ganga at Farakka, Navigation lock at Farakka, Jangipur and Kalindri, a road-cum-rail bridge across the feeder canal, townships at Farakka, Ahiron and Khajuriaghat having 4000 dwelling units. The appurtenant structures include flood embankment marginal bunds, afflux/ guide bund etc. The existing navigational lock at Farakka has been transferred in April, 2018 to IWAI under Ministry of Shipping for their operational requirement.

FBP authority has been assigned following major responsibilities:

- Operation & Maintenance of Main Barrage
  - (a) 112 gates on main Barrage
  - (b) 11 gates on Head-Regulator
  - (c) 15 gates of Jangipur Barrage
  - (d) 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 original jurisdiction (12.5 km upstream and 6.9 km downstream of Barrage); alongwith its allied structures like marginal bund, afflux bund, inspection road, regulator, 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.

So far 42 gates of the Farakka Barrage have been replaced with new gates and the work of replacement of remaining gates has 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 to lives and livelihood of local people in the region.

2.7.2. TREATY ON SHARING OF GANGA/ GANGES WATERS AT FARAKKA

As per the Treaty signed by the Prime Ministers of India and Bangladesh on 12th December, 1996 the Ganga/Ganges waters is being shared at Farakka (which is the last control structure on river Ganga in India) during lean period, from 1st January to 31st May every year, on 10-daily basis as per the formula provided in the Treaty for 30 years and monitored by a Joint Committee headed by Members, JRC from both sides. The 69th & 70th meeting of Joint Committee were held at Kolkata (in May, 2018) & Dhaka (in September, 2018) respectively.



A Bird's eye view of the Farakka Barrage Project

2.7.3. MAJOR ACHIEVEMENTS OF WORK(S) IN THE YEAR FOR FARAKKA BARRAGE PROJECT ARE LISTED BELOW:-

- Emergency Anti-erosion work at upstream right bank of River Ganga near Burning Ghat to Ganga Pump House Area.
- Emergency Anti-erosion Work at downstream left bank of river Ganga near Hossianpur Area (working length 330.00 m).
- Partial restoration of 9th marginal embankment (breach portion) on Left Bank of River Ganga U/S of Farakka Barrage between Ch. 1950.00 m and Ch. 2150.00 m (Total working length 200 m).
- Protective measures of eroded bank at u/s left bank of Farakka Barrage near Birnagar area in between Ch. 2177 to 2229 and in between Ch. 2520 to Ch (Total working length 212.00 m).
- Restoration of bank slope in the u/s of Farakka Barrage near village Birnagar on Left Bank of River Ganga in between Ch. 2235.00 m and Ch. 2268 m, 2470 m and 2520 m and 2520 m and 2590 m.
- Restoration of bank slope in the D/S of Farakka Barrage near village Chakbahadurpur on Left Bank of River Ganga in between Ch. 3700.00 m and Ch 3880 m (Total Working length 180 m).
- Transfer of the Existing Navigational lock at Farakka to MoS/IWAI.
- The work for replacement of 35 gates is *in progress (Physical progress is 2%).*
- The work of Construction of walk-way Bridge over piers of Farakka Barrage.
- Renovation/Special repair and improvement of PSC bridge road over Farakka Barrage is *in progress & ahead of schedule. (Physical progress is 20%).*
- Construction of Security wall throughout the Township, FBP Colony Part-I,II,III & IV at Farakka Barrage Project, Murshidabad, West Bengal (Total length 8 km) *work order issued.*
- Construction of Boundary Wall of the Khejuriaghat Colony at Left Bank of River Ganga in Farakka Barrage Project *work order issued.*
- Filling up of bed scour pockets up to RL (+) 3.00 by dumping nylon crates filled with sand filled HDPE bags in Feeder Canal in between RD 0.200 to RD 0.700 under Farakka Barrage Project (Phase-I) is *in progress.*
- Special protection work for canal bank in the left bank of Feeder Canal (total working length 1247 m) is *in progress.*
- Filling up of bed scour pockets up to RL + 5.00 by dumping Nylon crates filled with sand filled HDPE bags in Feeder Canal in between RD 46.50 to RD 47.80 at Up stream of Bagmari Syphon under Farakka Barrage Project is *under tendering stage.*
- Filling up of bed scour pockets by sand filled HDPE bags filled in Nylon crates in Feeder Canal in between RD 48.150 to RD 49.050 (Phase-I) is *under tendering stage.*

- Special repair of internal road of Farakka Barrage Project Township for a length of 9 km (approx.) is *under tendering stage.*
- Design, Fabrication, Manufacturing, Supply, Insurance, Transportation to site, etc. of two tier Fish Lock gates both U/S & D/S at bay no 25 & 25A of Farakka Barrage, misc. Hydro-mechanical/ electro-mechanical components with three yrs operation & maintenance Contract *work order issued.*

3.0 Registered Societies/ Statutory Bodies/ Autonomous Bodies

3.1. NATIONAL WATER DEVELOPMENT AGENCY (NWDA)

3.1.1. INTRODUCTION

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 MoWR, RD & GR) 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.

Hon'ble Union Minister of 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.

3.1.2. HIGHLIGHTS OF ACTIVITIES

a. Interlinking of Rivers under NPP

- Secretary (WR, RD & GR) held a meeting with officials of Governments of Maharashtra and Gujarat on 20.04.2018 and another meeting with Chief Secretaries of Maharashtra and Gujarat on 07.09.2018 for finalisation of Memorandum of Understanding (MoU) for implementation of Damanganga- Pinjal and Par-Tapi-Narmada Link Projects.
- Secretary (WR, RD & GR) held a meeting with officials of Governments of Uttar Pradesh and Madhya Pradesh on 23.04.2018 for finalisation of Memorandum of Agreement (MoA) for implementation of Ken-Betwa Link Project. Government of UP has conveyed the readiness to

sign the MoA vide letter dated 07.08.2018.

- Draft Cabinet Note for National Interlinking of Rivers Authority (NlRA) has been circulated among various Ministries/NITl Aayog. The comments of NITI Aayog, DoPT, MIIA, DoRD, DoF and PMO have been received and the replies have been sent.
- Ministry of Tribal Affairs (MoTA) accorded clearance for R & R plan of Project

  Affected Families (PAFs) under Lower Orr Dam.
- Comprehensive DPR of Ken-Betwa Link Project prepared and sent to Governments of UP and MP, CWC on 22.10.2018.
- Hon'ble Minister (WR,RD & GR) reviewed the status of ILR projects on 31.05.2018.
- Preparation of DPR of Godavari- Cauvery (Grand Anicut) link project has been taken up and is under progress.

b. Intra State Links:

- DPR of Ponnaiyar (Nedungal)-Palar Link Project of Tamil Nadu has been completed and sent to Governments of Kamataka and Tamil Nadu during August, 2018.
- DPR of Wainganga (Gosikhurd)- Nalganga (Puma Tapi) Link Project of Maharashtra has been completed and sent to Government of Maharashtra during November, 2018.
- Preparation of DPRs of Damanganga (Ekdare) - Godavari and Damanganga (Vagh Val) - Vaitarna - Godavari (Kadva Dev) Link Projects of Maharashtra are continued.

c. Activities in the North Eastern Region:

- The Draft Feasibility Report of Manas-Sankosh-Teesta-Ganga (MSTG) has been completed and is under finalisation. The finalised report will be sent to Govts of Bihar, Assam and West Bengal for their comments/views.

3.1.3. DETAILS OF FUNCTIONS/ MEETINGS:

- Hon'ble Minister (WR, RD & GR) held a meeting with Hon'ble Chief Minister of Madhya Pradesh on 18.05.2018 lor Ken-Betwa Link Project.
- Cabinet in its meeting held on 06.06.2018 has reviewed the status-cum progress Report of ILR projects.
- The twelfth Meeting of Sub-Committee for System Studies for identification most appropriate alternate Plan was held on 27.07.201 8.
- 32nd Annual General Meeting of NWDA and l5th Meeting of Special Committee for ILR were held on 20.08.2018 under the Chairmanship of Hon'ble Minister for Water Resources, RD & GR at Vigyan Bhawan, New Delhi.

- 9th& 10th Meeting of Task Force for Interlinking of Rivers were held on 30.05.2018 and 05.10.2018 respectively under the Chairmanship of Dr.B.N.Navalawala.
- 8th , 9th , 10th , 11th , 12th and 13th Meetings of Group on Financial Aspects under Task Force for ILR were held on 18.04.2018, 01.05.2018,12.06.2018,28.06.2018, 12.07.2018 & 25.07.2018. The Group has submitted its Interim Report to the Chairman, TF-ILR on 07.08.2018. The Chairman, TF-ILR submitted the Interim Report to Hon'ble Minister (W& RD & GR) on 02.11.2018.
- The Chairman TF-ILR has submitted the Report of the Group on Legal Aspects under TF-ILR to Hon'ble Minister (WR, RD & GR) on 02.1 1.2018.
- Two Regional Conferences viz; One at Kolkata on 16.04.2018 for Eastern Region and the other at Mumbai on 18.06.2018 for Westem Region to sort out various water related issues between the States.
- NWDA has completed & circulated the draft Detailed Project Report of Godavari-Cauvery (GrandAnicut) link comprising Godavari (Ichampalli/Janampet)-Krishna (Nagarjunasagar), Krishna (Nagarjunasagar)-Pennar (Somasila) and Pennar (Somasila)-Cauvery(Grand Anicut) links.
- The 66th Meeting of Governing Body of NWDA was held on 27.02.2019 at Vigyan Bhawan, New Delhi under the Chairmanship of Secretary (WR), RD & GR.
- 13th Meeting of Sub-committee-II for System Studies for identification of most appropriate alternate plan under the Special Committee for ILR was held on 04.02.2019.

3.1.4. FINANCIAL ASPECTS:

- The budget estimate for the year 2018-19 was Rs. 91.97 Crore. The revised budget estimate for the year 2018-19 is Rs. 83.975 Crore and the actual expenditure upto March 2019 is Rs. 80.29 Crore.
- NWDA disbursed an amount of Rs. 2000.70 Crore to the State Govts as Central Assistance during the period 01.01.2019 to 31.03.2019. As such, NWDA has disbursed Rs. 1400 Crore for Polavaram Project and Rs. 651.12 Crore to North Koel Project, Rs. 3442.28 Crore to 14 States during the financial year 2018-19. The total amount of CA released during the year 2018-19 is Rs. 5493.40 crore.

3.2. NATIONAL WATER MISSION (NWM)

3.2.1. INTRODUCTION

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. The goals, respective strategies and the key achievements are described below:

3.2.2 Physical Achievements and new initiatives taken during the current financial year (From 1st April to 31st December, 2018):

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

New Initiatives & Key Achievements

i. **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 six river basins (Mahanadi, Mahi, Tapi, Subarnarekha, Sabarmati, and western flowing rivers from Tadri to Kanyakumari) and two downscaling studies in association with research institutes like IITs, NITs, IISc and NIH have been approved under the Research & Development scheme of the Ministry.

ii. **Uploading the water data in public domain:**

- CWC has launched web based Water Resources Information System (India-WRIS) in association with NRSC. The Version 4.1 has been initiated in July 2015. More Geographical Information System (GIS) layers are being added in the new Version and now GIS based data is available in public domain at 1:2, 50,000scale.
- 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.
- 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.

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

New Initiatives and Key Achievements

i. **Empanelment of Lead & Field NGOs:** NWM has entered into agreement Memorandum of Understanding (MOU) with TISS, Mumbai to facilitate empanelment of NGOs/VOs to implement activities suggested in list of substantive schemes recommended in the Mission document. NWM has empanelled 62 Lead and Field NGOs. The empanelled Lead and Field agencies across the 4-Zones are meant for implementing various activities of NWM broadly consisting of promoting water conservation, minimize wastage and increasing water-use-efficiency through awareness and capacity



Shri U. P. Singh, Secretary (WR, RD & GR) addressed about the role of community and NGOs in water conservation augmentation and preservation.

building, encouraging local planning and participation. The list of empanelled Lead and Field NGO's is given at ***Annexure-X.***

ii. NWM organized a scoping meeting with its empanelled NGOs on 20th November 2018 with an objective to exchange information and ideas on water management and water sustainability in vulnerable areas and to encourage participation of NGO's in various activities related to achieving the five identified goals of NWM. As the NGOs have trained manpower in the field of Information, Education and Communication (IEC) and Social mobilization they can act as good communicators, activators and motivators.

iii. NWM organized a scoping meeting with all the Central Public Sector Undertakings (CPSEs). The meeting was organized as a part of one of the strategies to interact and encourage corporate sectors/ industries to take up, support and promote water conservation activities as part of their Corporate Social Responsibility (CSR). About



Shri U. P. Singh, Secretary (WR, RD & GR) addressed representatives of CPSEs about how CPSEs can contribute towards water conservation during scoping meeting on 8th January 2019

75 CPSEs participated from across the country. The interaction in the workshop explored the possibilities that include; support and promote water conservation, augmentation and preservation, conduct water audit within industry, adopt water efficient technologies within the industry, adopt vulnerable and over exploited blocks of water for conservation, augmentation and preservation and to develop them as role models and to spread awareness among Industries and people working in it towards better water conservation.

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

New Initiatives and Key Achievements

i. **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. 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.

ii. **Promotion of Water Purification and Desalination:** It is proposed to install desalination plants based on the innovative technology developed by Central Salt and Marine Chemicals Research Institute (CSMCRI) in the States of Gujarat, Tamil Nadu and Andhra Pradesh. Three sites have been identified in the State of Gujarat, and the CSIR-CSMCRI has completed Design and development work for 1000- 1500 LPH capacity RO unit. 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.

iii. **Organizing Regional workshop for focused attention to vulnerable and over exploited area**: N W M has planned to organize a number of workshops during 2018-19 with an objective of the proposed workshop includes improved groundwater management through community processes, creating local leadership and enabling peer-to-peer learning between NGOs and communities. The objective of the workshops is aimed for appreciation and replication of such state/different agencies efforts to minimize the effect of over exploitation and salinity. On 30th November 2018, NWM has conducted a workshop in Jhansi (Uttar Pradesh) where more than 1000 people including resource persons from different Central ministries, State officials, industry, Research Organization, Gram Pradhans, Block Development Officers (BDOs), NGOs and local community people participated.



Workshop conducted on focused attention to vulnerable and over exploited areas on 30 November 2018 in Jhansi.

Goal 4: Increasing water use efficiency by 20%

New Initiatives and Key Achievements

i. **Base Line Studies for Improving WUE in Irrigation Sector:** NWM has awarded twenty six Base Line 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. NERIWALM-Tezpur, WALAMTARI-Hyderabad, WALMI-Aurangabad and CWRDM-Kerala are conducting these studies.

ii. **Bench marking studies for Improving WUE in Industrial Sector:** NWM has awarded a bench marking Study to "The Energy & Resources Institute (TERI)", New Delhi to ascertain the bench marks 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.

vi. **Efficiency labelling of water appliances and fixtures**: For developing standard in respect of improving water use efficiency in domestic appliances, NWM has collaborated with Bureau of Indian Standard (BIS) for efficiency labelling. Standards for Washing Machine are under finalization and standards for Dish Washer, Tap, Bathing Shower, Toilet cistern etc. are under process.

Goal 5: Promotion of basin level integrated water resource management

New Initiatives and Key Achievements

i. **Preparation of State Specific Action Plans (SSAP) for water sector:**

NWM has initiated action to prepare State Specific Action Plan (SSAP) for water sector covering irrigation, agriculture, domestic water supply, industrial water supply and waste water utilization in respect of all the States/UTs. NWM has developed a common template for-water budgeting to be filled and completed by the State Governments as a part of their SSAP for water sector. 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. Memorandum of understanding has been signed by 25 States/UTs for preparation by SSAP. Tamild Nadu, Chhattisgarh, Arunachal Pradesh, Uttarakhand and West Bengal have completed the formulation of SSAP and processing for submission. These five States made presentation in the meeting (10.01.2019) with Nodal Officers for SSAP to other States present in the meeting on the methodologies adopted by them for successful formulation of SSAP so as to provide guidance to the remaining States in completion of their template.

NWM in collaboration with NERIWALM and NIH organized National Inception workshop on State Specific Action Plan (SSAP) for water sector in five regions of the country i.e. Pune on 13/09/2018, Bhubaneswar on 19/09/2018, Hyderabad on 05/10/2018, Gangtok on 25/10/2018 and Shimla on 09/12/2018. The overall objective of SSAP workshop was to understand the importance of Water Budgeting and enable State/UT nodal officers for better understanding of the key parameters/ Objectives of SSAP template and help the stakeholders to build the capacities to formulate SSAP expeditiously. The workshop participants (around 500 people) included Union Minister Shri Arjun Ram Meghwal, State Ministers, expert from Government Departments and non-Government agencies, NGOs, State govt. officials.

3.3. NATIONAL INSTITUTE OF HYDROLOGY (NIH)

3.3.1. INTRODUCTION

The National Institute of Hydrology, a Govt. of India Society under the MoWR, RD & GR, established in December 1978 at Roorkee, is conducting basic, applied and strategic research in the fields of hydrology and water resources development. The Institute is fully aided by the Ministry of Water Resources, Govt. of India. The Objectives of the institute 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.



Hon'ble Minister of State for Water Resources, RD & GR, Shri Arjun Ram Meghwal (a) lighting ceremonial lamp during inaugural of SSAP workshop held in Pune on 13th September 2018 and (b) gracing the SSAP workshop held at Bhubaneswar on 19th September 2018.

- 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.

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).

3.3.2. Studies and Research:

Major Research Areas (beyond XIIth Plan) are as under:

- 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 hydrologic modeling of catchments, snow and glacier melt modeling, environmental flows assessment, integrated water resources management, water quality management plan for lakes, watershed development, storm water drainage network in cities and flood inundation mapping and flood risk zoning.

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
- Hydro-meteorological observatory

The research output of the Institute is published in the form of reports and peer reviewed scientific papers. During the year 2018-19 (up to Dec. 2018), the Institute has published 22 papers in reputed international and national journals and proceedings of international and national conferences and symposia. It is expected that more papers will be published by March 2019). During the year, 34 technical and 62 sponsored studies were going on. 13 consultancy projects were completed and 63 are ongoing in the year 2018-2019.

One of the main objectives of the Institute is to transfer the developed technology to the target users.The Institute has organized 9 training programmes for field engineers, scientists, researchers, etc.

Twenty four Scientists and scientific staff of the Institute were trained at various places in the country.

3.3.3. National Hydrology Project:

Keeping in view the NHP objectives and initiatives, NIH is involved in the following activities of NHP:

a. **Purpose Driven Studies (PDS):** The R&D Section at NIH is coordinating research activities, and reviewing and monitoring the progress of PDSs. Three R&D Sessions were organized on: 13-14 July, 2017, 19-20 September, 2017 and 6 March, 2018. Total 33 PDS were approved during these R&D sessions.

b. **Training and Capacity Building:** During the year, 12 courses were organized by NIH at Roorkee, Belgaum, Bhopal, Mandi and Tezpur. Training reports of all the courses have been prepared.

c. **Centre of Excellence for Hydrologic Modelling***:* In the year 2017-18, a status report on "Hydrologic modelling, current status and future directions" has been prepared. Two studies have been initiated during 2017-18: (i) Integrated Assessment of the Impacts of Climate Change on the Hydrology of Narmada basin through Hydrological Modelling Approaches and (ii) Integrated Management of Water Resources for Quantity and Quality in Upper Yamuna Basin up to Delhi. A





Joint study with IIT Kharagpur on "Development and Testing of a Large-Scale Conceptual Hydrological Model" has been approved and initiated during the year.

d. Decision Support System (DSS): During the year TOR for DSS (PM) i.e. Decision Support System (Planning & Management) has been finalized and interaction with states on DSS (PM) has been made.

3.3.4. NMSHE Project: Integrated Hydrological Studies for Upper Ganga Basin up to Rishikesh

DST has approved a project proposal entitled *"Integrated Hydrological Studies for Upper Ganga Basin up to Rishikesh"* under the National Mission for Sustainable Himalayan Ecosystem (NMSHE). This project, which has been approved by the DST in January, 2016 at total cost of Rs.13.04 Crore, envisages to focus on issues of comprehensive integrated hydrological studies for upper Ganga basin up to Rishikesh. Following 11 sub-projects have been formulated with different study teams:

a) Development of hydrological database in Upper Ganga basin
b) Real-time snow cover information system for Upper Ganga basin
c) Glacial Lakes & Glacial Lake Outburst Flood (GLOF) in Western Himalayan region
d) Assessment of downstream impact of Gangotri glacier system at Dabrani and future runoff variations under climate change scenarios
e) Observation and modeling of various hydrological processes in a small watershed in Upper Ganga basin
f) Hydrological modeling in Alaknanda basin and assessment of climate change impact
g) Hydrological modeling in Bhagirathi basin up to Tehri dam and assessment of climate change impact
h) Study of river - aquifer interactions and groundwater potential in the upper Ganga basin up to Dabrani
i) Understanding of hydrological processes in study basin by using isotopic techniques
j) Environmental Assessment of Aquatic Ecosystem of Upper Ganga Basin
k) Water Census and Hotspot analysis in selected villages in Upper Ganga basin

All the sub-projects are concentrated in the Upper Ganga basin up to Rishikesh except for the glacial lake and GLOF studies which will be carried out in parts of western Himalayas region.

3.3.5. Neeranchal National Watershed Project (NNWP) [World Bank funded, PMKSY component of Department of Land Resources]

The objectives of this project are:

- Develop and pilot a DSS-Hydrology to implement Watershed Component of PMKSY at 28 demonstration watersheds in 9 States
- Develop tools and systems to help all stakeholders to make better water management decisions during watershed planning (DPR) and post implementation (Impact Assessment)
- Conduct capacity building programs for stakeholders (SLNAs)

The overall objective of the development of DSS-Hydrology is to support DoLR and States in bringing hydrology-based planning in watershed development and to facilitate improved returns from watershed management. The DSS-H will use new technologies and models for hydrological assessment and monitoring, and will translate complex and large data sets into simple and meaningful outputs designed for decision making. The DSS-H shall identify appropriate and feasible soil, land and water conservation interventions at the planning stage and facilitate impact assessment for the interventions based on scientific principles.

During the year 2018-19, the generic DSS development was completed and customization for Kanker district (Chhatisgarh) was attempted. A demonstration of the DSS-H module was organized at Raipur during 20-21 July 2018 for the officers of Kanker and Jashpur districts in Chhatisgarh. The NIH Neeranchal Project team also presented DSS-H module at a workshop entitled 'DSS and Geoinformatics for Planning Monitoring and Evaluation of Watershed Management', organized by FRI, Dehradun during 30-21 July 2018.

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

The objective of NERIWALM is to promote advancement of science and acquisition of scientific knowledge and to provide instruction and training in water and land management for irrigation and agriculture. It imparts trainings to enhance knowledge, skill and capacity of in-service personnel working in the Departments of Water Resources/Irrigation, Soil Conservation, Agriculture & Horticulture, Rural Development etc. including Water Users Associations (WUAs) and farmers in the NE region of India.

During the year 2018-19, the NERIWALM targets to conduct of 66 programmes for different stakeholders like officers, farmers, Women groups/ farmers and student. Total number of 1889 participants are benefited from such training programmes. The breakup of number of programmes and participants for different target groups is given in the Table.

Types of programme	Target Group	Target for 2018-19	Achievement (April to December, 2018)	Anticipated Achievement (Jan to March, 2019
One week training programme	Officers	05	5	-
	Student	-	9	3
	NGOs	-	1	-
Three days training programme	Officers	12	1	2
	Farmers	08	2	1
	WUAs	06	2	1
	NGOs/SHGs	03	0	1
One day training programme	Farmers	06	1	1
	WUAs	08	0	1
	Students	-	1	-
ToT (One week)	Farmers	03	0	1
	WUAs	03	0	1
	NGOs	02	0	1

Types of programme	Target Group	Target for 2018-19	Achievement (April to December, 2018)	Anticipated Achievement (Jan to March, 2019
Total Training		56	31	-
Seminar, Workshop, Conference	Officers	02	17	-
	WUAs	02	1	-
	Farmers	-	1	-
	Students	-	2	-
Grand Total		**65**	**52**	**13**

3.5. National Mission for Clean Ganga (NMCG)

3.5.1. INTRODUCTION

NMCG was 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 has since been dissolved with effect from the 7.10.2016, consequent to 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 MoWR, RD & GR,
- 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.

National Mission for Clean Ganga has signed Memorandum of Understanding (MoUs) with various Central Ministries such as Ministry of Human Resources Development, Ministry of Rural Development, Ministry of Railways, Ministry of Shipping, Ministry of Tourism, Ministry of Ayush, Ministry of Petroleum, Ministry of Youth Affairs and Sports, Ministry of Drinking Water & Sanitation and Ministry of Agriculture for synergizing their efforts for the common cause of Ganga Rejuvenation.

3.5.2. FUNDING & SANCTION OF PROJECTS

NMCG receives grants from GOI for implementing the Namami Gange Program. The allocation for this program for the current financial year of 2018-19 is Rs. 3070.00 crore. Allocations to NMCG from GOI are 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 the FY 2018-19 against Budget allocation of Rs. 3070.00 crore MoWR, RD & GR has released an amount of Rs. 1670.00 crore to National Mission for Clean Ganga. NMCG released an amount of Rs. 2120.54 crore (till 31.12.2018) to State Programme Management Groups and other implementing agencies for the implementation of project under Namami Gange.

3.5.3. 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.

a. 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 15.01.2019 aggregate of 468 MLD capacity created and 92 MLD rehabilitated and sewerage network of 2488.17 km has been completed and made operational under NGRBA/ Namami Gange. Further, STP projects with additional treatment capacity of 2607.37 MLD new capacity and 827 MLD rehabilitation Capacity sewerage network projects of 2454 km have been sanctioned and are in various stages of implementation. NMCG has so far sanctioned 136 Sewerage Infrastructure projects in 106 towns on Ganga and 30 towns on tributaries at Rs. 20623.13 Crore under Namami Gange Program including Externally Aided projects (EAP) component with the assistance of Japan International Agency (JICA) and the World Bank. The overall status of these Sewerage infrastructure Components under Namami Gange are tabulated below:

State	No. of Projects	Total Sanctioned Cost (Rs. Crore)	Total Expenditure (Rs. Crore)	No. of projects completed
Uttarakhand	32	1084.51	356.72	18
Uttar Pradesh	43	8516.38	1888.60	13
Bihar	26	5029.93	479.06	-
Jharkhand	2	156.12	79.83	-
West Bengal	19	3245.67	831.23	3
Haryana	2	217.87	217.94	2
Delhi	11	2361.08	81.37	-
Total	136	20623.13	3934.75	36

b. Hybrid annuity based PPP model:

Financial model for execution of infrastructure projects under Namami Gange Programme on Hybrid Annuity based Public Private Partnership (PPP) model has been developed. The purpose is to implement infrastructure projects under 'Namami Gange' in a financially sustainable, outcome oriented and accountable manner.

Accordingly, development of 82 MLD STPs at Haridwar , 30 MLD at Mathura, 50 MLD STP at Varanasi, 50 MLD at Unnao, Shuklaganj and Kanpur, 72 MLD at Allahabad - Naini, Jhusi, Phaphamau and 35 MLD STP at Farrukhabad have been awarded under Hybrid annuity mode. Similarly, Bids are under evaluation for STP at Digha and Kankarbagh, Patna; Howrah and Bally, Kamarhati and Baranagar. Projects of Mirzapur, Gazipur; Bhagalpur, Kolkata (Tolly's Nala), Hugli-Chinsurah & Maheshtala and Moradabad are under bidding.

3.5.4. MONITORING OF POLLUTION:

a. Ghat Cleaning Activities:

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

b. River Surface Cleaning

River surface cleaning services through trash skimmers have been hired for 11 towns. These trash skimmers are operational in Haridwar, Garhmukteshwar, Kanpur, Prayagraj, Varanasi, Patna, Sahibganj, Howrah, Nabadwip, Mathura-Vrindavan, and Delhi.

c. Ghat Cleaning

IL&FS Environmental Infrastructure and Services Ltd. (IEISL) has been engaged for cleaning of 84 ghats in Varanasi for 3 years at a cost or Rs. 5 Crores per year. Similar ghat Cleaning activities have been taken up for cleaning of 87 ghats at Bithoor, Kanpur, Prayagraj and Mathura- Vrindavan in Uttar Pradesh at a cost of Rs. 12.97 crore for 3 years. Also Cleaning of 72 ghats of Haridwar, Uttarakhand has been taken up at a cost of Rs. 15.9 Crore for 3 years.

d. River Front Development

Details of the River Front development project is as under:–

- Cost: Rs. 243.27 Crore
- Expenditure: Rs. 233.77 Crore

- No. of Ghats: 20 (16 Complete)
- Promenade: 6.6 km (4.8 Complete)
- Crematoria : 1 - Completed
- Buildings: 3
- Completed - Audio visualTheatre at Baharwa Ghat
- 70% Completed - Community cum Eco Centre at Collectorate Ghat and Community cum Cultural Centre at Raja Ghat.



Loharwa Ghat **Promenade**

e. Ghats/ Crematoria

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

S. No.	State	Sanctioned			Cost (In Cr.)	Completed		Ongoing/Under Progress		Under Tendering		Expenditure incurred (Till 31st Dec) Rs. in Crores
		Ghats	Crematoria	Total		Ghats	Crematoria	Ghats	Crematoria	Ghats	Crematoria	
1	Uttarakhand	22	22	44	175.08	17	13	4	9	1	0	153.39
2	Uttar Pradesh	87	25	112	397.70	53	0	34	25	0	0	154.18
3	Delhi	1	0	1	1.99	0	0	0	0	1	0	0.00
4	Bihar	14	1	15	63.78	5	0	9	1	0	0	18.66
5	Jharkhand	12	2	14	62.07	4	1	8	1	0	0	25.96
6	West Bengal	9	3	12	16.77	0	0	9	3	0	0	5.16
TOTAL		145	53	198	717.39	79	14	66	39	2	0	

3.5.5. RURAL SANITATION AND GANGA GRAM

a. Rural Sanitation:

Ministry of Drinking Water & Sanitation has constructed 10,83,688 no. of Individual Household Latrines (IHHLs) in 4465 Ganga bank villages and declared Open Defecation Free (ODF), for which NMCG has released Rs. 829.04 Cr. to Ministry of Drinking Water & Sanitation.

b. 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.

Ministry of Drinking Water & Sanitation (MoDWS) is developing 25 villages as Ganga Grams on pilot basis from across the 5 Ganga basin states. Out of these 25 villages, implementation

has been completed in 4 villages and work is in progress in 21 villages. Liquid waste management is one of the priority activities under the Ganga Gram scheme, which is being implemented in all the identified 4465 villages along the Ganga river. NMCG has released Rs. 123.96 Cr. to Ministry of Drinking Water & Sanitation for the implementation of the project. Status of LWM is given below (as on 22nd January 2019):

State	No. of Villages	Total Gram Pan-chayats	DPR pre-pared	DPR Ap-proved	Imple-menta-tion Com-pleted	On-going	Fund released by NMCG for LWM (2015-2019) (Rs. in Cr.)
Bihar	468	271	12	0	0	12	62.08
Jharkhand	66	26	5	5	0	5	0
Uttar Pradesh	1604	1011	550	500	3	206	20
Uttarakhand	222	130	130	130	29	101	0
West Bengal	2105	224	80	80	0	80	41.88
Total	**4465**	**1662**	**777**	**715**	**32**	**404**	**123.96**

Afforestation is also an another priority activity under the Ganga Gram scheme, for which NMCG has released Rs. 67.0 cr. to the State Forest Departments of the 5 Ganga basin States.

3.5.6. Biodiversity Conservation:

Under the "Namami Gange" Programme, "Conservation of aquatic life-with special attention to Dolphin, Ghariyal Turtle and Fish" has been identified as one of the immediate activities. Wildlife Institute of India (WII) is implementing the project "Biodiversity Conservation & Ganga Rejuvenation".

Survey has been carried out in the Ganga River to understand the present status and distribution of the identified aqua life of Ganga River and create a base line. The report published on the basis of survey identifies more than 50% of the Ganga river stretch with high biodiversity values in terms of presence of priority aquatic species such river dolphins, otters, gharials, aquatic birds and fishes. This signifies that the river is thriving with life and has high odds for rejuvenation. High biodiversity values areas were identified for developing management plan to restore and rejuvenate the existing aqua life of Ganga in these identified stretches.

Rescue and Rehabilitation Centre in Narora (NAPS) and Sarnath (UPFD) established and operationalized for the restoration of the aquatic environment of River Ganga. Nature Interpretation Centres are being developed to create Mass Conservation Education and Awareness among various stakeholders. WII is also developing a cadre of trained Ganga Prahari to support the Ganga Rejuvenation Programme. Till date over 600 Ganga praharis trained.

3.5.7. Afforestation:

Forestry Intervention for Ganga is being implemented by the 5 Ganga bank States under the Namami Gange programme, as per the DPR prepared by FRI Dehradun. NMCG has sanctioned Rs.

112.141 cr. for afforestation work in 10785 ha. land during the year 2016-18. Further, during the FY 2018-19, Rs. 87.84 cr. has been sanctioned from Clean Ganga Fund for afforestation including maintenance for 1st & 2nd years. For implementation of balance work under the FRI-DPR, MoEF & CC has agreed to carry out afforestation through the CAMPA fund.

3.5.8. ECO TASK FORCE/ GANGA TASK FORCE:

Ganga Task Force, a unit of Territorial Army, Ministry of Defence was established by NMCG during the year 2017 with the following objectives:

a) Plantation of trees to check soil erosion.

b) Management of public awareness/ participation campaign.

c) Patrolling of sensitive river areas for biodiversity protection.

d) Patrolling of Ghats.

e) Monitoring of river pollution

f) Assist during floods/natural calamity in the region.

The GTF has started its activities in Prayagraj.

3.5.9. INTERNATIONAL COOPERATION

National Mission for Clean Ganga (NMCG) has been receiving financial and technological assistance for cleaning of river Ganga from foreign countries / external agencies. NMCG endeavours to deploy best available knowledge and resources across the world for Ganga rejuvenation. Countries such as Australia, United Kingdom, Germany, Finland, Israel etc. have shown interest in collaborating with India for Ganga rejuvenation. Germany has been providing technical collaboration to the project "Support to Ganga Rejuvenation" under Indo – German Bilateral Development Cooperation and has committed an amount of Euro 3 million.

Among the major achievements of our foreign partners this year were organising Bal Ganga Mela, River Basin organisation workshop and Ganga Museum workshop by GIZ, Germany. Israel Government part sponsored the training for six officials from NMCG and other officials from State of Punjab & Maharashtra at Tel Aviv and Rehovot, Israel under their course on Thematic Water Delegation tailored and focused on Sharing of Israeli Water Policy Experience : Planning, Implementation and Lessons learned" and "MASHAV Course on Urban Water Technologies & Management".

3.5.10. Abatement of Industrial Pollution

The status of miscellaneous activities related to abatement of industrial pollution is as under:

a. Re-inventorisation & identification of 961 Grossly Polluting Industries (GPI) on main stem of river Ganga completed.

b. Third Party Inspection (TPI) of 961 GPIs completed by engaging institutes of repute.

c. Zero Liquid Discharge achieved in 32 molasses based Distilleries.

d. Percent compliance of GPIs increased from 39 to 69 % (2017 vs 2018).

e. Charter for abatement and control of pollution in Sugar mills has been prepared and its implementation initiated.

f. Show Cause notice issued to non-complying Sewage Treatment Plants (STP) under section 5 of Environmental (Protection) Act,1986.

g. Construction of 20 MLD Common Effluent Treatement Plant (CETP), Collection and Conveyance system, Pilot-scale 200 KLD Zero Liquid Discharge (ZLD) plant and 900 KLD Common Chrome Recovery unit at Jajmau tannery Cluster, Kanpur with an estimated cost of Rs.554 crores sanctioned and tender floated.

h. Up-gradation of existing 6.25 MLD CETP at Mathura Textile cluster sanctioned by NMCG for Rs. 13.87 crores.

i. A project on "Inspection and Monitoring of Industries, STPs and CETPs by Third Party Technical Institutions" at an estimated cost of Rs 98.12 Lakhs sanctioned to Uttar Pradesh State Pollution Control Board (USPCB) for Kumbh period.

j. Strengthening of Laboratories of State Pollution Control Boards at an estimated cost of Rs 85.97 crores sanctioned for SPCBs (Uttrakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal).

k. Comparative assessment of bio-monitoring study for River Ganga for the period 2014-2018 under process.

l. 40 Real Time Water Quality Monitoring (RTWQM) Stations for the second phase has been identified and their tendering work is under progress.

m. A Technical Expert Committee with an advisory role for establishment of Ganga Monitoring Centres (GMC) has been constituted.

1.1.11. New Initiatives

a. CSIR-NEERI in June, 2018 submitted a report on "Assessment of water quality and sediment analysis to understand the special properties of Ganga river" with following salient findings:

   (i) DO levels in river Ganga do not appreciably reduce even at high density population centers and industrial areas, though there is a high influx of organic load entering the River.

   (ii) In river Ganga, the bacteriophages were detected to be approx. 3 times more in proportion than bacterial isolates.

b. NMCG have issued a notification dated 10th October 2018 on environmental flows in river Ganga, wherein minimum environmental flows have been notified that is to be maintained in river Ganga from its origin to Unnao (Uttar Pradesh) specifically at locations downstream of structures or projects meant for diversion of river flows for purposes like irrigation, hydropower, domestic and industrial and other requirements.

c. Services for removal of pollutant from drain water through installation and commissioning of modular treatment system for drain joining River Ganga.

3.6. NARMADA CONTROL AUTHORITY (NCA)

3.6.1. INTRODUCTION:

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 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.

3.6.2. ORGANISATION:

The Authority is headed by the Secretary, MoWR, RD & GR, 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 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.

3.6.3. PROGRESS OF SARDAR SAROVAR PROJECT

a. SARDAR SAROVAR DAM

Sardar Sarovar Project was dedicated to the Nation by the Hon'ble Prime Minister on 17th September, 2017. An expenditure of Rs.66, 890.70 crore has been incurred on Sardar Sarovar Project upto January, 2019.

b. NARMADA CANAL SYSTEM

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 complete.

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 systems 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 2018-19. In Rajasthan portion, works pertains to Distributaries (Flow & Lift) including Sub- distributaries, minors & sub-minors were almost completed to 99.7%.

c. UTILIZATION OF WATER

The Narmada water is being supplied to Central Gujarat/ North Gujarat and Saurashtra region of Gujarat. Irrigation benefits are being achieved by releasing Narmada water from the Sardar Sarovar Dam. Govt. of Gujarat has created a irrigation potential of 16.38 Lakh ha. out of 17.92 Lakh ha. up to minor level and the CCA development up to Sub-minor level is 14.87 Lakh ha. against 18.45 Lakh ha till March, 2019. Around 10,66,585 ha. area has been irrigated & drinking water supply to the quantity of 1121.86 MCM provided till March, 2019 during the irrigation year i.e. from July, 2018 to June, 2019 in Gujarat.

Rajasthan has also created an irrigation potential of 2.45810 Lakh ha. to utilize Narmada water. Drinking water benefits will be provided to 1541 Villages & 03 Towns of Jallore&Barmer Districts in Rajasthan. 1.8 Lakh ha. area has been irrigated till December, 2018 during the irrigation year i.e. July, 2018 to June, 2019.

3.6.4. RESETTLEMENT AND REHABILITATION ACTIVITIES

SARDAR SAROVAR PROJECT (SSP) PROGRESS OF R&R

Upto 31st December, 2018

Dam height	State	No. of Villages affected	Total PAFs	Total PAFs resettled	Balance PAFs likely to be resettled
138.68m.	Gujarat	19	4763	4763	Nil
	Maharashtra	33	4307	4307	Nil
	Madhya Pradesh	178	23614	23614	Nil
Total		230	32684*	32684	Nil

**This number of PAFs may change due to addition / subtraction of genuine/false PAFs likely to be declared by the GRA/State Governments.*

3.6.5. DROUGHT MITIGATION IN GUJARAT STATE

During the Water Year 2017-18, Narmada basin received about 29% less rainfall which resulted into 46% deficiency in availability of Narmada waters. Naturally this has created hydrological drought condition in Madhya Pradesh as well as Gujarat & Rajasthan. This drought condition would have created a great crisis in terms of fulfilling the water requirement for drinking, irrigation & industries as well as maintaining environmental flow in the Narmada River. Madhya Pradesh agreed to release about 14 Million Cubic Meter of water per day, Maharashtra and Gujarat permitted to utilize their unutilized share by Gujarat and Gujarat has also been allowed to utilize its water storage in Sardar Sarovar Reservoir below Minimum Draw Down Level to mitigate the hydrological drought condition and fulfilling requirement for drinking, irrigation and industries till the onset of next monsoon.

3.6.6. 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 431.495 MUs (0.00 MUs from RBPH &431.495 MUs from CHPH) during the FY 2018-19 (01st April, 2018 to 06th January, 2019). 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.

3.6.7. REAL TIME DATA ACQUISITION SYSTEM IN 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 was decided in 19th Hydromet Meeting to upgrade the existing 4 Project Station namely Bargi, Tawa , ISP and SSP with suitable necessary infrastructure. At present, 4 Project Stations and MCC are operational and hourly hydrometeorological 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 as well as cardinal Stations at Narmada.

Consequent upon the decision taken in the 88th NCA meeting held at New Delhi on 17th May, 2017, the Central Water Commission was directed to take up the work of implementation of Real Time Data Acquisition System in Narmada basin for inflow forecast and Annual Water Accounting. The data thus obtained will be shared to NCA as well as party States on real time basis seamlessly. In pursuance,CWC had constituted a Committee under the Chairmanship of Executive Member, NCA to finalise RFP so that Chief Engineer (NBO), CWC, Bhopal can take necessary actions for implementation of RTDAS. The duly formed TEC after 2/3 meetings finalized the technical specification, details of data to be observed, density of network etc. and also finalized the draft RFP and forwarded to the Chairman CWC on 04.9.2018 for implementation.

3.6.8. WATER ACCOUNTING

NCA prepares Annual Water Account (AWA) of Narmada Basin and the AWA for the year 2015-16 has been prepared and circulated to the party States. 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 storage in the major and medium reservoirs in Narmada basin, release for various purposes and change in storages, utilization by Party States during monsoon and also the probable non-monsoon flows. The utilizable flow for the year 2018-19, was assessed as 22.63 MAF which was 19% lesser than 28.00 MAF at 75% dependability.

3.7. BRAHMAPUTRA BOARD

3.7.1. INTRODUCTION:

Brahmaputra Board was constituted in the year 1980 by an Act of Parliament (No. 46 of 1980 called “The Brahmaputra Board Act”) under List 56 of Schedule 7 of article 246 of the Constitution of India 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).

3.7.2. HIGH POWERED REVIEW BOARD

A High Powered Review Board to oversee the work of the Brahmaputra Board was constituted with the Union

MoWR, RD & GR 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.

3.7.3. THE NORTH EASTERN HYDRAULIC & ALLIED RESEARCH INSTITUTE (NEHARI):

The institute was established near Guwahati with facilities of Hydraulic Modelling, Soil Testing, Concrete and Rock Mechanics Laboratory in association with CSMRS, CWPRS. The Board has successfully carried out sample testing as requested by various organizations like NEEPCO, CWC, NEC, NHPC and State 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). A Committee under the Chairmanship of Superintending Engineer (Planning), Brahmaputra Board with members from CWC, CWPRS and CSMRS constituted to assess the present condition of the existing infrastructure/equipments, machineries and requirement of new equipments/machineries in different laboratories at NEHARI for making it fully functional. The 1st meeting was held on 10.01.2019.

3.7.4. 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.

3.7.5. ACHIEVEMENTS OF THE YEAR

a. Master Plans

Preparation of Master Plans (Status)

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-

Part	River	Number	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	River	Number	Status
Part-III	Master Plan on tributaries of the Brahmaputra and rivers of Tripura including Majuli Island and Dhaleswari	68	o Approved by Government of India-50 Master Plans o Approved by the Board and submitted to MoWR,RD & GR for approval- 3 Master Plans o Awaiting for comment for State Govt after completion – 1 Master Plan o Further updated as per suggestion of MoWR,RD & GR utilising tools of modern technology – 6 Master Plans o Draft Master Plan under preparation - 3 Master Plans o New Master Plans identified - 5 Sub-basins
Total		**70**	

During the year 2018-19: 3 Master Plans Viz. Jaldhaka, Simsang and Torsa were approved by the Government of India and approval is expected on another 3 Master Plans viz. Teesta, Tangani and Kynshi during the year. Modification of 6 draft Master Plans is continued. 3 Master Plans are under preparation and 5 are in the identified list for preparation.

b. 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 these Projects is summerised in ***Annexure-XI.***

C. 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 26°45'N and 27°10'N, and longitudes between 93°40'E and 94°35'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 tribal - 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 almost completed. A new scheme for protection of Majuli Island from flood and erosion of river Brahmaputra for Rs. 233.57 crore has been approved by MoWR, RD & GR and Ministry of of DoNER allocated Rs 207 crore for the same. Execution of the scheme is in progress. 22% of the work completed so far and targeted to complete 40% work upto March 2019. Rs. 36038 crore spent till December 2018. Board is also planning to create regular office campus longwith a recreation centre at Majuli for monitoring of protection work and for further survey and investigation activities. In this regard district administration has provided land.

Financial Implication

For Expenditure incurred by Brahmaputra Board upto 31st December 2018 on undertaking measures protection of Majuli Island from floods and erosion are detailed below-

d. Restoration of Dibang and Lohit Rivers at Dhola - Hatiguli

The scheme "Avulsion of Brahmaputra at Dhola-Hatighuli (Measures for diversion of River Dibang and Lohit to their original courses) 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 78.46 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

No.	Description	Estimated Cost	Actual Expr.	Remarks
1	Phase-II & Phase-III	115.99 cr	127.48 cr	Completed
2	New scheme "Protection of Majuli Island from flood and erosion of river Brahmaputra"	233.57 cr		
	Funded by MoDoNER	207.00 cr	36.38 cr	Physical progress 22%
Spent from Grants-in-aid of MoWR,RD & GR		26.57 cr		Work yet to start



Spur No.- 4 near Dakhinpat, Majuli (Out of 5 spurs constructed so far)

erosion. The desertees from the areas have returned back and restarted cultivation in a big way.

Eleven villages under Doomduma Revenue Circle in an area of about 1500 ha are now protected 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 with details of expenditure as under:

Sl. No.	Description	Estimated Cost (Rs. in crore)	Actual Expenditure (Rs. in crore)
1	Phase-IV (December 2013)	54.43	56.59 (up to December 2018)

For continuation of benefits accrued from the schemes implemented in 4 phases of works of scheme Avulsion of Brahmaputra at Dholla Hatghuli, it is proposed to convert the existing tie-bund into a full-flagged embankment at Bahbari. DPR of Rs. 24.95 crore techno-economically cleared by CWC the work is under process of implementation. About 20% of the work is expected to be completed during this year.

e. Other Schemes:

i. Protection of Balat Village in Meghalaya on River Umngi (Estimated cost Rs. 10.18 crore): Part –I of scheme amounting Rs. 5.63 crore was taken up for implementation and completed with an expenditure of Rs. 4.82 crore. DPR for Phase-II works has been techno-economically cleared by CWC for Rs. 12.878 crore. The work is under process of implementation.



Bank revetment works at river Brahmaputra at Dhola-Hatighuli, Tinsukia District of Assam



Works executed for Protection of Balat Village from erosion of River Umngi in South West Khasi Hills District of Meghalaya

ii. 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. Further, due to inability of state Government to provide land, the work of construction of retirement bund consumed more time. Work order as per modified DPR has been issued and expected to complete in next year. Out of three major components of works of RCC porcupine screens completed and the retirement bund also almost completed. Due to changed scenario after laying of RCC porcupine screens, a sub-committee of TAC-BB has visited the area and on the basis of report of sub-committee, the TAC-BB will decide to implement of third component of Bank Revetment works. The work is executed in 3 groups. Work of 1st group is expected to complete 70% and 30% of each group of remaining two groups up to March 2019. Expenditure upto December 2018 is Rs. 9.82 croe.



Works at Mnakachar, Kalair-Alga

iii. Anti-erosion measure in Masalabari in Assam near International Border:

The work of Rs. 5.05 crore has been completed during the year 2018-19.



Bank revetment work with Geobag at Masalabari

f. New Schemes taken up during the year

Following 2 (two) schemes in the State of West Bengal has been taken up for implementation during the year and tendering is in process. It is expected to complete 30% of each scheme up to March 2019.

1. Anti-Erosion measures for bank protection of Bhajaner Charra, Nishiganj area under Cooch Behar Block No. II along the left bank of River Mansai at Cooch Behar district in West Bengal

2. Bank protection work at Bhogdebri area on the Right Bank of River Mansai in Cooch Behar district in West Bengal.

g. Drainage Development Schemes (DDS)

Brahmaputra Board identified 41 drainage congested areas for preparation of Detailed Project Report (DPR) based upon the studies carried out under 49 approved Master Plans. During 2018-19, observations of CWC on the DPRs of Pota Kolong, Deroi, Larsing and Dharmanagar DDSs are being attended and DPRs are under modification.Regarding Demow DDS, CWC requested to get the design of the DPR of Demow DDS to be vetted from CWC has headquarters.

h. Feasibility Studies for channelization of river Brahmaputra-Mathematical Model Studies of River Brahmaputra with emphasis on climate change:

Keeping in view for a long term bank protection of river Brahmaputra, Brahmaputra Board had prepared a draft conceptual proposal for "River Stabilization measure in the Main Stem of Brahmaputra" at an estimated cost of Rs. 7984 crore. To assess the efficacy of the proposal, a research project "Mathematical Model Study of River Brahmaputra with emphasis on climate change" to understand the river dynamics, its problem as well as finding out long term sustainable solution to the complex problem of floods and erosion has been taken up and an MoU in this regard has been signed with IIT Guwahati at a cost of

Rs.2.80 crore to conduct the Mathematical Model studies. IIT,Guwahati has taken up 2D model in the study after demonstration of l D model(BRAHMA-ID Model). River cross section of Brahmaputra covering Majuli Islands south bank was provided to IITG for validation of 2D model. Validation of 2D model through physical model study at NEHARI, North Guwahati is in progress. It is expected to complete the study by March 2019.

i. Monitoring of Schemes under Flood Management Program - A State Sector under Central Plan– in Brahmaputra and Barak Velley

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:

During the year 2018-19, six schemes of Assam have been monitored by Board. Special monitoring was done for four schemes of Arunachal Pradesh, 39 schemes of Assam, three schemes of Nagaland, one scheme in Mizoram and one scheme in Tripura as per instruction of Inter Ministerial Committee on FMP.

j. Organising of seminar on "Synergy among organisations working in Water Resources Sector in North Eastern Region"

Brahmaputra Board organized a seminar on "Synergy among organisations working in Water Resources Sector in North Eastern Region" on 27th September, 2018 at Assam Administrative Staff College, Khanapara, Guwahati. 74 members of 37 organisations participated the seminar.

Plan	No of schemes	Central Assistance (Rs in crore)	Remarks
X	74	146.20	
XI	201	1063.58	
XII	61	178.57	XI plan scheme= 118.2 crore XII plan scheme= 55.37 crore
17-18		266.67	XI plan scheme= 21.18 crore XII plan scheme= 245.49 crore
Total		**1655.02**	



Meeting with the Hon'ble MoS (WR, RD & GR) at Conference Hall of Brahmaputra Board



Plantation by Hon'ble MoS (WR, RD & GR) Sri Arjun Ram during his visit to Brahmaputra Board office



Secretary (WR, RD & GR) Shri U.P. Singh along with Principal Secretary, Govt. of Assam Shri Hemanta Narzary and Commissioner (B&B) Shri T. S. Mehra, MoWR, RD & GR inaugurating the Seminar "Synergy among organisations working in Water Resources Sector in North Eastern Region", Organized by Brahmaputra Board on 27th Sep 2018 at Administrative Staff College, Guwahati"

k. Restructuring of Brahmaputra Board

MoWR, RD & GR approved the proposal of restructuring of Brahmaputra Board during the year 2018-19 to-

- Strengthen the existing structure of Brahmaputra Board to make it able to meet its objective
- In order to make the Brahmaputra Board Administratively and Operationally more efficient

within the ambit of existing Act by revamping its Technical and Non-technical Cadres

- Increase the footprints of the Board in all NE States by opening Regional Offices
- Focus on planning, flood protection and anti-erosion works.

3.8. BETWA RIVER BOARD

3.8.1. INTRODUCTION

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. BRB 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.

3.8.2. 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 is to be shared equally by both the States. Construction work of Dam and Power House has been completed.

a. 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 Betwa River Board 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.

b. Planning and Present status of Rajghat Power House works:

The estimate of Rajghat Hydro Electric Project at 1997 price level was Rs. 131.26 crores which included Rs. 58.41 crores for the civil works. The further revised cost of the civil works of Power House is Rs. 66.89 crores at December, 1999 price level and same has been furnished by BRB to MPPGCL. MPPGCL have contributed Rs. 59.51 crores. The total expenditure incurred on civil works of Rajghat Power House till June, 2008 is Rs. 63.15 crores. The three unit of Power House have been tested and commissioned during 1999-2000. From 1999-2000 to 2010-2011 (Eleven years) total units of power generation from Rajghat Power House are 11025 lakh units.

c. O & M Estimate of Rajghat Dam Project during Transition Period:

An estimate of 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 head in addition to pending liabilities under capital cost. The State of U.P. have paid only Rs. 133.50 crores and M.P. has paid only Rs. 79.34 crores against their due share upto December,2018.

d. Utilization of present storage:

The phase-1 of the construction of Dam upto Spillway crest level was completed in 1992. Since then reservoir storage is being utilized in downstream 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.

3.9. TUNGABHADRA BOARD

3.9.1. INTRODUCTION

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 four Members, one each representing the States of Andhra Pradesh, Telangana, 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.

3.9.2. Physical and financial achievements and new initiatives taken during the current financial year from 1st April 2018 to 31st December 2018.

a. Irrigation Wing

The Tungabhadra Reservoir has been filled up to the full reservoir level 497.723 (1632.95 ft.) in this year. The inflow in to the reservoir from April 2018 to December 2018 was 10242.21 Million Cubic Meters (Mcum) (361.66 TMC). The utilization by the Karnataka State, Andhra Pradesh & Telangana till end of December 2018 during the water year 2018-19 is as per the table below:

Sl. No.	Name of the State	Allocation as per KWDT Award (TMC)	Prorata Entitlement on Abstraction (TMC)	Actual Utilization (in TMC) (As on 31.12.2018)	Actual Utilization (in MCum) (As on 31.12.2018)
1.	Karnataka	138.990	98.997	84.698	2398.65
2.	Andhra Pradesh	66.500	47.366	41.362	1171.37
3.	Telangana	6.510	4.637	1.891	53.52
	Grand Total	**212.000**	**151.000**	**127.951**	**3623.54**

The Evaporation losses from April 2018 to December 2018 was 156.326 MCum (5.520 TMC) to be shared equally by the State of Karnataka on left side and on the right side. The Reservoir evaporation loss shall be shared by the State of Karnataka and Andhra Pradesh in the ratio of 12.5 : 5.5. The water surplussed over spillway was 5029.43MCum (177.593 TMC) in addition to 492.229MCum (17.381 TMC) of water drawn for extra power generation by the power houses on both the sides without jeopardizing the Irrigation interests during this water year 2018-19.

b. Hydro Electric Scheme

Two Power Houses are maintained by the Tungabhadra Board, with a total installed capacity of 72 MW and a target of 150 million units of power generation is envisaged during the water year 2018-2019. Against this, the power generated till end of December-2018 was 105.12 million units. The power generated is shared between the States of Karnataka and Andhra Pradesh in the ratio of 20:80.

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 19.598 million unit's upto December-2018. 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.11.5crores. The Mini Hydel plant comprising single unit of 1.4 MW has generated 6.243 million units upto December-2018. The power generated is purchased by the GESCOM, Gulbarga (Karnataka) and rate of power purchase is Rs.2.80 per unit.

Anticipated power generation from Jan-2019 to Mar-2019 will be 30 million units.

c. Fisheries Wing

The Tungabhadra reservoir has a water spread area of 378 sq.km at full reservoir level affording tremendous scope for development of fisheries. Quality fish seeds are produced and reared in the Board's Fish Farm to meet the demand of the public and for stocking in the reservoir to increase the biomass of fish wealth. The fishing rights of the reservoir were renewed for the year 2018-19 to Koralahalli Fisheries Co-operative Society for Rs.144 lakhs. In order to facilitate preservation of fish catch, the Board is running an ice-cum-cold storage plant. The gross earnings from the Ice Plant upto December, 2018 is 3.18 lakhs.

3.10. POLAVARAM PROJECT AUTHORITY

3.10.1. INTRODUCTION

Polavaram Irrigation Project (PIP) is a multi-purpose irrigation project which is on the river Godavari near Ramayyapeta village of Polavaram mandal about 42km upstream of Sir Arthur Cotton Barrage, where river emerges out of last range of

the Eastern Ghats and enters the plains in West Godavari District of Andhra Pradesh State. It envisages construction of a dam to create ultimate irrigation potential of 2.91 Lakh Ha. The project also envisages generation of 960MW of hydro power, drinking water supply to a population of 28.50 Lakh in 540 villages, diversion of 80TMC of water to Krishna river basin.

The Project has been declared as a National Project as per section 90 of AP Reorganisation Act, 2014. Central Government is funding 100% of the remaining cost of the irrigation component only of the project for the period starting from 01.04.2014. Government of Andhra Pradesh is executing the irrigation component of the project on behalf of Government of India. The Power component of the project is being executed by APGENCO.

In pursuance of the Andhra Pradesh Reorganization Act, 2014, the Central Government constituted a Governing Body to Polavaram Project Authority by the Ministry of Water Resources Notification dated 28th May, 2014. The Authority is playing an important role in executing the project in guiding WRD in all important aspects of the project execution such as designs, monitoring of the progress, quality control, land acquisition & rehabilitation (LA and R&R) of the project affected people etc. M/s WAPCOS Limited has been engaged for Project Monitoring & Coordination Consultancy Services for execution of Polavaram Irrigation Project. For monitoring of quality of works, PPA has engaged CSMRS, New Delhi as Quality consultant.

3.10.2. COST OF THE PROJECT

The approved cost of Polavaram Irrigation Project is Rs.16,010.45 Cr (at 2010-11 price level). Revised cost estimate at 2013-14 price level amounting to 57,940.86 Cr is under finalization in CWC, New Delhi.

3.10.3. STATUS OF LAND ACQUISATION AND RESETTLEMENT& REHABILITATION

Total Land requirement of the project due to construction of the project is 1,66,423 Acres. So far, total land acquired for the project is 1,10,095 Acres. Total project displaced families (PDF) are 1,05,601, out of that total of 3922 nos of PDFs have been shifted to 26 nos. of new R&R colonies till end of November, 2018.

3.10.4. PHYSICAL AND FINACIAL ACHIEVEMENTS

The Project is in an advanced stage of progress. The Physical & Financial Progress of Polavaram Irrigation Project as submitted by Water Resources Department, GoAP up to November, 2018 is as follows:

S. No	Description	% of Physical progress (up to Nov, 2018)	% of Financial progress (up to Nov, 2018)
1	Head works	50.54%	60.57%
2	Right main canal	90.00%	88.32%
3	Left main canal	66.02%	65.40%
	Overall Project	**61.81%**	**67.23%**

3.10.5. EXPENDITURE ON THE PROJECT

Expenditure incurred on project before declaration of National Project (upto 31.03.2014) is Rs. 5177.62 Cr. After declaration of National Project, a sum of Rs. 6727.26 Cr has been released to GoAP for execution of Polavaram Irrigation Project

during 2014-18 till end of December, 2018, out of which Rs. 1385 Cr has been released during current finacial year.

3.10.6. MEETINGS OF THE POLAVARAM PROJECT AUTHORITY

During the current financial year FY 2018-19, following meetings have been held for monitoring of various activities and for sorting out the issues related to the project implementation.

- **10th& 11th Dam Design Review Panel meetings** were held on **7th August, 2018** and **6th - 7th January, 2019** respectively for sorting out the technical issues related to planning, design and construction schedule of the project.
- **8th Polavaram Project Authority meeting** was held on **18th December, 2018** and various issues pertaining to technical, administrative and financial matters were discussed.
- Expert Committee constituted under the Chairmanship of Member (WP&P), Central Water Commission to overview the implementation of Polavaram Project **visited the project during 5th -7th September, 2018.**
- **CSMRS officials** visited the project twice in this year (11th -16th june 2018 & 10thto 17th September) and submitted the report related to quality control of various works.
- M/s WAPCOS Limited has been appointed on 02.04.18 as Project Monitoring & Coordination Consultant (PMC) for Polavaram Irrigation Project. WAPCOS has been montoring the project implementation at site and suggesting the measures for removing the bottlenecks for timley completion of the project.
- **On 11th July 2018, Shri Nitin Gadkari**, Hon'ble Union MoWR, RD & GR visited the project to review the progress of the works.
- **2nd, 3rd & 4th meetings of Monitoring Committee of R & R works were held** on 24.4.2018, 28.8.2018 & 30.01.2018 respectively to strengthen monitoring mechanism for Land Acquisition and Rehabilitation and Resettlement process for PIP and synchronize the efforts of various agencies involved.

3.10.7. SPECIAL ACHIEVEMENT

This Project has been awarded for "Best implementation of Water Resources Project" by Central Board of Irrigation and Power on 4th January, 2019. The project has also made two Guinness Book of world Records for "Largest continuous concrete pour" and "Most concrete pour in 24 hours" with a record of 32,315.5 cubic meter in 24 hours on 7th January, 2019.

3.11. KRISHNA AND GODAVARI RIVER MANAGEMENT BOARDS

3.11.1. APEX COUNCIL

In exercise of the powers conferred by sub-section (1) of Section 84 of the Andhra Pradesh Reorganisation Act, 2014 (Act 6 of 2014), the Central Government constituted the Apex Council for supervision of the functioning of the Godavari River Management Board and Krishna River Management Board vide

Gazette Notification dated 29th May, 2014, consisting of:

a) Minister of Water Resources, River Development and Ganga Rejuvenation, Government of India – Chairman;

b) Chief Minister of the State of Andhra Pradesh – Member; and

c) Chief Minister of the State of Telangana – Member.

First meeting of the Apex Council was held on 21.09.2016 under the Chairpersonship of Hon'ble Minister (WR, RD & GR) to sort out the issues of the States of Andhra Pradesh and Telangana pertaining to Krishna River Management Board.

3.11.2. KRISHNA RIVER MANAGEMENT BOARD (KRMB)

The KRMB was constituted vide Gazette Notification No: S.O.1391 (E) dated: 28th May, 2014 in accordance with sub-sections (1),(4) and (5) of Section 85 of the Andhra Pradesh Reorganisation Act, 2014.

Subsequent to formation of the Board, various issues related with the functioning of the Board as mandated in the Andhra Pradesh Reorganisation Act, 2014 were discussed in meetings with the senior officers of the States of Telangana and Andhra Pradesh. To sort out the issues raised by the State Governments, regular meetings were held at technical level as well as Board level. Besides various technical meetings, 8th and 9th Board meetings were held during 2018-19 on 06.06.2018 and 16.10.2018 to sort out the issues of water sharing for drinking and Irrigation water requirements and also power sharing through Nagarjuna Sagar and Srisailam Projects and orders were issued accordingly. Next Board meeting is likely to be held before end of March, 2019.

The Ministry has conducted a meeting with the officials of KRMB and Central Water Commission during September, 2018 to sort out the issue of Krishna water supply to Chennai. A committee was constituted by the Ministry under Chairmanship of Chairman, KRMB to resolve the issue of Krishna water supply to Chennai. First meeting of the committee has been held on 09.01.2019.

3.11.3. GODAVARI RIVER MANAGEMENT BOARD (GRMB)

The GRMB was constituted vide Gazette Notification No: S.O.1403 (E) dated: 28th May, 2014 in accordance with sub-sections (1), (4) and (5) of Section 85 of the Andhra Pradesh Reorganisation Act, 2014.

Subsequent to formation of the Board, various issues related with the functioning of the Board as mandated in the Andhra Pradesh Reorganisation Act, 2014 were discussed in meetings with the senior officers of the States of Telangana and Andhra Pradesh. To sort out the issues raised by the State Governments, regular meetings were held at Board level. During 2018-19, 7th meeting of GRMB was held on 03.07.2018. GRMB has given Technical clearance to Middle Kolab Multi Purpose Project, Odisha on 11.07.2018 under Section 85(8)(d) of the Andhra Pradesh Reorganisation Act, 2014. Next Board meeting is likely to be held before end of March, 2019.

Ministry of Water Resources, River Development & Ganga Rejuvenation

PUBLIC SECTOR ENTERPRISES



8. Public Sector Enterprises

1.0 Water And Power Consultancy Services Limited (WAPCOS)

1.1. INTRODUCTION

WAPCOS Limited is a "MINI RATNA-I" Public Sector Enterprise under the aegis of the Ministry of Water Resources, River Development & Ganga Rejuvenation. Incorporated on 26th June, 1969 under the Companies Act, 1956; WAPCOS is a technology driven Consultancy and Engineering, Procurement and Construction (EPC) organization with strong home country and global presence in the field of Water, Power and Infrastructure Sectors. The Quality Management Systems of WAPCOS comply with the Quality Assurance requirements of ISO 9001:2015 for Consultancy Services and also with the Quality Assurance requirements of ISO 9001:2015.

1.2. FIELDS OF SPECIALIZATION

Main Fields of specialization of the Company cover

- Irrigation, Drainage and Water Management
- Ground Water Exploration and Minor Irrigation
- Flood Control and River Morphology
- Dams and Reservoir Engineering
- Water Bodies and Land Conservation
- Agriculture
- Watershed Management
- Natural Resources Management
- Hydropower
- Thermal Power
- Pumped Storage Project
- Transmission and Distribution
- Rural Electrification
- Non-conventional Sources of Energy
- Water Supply, Sanitation and Drainage
- Environment
- Ports and Harbours and Inland Waterways
- Urban and Rural Areas development
- Roads and Highway Engineering
- Buildings & Townships
- Ropeways

1.3. RANGE OF CONSULTANCY SERVICES

WAPCOS spectrum of services covers a wide range of activities e.g.

- Preliminary Investigations/ Reconnaissance
- Feasibility Studies/ Planning/ Project Formulation
- Baseline and Socio-Economic Surveys
- Field Surveys & Investigations and Testing

- Institutional/ Human Resource Development
- Project Management and Construction Supervision
- Operation & Maintenance
- EPC/ Turnkey & Deposit Works

The USPs of WAPCOS include Survey & Investigation/Pre-Feasibility/DPRs for more than 550 Projects in Irrigation, Water Resources & Agricultural etc. contributing to development of over 17 Million ha Irrigation Potential; more than 200 Projects in Ports & Inland Navigation; over 500 Projects in Water Supply & Sanitation, Rural & Urban Development, Roads & Highway Engineering; EIAs for over 300 Projects in the fields of Irrigation, Hydro/ Thermal Power, Ports & Harbours in India and Abroad. Similarly, in Hydro-Power Sector; WAPCOS has completed almost 52 Hydro-Power Projects in 19 Countries with an installed capacity of more than 21,600 MW; over 105 Hydro Power Projects in India with an installed capacity of more than 9,000 MW. In Thermal Power; the Company has successfully completed 12 overseas Projects with installed capacity of more than 2,900 MW and 37 Projects in India with an installed capacity of more than 12,000 MW. In Transmission & Distribution WAPCOS has accomplished more than 14 Projects in India and Abroad.

1.4. REGISTRATION WITH INTERNATIONAL ORGANIZATIONS

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
- French Development Agency
- German Development Bank

1.5. OPERATIONS ABROAD

In the year 2008-2009, WAPCOS had presence in 8 countries that has expanded to 46 countries by year 2018-2019. Apart from India, WAPCOS has successfully completed/on-going consultancy assignments in countries covering Asia, Africa, Middle East, South America, Pacific Islands and providing consultancy services in countries viz; Angola, Afghanistan, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, DR Congo, Ethiopia, Fiji, Georgia, Ghana, Guinea Conakry, Kenya, Kazakhstan, Lao PDR, Lesotho, Liberia, Malawi, Maldives, Mali, Mangolia, Mozambique, Myanmar, Nauru, Nepal, Niger, Nigeria, Philippines, Rwanda, Senegal, Sierra Leone, South Sudan, Sri Lanka, Swaziland, Tanzania, Tajikistan, Togo, Uganda, Uzbekistan, Vietnam, Yemen and Zimbabwe.

1.6. FINANCIAL STATUS

The Authorized and Paid up Capital of the Company are Rs.100 Crore each. The total income for the year 2017-18 has been Rs. 1170.78 Crore against Rs. 987.58 Crore in 2016-17 reflecting an increase of 18.55%.

The Profit before Tax for the year 2017-18 has been Rs. 189.40 Crore against Rs. 156.91 Crore in 2016-17, which is an increase of 20.17%.

1.7. INNOVATION AND CHANGE ORIENTATION

WAPCOS has been able to secure

projects under the following Schemes: -

(i) **Namami Gange, Integrated Ganga Conservation Mission-** Prepared the DPR for more than 250 ghats and Crematoria in the states of Uttarakhand and Uttar Pradesh. In addition, Condition Assessment and Feasibility Report has been prepared for about 30 towns in the states of Uttarakhand and Uttar Pradesh. Currently WAPCOS is nearing completion of Construction of 23 Ghats and Crematoria in Uttarakhand.

(ii) **Atal Mission for Rejuvenation and Urban Transformation (AMRUT)-** Project Development and Management Consultant (PDMC) for this Scheme in Bihar, Madhya Pradesh, Haryana and Meghalaya. WAPCOS has also been appointed for the preparation of DPRs for AMRUT projects in Rajasthan.

(iii) **Smart City Mission-** Prepared Smart City Proposal for Guwahati City and was ranked 17th in the 1st Round. Prepared the Smart City Proposal for Shimla, which has also been selected. Now secured the Project Management Consultancy for Kohima Smart City, Nagaland.

(iv) **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) -** An Agreement has been signed on 4.10.2017 between National Water Development Agency (NWDA), MoWR, RD & GR and WAPCOS Ltd. wherein WAPCOS has been appointed Project Monitoring and Management Agency for Projects under PMKSY.

(v) **Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)-** 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, Karnataka, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh, West Bengal, Assam, Tripura, Jharkhand, Haryana, Manipur, Nagaland, Himachal Pradesh, Jammu & Kashmir, Rajasthan, Madhya Pradesh Andaman & Nicobar Island and Pondicherry.

(vi) **Integrated Power Development Scheme (IPDS)–** Third Party Independent Evaluation Agency – Energy Accounting (TPIEA-EA) and Third Party Concurrent Evaluation Agency (TPCEA) 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, Rajasthan Tamil Nadu, Andhra Pradesh, Telangana, Chhattisgarh, Odisha, Goa and Maharashtra.

1.8. CORPORATE SOCIAL RESPONSIBILITY

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, safe drinking water activities, development of pond structures and water conservation awareness programs in backward areas, Swachh Bharat activities including



Beneficiaries at Training Center in Shree Durgiyana Committee Amritsar, Punjab



Skill Development Program in Dehradun, Uttrakhand

construction of toilets, School Sanitation, Hygiene and Healthcare Programme for underprivileged people, Upliftment of deprived society, and Development of infrastructure etc.

1.9. FOREIGN PROJECTS

BHUTAN

- Design Engineering for Punatsangchhu-I&II Hydro Electric Project
- Technical Services on Design & Construction of 400 kV Transmission lines Mangdechhu Hydro-Electric Project

BANGLADESH

- Enhancement of capacity of grid substation and transmission line for rural electricity T&D project funded by World Bank

CAMBODIA

- Supply and Installation of 1500 Hand Pumps for Augmentation of Rural Water Supply
- Study of Groundwater Resources of Kampong Speu Province

LAO PDR

- Construction of Storage Dams and Development of Irrigation Systems, Department of Irrigation, Ministry of Agriculture and Forestry

MALDIVES

- Project Management for Kulhudhuffushi Harbour Expansion Project

MONGOLIA

- Project Management for Construction and Establishment of Atal Bihari Vajpayee Center of Excellence in Information Technology, Communication and Outsourcing Center

MYANMAR

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

NEPAL

- Construction Supervision and Construction Management for Kulekhani-III HEP

- Project Management for Strengthening of India - Nepal Power Transmission line Interconnection at 132 kV Level

UZBEKISTAN

- Preparatory Consultant for Sustainable Hydropower Project

BURUNDI

- Kabu 16 (20 MW) Hydro Electric Project

DR CONGO

- Project Management for Grand Katende Hydro Electric Project

FIJI

- Engineering Services for review of construction of Rakiraki Bridge project

GHANA

- Completion of the Kpong Left bank Irrigation Project (KLBIP),Ghana (Phase-I)
- IUESMP and Preliminary design of Prioritized Interventions for Greater Accra Municipal Authority

LIBERIA

- Consultancy Services for Owner's Engineer for the construction of the Kaiha River Mini-grid system in Lofa for Rural and Renewable Energy Agency (RREA)
- Consultancy Services for Supervision Engineer the construction of the 66/33/22 kV Transmission and Distribution Network in Monrovia and Bomi/ Grand CAPE Mount Countries for Liberia Electricity Corporation (LEC)

MOZAMBIQUE

- Towers Erection in BL-2 High Voltage Line (Influene – Ressano Garcia) to Elevate the Sag at N4 & Maputo Circular Road's Crossing Places
- Reconstruction Works of 5 Km of the 110 kV Transmission Line, Macia – Lionde
- Tender Engineering, Design Review and Construction Supervision for Emergency Project – Overhead Transmission Lines and Cables

NIGER

- Project Management Consultancy for Rural Electrification of 50 villages through Solar Photo Voltaic (SPV) system in Niger

REPUBLIC OF TOGO

- Assistance to Client for Engineering Studies, Supervision and Control of Rural Electrification Project Phase 4

RWANDA

- Export Targeted Modern Irrigated Agriculture Projects

SIERRA LEONE

- Preparation of Feasibility Study & Detailed Project Report for Construction of a 240 Km – 225 kV transmission line, a 132 kV single Circuit transmission line and related substation

SWAZILAND

- Project Management Consultant for Turnkey Project for ensuring Food Security through increased Maize

production by Soil Conditioning, Farm Mechanization and Granular Fertilizer Application

UGANDA

- Project Management and Construction Supervision of 1392 Km of Medium Voltage Lines and 1482 Km of Low Voltage Network funded by ADB

ZIMBABWE

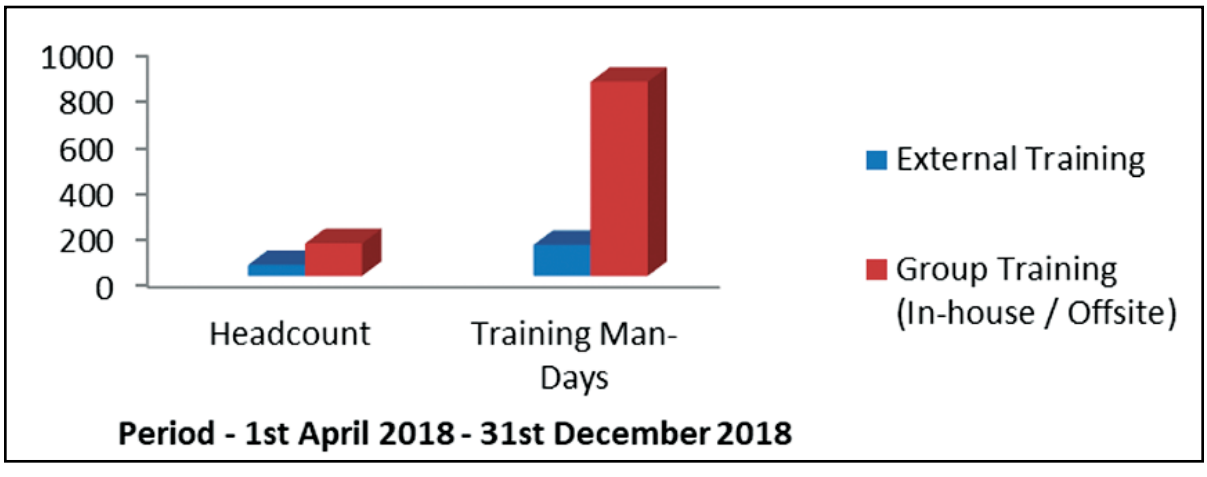
- Up-Gradation of Deka Pumping Station and River Water Intake System at Hwange Thermal Power Station for Zimbabwe Power Company
- Replacement of Existing Boilers with CFBC Boilers for Small Thermal Power Station at Harare, Bulawayo and Munyati for Zimbabwe Power Company
- Supply of Custom Built Simulators for 220 MW and 120 MW in Zimbabwe and to Train the Trainers for Skill Development of Zimbabwean Engineers and Operators in Zimbabwe for Zimbabwe Power Company
- Repowering of Small Thermal Power Stations at Harare (2x30 MW), Munyati (2×50 MW) & Bulawayo (3×30 MW).

1.10. EXTERNAL TRAINING PROGRAMMES

Whereas Internal training is very important, external training process can add interest, give a greater breadth of experience and working practices, and give better opportunities for discussion with other people facing the same problems. Some of the external training programmes organised for WAPCOS employees are:

- Prevention of sexual Harassment at Workplace
- Executive Development Programme
- Leadership Transition with Whole Brain Thinking
- GST - Post Implementation Challenges
- Electrical Faults & Arc Flash Hazards
- Preventive Vigilance , Investigation, Departmental Enquiry and Law on Termination

During the period 1st April 2018 – 31st December 2018, a total of 189 officers were trained out of 1019 regular employees, covering a total of 976 training man-days.



1.11. VIGILANCE

During the year 2018-2019, Vigilance Awareness Week was observed from 29th October, 2018 to 3rd November, 2018. Efforts were made to maintain high moral standard of employees through Awareness Programme during the Vigilance Awareness Week.

Besides the above activities, a Seminar on **"Eradicate Corruption – Build a New India"** was organized by WAPCOS on behalf of the Ministry of Water Resources, River Development & Ganga Rejuvenation on the 30th October, 2018 at SCOPE Auditorium, SCOPE Complex, Lodhi Road, New Delhi in which a large number of employees from the Ministry of Water Resources, River Development & Ganga Rejuvenation and all other offices under its control including WAPCOS participated.



Presentation of Dividend of Rs. 50.63 Crore (Inclusive of Dividend Tax) and Bonus Shares worth Rs. 35 Crore for the year 2017-18 to Nitin Gadkari, Minister, Road Transport & Highways, Shipping & Water Resources, River Development & Ganga Rejuvenation, Government of India by CMD, WAPCOS in presence of Arjun Ram Meghwal, Minister of State, Parliamentary Affairs and Water Resources, River Development & Ganga Rejuvenation, Dr. Satya Pal Singh, Minister of State, Human Resources Development and Water Resources, River Development & Ganga Rejuvenation, Government of India and Foreign Dignitaries.



Laying of MS 900 Pipe in trench b/w Nzega Junction &Igunga Junction, Tanzania



PMC of Chakdah Water Supply Scheme – Clariflocculator, West Bengal



Modern Transport Solution for The Historic City Bikaner, Rajasthan



Release of Coffee Table Book titled "Smart Mobility in Urban & Hilly Areas"1 during MoU signing between WAPCOS & Doppelmayr

2.0. National Projects Construction Corporation Limited (NPCC)

2.1. INTRODUCTION

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 Limited is a "**MINI RATNA**"(Category-I) and "**ISO 9001:2015**" accredited Public Sector Enterprise under the aegis of the Union Ministry of Water Resources and is well established in the Country with its Registered Office at New Delhi, Corporate Office at Gurugram and 19 Zonal Offices in the state capital of different states including International Division.

In its 62 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 seven years and now has a positive net worth.

2.2. FIELDS of specialization

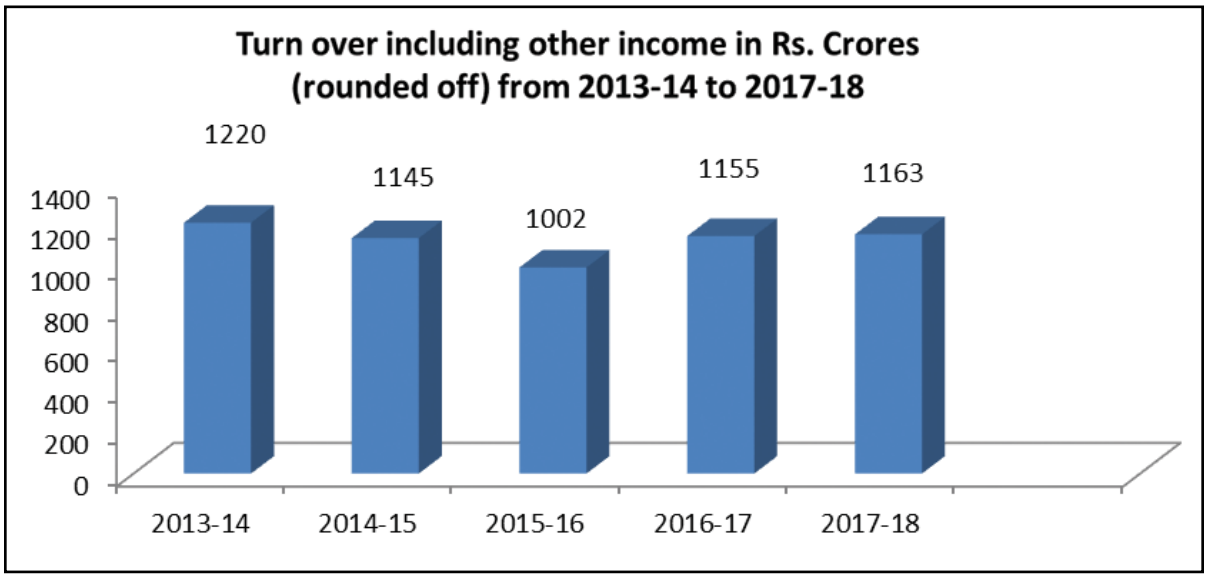
Townships & Other Residential Buildings, Institutional Buildings, Office Complexes, Roads, Bridges & Fly-Overs, Hospitals & Health Sector Projects, Industrial Structures, Surface Transport Projects, Environmental Projects, Thermal Power Projects, Hydro-Electric Power Projects, Dams, Barrages & Canals, Tunnels & Underground Projects and Real Estate Works.

2.3. FINANCIAL Status

The authorized capital of the corporation is Rs. 700 Crores and its Paid up Capital is Rs. 94.53 Crores. The Corporation achieved a turnover including other income of Rs. 1163 crore (rounded off) during 2017-18 compared to previous year's turnover including other income of Rs 1155 Crore (rounded off). The net worth of corporation is Rs 173.81 Crore with profit of Rs 30.36 Crore as on 31.3.2018.

The turnover from 2013-14 to 2017-18 has been indicated in table below. The order book positions as on 1st January 2019 stand at Rs. 10277crore.

The turnover of the Corporation during last five years is given below:



2.4. MAJOR Works Secured during 2018-19

NPCC is executing projects for various Ministries/ Govt. Departments/ Organizations as their "Extended engineering Arm" like MoRD, MHA, MoWR, MoH, MoFPI, Banks, MoES, Ministry of AYUSH, Assam Rifle, Ministry of Youth Affairs & Sports, IGNTU, SC& ST Development Department, Govt of Odisha, RAU, Central Agricultural Universities as well as State Governments. NPCC had added new clients like Kendriya Vidyalaya, West Bengal State Rural Development Agency, Central Excise at Dwaraka, Vishveshwaraiah Jala Nigam Limited, Guru Ghasidas Vishwavidyalaya, Hydro Engineering College, Navodaya Vidyalaya Samiti, Karnataka Slum Development Board etc. for its value addition for infrastructure development of country. Few projects listed below:

- Construction of Kendriya Vidyalaya at Various locations across Country
- Construction for upgradation of ITI at Jabalpur, Rewa, Sagar and Shadol for MP Housing Board.
- Bone & Joint Hospital Srinagar
- Establishment of Industrial Biotech Parks(ITBP) at 02 locations in J&K Region for CSIR.
- Building Works in CGWB (MoWR, RD & GR) Ahmadabad, Ambala and Jammu.
- Indoor Sports Complex and Food Court of IIT Kharagpur in West Bengal.
- Construction of LS, US Quarter & Site Development of Police Line Campus at Pakur, Jharkhand.
- Development of Mandiri Nala under Patna Smart City Mission at Patna

2.5. Major Works completed:

- Construction of New Building (Phase -I) at NRIADD, Kolkata.
- Road works completed in Gumla Distt. in Jharkhand
- Road works completed in Latehar Distt. in Jharkhand

- Road works completed in West Singhbhum in Jharkhand
- Road works completed in Saraikela Kharsawan Distt. in Jharkhand
- Road works completed in East Singhbhum in Jharkhand
- 12 Nos. Single Men Barrack (G+III) in 3 Blocks Assam Rifles works in Shillong.
- 16 Nos. Single Men Barrack (G+III) in 4 Blocks Assam Rifles works in Shillong..
- 176 Dwelling Units under IHSDP at Roing, Arunachal Pradesh Assam Rifles works in Shillong
- Dolaithabi Barrage, Manipur
- Road and Drain Improvement work, Bagalkote District.
- Road and Drain Improvement work, Shimoga District.
- Construction of 63 Bed-Boys and Girls Hostel, Dining Hall with Kitchen of SAG Centre, Alleppey for Sports Authority of India.
- Const. of faculty of journalism & mass Communication at IGNTU, Amarkantak.
- Const. of Officers Rest Houses, duty Room, Service block and ancillary works at Kauri in Jammu.
- PMGSY Road Works in Paschim Medinipur West Bangal.
- 501-040 Construction of Toilets at schools in different dist. Of Odisha (SVA) MCL.
- Construction of BOP, Roads & Fencing Works for MHA.
- PMGSY Road (640 in No.) in 6 districts of Bihar i.e Bhojpur, Buxar, Rohtas, Kaimur, Patna, Nalanda.
- Head Race Tunnel from Dharasu Adit from 12.00Km to 16.00Km Surge shaft, Expansion chamber, Ventilation shaft & excavation of penstock & appurtenants thereof Dehradun.
- Construction of Office Building of P&SB at Gurgaon.
- Construction of B.G Single Tunnel T3 on Katra-laole section of Udhampur-Srinagar-Baramulla rail link project.
- Construction of High Altitude Road along Indo-China Border at Leh in the state of J&K.(Karzok to Chumar).
- Construction of High Altitude Road along Indo-China Border at Leh in the state of J&K. (Phobrang to Charste)

2.6. STATUS of major works under execution

At present, the corporation is working at more than 281 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, Hydroelectric Projects (Haithiari Power house in Uttrakhand) & other miscellaneous projects. Some of the major projects are:-

a. Building Works

The Corporation has under-taken several construction assignments relating to Buildings, Roads, Hospitals, Bridges, Flyovers etc.

- Slum Board Dwelling Units in Bellary City.
- Ayush Institute at Sarita Vihar, Silchar, Shillong, Kolkata.
- Development of Amenities for ASI.
- ST & SC Development Deptt. Govt of Odisha.
- Navodaya Vidyalaya works at Various Locations.
- Hydro Engineering College in Himachal Pradesh.
- C/o Guru Ghasidas University (GGU).
- National Institute of Pharmaceutical Education and Research (NIPER) Campus.
- CAU Works in North eastern States.
- Dr Rajendra Prasad Central Agricultural University at Pusa, Samastipur.
- Building at Dwarka for Central Excise Deptt.
- Construction of Toilet Blocks for MCL under Swach Vidyalaya Scheme.
- C/o BOPs along Indo Bangla Border.
- Post Graduate institute of Yoga & Naturopathy at Jhajjar, Haryana and Nagamangala, Karnataka
- Indira Gandhi National Tribal University Campus at Amarkanthak (M.P).
- Rajiv Gandhi National Institute and youth development at Sriperumbudur.
- Construction of new building at NRIADD, Salt Lake, Kolkata.
- Silver Jubilee Hall & Academic Block at NERIST, Itanagar.
- Development of tourist facilities at Mantalai, Sudhmahade, Patnitop in J&K (Ministry of Tourism Deptt.)
- Seismological Research Lab., Karad for Ministry of Earth Sciences.
- Buildings at Central University of Kashmir at Srinagar
- Construction of building for Central Ground Water Board Raipur.
- C/o LS, US Quarter & Site Development of Police Line Campus at Pakur.
- C/O Hostel Building for Research Scholars at CSIR-NEIst.
- Farmers Training Hostel and Training Hall with seating Capacity of 500 at NRC-IF, Piprakothi, Motihari Bihar.
- Multipurpose hall at Devi Ahilya University, Indore.
- Construction works in M.P. Housing Board.
- Ayush Building Works At Siliguri And Lucknow.
- Science & Technology Works.
- Construction of Toilet Blocks for MCL under swacha vidyalaya scheme.



JDA FLATS AT MUTHI JAMMU



Admin Block BGRL, Karad



Wrestling Hall, Kandivali



Core Repository, BGRL, Karad



ESI DISPENSARY, CHHIPITOLA, AGRA

b. 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.
- New Hathiari Hydro Electric Project in Uttrakhand
- Indoor Sports Complex and Food Court.
- Dolaithabi Barrage, Manipur.



Laying of final layer of Synthetic layer at Jnan Ghosh Stadium of IIT Kharagpur



Sarkanda Bathing ghat



Zonal Meeting at Corporate Office on 4th Dec., 2018



Inauguration of Sarkanda Bathing Ghat by Honorable Minister Uma Bharti on 3rd November 2018



Zonal Meeting at Corporate Office from 18th to 20th April,2018

Ministry of Water Resources,
River Development & Ganga Rejuvenation

INITIATIVES IN NORTH EAST



9. Initiatives in North East

1.0. National Institute of Hydrology

To cater the hydrological needs of the North Eastern Region, Sikkim and northern part of West Bengal (Teestha Basin), the Centre for Flood Management Studies for the Brahmaputra Basin (NIH-CFMS) has been actively interacting with the State, Central and Academic organizations working in water resources in this region. The thrust areas of research at CFMS-Guwahati are (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, and (vii) Socio-economic aspect of flood disaster.

The Institute also contributed in preparing the report entitled "Framework for proper planning and management and water resources in the north eastern region of India". This report was prepared by an expert committee constituted by the Ministry of Water Resources, RD & GR.

2.0. Central Soil and Material Research Station

Thirty three projects, including four abroad and two in North- East region of India, were investigated by CSMRS. The investigations comprised field and laboratory investigations in the areas of Soil, Rock, Rockfill, Geosynthetics, Concrete and its constituents. The details are as under,

Projects in North-East India:

(i) Tezpur Water Resources Division, Tezpur, Assam

(ii) Umangot HEP, Meghalaya

International Projects:

(iii) Kholongchhu HE project, Bhutan

(iv) Kuri Gongri Project, Bhutan

(v) Punatsangchhu-I H.E. Project, stage II, Bhutan

(vi) Punatsangchhu-II H.E. Project, stage II, Bhutan





Goodman Jack Tests to determine modulus of deformation and elasticity, Kuri Gongri H. E. Project, Bhutan

3.0. Central Ground Water Board (CGWB)

The Central Ground Water Board is conducting scientific and technical studies for ground water assessment, development and management in the North Eastern Region. During the year 2018-19 (upto December 2018), a total of 13 boreholes have been constructed for data generation. Around 1300 ground water samples have been collected and analysed for assessment of ground water quality. Ground water level monitoring has been carried out as per the schedule. In addition to above 22 number of short term investigations for ground water has been conducted by CGWB in the region.

Sl. No	Activities	Achievements
1.	**Field Activities for Aquifer Mapping:**	
	Ground Water Exploration	During financial year 2018-19 as on 31.12.18, the Central Ground Water Board has constructed 13 wells (EW- 11, OW-2). However, a total of 24 wells are likely to be achieved by 31.03.2018.
	Water Quality Analysis	Around 1309 nos. of water samples were analysed for the basic constituents, heavy metals (such as Cu, Zn, Fe, Mn, CO, Cd, Cr, Ni, Pb etc.) .
2.	**Ground Water Regime Monitoring**	Monitoring of water level from GWMS for the month of May, August & November, 2018.
3.	**Short Term Water Supply Investigation.**	22 nos. Short Term Water Supply Investigation has been carried.

4.0. National Project Construction Corporation Limited (NPCC)

NPCC is working in eight north eastern states for the last 35 years for developing the infrastructure and other social amenities for the upliftment of socio-economy of the peoples of north eastern states. Assam movement emphasized that a large chunk of Bangladeshi population has come & settled in North-East. In an accord, it was decided to have a barrier in north east states, which will safe guard the people from illegal entry of the Bangladeshi & insurgent groups. The Indian Government started Border Fencing in Assam. Thereafter to other North Eastern states of Tripura, Meghalaya & Mizoram to check the influx of illegal migrant.

a. Indo-Bangladesh Border Fencing and Road Works

NPCC working for construction of Fencing in Tripura, Mizoram, Meghalaya and Assam for 640.72 Km mostly in insurgency prone area. NPCC has today made the area total accessible having network of road along the border fencing, where, there were no accessibility & BSF Jawans used to move 20.0Km. to 30.0Km. to reach the existing Border. NPCC has already completed 464 Km of fencing works, 241 Km of Road Works in the border areas of Indo Bangladesh Border.

b. Indo-Bangladesh Border Flood-lighting Works

The excellent performance of NPCC, encouraged MHA (GoI) for construction of Border Flood Lighting of Tripura & Meghalaya. NPCC has kept performance intact & completed Border Flood Light Work of 671.8 Km in Tripura and 314.4 Km in Meghalaya. The Border Flood Light is helping to BSF 24 hrs vigil over insurgent groups & illegal migrant of Bangladesh.

c. Border out post Works

NPCC has completed the construction of BOP works in extreme difficult area of Tripura-44 No. posts (Total 50 Nos.), Mizoram-4 Nos (Total 21 No. posts), Assam- 5 Nos. (Total 6 No. post), Meghalaya-11 nos.(Total 17 No. post) & West Bengal- 49 Nos.(Total 94 No. posts) for monitoring the border activities by BSF.



BOP BARDUP IN MEGHALAYA

d. NATIONAL INSTITUTE OF ELECTRONICS & INFORMATION TECHNOLOGY (NIELIT) WORKS:-

NPCC is also playing a major role in the creating infrastructure for 10 No. extension centres and a centre of NIELIT in the N.E. states of Mizoram, Nagaland, Manipur, Arunachal Pradesh, Meghalaya & Assam for development of the skills of information technology contributes for the better socio-economic development.

e. ASSAM RIFLE WORKS

Construction of complete Establishment of Assam Rifles in all the states of North East with Administrative Block, hospitals, all types of residential quarters, Barracks, Posts, Recreation centres, library building, museum building, MT park, etc.

5.0. Brahmaputra Board (BB)

Organising of seminar on "Synergy among organisations working in Water Resources Sector in North Eastern Region"

Brahmaputra Board organized a seminar on "Synergy among organisations working in Water Resources Sector in North Eastern Region" on 27thSeptember, 2018 at Assam Administrative Staff College, Khanapara, Guwahati. 74 members of 37 Organisations participated in the seminar. Shri U. P. Singh, IAS, Secretary, MoWR, RD & GR inaugurated the seminar and Shri Keshab Mahanta, Hon'ble Minister, Water Resources, Science & Technology, Information Technology; Cultural Affairs (only Library & Archaeology matters) Government of Assam attended the closing ceremony of the seminar. The seminar comprises of three Technical Sessions on "Data and Information Sharing";"Harvesting the Relevant Data" and "Identifying Relevant Issues".

The activities carried out by Brahmaputra Board in North Eastern Region have already been discussed in *Chapter-7.*



Meeting with the Hon'ble MoS (WR, RD & GR) at Conference Hall of Brahmaputra Board



Plantation by Hon'ble MoS (WR, RD & GR) Sri Arjun Ram during his visit to Brahmaputra Board





Shri U.P. Singh, Secretary (WR, RD & GR) along with Shri Hemanta Narzary Principal Secretary, Govt. of Assam and Shri T. S. Mehra, Commissioner (B&B), MoWR, RD & GR inaugurating the Seminar "Synergy among organisations working in Water Resources Sector in North Eastern Region", Organized by Brahmaputra Board on 27th Sept., 2018.

6.0. North Eastern Regional Institute of Water and Land Management (NERIWALM)

a. TRAINING PROGRAMS

The Institute's service is to cater to the needs of all the states of the North Eastern region. Participation of each state in the capacity building programme was recorded for the year 2018. The state of Assam recorded the highest number of participation. The reason may be proximity to NERIWALM and highest population compared to other states of NE region. States such as Mizoram, Meghalaya and Tripura recorded least participation in this year. Participants from India other than NE region consisted of 243 numbers which is given in Table.

State wise participants of training during 2018

Name of state	Total Number of participant	Name of state	Total Number of participant
Assam	943	Nagaland	107
Arunachal Pradesh	75	Tripura	52
Manipur	122	Sikkim	118
Meghalaya	53	All NE region	144
Mizoram	32	Other states	243
Total: 1889			

b. OUTREACH ACTIVITY:

As part of outreach programme, NERIWALM is documenting the traditional participatory irrigation water management system (Dong) prevalent in Indo Bhutan border of Assam. Another outreach programme on summer rice cultivation in a deep tube well command area is also under execution in Rangiam Assam.

c. SPONSORED TRAINING/ WORKSHOP/ SEMINARS

Out of the 52 programmes conducted during the year, Institute received sponsorship for 04 training/workshops, while 15 conducted as self financed and remaining 33 were conducted from Institute's funds. NERIWALM organized 01 international programme for Flood Warning Section of the Royal Government of Bhutan on Hydro-Meteorological Observation sponsored by the National Centre for Hydrology and Meteorology, Govt. of Bhutan. Under the State Specific action Plan for Water Sector, the institute organized three Inception workshops which were held in Bhubaneswar, Hyderabad and Sikkim. The workshops were sponsored by NWM, MoWR, RD & GR.

Ministry of Water Resources,
River Development & Ganga Rejuvenation

ADMINISTRATION, TRAINING AND GOVERNANACE



10. Administration, Training and Governance

1.0. 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 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 are also part of the Administration Section. Details of the activities of above Committee /Cell are given in Chapter- 14 (Staff Welfare) of this Report.

2.0. 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 to train the officers of the Ministry in reputed institutes located in India and abroad in different fields. Officers are also given induction training on joining in this Ministry, 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.

For the financial year 2018-19, an amount of Rs. 2.00 Crore has been allocated for training of MoWR Officers, expenditure to the tune of Rs. 1.20 crore on Training of MoWR Officers has already been incurred till 31st December, 2018 under HRD & CB Scheme. During the FY 2018-19, a total of 180 officers of this Ministry were sent for various training programmes till December, 2018.

During the financial year 2018-19, 4 officers were sent for the International training programme on "Budgeting, Accounting and Financial Management" at NIFM, Faridabad with International Component at University of California. More than 45 Officers from the Ministry/ CWC were sent for the training programme on "RTI Matters- Role of CPIO and AA" conducted by National Productivity Council and Mahatma Gandhi State Institute of Public Administration, Chandigarh. More than 20 officers were sent for "Leadership Training Programme" at IIM, Kolkata and ASCI, Hyderabad. Officers from Finance Division were also sent for "Finance for Non-Finance Executives" programme at IIM, Kolkata. Officers of the Ministry were also sent for "Management of Water Resources" and "Over-view of Water Sector for Non-Technical Officers" programmes at National Institute of Hydrology, Roorkee and National Water Academy, Pune respectively. Various officers of the cadre of CSS, CSSS and officers of Central Staffing Scheme were sent for the mandatory training programmes conducted at ISTM.

3.0. Swachhata Pakhwada

MoWR, RD & GR alongwith all Attached Offices, Subordinate/ Autonomous Organisations and PSUs under the Ministry organised Swachhata Pakhwada from 16th to 31st March 2019.

The Swachhata Pakhwada was inaugurated on 15th March 2019 with Swachhata Pledge at Shram Shakti Bhawan led by senior officers of the Ministry followed by shramdaan for cleanliness at Shram Shakti Bhawan and surrounding areas by staff and officers of the Ministry.

During the fortnight, more than 125 major events have been organised all over the country by Ministry (Sectt.), Attached Offices, Subordinate/ Autonomous Organisations/ PSUs under the Ministry. Emphasis has been laid on going beyond symbolism and working on more sustainable and long terms contributions towards swachhta like generation of mass awareness by organising group cleanliness activities involving local masses, events like Swachhata sandesh rallies, educating school children through lectures, painting competitions, plantation activities, and awareness through social media platforms etc.

Special Yamuna Cleanliness drive was also organised on 29th March 2019 by the Ministry (Sectt.) at Chhath Ghat, Yamuna, Delhi through Shramdaan by officers and staff of the Ministry and M/s WAPCOS Ltd and UYRB to generate mass awareness about the importance of clean rivers. Ghat cleaning events at Yamuna, Delhi were organised at Kalindi Kunj Ghat by NMCG on 20.03.2019 and by, CGWB on 26.03.2019, Ram Ghat near Wazirabad Barrage by CWC, Old Yamuna Bridge by NWDA on 29.03.2019, Yamuna Ghat, Geeta Colony by CSMRS on 29.03.2019.

Glimpses of Activities carried out under Swachh Bharat Abhiyan




स्वच्छता ही
अभियान
SWACHHTA HI
COMPAIG

Ministry of Water Resources,
River Development & Ganga Rejuvenation

TRANSPARENCY, ROLE OF WOMEN IN WATER RESOURCES MANAGEMENT, PROGRESSIVE USE OF HINDI



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 MoWR, RD & GR, Room No. 02, B-wing, Ground Floor, Shastri Bhawan, Dr. Rajendra Prasad Road, 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, MoWR, RD & GR. 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, MoWR, RD & GR or by cash. List of central public information officers / appellate authorities in the various sections / wings of the ministry is at ***Annexure-XII.***

During the period from 01.01.2018 to 31.12.2018, 1656 RTI applications and 70 RTI appeals were received in RTI Cell, MoWR, RD & GR which were forwarded to concerned CPIO/ First Appellate Authority in the Ministry/ Other Public Authority for necessary action as per RTI Act, 2005.



Participants from MoWR, RD & GR attended training on RTI-Role of CPIOs at MGSIPA, Chandigarh during 27-29, December, 2018.

12. Role of Women in Water Resource Management

Water needs to be managed as a common pool community resource held, by the state, under public trust doctrine to achieve food security, support livelihood, and ensure equitable and sustainable development for all. Women play a crucial role in Planning, conservation and management of water resources.

The National Water Policy while emphasizing 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.

Women contribution in agriculture and allied activities is noteworthy. 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. Rural women play a vital role in agricultural sector production by working with full passion in production of crops right from the soil preparation till harvesting and food protection activities. Water Users' Associations can contribute significantly in this regard and bring in a new culture among the water users. Efforts have 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.

Presently, total 65 no. of Women Employees are working in the Ministry (Sectt.), out of which 14 belongs to Group 'A', 37 belongs to Group 'B' and 14 belongs to Group 'C' category.

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 the compliance of various orders/ instructions issued by the Department of Official Language.

The Second Sub-Committee of Parliamentary Committee on Official Language inspected 6 Offices of the MoWR, RD & GR viz. (1) NIH, Roorkee (2) NWDA, Hyderabad (3) Superintending Engineer (Godavari Basin), Hyderabad (4) NPCC, Gurugram. (5) Chief Engineer (Yamuna Basin), CWC, Delhi (6) WAPCOS, Chennai.

The meeting of Ministry's Hindi Advisory committee was held on 08.06.2018 under the chairmanship of Hon'ble Minister of State (MoWR, RD & GR). In this meeting, decisions were taken to promote the use of Hindi in the Ministry and its organization.

Meetings of official language Implementation Committee of the Ministry have been conducted 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 the shortfalls in relation to targets prescribed by Department of Official Language. The measures were also suggested for the removal of the shortfalls.

In order to encourage the use of Hindi in the official work of the Ministry, messages and appeal were issued on 13.09.2018 by the Hon'ble Union MoWR, Rd & GR, Hon'ble Minister of State for WR, RD & GR and Secretary, MoWR, RD & GR.

Hindi Fortnight was organized in the Ministry from 14.09.2018 to 30.09.2018. The competitions like Rajbhasha Quiz, Hindi Noting & Drafting, Hindi Essay, Translation, Hindi Typing, Hindi Essay Debate and Hind 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 incentive prizes of Rs. 1000/-for each of these competitions. The prizes were given to 58 meritorious participants.

To provide on the spot solution for the problem in performing official work in Hindi, a unique training workshop programme "Rajbhasha Aapke Dwar " is being implemented by the Hindi section of our ministry. In this programme, till date, officers and employees of some sections like Policy and Planning, Ground water, Project etc. were imparted "on the spot training" in their sections.

Incentive Schemes like 'Rajbhasha Vaijayanti Puraskar Yojana' and 'Incentive Scheme for doing work in Hindi' were implemented in the Ministry for promoting the implementation of Offcial language Policy. 'Rajbhasha Vaijayanti Purashkar Youjana' is for promoting the Hind work in Attached and Subordinate Organizations of the Ministry. The winners are selected after evaluating total work in Hindi of the Organization. 'Rajbhasha Vaijayanti Puraskar Yojana 2016-17' distribution ceremony was held on 20.12.2018. GFCC, Patna, WAPCOS, Gurugram and CWPRS, Pune received first, second and third Prizes respectively. Winning offices are given cups and Certificates. Under 'The incentive scheme for doing work in Hindi' provision has been made to give cash award each year to the officers and employees on the basis of the work done by them in Hindi.

Besides this "Moulik Pustak Lekhan Yojana" is also being implemented in the Ministry. Under the head, an amount of Rs. One lakh has been earmarked as prize money.

The Ministry has organized "Second Rajbhasha Sammelan" on 07.09.2018 in Pune. Officials of the Ministry and its Organizations participated in this conference. Three sessions were organized in one-day programme, where the experts delivered their lectures on different subjects. Closing Session was chaired by Secretary, MoWR, RD & GR. The programme ended with a Kavi Gosthi where three renowned Poets of India participated.

Ministry of Water Resources, River Development & Ganga Rejuvenation

STAFF WELFARE, VIGILANCE, APPOINTMENT OF PERSONS OF SPECIAL NEEDS



14. Staff Welfare

1.0. 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 SCs/STs/OBCs in Government Services.

This Ministry is responsible for reservation of various categories in services only for Staff Car Drivers and MTS grade. Implementation of reservation in these posts to Scheduled Castes, Scheduled Tribes, OBCs, Ex-Servicemen and divyang is followed as per Govt. rules. The post of MTS is filled through SSC. The vacancies in MTS grade are intimated to SSC.

Shri. Binod Kumar, Director is appointed as Liaison Officer for OBC i.r.o. the Ministry.

Shri. Mukesh Kumar, DS is appointed as Liaison Officer for SC/ST i.r.o. the Ministry.

2.0. Complaint Committee on Sexual Harassement 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 follows:

(i) Smt. Bindu Sreedathan, Director :Chairperson

(ii) Shri S.N. Pal, Under Secretary : Member

(iii) Smt. J. Subhangi, Section Officer : Member

(iv) Representative of Nari Raksha Samiti, NGO: Member

The Complaints 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), MoWR, RD & GR for further necessary action.

During the year ending 31st December, 2018, no complaint was received by the Committee.

3.0. Redressal of Public/Staff Grievances

A Grievances Redress Cell was set up in the MoWR, RD & GR which entertains the grievances of employees/ officers working in various organizations under the Ministry. Shri Girraj Goyal, Director (Coord.), has been designated as Director (Public & Staff Grievances) and all grievances are to be disposed off within a period of 60 days. Centralized Public Grievance Redress and Monitoring System (CPGRAMS) software developed by Deptt. of AR & PG, is regularly monitored in the Ministry.

During the period from 01st January, 2018 to 31st December, 2018, a total number of 3850 grievance petitions were received in this Ministry. Besides, 450 grievance petitions were carried forward which were pending at the end of 31 December, 2017. Out of total 4300 grievance petitions, 3878 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-XIII.***

15. Vigilance

The vigilance matters relating to the Ministry and its Organizations are handled by the Vigilance Division which functions under the guidance, supervision and control of a part time Chief Vigilance Officer of the level of Joint Secretary assisted by a Director, Under 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 Board level officers of PSUs are dealt with by the Division.

The Vigilance Division functions as a link between the Ministry and the Central Vigilance Commission (CVC) 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 various agencies/ departments like CVC, UPSC, Department of Legal Affairs, DoPT etc.

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 by the Ministry from 29th October, 2018 to 3rd November, 2018. An essay competition was organised in the Ministry which received wide participation from the employees. Besides this, Ministry has organised a half day seminar on subject "Eradicate corruption-Build a new India" through WAPCOS as a part of vigilance Awareness Week at SCOPE Auditorium, SCOPE Complex, Lodhi Road, New Delhi. All Organisations under the Ministry also observed "Vigilance Awareness Week-2018" enthusiastically by conducting various competitions such as essay writing/quiz/drawing competition and other awareness programs.

Preventive Vigilance Inspection (PVI) is an integral part of vigilance as per the guidelines issued by CVC. The basic aim of PVI is to prevent the possibility of corruption and to encourage the culture of probity and greater transparency in the Government functioning. PVI is concerned to bring awareness about the 'Preventive' measures to be taken to avoid the scope of irregularities in sensitive matters and also to sort out problems at an early stage. Preventive Inspection of 9 Organisations/Regional Offices under the Ministry was planned to be conducted during 2018-19. Out of which 4 PVIs have already been completed till December 2018. Remaining 5 PVIs will be completed by 31st March 2019.

The Vigilance Division is also responsible for calling for the Annual Property Returns of all Groups 'A', 'B' and 'C' Staff and monitoring them.

16. Appointments of Personal of Special Needs

Monitoring of the recruitment of persons with Special Needs is being done to ensure fulfillment of prescribed percentage of reservation 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. 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.

Admn. Section is dealing with reservation of Persons with Disabilities (Divyangjan) in MTS Post. The vacancies in MTS grade are filled through SSC. As on 31.12.2018 the total strength in MTS grade was 63, out of which there are two Persons with Disability (Visually Handicapped) PWDs (VH).

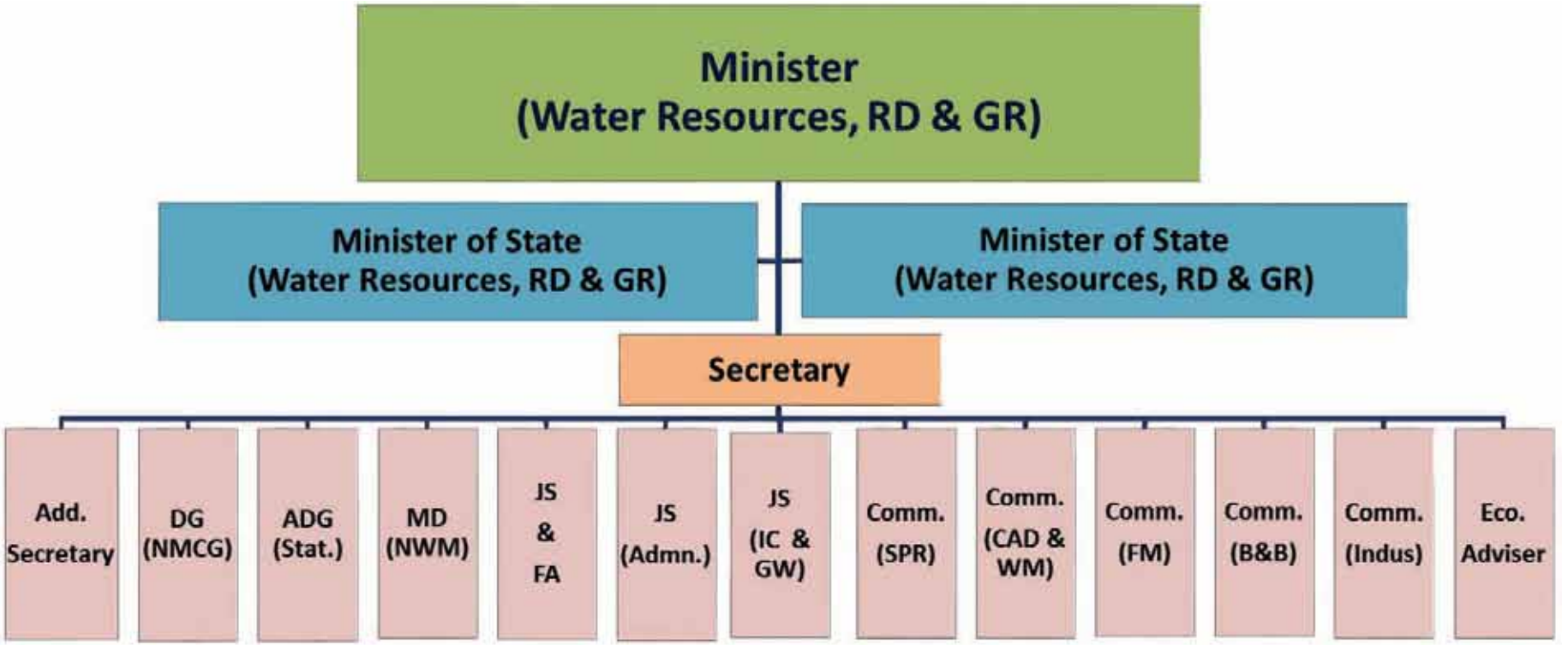
The relevant reservation rosters as prescribed by the Government are also maintained for planning the reservation of Persons with Special Needs.

Shri. Mukesh Kumar, DS is appointed as Liaison Officer for Person with Disabilities (Divyangjan) i.r.o. the Ministry.

ANNEXURES

ANNEXURE – I

ORGANIZATION CHART OF MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION



ANNEXURE –II

STAFF IN POSITION IN THE MINISTRY OF WATER RESOURCES, RD &GR AS ON 31.12.2018

Group	Total Employees in position	Representation of SC/ST/OBC				PH
		SC	ST	OBC	Others	
A	112	19	8	11	74	--
B	153	20	6	29	98	4
C	141	44	11	30	56	2
Total	**406**	**83**	**25**	**70**	**228**	**6**

ANNEXURE – III

LIST OF NAMES & ADDRESSES OF SENIOR OFFICERS & HEADS OF ORGANISATIONS UNDER THE MINISTRY OF WATER RESOURCES, RD & GR

S. No.	Name of the Organisation	Head of the Organisation / Senior Officer
1.	Government of India, Ministry of Water Resources, RD & GR, Room No. 412, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri U.P. Singh, Secretary, Tel No. 23710305, 23715919, Fax. 23731553.
2.	Government of India, Ministry of Water Resources, RD & GR, Room No. 404, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Smt. T. Rajeswari, Additional Secretary, Tel No. 23714609, Fax. 23716894.
3.	Government of India Ministry of Water Resources, RD & GR, Room No. 6, 2nd Floor, B wing, Lok Nayak Bhawan, Khan Market, New Delhi.	Shri Surender Mohan Mahajan (Rtd. on 31.1.2019) Additional Director General (Stat.) Tel No. 24691080 Fax. 24691080
4.	Government of India, Ministry of Water Resources, RD & GR, Room No. 406, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri Nitishwar Kumar, Joint Secretary (Admn.), Tel No. 23725477, 23710619.
5.	Government of India, Ministry of Water Resources, RD & GR, Room No. 403, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri Akhil Kumar, Joint Secretary(IC & GW), Tel No. 23710343, Fax. 23730719.
6.	Government of India Ministry of Water Resources, RD & GR, Room No. 401, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri Jag Mohan Gupta, Joint Secretary & Financial Adviser, Tel No. 23710297 Fax. 23710297
7.	Government of India Ministry of Water Resources, RD & GR, Room No. 236, 2nd Floor, 'B' wing, Krishi Bhavan, Rafi Marg, New Delhi-110 001	Dr. B. R. K. Pillai, Commissioner (CADWM) Telefax No. 23382256

S. No.	Name of the Organisation	Head of the Organisation / Senior Officer
8.	Government of India Ministry of Water Resources, RD & GR, Room No. 411, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri K. Vohra, Commissioner (SPR), Tel No. 23710107.
9.	Government of India Ministry of Water Resources, RD & GR, Room No. 827, 8th Floor, CGO Complex, Lodi Road, New Delhi-110 001	Shri J. Chandrashekhar Iyer , Commissioner (Flood Management) Tel No. 24368238 Fax. 24362780
10.	Government of India Ministry of Water Resources, RD & GR, Room No. 204, 2nd Floor, CGO Complex, Lodi Road, New Delhi-110 001	Shri T.S. Mehra, Commissioner (B&B). Tel No. 24364724.
11.	Government of India Ministry of Water Resources, RD & GR, Room No. 814, 8th Floor, CGO Complex, Lodi Road, New Delhi-110 001	Shri P.K. Saxena, Commissioner (Indus) Tel No. 24361540 Fax. 24361540
12.	Government of India Ministry of Water Resources, RD & GR, Room No. 7, Ground Floor, Shastri Bhavan,Dr. Rajendra Prasad Road, New Delhi-110 001	Shri. B. B. Sharma (Rtd. on 31.12.2018) Economic Adviser, Tel No. 23388941 Fax. 23381895
Attached Offices		
13.	Central Water Commission, Room No. 326, Sewa Bhawan, R.K. Puram, New Delhi	Shri S. Masood Hussain, Chairman (CWC), Tel. No.26715351, Fax: 26108614.
14.	Central Soil and Materials Research Station, Room No. 111, Hauz Khas, New Delhi-110016	Shri S.L. Gupta, Director, Tel. No. 26961894, 26967985 Fax: 26967985

S. No.	Name of the Organisation	Head of the Organisation / Senior Officer
	Subordinate Offices	
15.	Farakka Barrage Project, P.O. Farakka Barrage, Distt. Murshidabad-742212 , West Bengal.	Shri Saibal Ghosh, General Manager, Tel. No. 03485-253644, Fax: 03485-253608.
16.	Ganga Flood Control Commission, Sinchai Bhawan, IIIrd floor, Patna-800015	Shri Arun Kumar Sinha, Chairman, Tel. No. 0612-2217294 Fax: 0612-2217960
17.	Central Water and Power Research Station, P.O. Khadakwasla, Pune-411024	Dr.(Mrs). V.V. Bhosekar, Director, Tel. No. 020-24380552, Fax: 020-24381004.
18.	Central Ground Water Board, Jamnagar House, New Delhi	Shri K.C. Naik, Chairman, Tel. No. 0129-2477101, Fax: 0129-2477200.
19.	Bansagar Control Board, Bansagar Colony, Rewa,Madhya Pradesh, 486001.	Shri Kiran Premanik, Secretary, Tel. No. 07662-226318 Fax : 07662-242433
20.	Sardar Sarovar Construction Advisory Committee, Narmada Bhawan, 'A' Block, 4th Floor, Vadodara-390001	Shri M.P. Singh, Secretary, Tel. No. 0265-2421438 Fax 0265-2437262
21.	Upper Yamuna River Board 201, "S", Sewa Bhawan, R.K. Puram, New Delhi-110016	Shri S. Masood Hussain, Chairman, Addl. Charge Tel. No. 26108590 Fax: 26195289

S. No.	Name of the Organisation	Head of the Organisation / Senior Officer
Public Sector Undertakings		
22.	Water and Power Consultancy Services (India) Limited, 5th Floor, 'Kailash', 26, Kasturba Gandhi Marg, New Delhi.	Shri R.K. Gupta, Chairman & MD Tel. No.23313881 Fax: 23314924
23.	National Projects Construction Corporation Limited, Plot No.148, Sector-44, Gurugram, Haryana-122003.	Shri Manohar Kumar, Chairman & MD, Tel. No. 0124-2385219, Fax : 0124-2385219.
Registered Societies / Autonomous Bodies/ Statutory Bodies etc.		
24.	National Mission for Clean Ganga, Government of India, Ministry of Water Resources, RD & GR, 1st Floor, MDCNS Building, India Gate, New Delhi-110002	Shri Rajiv Ranjan Mishra, Director General (NMCG) Tel No. 23049528
25.	National Water Mission, 2nd Floor, Block-III,CGO Complex, Lodhi Road, New Delhi-110 003	Shri G. Ashok Kumar, Mission Director, Tel No. 011-24365200
26.	National Institute of Hydrology, Jal Vigyan Bhawan, Roorkee, Uttarakhand-247667 .	Dr. Sharad Kumar Jain, Director, Tel. No. 01332-272106 Fax: 01332-272123/273976
27.	National Water Development Agency, 18-20, Community Centre, Saket, New Delhi-110017	Shri M. K. Srinivas, Director General Tel. No. 26519164 Fax: 26513846
28.	North Eastern Regional Institute of Water and Land Management, Dolabari, Tezpur, Sonitpur, Assam-784027	Dr. Pankaj Barua, Director(NERIWALM), Tel No. 03712-268107, Fax. 03712-268007

S. No.	Name of the Organisation	Head of the Organisation / Senior Officer
29.	Narmada Control Authority, Narmada Sadan Sec-B, Scheme No.74-C, Vijay Nagar, Indore-452010	Dr. M.K. Sinha, Executive Member & HoD, Tel. No. 0731-2557276, Fax : 0731-2559888.
30.	Brahmaputra Board, Basistha, Guwahati, 781029	Shri Rajiv Yadav, Chairman Tel. No. 0361-2301099 Fax 0361-2301099
31.	Betwa River Board, Nandanpura, Shivpuri Highway, Jhansi-284003	Shri Jagdish Singh, Chief Engineer, Telefax. No. 0510-2480183
32.	Tungabhadra Board, Tungabhadra Dam, Taluk: Hospet, Distt:Bellary, Karntaka -583225	Shri D. Ranga Reddy, Chairman, Tel. No. 040-29808740 Fax 040-29808742
33.	Krishna River Management Board, Jalasoudha, Erra Manzil, Hyderabad, 500 082.	Sh. R.K. Gupta, Chairman, Tel. No. 040-23304120.
34.	Godavari River Management Board, 5th Floor, Jalasoudha, Erra Manzil, Hyderabad, 500 082.	Shri R.K. Jain, Chairman, Tel. No. 040-23313163. Fax 040-23313162.

ANNEXURE-IV

BUDGET AT A GLANCE

(Rs. in crore)

Scheme/ Office/ Component	ACTUALS 2017-18	BE 2018-19	RE 2018-19	Exp. up to 31.12.2018
Central Sector Schemes				
Farakka Barrage Project	117.13	195.00	109.22	70.81
Emergent Flood Protection Works in Eastern & Western Sector	0.00	0.01	0.01	0.01
DRIP	81.11	124.00	75.00	28.53
National Ganga Plan	700.00	2250.00	700.00	300.00
Ghat works for Beautf. of River Front	0.00	50.00	50.00	50.00
National River Conservation Plan	723.21	770.00	1620.00	1320.00
Implementation of National Water Mission *	1.17	0.00	0.00	0.00
River Basin Management	186.21	225.00	200.00	126.57
Flood Forecasting **	39.21	0.00	0.00	0.00
Interlinking of Rivers	0.00	1.00	0.01	0.00
Development of Water Resources Information System	61.93	211.27	96.93	64.76
Ground Water Management & Regulation	254.44	450.00	260.00	155.93
National Hydrology Project	177.89	250.00	80.00	38.62
Research & Development *	49.08	0.00	0.00	0.00
Human Resources Development/ Capacity Building	27.30	62.77	60.00	19.97
Infrastructure Development	43.63	87.76	50.00	29.15
R&D and NWM	0.00	95.00	52.00	30.81
Sub Total	**2462.30**	**4771.81**	**3353.17**	**2235.16**
Centrally Sponsored Schemes				
PMKSY-Har Khet Ko Pani	1355.22	2600.00	2181.19	1514.22
Impact Assessment Studies	0.14	1.00	1.00	0.00
Assistance to SYLCP	0.00	0.01	0.01	0.00
FMBAP	0.00	527.00	719.00	482.50
Flood Management Programme ***	562.67	0.00	0.00	0.00

Scheme/ Office/ Component	ACTUALS 2017-18	BE 2018-19	RE 2018-19	Exp. up to 31.12.2018
River Management Activities & Work related to Border Areas ***	187.06	0.00	0.00	0.00
Irrigation Census	17.45	50.00	54.50	43.31
Atal Bhujal Yojana	0.00	0.04	0.04	0.00
Special Package for Marathawada, Vidarbha and other drought prone areas of Maharashtra	0.00	0.00	500.00	353.02
Sub Total	**2122.54**	**3178.05**	**3455.74**	**2393.05**
Establishment				
Secretariat - Economic Services	76.34	95.00	84.95	63.09
Attached, Subordinate & Other offices				
Central Water Commission	332.29	443.49	383.52	282.05
Central Soil & Material Research Station	14.16	17.27	15.04	11.98
Central Water & Power Research Station	58.61	81.00	63.93	56.92
Sardar Sarovar Construction Advisory Committee - SSCAC	0.69	1.50	0.54	0.37
Bansagar Control Board	0.36	0.70	0.44	0.31
Upper Yamuna River Board	8.73	2.46	1.27	0.89
Central Ground Water Board	213.70	242.22	230.63	189.61
National Institute of Hydrology	23.75	26.50	21.00	17.27
NWIC	0.00	0.00	0.29	0.00
CWMA	0.00	0.00	2.00	0.00
Sub Total	**728.63**	**910.14**	**803.61**	**622.49**
Total	**5313.48**	**8860.00**	**7612.52**	**5250.70**

Remarks:

* The schemes of (i) Implementation of National Water Mission and (ii) Research & Development were merged into one scheme, namely Research & Development and National Water Mission (R&D and NWM).

**The erstwhile scheme of Flood Forecasting was merged with the scheme of Development of Water Resources Information System.

*** The schemes of (i) Flood Management Programme and (ii) River Management Activities & Work related to Border Areas were merged as Flood Management & Border Areas Programme.

ANNEXURE-IV(A)

STATUS OF PENDING C & AG PARAs NO.6 OF 2018 REPORT AND 22 OF 2018 REPORT

Sl. No	Extracts of Para	Ministry Remarks
1	**Performance Audit of National Projects (C&AG Report No. 6 of 2018):** In February 2008, the Government of India approved a Scheme of National Projects where under it identified 16 major water resource development and irrigation projects that were under the Accelerated Irrigation Benefits Programme (AIBP) but were languishing due to various constraints and hurdles including land acquisition, inter-State coordination, financial constraints and issues relating to rehabilitation and re-settlement of affected population. The poor implementation of the schemes was adversely impacting strategic national interests. The fundamental objective of the scheme was to ensure coordinated and focused action to expedite their execution and ensure their early completion. A performance audit of the scheme brought out that this fundamental objective remained unachieved though an expenditure of Rs.13,299.12 Cr. had been incurred on the five projects as of March 2017. Out of the 16 National Projects, only five projects were under implementation. In these five projects, 14.53 lakh Hectare Irrigation Potential has been created but a mere 5.36 lakh Hectare (37 per cent) Irrigation Potential is being utilised. The five projects under implementation have not been able to reach a stage where the benefits of power generation, drinking water and reservoir creation can be delivered except for creation of 0.53 Million Acre Feet storage in Gosikhurd project. In none of the five projects under implementation had any proposal for Command Area Development works been sent to Central Water Commission for approval (March 2017). In absence of paripassu implementation of Command Area Development works providing last mile connectivity through distributaries, irrigation potential would not be utilized, even if projects are completed. Deviation from codal provisions and tender/agreement terms provided no assurance as to the transparency and objectivity of the process of selection of contractors, award of works and their execution. Lack of adequate and effective monitoring and timely action to deal with breaches and damages to created infrastructure both contributed to the poor progress of works as well as inadequate maintenance of assets already created.	ATN sent to C & AG on 07/02/2019 for vetting

Sl. No	Extracts of Para	Ministry Remarks
2	**Performance Audit of Accelerated Irrigation Benefits Programme (C&AG Report No. 22 of 2018):** The Accelerated Irrigation Benefits Programme (AIBP) was launched during 1996-97 as a Central Assistance (CA) programme for accelerating the implementation of large projects which were beyond the resource capability of the States and completion of other irrigation projects which were at an advanced stage but were delayed due to resource constraints faced by State Governments. Initially, the primary goal of AIBP was to speed up completion of Major and Medium Irrigation (MMI) projects. The coverage under AIBP was gradually expanded over the years to include drought prone area of KBK districts of Odisha and Minor Irrigation (MI) schemes of Special Category States (SCS); Extension, Renovation, Modernization (ERM) projects and MI schemes of Special Areas (SA)*[The Special Areas denote Drought prone areas, Tribal areas, Desert areas, Flood prone areas]* of non-SCS. Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR,RD&GR/Ministry) is responsible for framing policy guidelines for implementation while State Governments are primarily associated with planning and implementation of irrigation projects and schemes. A Performance audit of the AIBP revealed several deficiencies in the planning, implementation and monitoring of the programme. Projects and schemes were included under AIBP in violation of the programme guidelines, resulting in irregular release of Rs. 3,718.71 Cr. Implementation of projects under AIBP was tardy, with delays in completion of projects ranging from one to 18 years. Out of the sampled 118 MMI projects and 335 MI schemes, only 30 MMI projects and 213 MI schemes were completed as of March 2017. The realization of envisaged benefits in terms of Irrigation Potential (IP) creation was only 68 per cent in MMI projects and 39 per cent in MI schemes. The utilization of IP created was 65 per cent and 72 per cent respectively for MMI projects and MI schemes. The extra financial implications seen in audit were to the extent of Rs.1,337.81 Cr. towards irregular/wasteful/avoidable/extra expenditure and Rs. 303.36 Cr. due to undue favour to the contractor. Monitoring by Central and State agencies was lax. There were shortfalls in number of monitoring visits by Central Water Commission (CWC) and reports were not prepared in all projects evaluated. Further, compliance to issues highlighted in the CWC reports were also pending. State Level Monitoring Committees were not formed in all the States. Monitoring through Remote Sensing Technology by National Remote Sensing Centre, Hyderabad (NRSC) was very limited due to the low resolution of imageries and other limitations attributed by the Ministry. There were gaps in IP highlighted by NRSC and variance in IP data of the NRSC and the Ministry. Participatory irrigation management through Water Users Associations suffered from serious limitations due to limited number, status and the resources at their command affecting the Operation & Maintenance of projects.	Report not yet received in the Ministry

Annexure-V

LIST OF PRIORITY PROJECTS (AIBP WORKS) REPORTED COMPLETED/ ALMOST COMPLETED

S.No.	State	Name of the Project
1	Andhra Pradesh	Maddigedda
2	Chhattisgarh	Maniyari Tank
3		Kharung
4	Jammu & Kashmir	Rajpora Lift
5	Karnataka	Sri Rameswar Irrigation
6		Bhima LIS
7	Madhya Pradesh	Singhpur Project
8		Mahuar Project
9		Sagad Project
10		Sindh Project Phase II
11		Indira Sagar Project Canal Phase - I & II (km. 0 to km. 142)
12		Omkareshwar Project Canal Phase-IV (OSP lift)
13		Indira Sagar Project Canal Phase - V (Khargone Lift)
14		Bansagar Unit 2
15		Barriyarpur LBC
16		Sanjay sagar (Bah) Project
17	Maharashtra	Bawanthadi (IS)
18		Lower Panzara
19		Dongargaon
20		Warna
21		Nandur Madhmeshwar Ph-II
22	Odisha	Upper Indravati(KBK)
23		Rukura-Tribal
24	Punjab	Kandi Canal Extension (Ph.II)
25		Rehabilitation of Ist Patiala Feeder and Kotla Branch Project
26	Rajasthan	Narmada Canal
27		Mod. of Gang Canal
28	Telangana	Gollavagu Project
29		Rallivagu project
30		Mathadivagu Project
31	Uttar Pradesh	Bansagar Canal

ANNEXURE -VI

CENTRAL ASSISTANCE & STATE SHARE DURING 2016-17, 2017-18 & 2018-19 FOR AIBP WORKS FOR 99 PRIORITY PROJECTS UNDER PMKSY

PMKSY- Releases		AIBP (Rs in Cr)					
Sl. No.	STATE	2016-17		2017-18		2018-19	
		CA Released	State Share release through NABARD	CA released	State Share release through NABARD	CA Released	State Share release through NABARD
1	Andhra Pradesh	7.40	97.90	15.23	391.44	0.00	0.00
2	Assam	0.00	0.00	0.00	0.00	0.00	0.00
3	Bihar	0.00	0.00	46.32	0.00	37.82	0.00
4	Chhattisgarh	13.29	0.00	17.25	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	961.88	620.55	1410.49	762.49	1047.29	1330.23
7	Jammu & Kashmir	0.00	0.00	9.57	0.00	16.92	0.00
8	Jharkhand	145.75	204.33	305.10	313.77	305.88	0.00
9	Karnataka	135.46	0.00	459.52	0.00	197.0	0.00
10	Kerala	0.00	0.00	0.00	0.00	0.00	0.00
11	Madhya Pradesh	300.13	500.00	181.27	161.83	81.01	0.00
12	Maharashtra	379.86	1723.58	363.02	1959.26	527.54	3293.88
13	Manipur	126.99	0.00	25.42	19.31	21.93	167.49
14	Odisha	457.74	178.15	464.71	1007.72	119.38	739.0
15	Punjab	52.42	0.00	0.00	0.00	0.00	0.00
16	Rajasthan	45.89	0.00	216.87	101.45	95.15	94.87
17	Telangana	545.44	0.00	13.24	0.00	1.99	0.00
18	Uttar Pradesh	135.63	0.00	65.60	0.00	397.16	2675.11
	Total	**3307.89**	**3324.51**	**3593.60**	**4717.27**	**2849.07**	**8300.58**

Annexure –VII

CENTRAL ASSISTANCE & STATE SHARE DURING 2016-17, 2017-18 & 2018-19 FOR CADWM WORKS FOR 99 PRIORITY PROJECTS UNDER PMKSY

PMKSY- Releases		CADWM (Rs in Cr)					
		2016-17		2017-18		2018-19	
Sl. No.	STATE	CA Released	State Share release through NABARD	CA released	State Share release through NABARD	CA Released	State Share release through NABARD
1	Andhra Pradesh	0.000	0.000	0.000	0.000	69.180	0.000
2	Assam	0.000	0.000	0.000	0.000	3.550	0.000
3	Bihar	12.643	0.000	8.760	0.000	14.420	0.000
4	Chhattisgarh	0.000	0.000	11.782	0.000	9.930	0.000
5	Goa	0.000	0.000	0.000	0.000	0.000	0.000
6	Gujarat	681.644	0.000	690.476	0.000	347.040	0.000
7	Jammu & Kashmir	0.000	0.000	0.000	0.000	1.700	0.000
8	Jharkhand	0.000	0.000	0.000	0.000	0.000	0.000
9	Karnataka	31.420	0.000	15.240	0.000	13.490	0.000
10	Kerala	0.000	0.000	0.000	0.000	0.000	0.000
11	Madhya Pradesh	77.746	0.000	102.785	71.520	70.910	0.000
12	Maharashtra	15.174	0.000	32.826	0.000	25.790	0.000
13	Manipur	0.000	0.000	0.000	0.000	0.000	0.000
14	Odisha	35.276	10.470	58.568	36.930	3.650	0.000
15	Punjab	0.000	0.000	0.000	0.000	0.000	0.000
16	Rajasthan	0.000	0.000	2.479	0.000	7.430	8.250
17	Telangana	0.000	0.000	10.220	0.000	26.120	0.000
18	Uttar Pradesh	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**853.903**	**10.470**	**933.136**	**108.45**	**593.210**	**8.250**

Annexure-VIII

STATE/UT WISE DETAILS OF CENTRAL ASSISTANCE RELEASED UNDER FMP/ FM COMPONENT OF FMBAP

(Rs. in crore)

Sl. No.	State	Funds Released (XI Plan)	Funds Released (XII Plan)	Funds released (FY:2017-18)	Funds released FY:2018-19 (up to 31.12.2018)	Total funds released so far
1	Arunachal Pradesh	81.69	87.91	21.18	0.00	190.78
2	Assam	748.86	64.89	245.49	65.22	1124.46
3	Bihar	723.18	184.64	0.00	16.58	924.41
4	Chhattisgarh	15.57	3.75	0.00	0.00	19.32
5	Goa	9.98	2.00	0.00	0.00	11.98
6	Gujarat	2.00	0.00	0.00	0.00	2.00
7	Haryana	46.91	0.00	0.00	0.00	46.91
8	Himachal Pradesh	165.98	221.87	87.50	71.36	546.71
9	Jammu & Kashmir	252.57	169.95	110.40	46.74	579.66
10	Jharkhand	18.44	4.27	0.00	0.00	22.71
11	Karnataka	23.80	0.00	0.00	0.00	23.80
12	Kerala	63.68	55.22	19.05	0.00	137.95
13	Manipur	66.34	24.36	0.00	0.00	90.70
14	Meghalaya	3.81	0.00	0.00	0.00	3.81
15	Mizoram	14.48	1.93	0.48	0.00	16.89
16	Nagaland	28.96	54.17	0.00	10.84	93.96
17	Odisha	101.12	0.00	0.00	0.00	101.12
18	Puducherry	7.50	0.00	0.00	0.00	7.50
19	Punjab	40.43	0.00	0.00	0.00	40.43
20	Sikkim	83.69	8.15	0.00	0.00	91.84
21	Tamilnadu	59.82	0.00	0.00	0.00	59.82
22	Tripura	23.62	0.00	0.00	0.00	23.62
23	Uttar Pradesh	290.69	111.22	13.55	15.58	431.03
24	Uttarakhand	49.63	153.98	0.00	0.00	203.61
25	West Bengal	643.26	158.75	65.03	23.65	890.69
	Total	**3566.00**	**1307.07**	**562.67**	**249.97**	**5685.72**

Annexure-IX

AREA PROTECTED AND POPULATION BENEFITTED DURING XI & XII PLAN

Sl. No	State	XI Plan		XII Plan		Total (XI &XII Plan)	
		Area protected in lakh ha	Population benefited in Lakh	Area protected in lakh ha	Population benefited in Lakh	Area protected in lakh ha	Population benefited in Lakh
1	Arunachal Pradesh	0.566	0.697	0.000	0.000	0.566	0.697
2	Assam	4.871	97.848	1.516	22.960	6.387	120.808
3	Bihar	10.522	70.920	13.330	42.247	23.852	113.167
4	Goa	0.002	0.150	-	-	0.002	0.150
5	Gujarat	-	-	0.000	0.330	0.000	0.330
6	Himachal	-	-	0.050	0.900	0.050	0.900
7	Jharkhand	-	-	0.162	1.850	0.162	1.850
8	J&K	0.900	0.000	-	-	0.900	0.000
9	Manipur	0.280	1.582	-	-	0.280	1.582
10	Nagaland	0.004	0.600	-	-	0.004	0.600
11	Orissa	1.556	7.202	-	-	1.556	7.202
12	Sikkim	0.201	2.397	-	-	0.201	2.397
13	Uttar Pradesh	0.538	4.005	-	-	0.538	4.005
14	Uttarakhand	0.001	0.053	0.004	0.202	0.005	0.255
15	West Bengal	0.150	11.810			0.150	11.810
16	Tripura	0.002	0.013	0.008	0.027	0.010	0.040
	Total	**19.593**	**197.277**	**15.070**	**68.516**	**34.663**	**265.793**

Annexure –X

LIST OF EMPANELLED LEAD AND FIELD NGOs WITH NWM

Sl. No.	Name of the Organization
Lead Agencies (Zone-1) North	
1.	Society for Development Alternatives(DA)
2.	Vyankti Vikas Kendra, India
3.	WWF India
Lead Agencies (Zone-2A) North-East	
1.	People Science Institute
Lead Agencies (Zone-2B) East	
1.	Action for Food Production (AFPRO)
2.	Social Action for Rural Development
3.	Advanced Centre For Water Resources Development and Management
Lead Agencies (Zone-3) West	
1.	Watershed Organization Trust (WOTR)
2.	Ambuja Cement Foundation
3.	Baif Development Research Foundation
Lead Agencies (Zone-4) South	
1.	Ramky Fondation
2.	Saciwaters
3.	Centre For Socio-Economic and Environmental Studies (CSEC)
Field Agencies across 4 Zones:	
Field Agency: (Zone-I) North	
1.	Society for Technology and Action for Rural Advancement (TARA)
2.	Institute for Integrated Rural Development-HP
3.	Actionaid Association
4.	Humana People to People India
5.	Indian Society of Agribusiness Professionals

Sl. No.	Name of the Organization
6.	Indian National Trust for Art and Cultural Heritage
7.	Aqua Foundation
8.	Yuva Mitra
9.	Advit Foundation
10.	Shramik Bharti
11.	Environmental Law Research Society
12.	Association for Rural and Technical Education Centre (ARTEC)
Field Agency: (Zone-2) East **Field Agency (Zone-2A) North-East**	
1.	Gramya Vikash Mancha
2.	North East Affected Area Development Society
Field Agency (Zone-2B) East	
3.	Life Academy of Vocational Studies
4.	Tagore Society For Rural Development
5.	Society for Upliftment of People with Peoples Organization and Rural Technology
6.	Society for promoting participative Ecosystem Management (SOPPECOM)
7.	Women's Organization for Socia-Cultural Awareness (WOSCA)
8.	South Asian Forum for Environment (SAFE)
9.	Vikas Sahyog Kendra
10.	Lokadrusti
11.	Janmitram Kalyan Samiti
12.	Janajagaran Kendra
13.	Adhikar-Khordha
Field Agency (Zone-3) West	
1.	Centre for Advance Research & Development
2.	Foundation for Ecological Security
3.	Krishak Sewa Sansthan

Sl. No.	Name of the Organization
4.	Development Support Centre
5.	Dilasa Janvikas Pratishthan
6.	Rashtravikas Agro Education Sanstha, Amalner
7.	Action for Agricultural Renewal in Maharashtra
8.	Harshal Gramin Vikas Bahuddeshiya Sanstha Chandrapur
9.	ICLEI South Asia
10.	Bhopal Yuwa Paryavaran Shikshan and Samjik Sansthan
11.	Ashwamegh Gramin Panlot Kshetra Vikas VA Shaikshanik Sanstha (AGVSS)
12.	Shikshit Rojgar Kendra Prabandhak Samiti
Field Agency (Zone-4) South	
1.	COODU Trust
2.	Arshabharath Bhahujana Bodhavalkarana Grama Vikasana Samithi
3.	Solidarity Movement of India
4.	Centre for Alternate Rural Employment
5.	SAMUHA
6.	EFFORT
7.	Society for National Integration through Rural Development
8.	Kottayam Social Service Society
9.	Navajeevan Organisation
10.	Samatha Society for Rural Education and Development
11.	Support for Network and Extension Help Agency (SNEHA)
12.	Green India Trust (GIT)

Annexure –XI

'SURVEY & INVESTIGATION' AND PREPARATION OF DETAILED PROJECT REPORTS OF MULTIPURPOSE PROJECTS BY BRAHMPUTRA BOARD

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 to private developers in 2011
4.	Kynshi Stage-II Dam Project	Others	450	

Status of Projects currently under S & I and DPR preparation is as under:

Sl. No.	Name of Project	State	Basin	Installed Capacity (MW)	Status
1.	Kulsi Multi-Purpose Project (Identified as National Project)	Assam & Meghalaya	Brahmaputra	55	DPR completed. Ready to place in TAC of MoWR. Awaiting for decision for ownership for implementation
2.	Noa-Dehing Dam Project (Identified as National Project)	Arunachal Pradesh	Brahmaputra	71	
3.	Simsang Dam Project	Meghalaya	Others	65	Due to shortage of Manpower, remaining works for preparation of DPRs to be carried out through outsourcing
4.	Killing Dam Project	Assam & Meghalaya	Brahmaputra	85	
5.	Jiadhal Dam Project	Arunachal Pradesh	Brahmaputra	70	

ANNEXURE – XII

LIST OF CENTRAL PUBLIC INFORMATION OFFICERS / APPELLATE AUTHORITIES IN THE VARIOUS SECTIONS / WINGS OF THE MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION

S. No.	Name & Designation of CPIO appointed (S/Shri/Smt/ Kum)	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. 011-23738126, Email ID: usadmn-mowr@nic.in	Administration Section/Cash Section SC/ST/OBC Cell	Director, Tel No. 23714734, Email ID-diradmn-mowr@nic.in
2	Narendra Singh, Under Secretary (E-I), Tel. No. 011-23716928, Email id: use1-mowr@nic.in	E-I Section	Chandan Mukherjee, DS (E-I/E-III), Tel. No. 011-23711459 Email id : chandan@nic.in
3	K.H. Sivaramakrishnan, Under Secretary (E-III), Tel. No. 011-23714350, Email id: use3-mowr@nic.in	E-III Section	
4	Amit Kumar Singh, Under Secretary (ID,e-Gov& IEC), Tel. No. 011-23710303, Email id: amitk.singh32@gov.in	ID, e-Governance Cell & IEC	Girraj Goyal, Director Tel No.-23766369 Email ID -dircoord-mowr@nic.in
5	Ashok Kumar Gupta, Under Secretary (Co-ord.), Tel. No. 011-23074005, Email id: uscoord-mowr@nic.in	Coordination Section	
6	Vinod Kumar, Under Secretary (GA), Tel. No. 011-23710303, Email id: usga-mowr@nic.in	General Admn.	Director, Tel No. 23714734, Email ID-diradmn-mowr@nic.in
7	Pratip Deb, Under Secretary (PSU/O&M, Parliament), Tel. No. 011-23716928, Email id: pratip.deb@nic.in	Public Sector Undertakings Section and PPP Cell/O&M & Parliament	S.K. Garg, Director (PSU/O&M, Parliament), Tel No.-23382256, Email ID-surender.garg@nic.in
8	Santanu Rakshit, Under Secretary (E-II), Tel No. 011-23710333, Email ID-use2-mowr@nic.in	E-II Section	Director, Tel No. 23714734, Email ID-diradmn-mowr@nic.in

S. No.	Name & Designation of CPIO appointed (S/Shri/Smt/ Kum)	Name of the Section/ Desk/ work	Name & Designation of the Appellate Authority appointed (S/Shri/Smt/Kum)
9	A.K. Wahi, Under Secretary (GW Desk, ABHY & NHP), Tel No.-01123766907, Email ID- ak.wahi64@gov.in	GW Desk, ABHY &NHP	Ashish Kumar, Director Tel No-011-23716747 Email ID- ashish.kumar74@gov.in
10	S.K. Kataria, Under Secretary (GWE), Tel No-011-23766907, Email ID-sk.kataria25@nic.in	GWE	Director, Tel No. 23714734, Email ID-diradmn-mowr@nic.in
11	Arun Kumar, Under Secretary (Vigilance/E-IV), Tel No.-011-23716928, Email-id:arun.kumar25@nic.in	Vigilance/ E-IV	S.K. Basu, Deputy Secretary, Tel No.-011-23711988, Email ID- dse4-mowr@nic.in
12	B.H.T. Vaiphei, Under Secretary (EA&IC), Tel No-011- 23074005, Email ID- eadesk-mowr@nic.in	EA&IC	Mukesh Kumar, Deputy Secretary (EA&IC), Tel No.011-23383078, Email ID: dsea-mowr@gov.in
13	Shraddha Mathur, Assistant Director (OL), Tel. No. 011-24367106, Email id shraddha.mathur@nic.in	Official language	M.C. Bhardwaj, Joint Director (OL), Tel. No. 011-23711486, Email id: mc.bhardwaj@nic.in
14	Rajaram Purohit, Jr. Hydrologist (NHP), Tel. No. 011-21420147, Email id: rr.purohit@nic.in	NHP	N.K. Manglik, SJC (NHP), Tel. No. 011-24367109, Email id :sic2nhp-mowr@gov.in
15	B.L. Meena, Under Secretary (B&B), Tel. No. 011-24367116, Email id: bl.meena15@nic.in	Matters of Brahmputra and Barak Wing	Vaseem Ashraf, Sr. Joint Commissioner (B&B), Tel. No. 011-24367590, Email-id: vaseemashraf-cwc@nic.in
16	R.R Sambharia, Sr. Joint Commissioner (FM), Tel. No. 011-24362160, Email id: rrsambharia-cwc@nic.in	Flood Management Wing	J. Chandrasekhar Iyer, Commissioner (FM), Tel. No. 011-24368238, Email id: commer-mowr@nic.in
17	Rakesh Toteja, Sr. Joint Commissioner (FM), Tel. No. 011-24360611, Email id: sjcer2-mowr@nic.in	Flood Management Wing	

S. No.	Name & Designation of CPIO appointed (S/Shri/Smt/ Kum)	Name of the Section/ Desk/ work	Name & Designation of the Appellate Authority appointed (S/Shri/Smt/Kum)
18	M.S. Sahare, Sr. Joint Commissioner (FM), Tel. No. 011-24392095, Email id: mssahare@nic.in	Flood Management Wing	
19	A.J. Soreng, Under Secretary (PP), Tel. No. 011-23714350, Email id: uspp-mowr@nic.in	Policy Section(PP)	Bhupesh Kumar, Sr. Joint Commissioner (PP), Tel: 011-23719503, Email Id: sjcpp-mowr@nic.in
20	Vijay Shrivastava, Under Secretary (Finance-I), Tel. No. 011-23711486, Email id: vijayk.srivastava@nic.in	Finance-I	S.L. Meena, Director (Finance), Tel: 011-23711360, Email id: dirfin-mowr@nic.in
21	Y.P. Yadav, Under Secretary (Finance-II), Tel. No. 01123719302, Email id: yp.yadav48@gov.in	Finance-II	
22	Bamane M. J., Deputy Director (PP), Tel: 011-23714350 Email ID: bamane.m@gov.in	Planning Unit(PP)	Ch. David, Joint Director (PP), Tel. 011-23716683, E mail ID: david.ch63@gov.in
23	Reading Shimray, Director (CADWM), Tel. No. 011-23382481, Email id: readingshimray-cwc@nic.in	Command Area Development and Water Management related matters	B.R.K. Pillai, Commissioner (CADWM), Tel. No. 011-23382256, Email: ravi.pillai@nic.in
24	Mannu Ji Upadhyay, Deputy Commissioner (BM), Tel. No. 011-24368344, Email id : mannuji-cwc@nic.in	River Basin Management, Administration of Bihar, UP & MP Reorganisation Act, Inter State Water Disputes Act, Inter State Water Disputes Tribunal, technical matters of NWDA and Inter-linking of Rivers	T.D. Sharma, Sr. Joint Commissioner (BM), Tel. No. 011- 24367109, Email id: sjcbm-mowr@nic.in

S. No.	Name & Designation of CPIO appointed (S/Shri/Smt/ Kum)	Name of the Section/ Desk/ work	Name & Designation of the Appellate Authority appointed (S/Shri/Smt/Kum)
25	Section Officer (Projects), Tel. No. 011-24362129, Email: id: project1-mowr@nic.in	Project Section	Ashwini Kumar Shukla, Sr. Joint Commissioner (SPR-II), Tel. No. 011-23385186, Email id: sjcpr-mowr@nic.in
26	A.C. Mallick Under Secretary (Pen. River), Tel No.-011-23383059, Email ID-uspenriv-mowr@nic.in	Pen. River	S.K. Kamboj, Sr. Joint Commissioner (Pen. River), Tel. No. 011-23388020 Email id: skkamboj-cwc@nic.in
27	Rahul Kumar Singh, Sr. Joint Commissioner (MI), Tel No : 011-23387834, Email id: sjcmi-mowr@nic.in	Minor Irrigation & Water Bodies	K. Vohra, Commissioner (SPR), Tel No- 011-23710107, Email ID-commpr-mowr@nic.in
28	Anup Kumar Srivastava, Sr. Joint Commissioner-I (SPR), Tel No : 011-23385186, Email id:aksriv-cwc@nic.in	SPR-I	
29	Rajveer Singh, Deputy Commissioner (Indus), Tel. No. 011-24360332 Email id: dcindus-mowr@nic.in	Indus Wing	Sr. Joint Commissioner (Indus), Tel. No.011- 24361467, Email id: sjcindus2-mowr@nic.in
30	SEO (Ml Stat), Tel. No. 011-24656135	Minor Irrigation Statistics	Bindu Sreedathan, Director (MI-Stat), Tel. No. 011-24654503 Email id: dirmi-mowr@nic.in
31	National Water Mission, Tel. No. 011-24368343, Email id:	National Water Mission	Dr. C.V. Dharma Rao, Adviser(C&M/NWM), Tel. No.011- 24366614, Email id: dharma.rao@nic.in
32	Sanjay Kumar Gaur, Under Secretary (NMCG), Tel. No. 011-23049417, Email id: gaur.sk@nic.in	NMCG	Deputy Secretary (NMCG), Tel. No. 011-23049506, Email id: nityananda.ray@nic.in

S. No.	Name & Designation of CPIO appointed (S/Shri/Smt/ Kum)	Name of the Section/ Desk/ work	Name & Designation of the Appellate Authority appointed (S/Shri/Smt/Kum)
33	Shri Narinder Pal Singh, Asst. Controller of Accounts, Tel. No: 011-23384843. Email id: np.singh82@gov.in	Matters related to Principal Accounts Office	R. D. Chouhan , Controller of Accounts, Tel. No. 011-23386644, Email id: ca-mowr@nic.in
34	Nafe Singh, Pay & Accounts Officer (FBP), Tel. 03485-253648, Email id: gmfbp@gov.in	Matters related to Pay & Accounts Office (FBP)	
35	Sunita R. Shinde, Sr. Accounts Officer (CWPRS), Tel. 020-24381813, Email id: sunita-robert@ yahoo.com	Matters related to Pay Accounts Office (CWPRS)	
36	Balbir Singh, Sr. Accounts Officer (CGWB), Tel: 0129-2477125, Email id: paro-cgwb@gov.in	Matters related to Pay & Accounts Office (CGWB)	
37	Upendra Malhotra, Sr. Accounts Officer (CWC), Tel No. 011-26711043, Email id: upendermalhotra-cwc@nic.in	Matters related to Pay & Accounts Office (CWC)	
38	J.P. Singh, Sr. Accounts Officer (CSMRS), Tel. No. 011-26850358, Email Id: pao-csmrs@nic.in	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-XIII

LIST OF POSTAL ADDRESSES OF PUBLIC/ STAFF GRIEVANCE OFFICERS IN THE MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION AND ITS VARIOUS ORGANISATIONS

Sl. No.	Name of the Organization	Address	Name &Designation of P.G./ S.G. Officer
1.	Ministry of Water Resources, River Development and Ganga Rejuvenation	Room No.627, Shram Shakti Bhavan, New Delhi-110001 (Tele No. 011-23766369)	Shri Girraj Goyal, Director (Coord) &Director (PG & SG) Email Id: dircoord-mowr@nic.in
2.	Narmada Control Authority	Narmada Sadan, Sector-B, Scheme No. 74, Vijay Nagar, Indore - 452010(MP) (Tele No. 0731-2575753)	Smt. Suman Sinha, Secretary and Grievance Redressal Officer
3.	Bansagar Control Board	Bansagar Control Board, Samab Colony, Rewa (MP) (Tele No. 07662-226318), 0755-2762059	Ms. Sonam Dwivedi, Pay & Accounts Officer &Public Grievance Officer
4.	Betwa River Board	O/o Pay &Account Officer, Betwa River Board, Nandanpura, Jhansi-284003 (U.P) (Tele No. 0510-2480279)	Shri. S.C.Rawat, Pay & Account Officer &Public Grievance Officer
5.	Central Ground Water Board	CGWB, CHQ, Faridabad, (Tele No. 0129-2477125 &(Fax No. 0129-2412524)	Col. Rajesh Kumar Gaur, Director (Admn) &Public Grievances officer
6.	Central Soil and Materials Research Station	Room No. 316, CSMRS, Olof Palme Marg, Hauz Khas, New Delhi- 110 016 (Tel No. 26581370) FAX No.-26853108	Shri. Hari Dev, Scientist 'E' (RM-I) &Director (Grievances)
7.	Central Water Commission	Room No. 313(S), Sewa Bhawan, R.K. Puram, New Delhi-110066, (Tele No. 01126187232) (Fax No. 26195516)	Shri. Ashis Banerjee, Secretary &Grievances Officer

Sl. No.	Name of the Organization	Address	Name &Designation of P.G./ S.G. Officer
8.	Central Water &Power Research Station	Central Water &Power Research Station, P.O. Khadakwasla Research Station, Pune - 411024 (Tele No. 020-24103402)	Dr. J. D. Agrawal, Scientist E and Grievance Redressal Officer Email Id: agrawal_jd@cwprs.gov.in
9.	Farakka Barrage Project	P.O. Farakka Barrage, Distt. Murshidabad, West Bengal-742212 (Tele No. 03485-253335)	Shri. R.K. Singh, Superintending Engineer (Coord.) & Director (Staff Grievances)
10.	Ganga Flood Control Commission	Ganga Flood Control Commission, Sinchai Bhawan, IIIrd Floor, Patna-800015 (Tele No. 0612- 2215222) (Fax No. 0612- 2222294)	Shri. Amitabh Prabhakar, Director (HRM.) & Director (Staff Grievances & Public Grievances)
11.	National Institute of Hydrology	Jal Vigyan Bhawan, Roorkee, Uttarakhand - 247667 (Tele No. 01332249216)	Dr. R.P. Pandey, Scientist-G, Public Grievance Officer & OIC, Staff Grievances
12.	National Projects Construction Corporation Limited	NPCC Ltd., Plot No. 148, Sector -44, Gurugram, Haryana- 122003	Shri. Nitin Saxena, Senior Manager (Law) Grievances Redressal Officer
13.	National Water Development Agency	18-20, Community Centre, Saket, New Delhi-110017 (Tele No. 26852735)	Shri. R.K. Jain, Chief Engineer (HQ) & Grievance Officer
14.	Sardar Sarovar Construction Advisory Committee	Sardar Sarovar Construction Advisory Committee, Narmada Bhavan, "A" Block 4 Floor, Vadodara - 390001 (Tele No. 02652437262)	Shri. Shekharandu Jha, Deputy Secretary (Grievances)
15.	Water & Power Consultancy Services (India) Ltd.	76, C, Sector-18, Gurugram, Haryana-122015, Tel No:- 0124-2344425	Shri. D.V.S.N. Raju, Director (Staff /Public Grievances)

Sl. No.	Name of the Organization	Address	Name &Designation of P.G./ S.G. Officer
16.	Brahmaputra Board	Basistha, Guwahati - 781029 (Tele No. 0361-2300128)	Shri. Jatin Chandra Mazumdar, Executive Engineer & Director (Staff/Public Grievances)
17.	Upper Yamuna River Board	Upper Yamuna River Board, Wing No. 4, Ground Floor, West Block No. 1, R.K. Puram, New Delhi- 110066 (Tele.011-26174147)	Shri. D.P.Mathuria, Member Secretary & Director of Grievances
18.	Tungabhadra Board	Tungabhadra Board, Tungabhadra Dam, Taluk: Hospet, Distt: Bellary, Karnataka State, PIN: 583225 Phone-08394-259113	Shri. G Naga Mohan, Secretary & Director of Grievances
19.	National Mission for Clean Ganga	1st Floor, Major Dhyanchand National Stadium, New Delhi 110002.	Shri. Nityanand Ray, Deputy Secretary (NMCG) & Director of Grievances.



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