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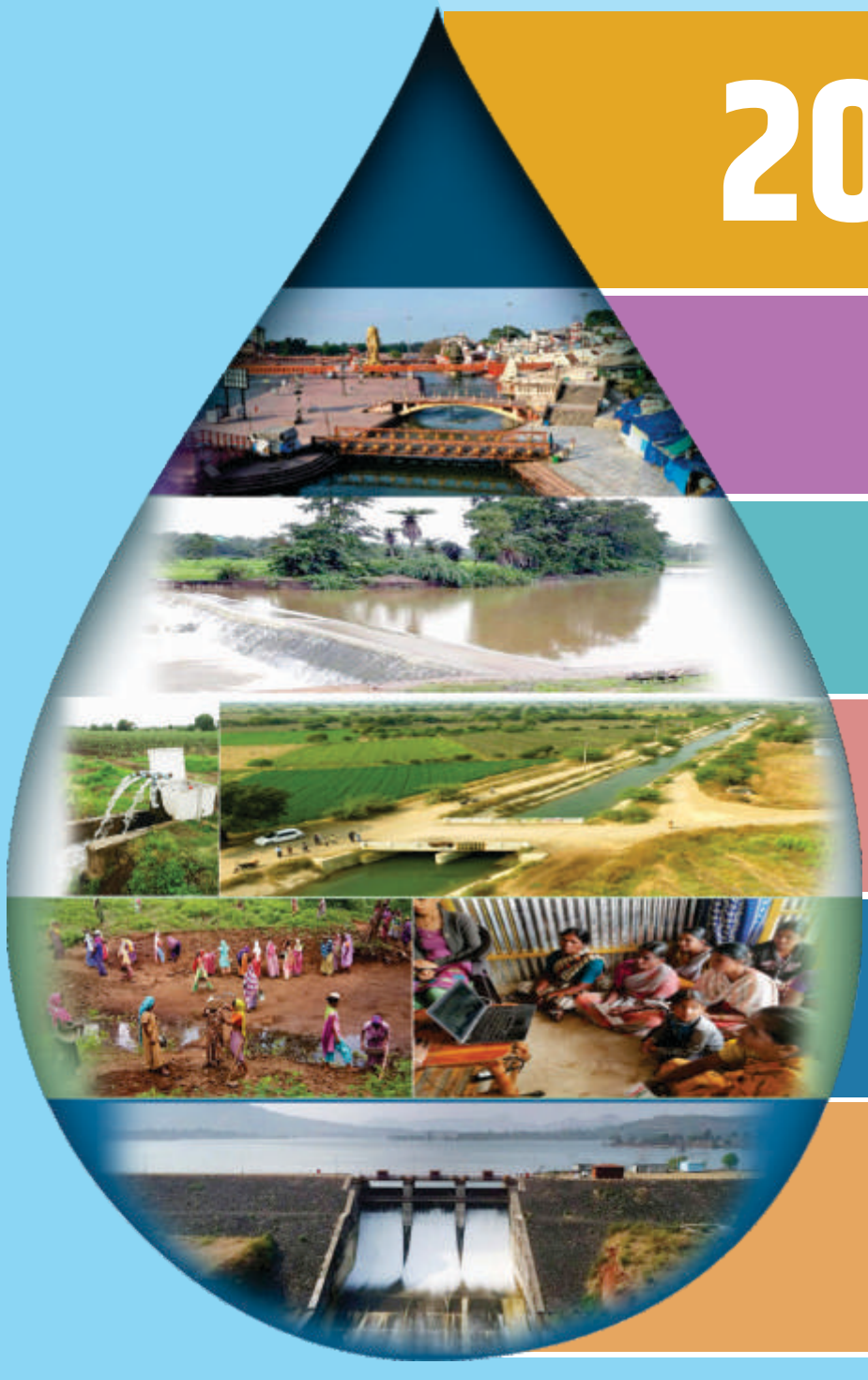
MINISTRY OF JAL SHAKTI
DEPARTMENT OF WATER RESOURCES,
RIVER DEVELOPMENT &
GANGA REJUVENATION,
GOVERNMENT OF INDIA

ANNUAL REPORT

2020-21



NAMAMI GANGE
Holistic River Rejuvenation

JAL SHAKTI ABHIYAN
A People's Movement for
Water Conservation and Recharge

PRADHAN MANTRI KRISHI SINCHAYEE YOJANA
Water for Every Field

ATAL BHUJAL YOJANA
Mobilizing Communities to
manage Groundwater

DAM REHABILITATION AND IMPROVEMENT PROJECT
Dam Safety and Building
Climate Resilience

Jal Shakti - Jan Shakti

ANNUAL REPORT

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GOVERNMENT OF INDIA

MINISTRY OF JAL SHAKTI

DEPARTMENT OF WATER RESOURCES
RIVER DEVELOPMENT AND GANGA REJUVENATION

NEW DELHI

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1 OVERVIEW


Prime Minister
Dr. Ambedkar International Centre
Chief Minister-Madhya Pradesh
Chief Minister-Uttar Pradesh
NIC

1. OVERVIEW

1.1 INTRODUCTION

Water is essential for sustenance of life. It is a limited resource. Water resources of the country are required to be harnessed judiciously to meet the growing requirement of our developing economy. Therefore, development, conservation and management of water resources are crucial.

The Department of Water Resources, River Development and Ganga Rejuvenation (DoWR, RD & GR) is mainly responsible for laying down policy guidelines and programmes for the development, conservation and management of water as a national resource. It is also responsible for an overall national perspective of water planning and coordination in relation to diverse uses of water; water laws and legislations; addressing inter-State and trans-boundary water issues; bilateral and multi-lateral cooperation; and general policy guidelines and programmes for assessment, development and regulation of the country's water resources. DoWR, RD & GR is also responsible for water quality assessment; rejuvenation of river Ganga and its tributaries and also conservation and abatement of pollution in other rivers.

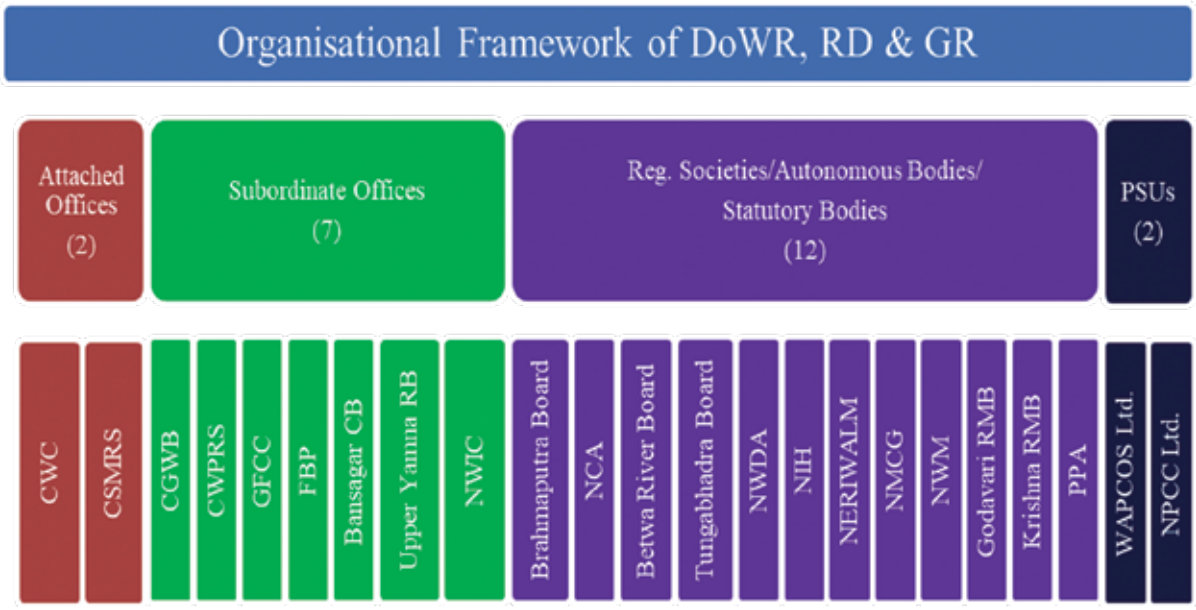
The Department is also allocated the subjects pertaining to regulation and development of inter-State rivers; implementation of awards of Tribunals; technical guidance, scrutiny, clearance and monitoring of the irrigation, flood control and multi-purpose projects; ground water management; flood proofing; water logging; sea erosion and dam safety.

The Department performs its functions with the support of its following specialized agencies:

(i) Two attached offices (Central Water Commission and Central Soil and Materials Research Station);

(ii) Seven sub-ordinate offices (Central Ground Water Board, Central Water and Power Research Station, Ganga Flood Control Commission, Farakka Barrage Project, Bansagar Control Board, Upper Yamuna River Board and National Water Informatics Centre);

(iii) Twelve Registered Societies, Autonomous Bodies, or Statutory Bodies (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

(iv) Two public sector enterprises (WAPCOS Limited and National Projects Construction Corporation Limited).

The Department is under the Ministry of Jal Shakti headed by the Hon'ble Union Minister Shri Gajendra Singh Shekhawat, who has assumed charge on 31st May, 2019 and Hon'ble Minister of State Shri Rattan Lal Kataria, who assumed charge on the same day. Shri Pankaj Kumar has taken charge as the Secretary of the Department on 27th January, 2021. The organization chart of the Department is given at ***Annexure-I.*** The present staff strength of the Department is given at ***Annexure-II***. The list of names and addresses of Senior Officers & Heads of Organizations under the Department is given at ***Annexure-III.***

There are 14 wings in the Department, viz; Administration, Brahmaputra & Barak, Command Area Development and Water Management, Economic Advisory, Flood Management, Finance, International Cooperation and Ground Water, Indus, Minor Irrigation Statistics, National Mission for Clean Ganga, National Water Mission, National River Conservation Directorate, River Development & Public Policy and State Projects.

1.2 MAJOR SCHEMES AND PROGRAMMES

Some of the activities and achievements of the Department under various schemes are summarized below (details are covered under Chapter 3 and Chapter 7).

Hon'ble Prime Minister Shri Narendra Modi launched the "Jal Shakti Abhiyan: Catch the Rain" campaign on 22nd March 2021. A Memorandum of Agreement was also signed between the Union Minister of Jal Shakti and the Chief Ministers of Madhya Pradesh and Uttar Pradesh to implement Ken-Betwa link project. Details are given in the Box-1 & 2.

BOX-1: "JAL SHAKTI ABHIYAN: CATCH THE RAIN"

Hon'ble Prime Minister Shri Narendra Modi launched the "Jal Shakti Abhiyan: Catch the Rain" campaign on 22nd March 2021, on the occasion of World Water Day. He announced the commencement of the campaign that aims to involve people in conserving water and adopting the practice of rainwater harvesting. The launch event was also participated in by Shri Gajendra Singh Shekhawat, Union Minister of Jal Shakti, Shri Shivraj Singh Chouhan, Chief Minister of Madhya Pradesh, Shri Yogi Adityanath, Chief Minister of Uttar Pradesh and Shri Rattan Lal Kataria, Minister of State of Jal Shakti.

Hon'ble Prime Minister Shri Narendra Modi emphasized that India's future progress lies in the development and efficient management of our water resources. Rainwater, being the major natural source of water, must be collected through appropriate structures, stored, conserved for use and reuse. Better management of rainwater would help prevent over exploitation of the country's groundwater resources.

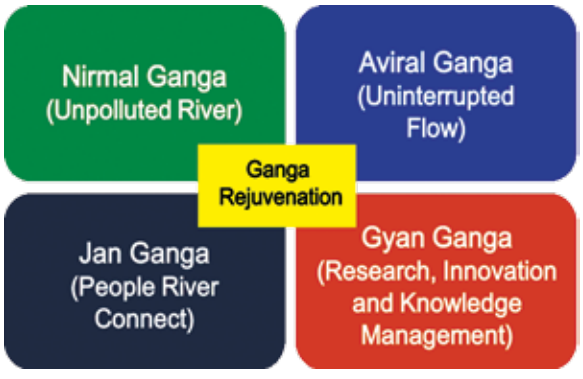
BOX-2: "MEMORANDUM OF AGREEMENT" WAS SIGNED FOR IMPLEMENTATION OF KEN BETWA LINK PROJECT

Alongside the campaign launch, a historic agreement was signed between the Union Minister of Jal Shakti and the Chief Ministers of Madhya Pradesh and Uttar Pradesh to implement the 'Ken-Betwa Link Project', fulfilling the vision of former Prime Minister late Shri Atal Bihari Vajpayee.

The main objective of the Ken-Betwa link project is to make available water to water deficit areas of upper Betwa basin from the surplus waters of Ken basin. The project would benefit in terms availibilty of water for irrigation, drinking purpose besides generation of electricity.

1.2.1 NATIONAL MISSION FOR CLEAN GANGA (NMCG)

The NMCG was registered as a society on 12.08.2011 under the Societies Registration Act, 1860. It acted as the 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 07.10.2016, consequent to the constitution of National Council for Rejuvenation, Protection and Management of River Ganga (referred as National Ganga Council) vide notification no. S.O. 3187(E) dated 07.10.2016 under EPA, 1986.



Namami Gange programme is an integrated Ganga conservation mission with a vision to restore the wholesomeness of the Ganga river by ensuring Aviral Dhara, Nirmal Dhara, and maintaining geo-hydrological and ecological integrity of the river. Namami Gange is following an Integrated River Basin Management (IRBM) approach with multi-sectoral and multi-agency interventions. Such interventions include pollution abatement for all sources of pollution to improve water quality, improving ecology and flow through ensuring environmental flow, conservation of wetlands, biodiversity, and demand side management. The programme aims to strengthen people-river connect through river front development and public outreach. It also strives to facilitate research, scientific mapping of different aspects, developing real-time monitoring and enabling evidence based policies and programs. The program can be broadly divided into four categories i.e. Nirmal Ganga, Aviral Ganga, Jan Ganga and Gyan Ganga.

1.2.2 PRADHAN MANTRI KRISHI SINCHAYEE YOJANA (PMKSY)

1.2.2.1 AIBP: PRIORITIZATION OF 99 PROJECTS:

- A large number of irrigation projects taken up under Accelerated Irrigation Benefits Programme (AIBP) after its launch in 1996-97 were languishing due to 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 02.03.2016 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.

INNOVATION IN FUNDING

- The arrangement of funds for Central Assistance (CA) has been made through NABARD under Long Term Irrigation Fund (LTIF) as per year-

wise requirements which would be paid back in 15 years' time. Further, the State Governments, if required, may also borrow funds from NABARD for the State share.

- In respect of the State Share availed by States from NABARD, interest subvention is provided 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 the level of Additional Secretary (or above) in the DoWR,RD&GR as the Mission Director, has been established for completion of 99 prioritized projects, including their CAD&WM works.
- A Council headed by CEO, NITI Aayog and having Secretary (WR,RD&GR), Secretary (AC&FW), Secretary (RD), Secretary (Finance) and 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.
- *Pari-passu* implementation of command area development works in the commands of these projects is envisaged to ensure that the irrigation potential created may be utilized by the farmers.
- Proposal for release of Central Assistance (CA) to be made by concerned officers of State Government and Central Water Commission (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.
- A GIS based portal for monitoring the progress of the projects, a mobile application has been developed for geo-tagging the project components under PMKSY-AIBP.

Central Assistance of Rs. 15,746.69 crore (AIBP: Rs. 12,999.34 crore; CADWM: Rs. 2,747.35 crore) has been provided for these projects from 2016-17 to 2020-21(till 31.03.2021), out of which Rs. 1,713.13 crore (AIBP: Rs.1,510.03 crore; CADWM: Rs. 203.10 crore) has been provided during the year 2020-21.

1.2.2.2 HAR KHET KO PANI: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 programme envisages integration of all activities relating to irrigated agriculture in a coordinated manner with multi-disciplinary team under a Command Area Development Authority.

COVERAGE

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 Sinchayee Yojana (PMKSY) from 2015-16 onwards. The ongoing CADWM programme has now been restricted to implementation of CAD works of 99 prioritized AIBP projects from 2016-17 onwards.

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 interventions** include survey, planning, design and execution of:

  (i) On-Farm Development (OFD) works;

  (ii) Construction of field, intermediate and link drains;

  (iii) Correction of system deficiencies; and

  (iv) Reclamation of waterlogged areas.

(b) **Non-Structural interventions** include activities directed at strengthening of Participatory Irrigation Management (PIM):

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

  (ii) One time Infrastructure Grant to the registered WUAs;

  (iii) Trainings, demonstration, and adaptive trials with respect to water use efficiency, increased productivity, and sustainable irrigation participatory environment.

1.2.2.3 HAR KHET KO PANI: SURFACE MINOR IRRIGATION (SMI) SCHEMES AND REPAIR RENOVATION & RESTORATION (RRR) OF WATER BODIES

Under the SMI scheme, since 12th plan onwards, 6,213 schemes are ongoing with an estimated cost of Rs. 13,449 crore. Under the RRR of Water Bodies scheme, since 12th Plan onwards, 2,219 schemes are ongoing with an estimated cost of Rs. 1,910 crore.

1.2.2.4 Har Khet Ko Pani –Ground Water (PMKSY-HKKP-GW)

The PMKSY-HKKP-GW scheme aims to create additional irrigation command from ground water for small and marginal farmers. During January to November 2020, projects of Rs 1,078.60 crore have been approved by Ministry of Jal Shakti. These projects, on completion, will create an additional command area of 83,665 ha

in States of Tamil Nadu, Manipur, Mizoram, Telangana, West Bengal and Assam and expected to benefit nearly 1.48 lakh small and marginal farmers.

1.2.2.5 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. 3,831.41 crore as central assistance to complete 83 SMI and 8 MMI (Major & Medium Irrigation) projects benefitting 12 districts of Vidarbha, Marathwada and drought prone areas of rest of Maharashtra.

1.2.3 ATAL BHUJAL YOJANA (ATAL JAL)

Atal Bhujal Yojana (ATAL JAL) is a World Bank aided Central Sector Scheme of the Government of India with an outlay of Rs 6,000 crore, out of which Rs.3,000 crore will be the loan from World Bank, with focus on community participation and demand side interventions for sustainable ground water management in identified water stressed areas. This scheme is expected to contribute significantly towards the water and food security of the participating States. The scheme was launched by the Hon'ble Prime Minister on 25.12.2019 and is being implemented from 1.04.2020 for a period of 5 years. Funds under the scheme shall be disbursed to the States as grant-in-aid.

1.2.4 FLOOD FORECASTING

Central Water Commission (CWC) is providing flood forecasting service at 328 stations, of which 198 are level forecasting stations on major rivers and 130 are inflow forecasting stations on major dams/ barrages. Out of these, flood forecasting service at 3 stations have been started during 2020. It covers 20 major river systems in the country across 25 States and UTs viz., Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Sikkim, Telangana, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, West Bengal, Daman and Diu, Jammu & Kashmir, and National Capital Territory of Delhi.

1.2.5 FLOOD MANAGEMENT & BORDER AREA PROGRAMME

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 Department, 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 and later extended for one year upto 2020-21.

1.2.6 NATIONAL HYDROLOGY PROJECT

National Hydrology Project (NHP), with support from the World Bank, envisages establishing a system for timely and reliable water resources data acquisition, storage, collation and management across all States & UTs in India, with 3 River Basin Organizations and 9 Central Government Agencies. It will also provide tools/systems for informed decision making for water resources

assessment, planning and management. The National Hydrology Project has been approved with an outlay of Rs.3,679.77 crore as a Central Sector Scheme with 100% grant to State Governments and Central Implementing Agencies. Overall, there are 48 Central and State Implementing Agencies (IAs) under this project. The project has a total duration of 8 years from 2016-17 to 2023-24.

1.2.7 HUMAN RESOURCE DEVELOPMENT AND CAPACITY BUILDING

The Human Resource Development and Capacity Building (HRD-CB) Scheme is an ongoing scheme consisting of five components viz; (i) Information, Education & Communication (IEC) (ii) Central Water Commission (National Water Academy), (iii) Rajiv Gandhi National Ground Water Training Institute (iv) North Eastern Regional Institute of Water And Land Management (NERIWALM) and (v) Trainings of officers of DoWR, RD & GR.

1.2.8 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 Plan of Central Water Commission (CWC) (iii) Information Technology Development Plan of the DoWR, RD &GR and (iv) e-Governance of the DoWR, RD & GR.

1.2.9 DAM REHABILITATION AND IMPROVEMENT PROJECT

The Dam Rehabilitation and Improvement Project (DRIP) is an externally aided project with assistance from World Bank for rehabilitating 223 dams located in seven States (Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Tamil Nadu and Uttarakhand), along with institutional strengthening, with system wide management approach. The scheme became effective in April 2012. The budget outlay of the scheme is Rs 3,466 crore with scheduled closure on March 31, 2021. Based on the success of ongoing DRIP, the Ministry of Jal Shakti initiated activities for DRIP Phases II and III, by inviting proposals in year 2017 for inclusion of more number of States and dams facing serious health and dam safety challenges. The scheme will have provision for rehabilitation of 736 dams located in 19 States.

1.2.10 MINOR IRRIGATION CENSUS & CENSUS OF WATER BODIES

"Rationalization of Minor Irrigation Statistics (RMIS)" was launched in 1987-88 in the DoWR, RD & GR, MoJS, with 100% central 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" to build up a comprehensive and reliable database in the Minor Irrigation (MI) sector for effective planning and policy making.

1.2.11 RESEARCH AND DEVELOPMENT

Research & Development (R&D) activities under the scheme include basic and applied research, creation and up-gradation of research facilities and training

of personnel implemented through the apex organizations of Department viz., CSMRS, CWPRS, NIH, and CWC and also research projects sponsored by the Department. Under the sponsored research projects, the Department provides financial assistance to IITs, Universities, research organizations etc. for taking up research in water sector through three Indian National Committees (INCs) constituted by the Department and Standing Advisory Committee headed by Secretary (WR, RD & GR). The Indian National Committees (INCs) constituted by the Department are: Indian National Committee on Surface Water (INCSW), Indian National Committee on Groundwater (INCGW) and Indian National Committee on Climate Change (INCCC).

1.2.12 DEVELOPMENT OF WATER RESOURCES INFORMATION SYSTEM

Development of Water Resources Information System (DWRIS) Scheme, a continuing scheme of XII Five Year Plan, is under implementation during the period 2017-18 to 2019-20 with outlay of Rs. 682.42 crore. It entails collection of hydro-meteorological and water quality data, storage and dissemination to the users for policy formulation, planning and designing of water resources projects, management of water resources, timely dissemination of flood forecast, etc.

1.2.13 NATIONAL PROJECTS

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

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

(ii) Inter-State projects which are dragging on due to non-resolution 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 lakh hectare or more are eligible for inclusion as National Projects with certain conditions.

(v) Also, the funding pattern of National Projects has been revised with effect from October, 2015, as follows.

	Category	Central : State
A	Projects in North-Eastern and Hilly States	90:10
B	Projects in other States	60:40

Sixteen projects have been declared as national projects so far.

1.2.14 NATIONAL RIVER CONSERVATION PLAN

The National River Conservation Directorate, functioning under the Department is providing financial assistance to the State Governments for conservation of rivers under the Centrally Sponsored Schemes of 'National River Conservation Plan (NRCP)'.

The objective of NRCP is to improve the water quality of rivers, which are major water sources in the country, through implementation of pollution abatement works in various towns along identified polluted stretches of rivers on cost sharing basis between the Central and State Governments.

1.2.15 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).

1.3 ORGANIZATIONS AND INSTITUTIONS

A brief description of the various organizations and institutions of the Department is presented below (details are provided in Chapter 7).

1.3.1 ATTACHED OFFICES

1.3.1.1 CENTRAL WATER COMMISSION

CWC with its headquarters at New Delhi is a premier technical organization in the field of water resources in the country since 1945. The Commission is 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 hydro-power development.

The Commission has three technical wings, namely:

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

(Website: www.cwc.gov.in)

1.3.1.2 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, rock fill technology, geosynthetics, soil dynamics, rock engineering, engineering geophysics, geotechnical instrumentation, concrete technology, concrete diagnostics and numerical modeling. *(Website: www.csmrs.gov.in)*

1.3.2 SUBORDIATE OFFICES[1]

1.3.2.1 CENTRAL GROUND WATER BOARD

Central Ground Water Board (CGWB) is 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 and sustainable exploration, development and management of India's ground water resources. *(Website: www.cgwb.gov.in)*

1.3.2.2 CENTRAL WATER AND POWER RESEARCH STATION

Central Water and Power Research Station (CWPRS), Pune is an apex research and development institution in the field of hydraulics and allied research in the water and power sector. It has continued to serve the needs of the nation for more than 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. *(Website: www.cwprs.gov.in)*

1.3.2.3 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 Commission provides 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)*

1.3.2.4 FARAKKA BARRAGE PROJECT

The Farakka Barrage Project (FBP) was commissioned in 1975 for preservation and maintenance of the Kolkata Port and for increasing the navigational depth of the Bhagirathi – Hooghly waterway. The Farakka Barrage Project also facilitates sharing of Ganga waters between Bangladesh and India as

1 *(Note: Sardar Sarovar Construction Advisory Committee, subordinate office under this Department has been dissolved vide DoWR,RD&GR order no. A-50013/44/2018.E.IV Section dated 11th August, 2020).*

per the agreement in Indo-Bangladesh Water Treaty 1996.(*Website: www.fbp.gov.in)*

1.3.2.5 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 as 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 16.09.1973 for sharing the waters of river Sone and the cost of the Bansagar Dam *(Website: www.bcb.nic.in).*

1.3.2.6 UPPER YAMUNA RIVER BOARD

Upper Yamuna River Board is a subordinate office under Department of Water Resources, River Development & Ganga Rejuvenation. 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 12.05.1994 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 in accordance with the provisions 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. (*Website: www.uyrb.gov.in)*

1.3.2.7 NATIONAL WATER INFORMATICS CENTRE

The National Water Informatics Centre (NWIC) has been set up in March, 2018 to act as (i) central repository of nation-wide water resources data (ii) to provide a 'single window' source of updated data on water resources and allied themes; and (iii) to provide value added products and services to all stake holders for its management and sustainable development.

NWIC managed the pan-India Water Resources Information System (India-WRIS: http://indiawris.gov.in) which provides comprehensive water resources data in line with the Hydro-Meteorological Data Dissemination Policy formulated by the DoWR, RD & GR in November 2018.

NWIC is also managing the Water Information Management system (WIMS) with effect from 01.12.2020- an online web enabled data entry portal where the water resources data collected all over the country by Central and State government agencies is being entered and the information is stored in a central repository for easy access and retrieval. *(Website: http://nwic.gov.in)*

1.3.3 REGISTERED SOCIETIES/ AUTONOMOUS BODIES / STATUTORY BODIES

1.3.3.1 BRAHMAPUTRA BOARD

The Brahmaputra Board was constituted by an Act of Parliament and received the assent of the President on 01.09.1980. The Brahmaputra Board Act provides for the establishment of a Board for planning and integrated implementation of measures for the control of floods and bank erosion in the Brahmaputra valley and for matters connected therewith.

A High Powered Review Board to oversee the work of the Brahmaputra

Board was constituted with the Union Minister of Jal Shakti as the Chairman, Chief Ministers of Assam, Manipur, Meghalaya, Nagaland, Tripura, Arunachal Pradesh, Mizoram, and Union Minister / Ministers of State - Finance, Surface Transport, Power, Agriculture, Ministers of State of Jal Shakti and Secretary to the Ministry of Jal Shakti, DoWR, RD&GR, Chairman of Central Water Commission as Members and Chairman of Brahmaputra Board as the Member-Secretary. Member (RM), CWC is a permanent invitee. *(Website: www.brahmaputraboard.gov.in)*

1.3.3.2 NARMADA CONTROL AUTHORITY

Narmada Control Authority and Review Committee was constituted in 1980 for proper implementation of the decisions and directions of the Tribunal vested with powers for implementation of the orders of the Tribunal with respect to the storage, apportionment, regulation and control of the Narmada water, sharing of power benefits from Sardar Sarovar Project (SSP), regulated release of water by Madhya Pradesh, acquisition of land likely to be submerged under the Sardar Sarovar Project by the concerned States, compensation, resettlement/ rehabilitation of the oustees, sharing of costs and implementation of the environmental safeguard measures. *(Website: www.nca.gov.in)*

1.3.3.3 BETWA RIVER BOARD

Betwa River Board (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.*(Website: www.brb.nic.in)*

1.3.3.4. TUNGABHADRA BOARD

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. Board exercises powers of a State Government under various codes, manuals, rules and regulations while discharging the functions on administrative matters of the project. *(Website: http://tbboard.gov.in)*

1.3.3.5 NATIONAL WATER DEVELOPMENT AGENCY

The National Water Development Agency(NWDA) was set up in July 1982 by the Government of India as a Society under Societies Registration Act, 1860 under the then Ministry of Irrigation (now Ministry of Jal Shakti) to study the feasibility of the links under peninsular component of National Perspective Plan. NWDA is fully funded by Government of India. The functions of NWDA have been modified from time to time. *(Website: www.nwda.gov.in)*

1.3.3.6 NATIONAL INSTITUTE OF HYDROLOGY

The National Institute of Hydrology (NIH), a Society under DoWR, 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 Government 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,
- 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. *(Website: www.nihroorkee.gov.in)*

1.3.3.7 NORTH EASTERN REGIONAL INSTITUTE OF WATER AND LAND MANAGEMENT

North Eastern Regional Institute of Water and Land Management (NERIWALM) is a Registered Society under the administrative control of DoWR, RD & GR. This is the only Water and Land Management Institute (WLMI) established and governed by the Government of India and is serving all the eight states of the North East. 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. Based on requests received from the colleges/universities for BE / B.Tech / M.Tech / Graduates / Post graduate were also conducted as it was required for the fulfillment of their prescribed degree course. *(Website: www.neriwalm.gov.in)*

1.3.3.8 NATIONAL MISSION FOR CLEAN GANGA

The National Mission for Clean Ganga (NMCG) was registered as a society on 12.08.2011 under the Societies Registration Act, 1860. It acted as the 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 07.10.2016, consequent to the constitution of National Council for Rejuvenation, Protection and Management of River Ganga (referred as National Ganga Council) vide notification no. S.O. 3187(E) dated 07.10.2016 under EPA, 1986. *(Website: https://nmcg.nic.in/)*

1.3.3.9 NATIONAL WATER MISSION

National Water Mission (NWM) was set up as per the National Action Plan on Climate Change (NAPCC) which was approved by the Government of India and released by the Hon'ble Prime Minister on 30.06.2008. NAPCC laid down the principles and identified the approach to be adopted to meet the challenges of impact of climate change through institutionalization of 8 national missions, one of which was the 'National Water Mission'. The main objective of NWM is "conservation of water, minimizing wastage and ensuring its more equitable distribution both across and within States through integrated water resources

development and management". *(Website: www.nwm.gov.in)*

Jal Shakti Abhiyan (JSA) is a mission-mode water conservation campaign launched on 1st July, 2019. The Department of Drinking Water and Sanitation, Ministry of Jal Shakti coordinated this collaborative effort of various Ministries of the Government of India and State Governments.

In the preparatory phase of Jal Shakti Abhiyan-II, National Water Mission (NWM), collaborated with Nehru Yuva Kendra Sangathan (NYKS), under the Department of Youth Affairs, Ministry of Youth Affairs and Sports to undertake "JSA-II: Catch the Rain- Awareness generation campaign" to cover 31,150 villages in 623 districts. The first phase of the campaign would run from 21st December 2020 to 31st March 2021. The campaign was launched on December 21, 2020, jointly by Shri Gajendra Singh Shekhawat, Hon'ble Union Minister, Jal Shakti; Shri Kiren Rijiju, Hon'ble Minister of State (Independent Charge), Youth Affairs & Sports and Shri Rattan Lal Kataria, Hon'ble Minister of State, Jal Shakti and Social Justice & Empowerment at Dr. Ambedkar International Centre, New Delhi. The event was joined by over 1.5 lakh viewers, including the field functionaries of NYKS, virtually through a digital link.

1.3.3.10 APEX COUNCIL AND KRISHNA & GODAVARI RIVER MANAGEMENT BOARDS

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.

The 2nd Meeting of the Apex council was held through video conferencing on 06.10.2020 under the Chairmanship of Hon'ble Minister, MoJS in which inter alia, Chairman, GRMB participated. The following decisions were taken in the meeting:

- Jurisdiction of GRMB and KRMB shall be notified by Government of India.
- Both the States shall submit the DPRs of new projects to the Boards immediately for appraisal and subsequent sanction by Apex Council.
- Both the States agreed for setting up of a Godavari Tribunal for adjudicating on the sharing of the waters of river Godavari between Andhra Pradesh and Telangana and request in this regard would be furnished by the States to the Central Government.

(Website- KRMB: http://krmb.cgg.gov.in and GRMB: www.grmb.gov.in)

1.3.3.11 POLAVARAM PROJECT AUTHORITY

Polavaram Irrigation Project (PIP) is a multi-purpose irrigation project on the river Godavari near Ramayyapeta village of Polavaram mandal in West Godavari District of Andhra Pradesh State envisages construction of a dam to create ultimate irrigation potential of 4.36 lakh Ha. The project also envisages generation of 960 MW of hydro power, drinking water supply to 28.50 lakh population, diversion of 80 TMC of water to Krishna river basin. The project has been declared as a National Project as persection 90 of AP Reorganisation Act, 2014.*(Website: http://ppa.gov.in)*

1.3.4 PUBLIC SECTOR ENTERPRISES

1.3.4.1 WAPCOS LIMITED

WAPCOS Limited is a "MINI RATNA-I" Public Sector Enterprise under the aegis of the DoWR, RD & GR. Incorporated on June 26th, 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 water, power and infrastructure sectors. WAPCOS has the requisite experience and expertise to undertake consultancy & EPC projects of any scale and complexity in the sectors of its operations. The quality management systems of WAPCOS comply with the quality assurance requirements of ISO 9001:2015 for consultancy services in water resources, power and infrastructure development projects and also with the quality assurance requirements of ISO 9001:2008 for engineering, procurement and construction projects.*(Website: www.wapcos.gov.in)*

1.3.4.2 NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED

National Projects Construction Corporation Limited (NPCC) was established on 9th January 1957 as a premier construction company to create the 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 DoWR, RD & GR and is well established in the country with its Registered Office at New Delhi, Corporate Office at Gurugram and 15 Zonal Offices in the State capitals of different States. *(Website: http://npcc.gov.in)*

2

WATER RESOURCES SCENARIO

2. WATER RESOURCES SCENARIO

2.1 WATER AVAILABILITY

The average annual water availability of any region or country is largely dependent upon hydro-meteorological and geological factors. As per the "Reassessment of water availability in basins using space inputs" report-2020, the total water availability of India received through precipitation is about 3,880 Billion Cubic Meter (BCM) per annum. After evaporation, 1,999.20 BCM water is available as natural runoff. Due to geological and other factors, the utilizable water availability is limited to 1,122 BCM per annum comprising 690 BCM of surface water and 432 BCM of replenishable groundwater. Out of this, the water potential utilized is around 699 BCM, comprising 450 BCM of surface water and 249 BCM of groundwater. Total requirement of the country for different uses for high demand scenario for the years 2025 and 2050 has been assessed at 843 BCM and 1,180 BCM respectively. Water availability per person is depends on population of the country and for India, per capita water availability in the country is reducing progressively. The average annual per capita water availability in the years 2001 and 2011 was assessed as 1,816 cubic meters and 1,545 cubic meters respectively which may further reduce due to increase in population. Annual per capita water availability of less than 1,700 cubic meters is considered as water stressed condition, whereas annual per capita water availability below 1,000 cubic meters is considered as a water scarcity condition.

2.2 CONSTITUTIONAL PROVISIONS FOR MANAGEMENT OF WATER RESOURCES

Water is a subject matter included in Entry 17 of List II (State List), subject to the provisions of Entry 56 of List I (Union List) under the Seventh Schedule of the Constitution. Entry 17 of List II of the the 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."

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." As such, the Union 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. The Union Government also has the power to make laws for the adjudication of disputes relating to waters of inter-State river or river valleys under Article 262 of the Constitution.

2.3 NATIONAL WATER POLICY

National Water Policy was first formulated in 1987 which was subsequently reviewed and revised in the year 2002 and 2012. Meanwhile, challenges such as growing river pollution, water scarcity, ensuring drinking water availability/supply, depletion of groundwater, IPC & IPU gap, low water use efficiency, drying up of springs, adoption of cropping pattern as per the water availability, etc., have emerged significantly in water sector, which are required to be addressed through appropriate revision of National Water Policy. In order to meet the present challenges in water sector, revision of National Water Policy has been envisaged by the DoWR, RD & GR and a drafting committee was constituted on 5th November, 2019 to revise the National Water Policy. The drafting Committee has submitted a draft National Water Policy which is under consideration of the Ministry.

2.4 DRAFT NATIONAL WATER FRAMEWORK BILL

The National Water Policy, 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, Dr. Mihir Shah Committee was constituted on 28.12.2015 to examine the provisions of the draft National Water Framework Law and suggest changes/ modifications therein taking into account inter-alia the emerging challenges in the water sector, reuse of waste water, 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 that included a draft of National Water Framework Bill which 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. It should adopt people-centered decentralized water management, for both surface and groundwater, 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:

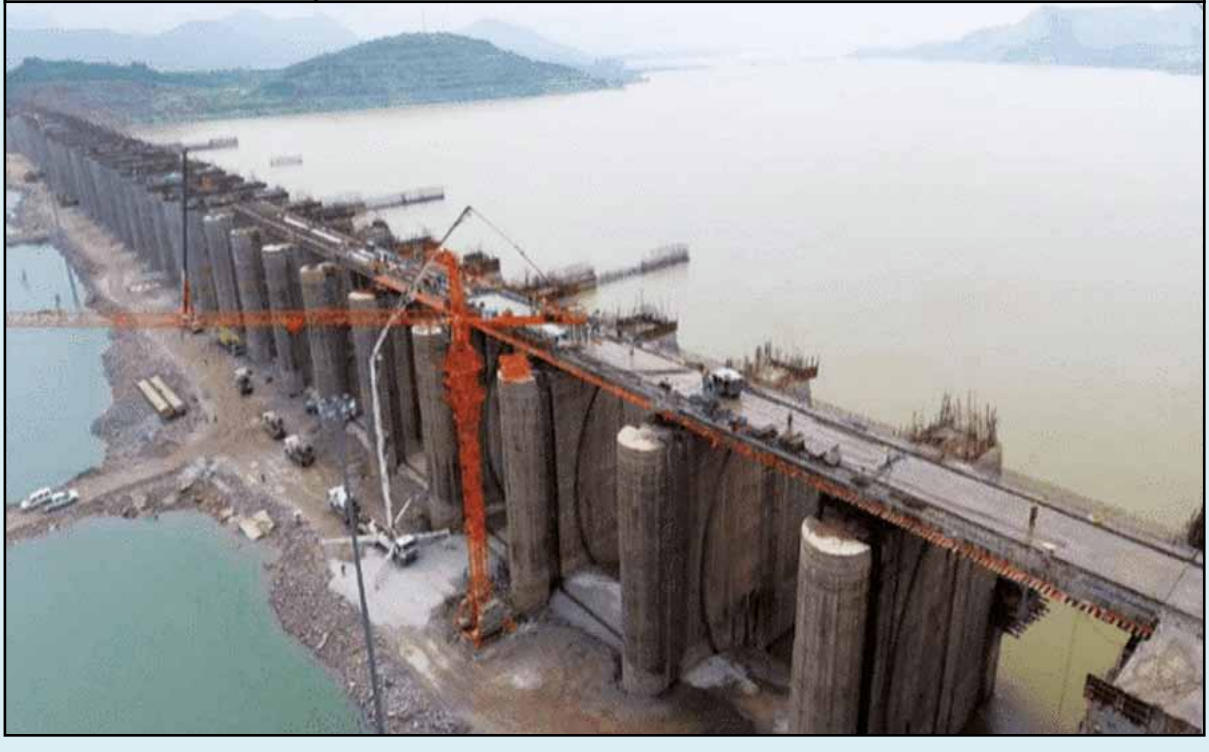
(a) Attainment of sufficient quantity of safe water for life and sustainable livelihoods by every person; and

(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. DoWR, RD & GR is regularly pursuing the State Governments for seeking their cooperation for early enactment of the National Water Framework Bill.

3

MAJOR SCHEMES & PROGRAMMES



3. MAJOR SCHEMES & PROGRAMMES

3.1 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: -

- Achieve convergence of investments in irrigation at the field level (preparation of district level and, if required, sub district level water use plans);
- Enhance the physical access of water on the farm and expand cultivable area under assured irrigation (*Har Khet Ko Pani*);
- Promote integration of water source, distribution and its efficient use, to make best use of water through appropriate technologies and practices;
- Improve on-farm water use efficiency to reduce wastage and increase availability both in duration and extent;
- Enhance the adoption of precision-irrigation and other water saving technologies (*per drop more crop*);
- Introduce sustainable water conservation practices;
- 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;
- 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.

Distributary Network of Gosikhurd Irrigation (National) Project, Maharashtra

PMKSY components

- *Accelerated Irrigation Benefits Programme (AIBP)*, [Implementation by the DoWR, RD & GR, Ministry of Jal Shakti]

- *Har Khet Ko Pani* (HKKP), [Implementation by the DoWR, RD & GR, Ministry of Jal Shakti]
- *Per Drop More Crop*, [Implementation by the Department of Agriculture Cooperation & Farmers Welfare (DoAC & FW), Ministry of Agriculture & Farmers Welfare]
- *Watershed Development* [Implementation by the Department of Land Resources (DoLR), Ministry of Rural Development]

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 crore in five years as brought out below:

Projected physical target and indicative outlay (GoI share)			
Component	**Implementing Ministry/ Department**	**Physical Target (in lakh ha)**	**Financial outlay (in Rs. crore)**
		2015-2020	
AIBP	DoWR, RD&GR	7.50	11,060
Har Khet Ko Pani	DoWR, RD&GR	21.00	9,050
Per Drop More Crop	DoAC&FW	100.00	16,300
Watershed Development	DoLR	11.50	13,590
Total			**50,000**

3.1.1 PRIORITIZATION OF PROJECTS DURING 2016-17:

One of the major reasons for the projects to remain incomplete under AIBP 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 were 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. Ultimate Irrigation Potential of these projects is 76.03 lakh ha. out of which 41.39 lakh ha. had been created upto 31.03.2016 and the balance potential of 34.64 lakh ha. is envisioned to be created through the completion of these projects.

Innovation/initiatives under the scheme

- The arrangement of funds for central assistance (CA) has been made through NABARD as per year-wise requirements which would be paid back in 15 years' time. Further, the State Governments, if required, may also borrow funds from NABARD for the State share.

- In respect of the State share availed by States from NABARD, interest subvention is provided by the Central Government so that overall interest rate for State share comes to about 6%, in order to make it attractive for the States and encourage them to raise requisite State share for early completion of projects. States that have signed MoA with NABARD to avail State Share from LTIF are as under:

S.N.	State
(a)	Andhra Pradesh
(b)	Assam
(c)	Bihar
(d)	Chhattisgarh
(e)	Jharkhand
(f)	Madhya Pradesh
(g)	Maharashtra
(h)	Manipur
(i)	Odisha
(j)	Punjab
(k)	Telangana
(l)	Uttar Pradesh

- 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.
- The use of pressurized pipe irrigation and micro irrigation wherever feasible is being promoted to increase efficiency. In Odisha and Maharashtra, land acquisition of 6,200 ha and 4,920 ha respectively has been avoided in distribution system by adopting underground Piped Distribution Network (PDN) with estimated cost saving of Rs. 1,500 crore. Other States are also being 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 44 projects have been reported to be complete/almost complete by December,2020 by the concerned State Governments. The details are at ***Annexure –IV.***
- The details of central assistance and State share released during 2016-17 to 2020-21 for AIBP works of 99 priority projects under PMKSY is given at ***Annexure –V.***

Some of the Completed Projects:

Mahan Major Project-Madhya Pradesh

Dolaithabi Project- Manipur

Mahi Sagar Project- Madhya Pradesh

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 (Jal Shakti), and PMKSY Council under Chairmanship of CEO, NITI Aayog.

Hon'ble Minister (Jal Shakti) reviewing the progress of the PMKSY Projects during April, 2020

3.1.2 COMMAND AREA DEVELOPMENT AND WATER MANAGEMENT (CADWM)

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

Coverage

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 Yojana (PMKSY) from 2015-16 onwards. The ongoing CADWM programme has now been restricted to implementation of CAD works of 99 prioritized AIBP projects from 2016-17 onwards.

Programme Components

The activities covered under CAD component of a project are broadly categorized as 'structural' and 'non-structural' interventions as detailed below:

i) **Structural Interventions –** include survey, planning, design and execution of:
   - On-Farm Development (OFD) works;
   - Construction of field, intermediate and link drains;
   - Correction of system deficiencies; and
   - Reclamation of waterlogged areas.

ii) **Non-Structural Interventions –** include activities directed at strengthening of Participatory Irrigation Management (PIM):
   - One time Functional Grant to the registered Water Users' Associations (WUAs);
   - One time Infrastructure Grant to the registered WUAs;
   - 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 devices needed for bringing efficiency in water conveyance and field applications (through sprinklers, rain guns, pivots etc). In case of micro-irrigation, other components such as land leveling, drainage works etc. would be reduced, or entirely discarded; enabling certain cost savings which is expected to offset the higher cost of micro-irrigation infrastructure. The devices such as sprinkler/ rain gun/ drip sets 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 and Farmers' Welfare.

Programme Implementation

All CAD works are planned, designed, tendered and executed by the State Governments. Central Water Commission (CWC) through its CAD Cells in the Regional Offices of CWC and the Project Monitoring Organization (PMO) at its headquarter provides the overall monitoring and coordination support. Moreover, for

monitoring of PMKSY projects, a Project Monitoring Unit has been created by DoWR, 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 process the case for approval of competent level for inclusion of project under CADWM program. Overall project implementation is reviewed, coordinated and guided at half yearly intervals by the Project Implementation Review Committee(PIRC).

Financing Pattern

Funds under PMKSY for the CAD component are provided to the State Governments as per cost sharing ratios (which are 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' is 75:25 (Centre : State) in lieu of 60:40 norm applicable for other States.

The core components of physical works under CADWM relate to construction of field channels. Since its inception in 1974-75 up to March, 2020, CCA of 22.98 mha has been covered and central assistance of Rs. 9,640.35 crore has been released to States. During 2016-17 to 2020-21, central assistance of Rs. 2,747.35 crore has been provided to prioritized projects under PMKSY (CADWM). The details of central assistance and State share released for CADWM works of priority projects under PMKSY is given at ***Annexure-VI.***

Physical & Financial Progress

During XII Plan period, a CCA of 7.6 mha was targeted with CA amount of Rs 15,000 crore which was subsequently reduced to 3.6 mha during mid-term appraisal. From 2015-16, the programme came under HKPP component of PMKSY with a target of 1.5 mha. Subsequently, from 2016-17 onwards, the role of programme has been restricted to 99 prioritised AIBP projects. The physical and financial achievement of the projects during XII Plan period and beyond are summarised in the Table below:-

Plan	Physical (in million hectare)		Financial (central assistance) (Rs in crore)	
	Target	Achievement	Target	Achievement
XII Plan				
(up to 2015-16)	3.6	1.419*	15,000	1,887.87
(from 2016-17 to 2019-20)	4.2	1.484 Mha* (till date)	8,176	2,677.70**

**The achievement is as per Central Assistance released*
***Till December 2020*

Participatory Irrigation Management (PIM)

National Water Policy emphasises participatory approach in water resources management. It has been recognized that participation of beneficiaries will help significantly 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 of responsibility for operation & maintenance and also collection of water charges to the Water Users' Association in their respective jurisdiction. One time functional grant @ Rs.1,200/- 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 this 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. Recognizing the need for sound legal framework for PIM in the country, during 1998, the Union Ministry of Water Resources brought out and circulated a model act to be adopted by the States legislatures for enacting new irrigation acts/amending existing irrigation acts. At present there are 18 States who have either enacted a new act or modified their existing act to fulfill the objective of the PIM. As per information made available by the State Governments, about 93,000 Water Users' Associations, covering an area of 17.84 million hectare (mha), have been formed in India.

Strengthening of PIM is being aimed as part of the CADWM program. In 2015-16, the CADWM program was included under PMKSY with aims to enhance physical access of water on-farm and expand cultivable area under assured irrigation, improve on farm water use efficiency, introduce sustainable water conservation practices etc. In 2016-17, the scope of the program was restricted to 99 prioritized AIBP projects aiming for *pari-passu* implementation of CADWM works. About 14,000 WUAs are targeted to be created under the ongoing 88 projects of which over 8,000 WUAs have been formed, and in case of about 2,900 WUAs, the CAD assets have also been transferred to respective WUAs.

3.1.3 RELINING OF SIRHIND FEEDER FROM RD 119700 TO 447927 AND RELINING OF RAJASTHAN FEEDER FROM RD 179000 TO 496000 OF PUNJAB

The funding of Relining of Sirhind Feeder and Rajasthan Feeder of Punjab was approved 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 western Rajasthan. Seven districts of western Rajasthan including major cities like Jodhpur, Bikaner, and 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 areas in both Punjab and 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. Relining

of Sirhind feeder would save 256 cusec of water which would stabilize/improve irrigation in 20,740 ha of area in Rajasthan and 48,356 ha in Punjab and address the problem of water-logging in 84,800 ha of land in Muktsar, Faridkot and Ferozpur districts in south-west Punjab.

The approved cost of relining of Sirhind feeder Canal is Rs. 671.48 crore and that of relining of Rajasthan Feeder Canal is Rs. 1305.27crore, at 2015 price level. Of the total estimated cost, Rs. 826.17crore would be provided as Central Assistance (Rs. 205.76 crore for Sirhind feeder and Rs. 620.41 crore for Rajasthan Feeder). This is in addition to Rs. 156 crore of central assistance released earlier for these projects. The project was scheduled to be completed in 3 working seasons (March to June) of 70 days each starting from March-June, 2019 and ending March-June, 2021. However, due to adverse conditions during 2020 no work could be taken up. Funding for Rajasthan Feeder and Sirhind Feeder shall be made through NABARD under existing system for funding of 99 PMKSY-AIBP projects under LTIF.

3.1.4 SURFACE MINOR IRRIGATION (SMI) SCHEMES

Under the SMI scheme, since 12th Plan onwards, 6,213 schemes are ongoing with an estimated cost of Rs. 13,449 crore. CA of Rs. 7,299 crore has been released to States upto March, 2020. Further, 3,397 schemes have been reported to be completed upto March, 2020. Target irrigation potential creation of these schemes is 10.528 lakh ha and out of this, 6.852 lakh ha is reported to have been created till March, 2020. In the current financial year, Rs. 272.56 crore has been released to SMI schemes till 31st December, 2020.

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

Under the RRR of Water Bodies scheme, since 12th Plan onwards, 2,219 schemes are ongoing with an estimated cost of Rs. 1,910 crore. CA of Rs. 433 crore has been released to States upto March, 2020. Further, 1,465 water bodies have been reported to be completed upto March, 2020. Target irrigation potential restoration of these schemes is 1.888 lakh ha and out of this, 1.319 lakh ha is reported to be restored till March, 2020. In the current financial year, Rs. 34.53 crore has been released under RRR of Water Bodies schemes till 31st December, 2020.

3.1.6 HAR KHET KO PANI –GROUND WATER (PMKSY-HKKP-GW)

The PMKSY-HKKP-GW scheme aims to create additional irrigation command from ground water for small and marginal farmers. During January to November 2020, projects of Rs 1,078.60 crore have been approved by Ministry of Jal Shakti. These projects, on completion will create additional command area of 83,665 ha in States of Tamil Nadu, Manipur, Mizoram, Telangana, West Bengal and Assam and benefit nearly 1.48 lakh small and marginal farmers. An amount of Rs. 103.38 crore has been released during January to December 2020, to the States of Arunachal Pradesh, Mizoram, Manipur, Tripura, Tamil Nadu and Uttar Pradesh as central assistance.

3.1.7 SPECIAL PACKAGE FOR COMPLETION OF IRRIGATION PROJECTS TO ADDRESS AGRARIAN DISTRESS IN VIDARBHA, MARATHWADA AND OTHER CHRONICALLY 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. 3,831.41 crore as central assistance (CA) to complete 83 SMI (Surface Minor Irrigation) and 8 MMI (Major & Medium Irrigation) projects benefitting 12 districts of Vidarbha, Marathwada and drought prone areas of rest of Maharashtra. Total estimated balance cost of these projects is Rs. 13,651.61 crore as on 01.04.2018. By completion of these schemes, an additional potential of 3.77 lakh ha would be created in above areas. CA of Rs. 1,200 crore has been provided to the projects under this package (Rs. 500 crore during 2018-19; Rs. 300 crore during 2019-20; and Rs. 400 crore during 2020-21).

Features of the Special Package

Under the Special Package, Central Government is to provide CA @ 25% of the balance cost of these 91 projects as on 01.04.2018 as well as 25% reimbursement for the expenditure incurred during 2017-18. State shares can be borrowed by the State through NABARD within their FRBM limit, if required, for implementation of these 91 projects. The balance cost of the said projects as on 01.04.2018 is estimated to be Rs.13,651.61 crore.

Status of Projects

Under the Special Package, 18 SMI projects have been reported to be completed up to 31.12.2020. In all, the projects under the special package, 86,160 ha. of irrigation potential has been created from 2018-19 onwards.

3.2 NATIONAL PROJECTS

The Union Cabinet on 7th February, 2008 gave its consent to the proposal of the DoWR, RD & GR, MoJS (earlier Ministry of Water Resources) on implementation of National Projects with Central Assistance of 90% of project cost which meets the following criteria:

- 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.
- 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.
- 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.

Central Assistance Released

S. No.	FY	CA Released under Special Package (Rs. in crore)		
		CA	No. of Projects CA Released (Amount of CA)	
			SMI	MMI
1	2018-19	500	56 (Rs. 170.57 crore)	07 (Rs. 329.43 crore)
2	2019-20	300	72 (Rs. 166.69 crore)	06 (Rs. 133.31 crore)
3	2020-21 (up to Dec.2020)	400	53 (Rs. 97.48 crore)	06 (Rs.302.52 crore)
	Total	**1200**	**434.74 crore**	**765.26 crore**

- 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.
- Also, the funding pattern of National Projects has been revised with effect from October, 2015, as follows.

	Category	Central : State
A	Projects in North-Eastern and Hilly States	90:10
B	Projects in other States	60:40

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, Polavaram Irrigation 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 Hydro Electric Project, Gyspa Hydro Electric 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 Shahpurkandi Dam Project of Punjab have been taken up for execution. Gosikhurd and Saryu Nahar Pariyojna are included under 99 prioritized projects under PMKSY. Polavaram project is also being funded under LTIF.

3.2.1 POLAVARAM NATIONAL PROJECT

Polavaram Irrigation Project (PIP) is a multi-purpose irrigation project on river Godavari in Andhra Pradesh State to create ultimate irrigation potential of 4.36 lakh ha. The project also envisages generation of 960MW of hydro power, drinking water supply to 28.50 lakh population, and diversion of 80TMC of water to Krishna river basin.

It has been declared as a national project as per section 90 of Andhra Pradesh 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.

After declaration of National Project, an amount of Rs.10,848.36 crore has been released for execution of Polavaram Irrigation Project during 2014-15 to 2020-21 (upto Dec. 2020). An expenditure of Rs.16,899.38 crore has been incurred for the project works till December, 2020 and the project has achieved overall progress of 41.10 %.

Polavaram Project Authority (PPA) has engaged M/s WAPCOS and CSMRS as Project Management Consultant and Quality Consultant, respectively, for the project. Various committees have also been formed to oversee the implementation of the project.

Polavaram Irrigation Project, Andhra Pradesh

Erection of Radial Gates

Construction of Spillway Bridge

3.2.2 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. Components 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 involve construction of Rapti Main Canal and its complete distribution system.

Saryu Barrage at Saryu River

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 is Rs. 2,243.02 crore up to 31.12.2020, out of which Rs. 358.21 crore has been released during 2020-21 (upto Dec. 2020).

3.2.3 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 is Rs. 3,487.38 crore up to 31.12.2020, out of which Rs. 86.70 crore has been released during 2020-21 (upto Dec. 2020).

Gosikhurd Project

3.2.4 SHAHPURKANDI DAM

The work on the project had 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 erstwhile MoWR,RD&GR at New Delhi on 8thSeptember, 2018 to resume works of Shahpur Kandi Dam project in Punjab on river Ravi. Work has been resumed with effect from 1stNovember, 2018.

Government of India has approved the funding for "Implementation of Shahpurkandi Dam (National Project) on River Ravi in Punjab State" with an estimated cost of Rs. 2,715.70 crore out of which, the irrigation component (28.61% of approved cost) and power component (71.39% of approved cost) amount to Rs.776.96 crore and Rs.1,938.74 crore, respectively. In this regard, central assistance of Rs. 485.38 crore would be provided for the balance works of irrigation component of the project amounting to Rs.564.63 crore.

After completion of the Shahpurkandi Dam Project, water would be made available to the States of Punjab and J&K to provide irrigation in 5,000 ha and 32,173 ha, respectively. In addition, water being released to provide irrigation in 1.18 lakhha under UBDC system in Punjab at present would be managed efficiently through this project and irrigation in the area would be benefitted. The project would be completed by June 2022.

Central assistance of Rs. 119.52 crore has been released for the project during 2019-20 to 2020-21 out of which Rs.59.52 crore has been released during 2020-21.

3.2.5 TEESTA BARRAGE NATIONAL PROJECT

Teesta Development Plan consists of three phases. Benefits envisaged are irrigation benefit to CCA of 9.22 lakh ha (Phase-I), 1,000MW Hydro Power (Phase-II) and Navigation Link between Brahmaputra and Ganga (Phase-III). Sub-stage – I, on completion, would create irrigation potential of 5.27 lakh ha over a CCA of 3.42 lakh ha.

The estimated cost of the project is Rs. 2,988.61 crore(at 2008 price level). The total expenditure up to April, 2014 (including expenditure under the scheme of national projects) is Rs.1,459.18 crore. Government of India has released central assistance of Rs.178.20 crore under the scheme of national projects. State Government has not submitted any funding proposal since 2012-13. The progress of Teesta project has been affected due to land acquisition issues. The State Government has constituted a High Level Task Force to suggest appropriate course of action for execution of balance works.

3.2.6 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 was signed by Hon'ble Chief Ministers of the co-basin States on 28.08.2018.

3.2.7 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.

3.3 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 (now Ministry of Jal Shakti) for implementation of Inter-Linking of Rivers (ILR) programme. Eighteen meetings of the Special Committee for Inter-Linking of Rivers (ILR) have been held so far (last meeting held on 07.12.2020 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 which have taken place during 2020-21are as under:

3.3.1 INTERLINKING OF RIVERS UNDER NPP

- After concerted efforts taken by Ministry of Jal Shakti, a tripartite Memorandum of Agreement (MoA) for the implementation of Ken-Betwa link project jointly has been signed on 22.03.2021 amongst the Union of India, Governments of Madhya Pradesh and Uttar Pradesh in the virtual meeting with Hon'ble Prime Minister of India.

A tripartite Memorandum of Agreement (MoA) for the implementation of the project jointly has been signed on 22.03.2021 amongst the Union of India, Governments of Madhya Pradesh and Uttar Pradesh in the virtual meeting with Hon'ble Prime Minister of India

- Meetings of Sub-Committee-IV on consensus building through negotiations to arrive agreement among party States under the Chairmanship of Chairman, CWC were held on 28.07.2020 and 10.12.2020 and the issues of water sharing in Par-Tapi-Narmada and Damanganga-Pinjal link projects were discussed.
- PFR of Parbati-Kuno-Sind link project for integration of Parbati-Kalisindh-Chambal link with Eastern Rajasthan Canal Project (ERCP) of Government of Rajasthan was circulated in June, 2020.
- Feasibility Report of Manas-Sankosh-Tista-Ganga Link Project was circulated in July, 2020.
- Detailed Project Report of Cauvery-Vaigai-Gundar link project was finalised and circulated in August, 2020.
- Feasibility Report of Mahanadi (Barmul) – Godavari (Dowlaiswaram) Link Project (Alternative to Mahanadi (Manibhadra) – Godavari Link) was circulated in October, 2020.
- Feasibility Report of Farakka-Sundarban link project was circulated in December, 2020.

3.3.2 INTRA STATE LINKS

- The Investment Clearance for Kosi-Mechi link project was recommended on 22.10.2020 by Investment Clearance Committee of Ministry of Jal Shakti.

3.4 FLOOD MANAGEMENT

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 financial central assistance through Flood Management Programme (FMP) and River Management Activities & Works related to Border Areas (RMBA) schemes of Department, which have been merged into a single scheme Flood Management and Border Areas Programme (FMBAP) for the three year period from 2017-18 to 2019-20 and later extended upto 2020-21. Grant-in-aid of Rs. 1,558.90crore under FMP component and Rs. 485.33crore under RMBA component of FMBAP has been released to States/UTs between April, 2017 and December, 2020.

3.4.1 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, 522 works were approved during XI & XII Plans. Central assistance of Rs. 6,431.90crore has been released to States/ UTs under FMP/ Flood Management component of FMBAP scheme since XI Plan till December, 2020. The completed works during XI and XII Plans have provided reasonable protection to 34.66 lakh ha area and benefitted 265 lakh population. The details of central assistance released till December, 2020 and area protected/population benefitted during XI & XII Plans are given in ***Annexure-VII & Annexure-VIII,*** respectively.

3.4.2 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 three components viz.,

i) Hydrological observations and flood forecasting on common border rivers with neighboring countries: Activities under this component include:

- **Flood forecasting on rivers common to India and Nepal:** Flood forecasting on rivers common to India and 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 water is 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.
- **Hydrological Data sharing by China:** 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 neighbouring countries:

Activities/projects under this component are:

- **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 SaptaKosi High Dam and Sun Kosi Storage cum Diversion Scheme:** As per the bilateral agreement, the Joint Project Office–SaptaKosi& Sun Kosi Investigation (JPO-SKSKI) – is carrying out field investigations for SaptaKosi High Dam and Sun Kosi Storage-cum-Diversion Scheme for preparation of a comprehensiveDPR.

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

The scheme provides for 100% grant to select border States and UTs for river management works. Grant-in-aid amounting to 708.53 crore has been released to States/UTs under RMBA/ RMBA component of FMBAP since XII Plan till December, 2020.

3.4.3 NORTH KOEL RESERVOIR PROJECT

DoWR, RD & GR has taken up the long pending project for completion of balance works of North Koel Reservoir Project, Bihar and Jharkhand. The balance works of North Koel Reservoir Project have been approved at an estimated cost of Rs. 1,622.27 crore. Project will provide irrigation benefit to 1,11,521 hectares of land annually in drought prone areas of Aurangabad and Gaya districts of Bihar and Palamau and Garwa districts of Jharkhand. It also has the provision for supply of 44 MCM water for drinking and industrial water supply. Execution of balance works of the project on turnkey basis by M/s WAPCOS Ltd. as Project Management Consultant (PMC) has been approved. 10% works on Dam & Appurtenant, 80% works on Mohammadganj Barrage and 70% works on Left Main Canal have been completed.

3.5 NATIONAL MISSION FOR CLEAN GANGA (NMCG)

National Council for Rejuvenation, Protection and Management of River Ganga (referred as National Ganga Council) vide notification no. S.O. 3187(E) dated 07.10.2016 under EPA, 1986 has come into force. The following five tier structure at national, state and district level is envisaged 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 river Ganga:

- National Ganga Council under Chairmanship of Hon'ble Prime Minister of India
- Empowered Task Force (ETF) on river Ganga under chairmanship of Hon'ble Union Minister of Water Resources, River Development and Ganga Rejuvenation
- National Mission for Clean Ganga (NMCG)
- State Ganga Committees, and
- District Ganga Committees in every specified district abutting river Ganga and its tributaries in the States.

During 2020-21, against budget allocation of Rs. 1,300crore,DoWR, RD & GR has released an amount of Rs. 875 crore to NMCG. NMCG released an amount of Rs. 714.50 croreduring 2020-21(upto 31.01.2021) to State

Programme Management Groups and other implementing agencies for the implementation of project under Namami Gange.

3.5.1 MAJOR ACHIEVEMENTS

i) **Inauguration of Uttarakhand Projects:** All projects in Haridwar, Rishikesh, Muni Ki Reti and Badrinath, the main cities along Ganga are commissioned and completed in Uttarakhand. Hon'ble Prime Minister Shri Narendra Modi digitally inaugurated projects of Uttarakhand worth Rs. 521 crore on 29th September, 2020. The projects included 68 MLD and 27 MLD STPs of Jagjeetpur in Haridwar; 26 MLD LakkadGhat STP in Rishikesh; 7.5 MLD and 5 MLD STPs of Muni ki Reti; 1.01 MLD STP of Badrinath and Ganga Museum to showcase river rejuvenation activities and bio-diversity of Ganga at Chandi Ghat, Haridwar.

ii) **Inauguration of Bihar Projects**: Hon'ble Prime Minister Shri Narendra Modi digitally inaugurated 2 sewerage treatment plants of 43 MLD in Beur and 37 MLD in Karmalichak and also laid the foundation stone of Muzzaffarpur River Front under Namami Gange programme for the State of Bihar in

Patna on 15th September, 2020. Three Ghats (East Akhara Ghat, Sidhi Ghat, Chandwara Ghat) of Muzaffarpur city will be developed under this scheme. Prime Minister also launched water supply project in Siwan Municipal Council and Chhapra Municipal Corporation under AMRUT scheme of Ministry of Housing and Urban Affairs. Shri Nitish Kumar, Hon'ble Chief Minister of Bihar; Shri Gajendra Singh Shekhawat, Hon'ble Minister of Jal Shakti; Shri Ravi Shankar Prasad, Hon'ble Minister of Law and Justice, Communication and Electronics & Information Technology and Shri Hardeep Singh Puri, Hon'ble Minister of Housing and Urban Affairs were present in the program.

iii) Almost entire Prayagraj now has sewerage network and STPs. Varanasi saw completion of 140 MLD STP at Dinapur and 120 MLD at Goitha. Another 50 MLD STP at Ramna would be ready during 2021-22 to ensure that no untreated sewage flows. In Bihar, Namami Gange projects aim to increase treatment capacity by 10 times from about 60 MLD to 650 MLD. In Jharkhand, Sahibganj STP is already functioning and the only o ther STP on Ganga at Rajmahal will be completed in a few months. Several projects in West Bengal too are making progress.

MLD Karmalichak new STP

MLD Beur new STP

3.6 ATAL BHUJAL YOJANA (ATAL JAL)

Atal Bhujal Yojana (ATAL JAL) is a World Bank aided Central Sector Scheme of the Government of India with an outlay of Rs. 6,000 crore, out of which Rs.3,000 crore will be the loan from World Bank, with focus on community participation and demand side interventions for sustainable ground water management in identified water stressed areas. This scheme is expected to contribute significantly towards the water and food security of the participating States. The scheme was launched by the Hon'ble Prime Minister on 25.12.2019 and is being implemented from 01.04.2020 for a period of 5 years. Funds under the scheme shall be disbursed to the States as grant-in-aid.

The scheme is being taken up in 9,000 water stressed Gram Panchayats of 222 administrative blocks/ Talukas in 80 districts of seven States, viz. Haryana, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh. The State-wise details of area and financial allocations are as below:

Components of Atal Bhujal Yojana

This scheme has two components viz.

i) **Institutional Strengthening & Capacity Building component (Rs. 1,400 crore)** for strengthening institutional arrangements by providing strong data base, scientific approach and community participation in the States to enable them sustainably manage their ground water resources.

ii) **Incentive Component (Rs.4,600 crore)** for incentivizing the States for convergence among various schemes of the Central and State Governments and achievement of pre-defined results as a measure of improved ground water management and consequent improvement in ground water scenario.

Allocation of funds under the Institutional Strengthening Component shall be used by the States for improving their institutional framework for ground water management through activities such as engagement of domain experts & District Implementation Partners (DIPs),

Details of area & tentative financial allocations

S. No.	State	Districts	Blocks	GPs	Area (sq.km)	Financial Allocation (Rs. crore)
1	Gujarat	7	34	2,201	18,187	756.76
2	Haryana	13	36	1,895	12,650	723.19
3	Karnataka	14	41	1,199	39,703	1,201.52
4	Madhya Pradesh	6	9	672	8,300	314.54
5	Maharashtra	13	35	1,339	13,209	925.77
6	Rajasthan	17	38	1,144	32,570	1,189.65
7	Uttar Pradesh	10	26	550	13,134	729.24
	National Programme Management Unit					159.33
	Total	**80**	**222**	**9,000**	**1,37,358**	**6,000.00**

procurement of equipment, upgradation of laboratories and capacity building activities. Funds under the Incentive Component, including the World Bank loan of Rs. 3,000 crore shall be disbursed to the States on achievement of pre-defined targets namely i) public disclosure of ground water related information and reports, ii) preparation of community-led Water Security Plans (WSPs) iii) public financing of approved Water Security Plans through convergence of ongoing/ new schemes, iv) adoption of practices for efficient water use and v) improvement in ground water conditions, evidenced by arrest in the decline of water levels in observation wells. The incentives shall be used by the States for interventions that improve the sustainability of ground water resources.

The scheme is expected to result in multiple benefits including i) improvements in sustainability of ground water resource in target areas, ii) positive contributions to the sustainability component of Jal Jeevan Mission, and to the goal of doubling farmers' income and iii) Inculcation of behavioural changes in the community to foster improved ground water management.

Implementation of Atal Bhujal Yojana

- National Inter-departmental Steering Committee has been constituted & National Programme Management Unit (NPMU) established.
- Program guidelines issued.
- Third Party Government Verification Agency (TPGVA) engaged.
- Preparation of web-based MIS to monitor progress of the scheme has advanced.
- MoA signed with all seven States.
- Funds to the tune of Rs. 34 crore released to all States under Institutional Strengthening and Capacity Building Component.
- Establishment of institutional mechanism for implementation of scheme is in progress in the participating States. States are going ahead with preparatory activities for ground level implementation of the scheme.
- First round of verification of achievement of States in respect of pre-agreed Disbursement Linked Indicator #1 (Public disclosure of ground water data / information and Reports) is being taken up by the Third Party Government Verification Agency (TPGVA).

3.7 DEVELOPMENT OF WATER RESOURCES INFORMATION SYSTEM (DWRIS)

Development of Water Resources Information System (DWRIS) Scheme, a continuing scheme of XII Five Year Plan, is under implementation during 2017-18 to 2019-20 with an outlay of Rs. 682.42 crore, for collection of hydro-meteorological and water quality data, storage and dissemination to the users for policy formulation, planning and designing of water resources projects, management of water resources, timely dissemination of flood forecast, etc.

Activities under Development of Water Resources Information System (DWRIS) scheme are:

- Hydrological observations (river

water level, river flow, sediment, water quality, rain fall) at 878 existing sites and 720 new Hydrological Observation sites.

- Flood forecasting at 328 stations.
- Development of hydrodynamic models for flood forecasting to enhance lead time of flood forecasts from 24 hours to 72 hours.
- Reassessment of water availability in the country.

3.8 MINOR IRRIGATION (MI) CENSUS & CENSUS OF WATER BODIES

"Rationalization of Minor Irrigation Statistics (RMIS)" was launched in 1987-88 in the DoWR, RD & GR, MoJS, with 100% central 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" to build up a comprehensive and reliable database in the Minor Irrigation (MI) sector for effective planning and policy making.

MI censuses are a rich source of information on India's ground and surface water sector. In the MI censuses detailed information on various aspects/ parameters like irrigation sources (dug well, shallow, medium and deep tube well, surface flow and surface lift schemes), irrigation potential created, potential utilized, ownership, holding size of land by the owner, devices used for lifting water, source of energy, 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 and 2013-14 respectively. All the information regarding the MI censuses conducted so far including schedules, instruction manual, guidelines, reports, evaluation studies conducted on the census etc. are available on the website of the Ministry. A separate dashboard has also been created for easy dissemination of Fifth Minor Irrigation Census data.

The scope of Irrigation Census has now been expanded to include census of water bodies with 100% central assistance. The First Census of Water Bodies has been launched in the States/UTs in convergence with Sixth Minor Irrigation Census. The Water Bodies Census inter-alia collects information on all important aspects on the subject including their size, condition, status of encroachments, use, storage capacity, status of filling up of storage etc.

6th Minor Irrigation Census and Census of Water bodies has approved outlay 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.

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 conducting census of MI schemes and the census of Water Bodies with the help of staff of State/UT Governments at district/block/ village levels.

A Memorandum of Understanding

(MoU) has been signed by DoWR, RD & GR with National Informatics Centre (NIC) for development of mobile application and software for data entry and validation of 6th MI Census and first Census of Water Bodies. The provision for capturing the latitude, longitude and photograph of water bodies has been kept in the Census of Water Bodies. The mobile App developed by NIC for the purpose was pilot tested along with the software for data entry and validation in four Regional Data Processing Workshops held at Northern, Southern, Eastern & Western regions. After the finalisation of mobile App & software including mandatory security audit, the field work of 6th MI Census and first Census of Water Bodies was launched. The State/UT Governments constituted a State level Steering Committee under the chairmanship of Principal Secretary of the Nodal Department with representatives of Agriculture, Urban Development, Fisheries, CWC, CGWB, etc. for monitoring and guiding the census work in the State/ UT. All the States/UTs conducted the State level Steering Committee Meetings in which the detailed action plan for conducting the census was approved. This was followed by conduct of State level training workshops, printing of schedules, procurement of mobile devices for capturing latitude, longitude & photograph, district/block level training workshops and launch of field work.

Presently, the field work of 6th MI Census and first Census of Water Bodies has been completed in Andhra Pradesh, Goa, Gujarat, Jharkhand, Nagaland, Rajasthan, Sikkim, Tamil Nadu, Chandigarh and Telangana. The States/UTs of Assam, Bihar, Chhattisgarh, Himachal Pradesh, Kerala, Meghalaya, Mizoram, Punjab, Tripura, Uttar Pradesh and A & N Islands have completed more than 80% of the field work. The field work is fast progressing in the States/UTs of Karnataka, West Bengal, Manipur, Puducherry, Odisha, Maharashtra, Uttarakhand, Haryana, Arunachal Pradesh and Jammu & Kashmir. Data processing activities and validation using the online software is in progress in 21 States/UTs, out of which 5 States/UTs have completed data entry.

An expenditure of Rs. 9.5 crore has been incurred up to 31st December, 2020 against the Revised Estimate (RE) of Rs. 10 crore for the financial year 2020-21.

3.9 FLOOD FORECASTING (FF)

CWC is providing flood forecasting service at 328 stations, of which 198 are level forecasting stations on major rivers and 130 are inflow forecasting stations on major dams/barrages. Overall 940 automatic data collection stations with sensors and satellite transmission system, three earth receiving stations viz New Delhi, Jaipur and Burla and 25 modelling centres equipped with latest computer systems for analysis of data, flood forecast formulation and its dissemination to concerned agencies expeditiously have been installed on various river basins.

During the flood season, CWC operates Flood Control Room on 24x7 basis at its headquarter in New Delhi and 29 Division Offices spread throughout the country for monitoring the flood situation. On an average, about 7,000 forecasts are issued during flood season every year by the CWC. 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.

3.9.1 REGULAR FLOOD FORECASTING ACTIVITY FROM 1ST MAY 2019

During the flood season 2020, 11,721 flood forecasts (8,243 level forecast and 3,478 inflow forecasts) were issued, out of which 11,198 (95.54%) 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. From the year 2020 web based software WIMS is used by all divisions of CWC for entering data on hourly basis, analysis of data and dissemination of flood forecasts. A summary of flood situation observed during 1st May to 31st December 2020 is given below:

Extreme Flood situation in flood forecasting Stations:

Seven flood forecasting stations flowed in Extreme Flood Situation during 1st May to 31st December, 2020;

Extreme Flood Situation in Monitoring Stations: 41 Flood Monitoring Stations flowed in Extreme Food Situation as detailed under:

- River Suklai at Suklai in Kamrup district of Assam on 25th June and 7th September 2020.
- River Mahananda at Moujabadi in Kishanganj district of Bihar on 27th and 28th June 2020.
- River Chandan at Thoothibari in Maharajganj district of Uttar Pradesh from 28th to 29th June 2020.
- River Suhali at New Motipur in Kheri district of Uttar Pradesh on 9thJuly.
- River Sharda at Jouljubi in Pithoragarh district of Uttarakhand on 19thJuly 2020.
- River Bagmati at Belsand in Sheohar district of Bihar on 12th July
- River Kosi at Dharmaaraghat in Khagaria district of Bihar on 12th July
- River BurhiRapti at Parsohan ghat in Siddharthnagar district of Uttar Pradesh on 12th July
- River Gandak at Lalganj in Vaishali district of Bihar from 24th July to 25th July and on 28th September.
- River Adhwara at Bishunpur in Darbhanga district in Bihar from 25th July to 31stJuly and from 5th to 6th August 2020.

Sl. No.	State	District	River	Station	Period	
					From	To
1.	Assam	Sivasagar	Dikhow	Sivasagar	22.06.2020-07	22.06.2020-12
2.	Bihar	Gopalganj	Gandak	Dumariaghat	23.07.2020-16	25.07.2020-06
3.		Muzzafarpur	Gandak	Rewaghat	24.07.2020-18	25.07.2020-08
4.		Samastipur	Burhi Gandak	Rosera	31.07.2020-06	05.08.2020-11
5	Odisha	Balasore	Subarnarekha	Mathani Road Bridge	26.08.2020-22	27.08.2020-22
6	Andhra Pradesh	East Godavari	Godavari	Chinturu	15.08.2020-18	24.08.2020-01
7	Karnataka	Gulbarga	Bhima	Deongaon Bridge	17.10.2020-02	19.10.2020-07

- River BurhiGandak at Sakra in Muzzaffarpur district of Bihar from 28th July to 3rdAugust 2020.
- River Burhi Yamuna at Panchkuan in Saharanpur district of Uttar Pradesh on 31st July 2020.
- River Cauvery at Napoklu in Kodagu district of Karnataka from 7th to 8th August 2020.
- River Mahanadi at Surajgarh in Rajgarh district of Chattisgarh from 29th August to 31stAugust 2020.
- River Mahanadi at Kalma in Janjgir-Champa district of Chattisgarh from 28th August to 30th August 2020.
- River Kharun at Pathardihi in Raipur district of Chattisgarh from 28th August to 29thAugust 2020.
- River Mahanadi at Kurubhata in Raigarh district of Chattisgarh from 28thto 29th August 2020.
- River Shakkar at Gadarwara in Jabalpur district of Madhya Pradesh on 29thAugust 2020.
- River Wainganga at Keolari in Seoni district of Madhya Pradesh on 29th August 2020.
- River Wainganga at Balaghat in Balaghat district of Madhya Pradesh on 30th August 2020.
- River Parwati at Astha in Sehore district of Madhya Pradesh on 29th August 2020.
- River Narmada at Handia in Harda district of Madhya Pradesh on 30th August 2020.
- River Kanhan at Satrapur/K.R.Bridge in Nagpur district of Maharashtra on 29th August 2020.
- River Mahanadi at Mahulpali in Sambalpur district of Odisha on 27th August 2020.
- River Mahanadi at Padampur in Rayagada district of Odisha from 27th to 28th August 2020.
- River Mahanadi at Kanas in Puri district of Odisha on 29th August 2020.
- River Swarna at Yennehole in Udupi district of Karnataka on 20th September 2020.
- River Musi at Anantharam in Nalgonda district of Telangana on 14thOctober 2020.
- River Kagna at Jewangi in Ranga Reddy district of Telangana on 14th October 2020.
- River Kagna at Malkhed in Gulbarga district of Karnataka from 14th to 15th October 2020.
- River Don at Talikot in Bijapur district of Karnataka from 15th to 16th October 2020.
- River Bhima at Yadgir in Gulbarga district of Karnataka on 16th October 2020.
- River Nira at Sarati in Pune district of Maharashtra from 15th to 16th October 2020.
- River Bhima at Takli in Solapur district of Maharashtra from 16th to 18th October 2020.
- River Bhima at Wadakbal in Solapur district of Maharashtra from 15th to 16th October 2020.
- River Araniar at Puduvayal in Tiruvallur district of Tamilnadu from 26th to 29th November 2020.
- River Palar at Arcot in Ranipet district of Tamilnadu on 27thNovember 2020.
- River Nagari at Bugga agraharam in Chittoor district of Andhra Pradesh on 26thNovember 2020.

- River Cheyyeru at Nandalur in Cuddapah district of Andhra Pradesh on 27thNovember 2020.
- River Periyaodai at Venganur in Cuddalore district of Tamilnadu from 3rdDecember to 5th December 2020.
- River Kallar at Poyapakkam in Ranipet district of Tamilnadu from 9th December to 11thDecember 2020.

Severe Flood situation for flood forecasting Stations: 88 FF Stations flowed in Severe Flood Situation in the States of Arunachal Pradesh, Assam, Bihar, Odisha, Uttar Pradesh, West Bengal , Jharkhand, Madhya Pradesh, Maharashtra, Rajasthan, Uttarakhand, Andhra Pradesh, Telangana, Kerala, Chhattisgarh and Gujarat during the period 1st May to 31st December 2020 as shown below:

Sl. No	State	District	River	Station
1.	Arunachal Pradesh	East Siang	Siang	Passighat
2.	Assam	Jorhat	Brahmaputra	Neamatighat
3.		Sonitpur	Jia-Bharali	N T Road Crossing
4.		Morigaon	Kopili	Dharamtul
5.		Nagaon	Kopili	Kampur
6		Kamrup	Puthimari	N H Crossing
7		Barpeta	Beki	Beki Rd Bridge
8		Barpeta	Manas	Manas NH Xing
9		Goalpara	Brahmaputra	Goalpara
10		Dhubri	Brahmaputra	Dhubri
11		Sonitpur	Brahmaputra	Tezpur
12		Kamrup	Brahmaputra	Guwahati (DC Court)
13		Nalbari	Pagladiya	Pagladiya NT Rd Crossing
14		Golaghat	Dhansiri(s)	Numaligarh
15		Karimganj	Kushiyara	Karimganj
16		Dhubri	Sankosh	Golokganj
17		Sivasagar	Desang	Nanglamoraghat
18		Dibrugarh	Buridehing	Chenimari (Khowang)
19		Lakhimpur	Subansiri	Badatighat
20		Dibrugarh	Brahmaputra	Dibrugarh
21		Cachar	Barak	Annapurnaghat
22		Cachar	Barak	Badarpurghat
23		Hailakandi	Katakhal	Matizuri
24		Kokrajhar	Gaurang	Kokrajhar
25	Bihar	Madhubani	Kamalabalan	Jainagar
26		Sitamarhi	Bagmati	Dheng Bridge
27		Sitamarhi	Lakhanadi	Runisaidpur
28		Muzzafarpur	Bagmati	Benibad
29		Khagaria	Kosi	Baltara
30		Araria	Parwan	Araria
31		Kishanganj	Mahananda	Taibpur

Sl. No	State	District	River	Station
32		Purnea	Mahananda	Dhengraghat
33		Katihar	Mahananda	Jhawa
34		Madhubani	Kamlabalan	Jhanjharpur
35		Siwan	Ghagra	Darauli
36		Sapual	Kosi	Basua
37		Adhwara	Sitamarhi	Sonebarsa
38		Motihari	Buri Gandak	Lalbegiaghat
39		Darbhanga	Bagmati	Hayaghat
40		Darbhanga	Adhwara Group	Ekmighat
41		Darbhanga	Adhwara Group	Kamataul
42		Muzzafarpur	Buri Gandak	Sikandarpur (Muzzafarpur)
43		Siwan	Ghagra	GangpurSiswan
44		Katihar	Kosi	Kursela
45		Bhagalpur	Ganga	Kahalgaon
46		Buri Gandak	Samastipur	Samastipur
47		Muzzafarpur	BurhiGandak	Ahirwalia
48		Khagaria	BurhiGandak	Khagaria
49		Patna	Ganga	Hatidah
50		Patna	Ganga	Gandhighat
51		Patna	Punpun	Sripalpur
52		W Champaran	Gandak	Chatia
53	Odisha	Balasore	Subarnarekha	Rajghat
54		Balasore	Burhabalang	NH_5 _Road Bridge
55		Keonjar	Baitarni	Anandpur
56		Bhadrak	Baitarni	Akhuapada
57		Jajpur	Brahmani	Jenapur
58		Cuttack	Mahanadi	Naraj
59		Gajapati	Vamsadhara	Kashinagar
60	Uttar Pradesh	Kushinagar	Gandak	Khadda
61		Balrampur	Rapti	Balrampur
62		Faizabad	Ghagra	Ayodhya
63		Ballia	Ghagra	Turtipar
64		Barabanki	Ghagra	Elginbridge
65		Gorakhpur	Rapti	Birdghat
66		Ballia	Ganga	Ballia
67		Baduan	Ganga	Kachlabridge
68	West Bengal	Coochbehar	Raidak-I	Tufanganj
69		Coochbehar	Jaldhaka	Mathabhanga
70		Jalpaiguri	Tista	Domohani
71		Coochbehar	Teesta	Mekhliganj
72		Murshidabad	Ganga	Farakka
73	Jharkhand	Sahibganj	Ganga	Sahibganj
74	Kerala	Pathanamthitta	Pamba	Malakkara
75		Palakkad	Bharathapuzha	Kumbidi
76	Madhya Pradesh	Hoshangabad	Narmada	Hoshangabad
77		Mandla	Narmada	Mandla
78	Rajasthan	Chambal	Chambal	Dholpur
79	Uttarakhand	Pauri Garhwal	Alakananda	Srinagar

Sl. No	State	District	River	Station
80	Maharashtra	Bhandara	Wainganga	Bhandara
81		Bhandara	Wainganga	Pauni
82	Gujarat	Bharuch	Narmada	Garudeswar
83		Bharuch	Narmada	Bharuch
84	Andhra Pradesh	East Godavari	Godavari	Dowlaiswaram
85		East Godavari	Godavari	Kunavaram
86	Telangana	Kothagudem	Godavari	Dummagudem
87		Kothagudem	Godavari	Bhadrachalam
88	Chhattisgarh	Bastar	Indravathi	Jagdalpur

3.10 NATIONAL HYDROLOGY PROJECT (NHP)

National Hydrology Project (NHP) has been approved as central sector scheme with a total outlay of Rs.3,679.76crore. NHP is a Central Sector Scheme, with 100% grant to the States with World Bank assistance to the tune of 50% of the project cost. It has pan-India coverage with 48 Implementing Agencies (IAs) (including 9 from Central Government, 3 from River Basin Organisations, 2 from Union Territories and and 34 from States).

Objectives:

- 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."

Impact:

The major impact of NHP is providing an enabling platform to the various Implementing agencies on pan-India basis for taking informed decision related to scientific management of precious water resources in the country and providing platform to central agencies, States, research institutes for discussing water management issues. Highlights are as follows:

- Under NHP impetus is being provided for installation of real time data acquisition system. Accordingly, around 15,500 surface and ground water monitoring sites are being established throughout the country through which real time data would be transmitted to the Central and State Data Centers apart from the centralized online water resources information system. Contracts have already awarded in respect of 7,200 such systems whereas bidding is in process for around 8,300 systems. The data of these stations is being integrated into centralised database system. During last two years of implementation of NHP, 37 implementing agencies (other than CWC and CGWB) have joined centralised database system for water resources data. The available information is now being disseminated through water data online module of India WRIS.
- Modification of Hydro-met Data Dissemination Policy has been carried out for easy sharing of data.
- **Knowledge products initiated:**

  a) Extended Hydrological Prediction (EHP) for three river Basins by CWC

b) Five Purpose Driven Studies (PDS) initiated

c) Development of Decision Support System, Planning and Management by NIH

- Operationalisation & Strengthening of National Water Informatics Centre (NWIC) has been done.
- Extended Hydrological Prediction for Yamuna, Narmada and Cauvery Basins by CWC.
- Sedimentation modeling for 7 basins including suggestion of remedial measures by CWC.
- Early Flood Warning System including inundation forecasting for the Ganga Basin by CWC.
- Survey of India started 0.5 m DEM data capture using aircraft-based LIDAR technology.
- Climate change and its impacts on water resources with focus on India by NIH.
- Construction of Data Centre at Uttarakhand, DVC, Puducherry and West Bengal.
- 16 SCADA contracts awarded and 2 completed-SCADA system functional at Okhla Barrage, Bisalpur Dam and Bihar Tubewell Automation and advanced stage of execution of works for Hathnikund Barrage (Haryana) and Saryu Barrage (Uttar Pradesh);
- Guideline for Setting up of Water Quality Laboratory and Network of Monitoring in Water Resources Departments.
- Inventory of Glacial lakes (GT>0.25 ha) has been prepared for entire catchment of Indian Himalayan river basins – Indus, Ganga & Brahmaputra
- Glacial Lakes Atlas of Indus Basin published.
- River cross-section survey for Uttar Pradesh, West Bengal, Jharkhand and Himachal to be carried out by the Survey of India.
- Shoreline Management Plan for Goa by NIOT initiated.
- For the first-time inventory of Glacial lakes (GT>0.25 ha) has been prepared for entire catchment of Indian Himalayan river basins – Indus, Ganga & Brahmaputra (9.6 lakh sq.km):
  a) Glacial Lakes Atlas of Indus Basin published
  b) Ranking of Glacial lakes for GLOF risk completed for Indus and Ganga basins
  c) GLOF Risk simulation in progress for prioritized lakes (5 each in Indus and Ganga) using DEM
- Capacity building of Central and State Implementing Agencies through physical as well as in virtual mode is being done for taking digital initiatives which include using advance techniques of remote sensing, geographical information system, digital elevation models etc.
- Capacity building of IAs. Till date 227 physical trainings have been conducted, wherein 2,630 staffwere trained and 80 trainings through webinar have been conducted. Other than the training, 80 Workshops, Conferences, Study Tours, Seminar etc. have been conducted under NHP.
- Till now, Rs. 515 crore has been released to Implementing Agencies, out of which expenditure of Rs. 455 crore has been incurred.

3.11 RESEARCH AND DEVELOPMENT (R&D)

R&D activities under the scheme includes basic and applied research, creation and up-gradation of research facilities and training of personnel etc. implemented through the apex organizations of Department viz., CSMRS, CWPRS, NIH, and CWC; and research projects sponsored by the Department. Under the sponsored research projects, the Department provides financial assistance to IITs, Universities, research organizations etc. for taking up research in water sector through three Indian National Committees (INCs)constituted by the Department and Standing Advisory Committee headed by Secretary (WR,RD&GR). The Indian National Committees (INCs) constituted by the Department are: Indian National Committee on Surface Water (INCSW), Indian National Committee on Groundwater (INCGW) and Indian National Committee on Climate Change (INCCC).The R&D program has also helped in capacity building and creation of additional facilities, research and infrastructure at various research institutes in India.

3.11.1 OUTCOME OF R&D SCHEMES:

Physical Achievements:

Action research undertaken by NIH, Roorkee on IWRM Plan for water security (PondHydrology) in identified villages of Western Uttar Pradesh has been completed. The study titled "Statistical Downscaling for hydro-climatic projections with CMIP5 Simulations to assess Impact of Climate Change" by IIT Mumbai in collaboration of IIT Guwahati, IISC Bangalore, IIT Gandhinagar, IIT Kanpur has been completed. The output of study is available athttp://www.regclimindia.in/regpage2.html which provides statistically downscaled precipitation product for Indian rainfall with Kernel Regression Based StatisticalDownscaling and ANN based statistical downscaling.

3.12 NATIONAL WATER MISSION (NWM)

The National Water Mission (NWM) was set up as per the National Action Plan on Climate Change (NAPCC) which was approved by the Government of India and released by the Hon'ble Prime Minister on 30th June, 2008. On 6th April, 2011, the comprehensive Mission Document for NWM was approved.

The main objective of NWM is "conservation of water, minimizing

Particulars	Year					
T - Target A - Achievement	2018-19		2019-20		2020-21 (till Dec, 2020)	
	T	A	T	A	T	A
Technical Reports Submitted (Nos.)	150	115	150	241	290	152
Research Papers Published (Nos.)	150	114	250	238	200	123
Completion of physical/numerical/mathematical model/desk studies/New Geotechnical investigation/ Evaluation of DPR/Compliance on DPR	140	152	125	165	125	60
Training of Personnel (Nos.)	650	579	650	791	-	393
Training Programmes/ Conferences Organized (Nos.)	25	21	30	66	40	20

wastage and ensuring its more equitable distribution both across and within States through integrated water resources development and management".

The five goals identified by the comprehensive mission document for National Water Mission are:

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

39 strategies for achieving these goals were also identified. These strategies are meant for integrated planning for sustainable development with active participation of the stakeholders.

"Implementation of National Water Mission (NWM)" is a Central Sector Scheme with financial outlay of Rs.196 crore for the XII Plan period. Scheme has been extended beyond XII Plan period upto 31.03.2021. Now the scheme is being considered for further continuation for the 15th Finance Commission period i.e. from financial year 2021-22 to 2025-26.

3.13 HUMAN RESOURCE DEVELOPMENT AND CAPACITY BUILDING (HRD-CB)

The Human Resource Development and Capacity Building (HRD-CB) Scheme is an ongoing scheme consisting of five components namely (i) Information, Education & Communication (IEC) (ii) Central Water Commission (National Water Academy) (iii) Rajiv Gandhi National Ground Water Training Institute (iv) North Eastern Regional Institute of Water and Land Management (NERIWALM) and (v) Trainings of officers of DoWR, RD & GR. Major activities carried out under this scheme are as follows:

3.13.1 INFORMATION EDUCATION AND COMMUNICATION (IEC)

The following major activities were undertaken by IEC Section during the financial year 2020-21.

- **National Water Awards**

  The Department has instituted National Water Awards with the objectives of encouraging the stakeholders to adopt holistic approach towards water resources conservation and management in the country. In view of this, 2nd National Water Awards 2019 was organised by the Department and winners in different categories were felicitated with awards. The 2nd National Water Awards 2019 distribution ceremony was organised on 11-12th November 2020 in hybrid mode i.e. on virtual platform as well as with a small physical audience in Vigyan Bhawan, New Delhi. The awards are given to motivate individuals/organizations who are doing commendable work in the field of water resources conservation and management. Shri M. Venkaiah Naidu, Vice President of India, inaugurated the awards

distribution ceremony on 11th November, 2020. Shri Gajendra Singh Shekhawat, Union Minister for Jal Shakti, Shri Rattan Lal Kataria, Minister of State for Jal Shakti, and Shri U.P. Singh,Secretary, DoWR, RD & GR were also present on the occasion. 98 winners were selected and given awards in 16 categories like Best State, Best District, Best Village Panchayat, Best Urban Local Body, Best Research/ Innovation/ New Technology, Best Education/ Mass Awareness effort, Best TV show, Best Newspaper, Best School, Best Institution/ RWA/ Religious Orgns., Best Industry, Best Water Regulatory Authority, Best Water Warrior, Best NGO, Best Water User Association and Best Industry for CSR Activity. The award winners in different categories are given a citation, trophy and cash prize. The event was telecasted through various virtual platforms/ social media platforms.

- **Water Heroes: Share Your Stories Contest**

  After successful completion of Water Heroes: Share Your Stories Contest 1.0 with the objective of promoting value of water in general and for supporting country- wide efforts on water conservation and sustainable development of water resources,the 2nd version of the contest, Water Heroes: Share Your Stories Contest 2.0 was started on 1st September, 2020 on Mygov Portal. The contest will run till 31st August, 2021. Each month, a maximum of 10 entries are selected for cash prize of Rs. 10,000/- each and a certificate is also given to the winners.

- **Monthly Magazine "Jal Charcha"**

  The Department has come up with the monthly magazine to engage with stakeholders to help in informed decision-making at the central 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 conservation and management of water resources in an integrated manner remains the main theme. Monthly Magazine "Jal Charcha" is being circulated on monthly basis to about 6,400 recipients all over the country.

- **Electronic Media Campaign**

  Various video spots/ documentary films on successful work done by the Department, best practices of State Governments on water conservation and management, videos for National Water Awards, rainwater harvesting techniques and water conservation are being produced through NFDC for telecasting them on social media handles of the Department. Videos for 2nd National Water Awards was produced through NFDC and played during the Award Distribution Function.

- **Social Media campaign**

  The social media activities of the Department are operated on Facebook, Twitter, Instagram and Youtube. The aim is to connect with

the people for creation of awareness about water conservation and management.

- **Logo Support:**

  Non-financial logo support was extended to 6th India Industry Water Conclave, 2nd National Water Innovation Summit, India e-Muncipalika Week, India Smart Utility Week, 4th World Water Summit, CII International Water Innovation Summit, Global Water Management Conclave, Neer Foundation, Water Digest Conclave etc.

3.13.2 CENTRAL WATER COMMISSION/ NATIONAL WATER ACADEMY

Central Water Commission, New Delhi conducted various trainings, workshops in CWC headquarter and field offices under HRD/CB Scheme during the year. In addition to above some of officers have participated in online trainings, workshops/conferences, webinars etc.

3.13.3 RAJIV GANDHI NATIONAL GROUND WATER TRAINING & RESEARCH INSTITUTE (RGNGWTRI)

RGNGWTRI had organized 37 training programmes including 21 tier I (National Level) and 15 tier II (State Level) and one Tier III (block Level) training programmes till December 2020. As part of these training programmes, 2,139 participants including 580 female participants were imparted training on various aspects of ground water. In view of the spread of Covid-19 in the country and lockdown declared by Government of India, Tier-II and Tier-III Training courses could not be conducted during the months of April to November, 2020. In addition to this RGI has arranged and completed interaction / interviews for accreditation of ground water professionals and institutions by the accreditation board.

3.13.4 NORTH EASTERN REGIONAL INSTITUTE FOR WATER AND LAND MANAGEMENT (NERIWALM)

NERIWALM conducted 48 programmes from 1st January to 31st December, 2020 for different stakeholders like officers, farmers/WUAs, women groups/farmers, stakeholders and students. Out of 2,092 participants in training, the number of males and females benefitted was 1,239 (59.2%) and 853 (40.8%), respectively.

3.14 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 Plan of Central Water Commission (CWC) (iii) Information Technology Development Plan of the DoWR, RD &GR, and (iv) e-Governance of the DoWR, RD & GR. ID Scheme aims at providing better working environment in the offices, creation of assets and savings on payment of monthly rent.

Implementation/continuation of the Infrastructure Development Scheme for the Department and its Attached and Subordinate Offices during the remaining period of 14th FC (i.e. 2017-20) was approved with the total projects cost of Rs.283.98 crore and an outlay of Rs.198.23

crore, out of which Rs.181.83 crore is meant for Land & Building component of the Scheme and Rs.16.40 crore is for IT component. For the current financial year 2020-21, Rs. 50 crore budget estimate was revised to Rs.11.11 crore at RE stage.

- **CWC – Land & Building**

  Renovation and modernization of CWC (HQ) at Sewa Bhawan, West Block-I & II(Revised estimated cost: Rs. 43.85 crore) has been completed by NPCC Ltd.

  Construction of office building of CWC/GFCC at Patna (Revised estimated cost: Rs.21.81 crore) is almost completed and finishing works of the building is under progress by CPWD, Patna. As in December, 2020 total expenditure on this project is Rs. 17.73 crore.

  Construction of boundary wall at Ayodhya & Kopergaon and Sub-divisionbuilding at Prayagraj were completed during FY 2019-20. Construction of hutments at Ram Sanehi ghathas been completed during FY 2020-21.

  The work for dedicated water supply lines at CWC, Jammu (Estimated Cost: Rs. 1.43 crore) is being executed by PHE Department of J&K. Asin December, 2020, total expenditure on this project was Rs. 1.07 crore.

- **CGWB – Land & Building**

  Shri Gajendra Singh Shekhawat, Hon'ble Minister of Jal Shakti inaugurated the RGI training institute building at Raipur on 25.02.2020. The post possession construction work of Guwahati office building is under progress. Construction of boundary wall, guard room for divisional workshop & store at Chennai has been completed. Construction of Regional & Divisional office at Ahmedabad is under progress. Construction of Divisional office at Ambala is under progress. Construction of boundary wall, guard room for Divisional workshop & store at Jodhpur is under progress. Construction of Divisional office, workshop & Store building at Jammu is under progress. These works are likely to be completed during FY 2021-22.

- **Land & Building of the Department**

  Renovation of 12 rooms and two toilets has been undertaken in Lok Nayak Bhawan, Krishi Bhawan and Shram Shakti Bhawan. Besides, Department's canteen has also been renovated in 2020. The works for the other rooms and toilets are in process.

- **e-Governance**

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

  i) Department has completely operationalized e-Office. The Department has more than 95% electronic files usage in e-Office. Moreover, the Department has linked its e-Office 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 these Departments. Digital

Signature has been provided to most of the officials with signing authority in the Department.

ii) e-Office is fully implemented in the Central Water & Power Research Station(CWPRS), Central Water Commission (CWC), Central Soil & Materials Research Station (CSMRS), Ganga Flood Control Commission (GFCC), National Institute of Hydrology (NIH), Central Ground Water Board (CGWB), NMCG, attached Offices/ Subordinate Organizations under the Department.

iii) An integrated monitoring dynamic Dashboard capturing all major schemes, programmes and interventions on real-time basis for all schemes including monitoring of financial allocation has been developed through NIC. It has been launched in public domain and regular monitoring is being done through the Portal.

iv) Social Media accounts including Facebook, Twitter, Instagram and Youtube of the Attached Offices/Subordinate Organizations under the Department have been operationalized. Regular meetings with the various organizations in the Department held in order to review the progress in social media activities.

v) Website: The website of the Ministry is updated regularly. Focus has been made on regular basis for updation of websites of the attached offices.

vi) Phase-I of eHRMS project, an initiative and flagship programme of DoPT has been implemented in the Department to create a comprehensive and integrated system through adoption of principles of e-Governance to serve as a single authentic source of truth of employees information to the Government of India and provide a generalized human resource management solution to all government employees.

3.15 DAM REHABILITATION AND IMPROVEMENT PROJECT (DRIP)

DoWR, RD & GR initiated World Bank assisted Dam Rehabilitation and Improvement Project (DRIP) in April 2012, with an objective to improve safety and operational performance of selected dams along with institutional strengthening with system wide management approach. The overall coordination and supervision was entrusted to Central Water Commission.

It is a State Sector Scheme with Central component with a provision of rehabilitation of 223 dams located in seven States i.e. Kerala, Madhya Pradesh, Odisha, Tamil Nadu, Karnataka, Jharkhand and Uttarakhand. DRIP has three objectives i.e. (a) Component-I: Rehabilitation of Dams and its Appurtenant Structures, (b) Component-II: Institutional Strengthening and (c) Component-III: Project Management.

The financial outlay of the scheme was originally Rs. 2,100 crore (with external loan of US$ 279.3 million), which was

revised to Rs. 3,466 crore (with external loan of US$ 416.3 million) in September 2018 along with extension of the scheme by two years up to June 30, 2020.

Achievements /Activities during year 2020:

- Physical rehabilitation at 210 dams completed to address various safety concerns of dams, safety of downstream people, property, environment and ecology of river. During the year 2020, rehabilitation activities have been completed at 63 dams.
- Financial achievement: Out of the Project cost of Rs. 2,646 crore, expenditure incurred till November 2020 is Rs. 2,380 crore.
- Dam Break Analysis (DBA) and Inundation Mapping have been completed for 222 dams. During the year 2020, DBA has been prepared for 21 dams and shared with concerned DRIP Implementing Agencies.
- Publication of Emergency Action Plans (EAP): As on 31st December 2020, EAPs for 177 dams have been prepared out of which 96 EAPs have been published during year 2020. Stakeholder Consultation Meetings to disseminate the published EAPs have been conducted for 57 dams, wherein meetings for 30 dams have been conducted during year 2020. This is part of risk mitigation strategy to communicate the associated risks to all stakeholders.
- Operation and Maintenance (O&M) Manuals have been published for 131 dams out of which 94 have been published during year 2020.
- Dam Health and Rehabilitation Monitoring Application (DHARMA), a web-based asset management tool has been developed to support the effective collection and management of dam data. The licenses for this tool have been provided to 18 States. Preliminary information available in National Register of Large Dams data for about 5,000 dams has been transferred into DHARMA, wherein detail data in respect of about 1,500 dams have been entered.
- 11 Guidelines and Manuals on various aspects of dam safety have been published under DRIP. During the year 2020, three guidelines have been published namely "Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects", "Guidelines for Classifying the Hazard Potential of Dams" and "Manual for Assessing Structural Safety of Existing Dams". These documents are available on official website of DRIP (www.damsafety.in)
- 186 national training programs on various facets of dam safety have been conducted, wherein about 5,000 officials were trained. During the year 2020, 20 trainings on various areas of dam safety were conducted, benefitting 440 officials of Implementing Agencies.
- A DRIP documentary was released in the month of December 2020, wherein success story of the scheme have been documented for showcasing various achievements of various partner agencies.

- DRIP Bulletin dedicated to academic partners has been published in December 2020, highlighting various activities undertaken by the institutes under DRIP. This bulletin can be downloaded from official website of DRIP (www.damsafety.in)

3.15.1 DAM REHABILITATION AND IMPROVEMENT PROJECT PHASE II (DRIP-II)

Based on the success of ongoing DRIP, the Ministry of Jal Shakti initiated activities for DRIP Phase II and Phase III, by inviting proposals in year 2017 for inclusion of more number of States and dams facing serious health and dam safety challenges. The scheme has provision for rehabilitation of 736 dams located in 19 States (Andhra Pradesh, Chhattisgarh, Goa, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand, West Bengal, and 2 Central Agencies (Bhakra Beas Management Board, and Damodar Valley Corporation). It is a State Sector Scheme with Central component, with duration of 10 years, to be implemented in two Phases i.e. Phase-II and Phase-III, each of six years duration with an overlap of two years.

The total cost of the project is Rs. 10,211 crore. Out of this cost, Rs. 7,000 crore is an external loan, Rs. 3,211 crore would be borne by the respective participating States and the three central agencies. The funding pattern of scheme is 80:20 (Special Category States), 70:30 (General Category States) and 50:50 (Central Agencies). The Scheme also has provision of Central Grant of 90% of loan amount for special category States (Manipur, Meghalaya and Uttarakhand).

DRIP Phase-II and Phase-III have been approved on 29th October 2020. The Phase II is being financed by World Bank and AIIB, each for US$ 250 million. Loan Negotiation with World Bank for Phase II, was held on November 10, 2020 in which 10 States (Gujarat, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Rajasthan, Odisha, Tamil Nadu, and Chhattisgarh) participated. The scheme is likely to be operationalisedduring 2021-22.

3.15.2 DETAIL OF MEETING ATTENDED BY HON'BLE UNION MINISTER

- **Review of DRIP Phase II & Phase III by Hon'ble Minister of Jal Shakti, Sh. Gajendra Singh Shekhawat, November 25, 2020 :**

  A review meeting was taken on November 25, 2020 by Hon'ble Minister of Jal Shakti**,** Shri Gajendra Singh Shekhawat on the progress of DRIP Phase II & Phase III. Shri Gulshan Raj, CE DSO and Project Director DRIP Phase II & Phase III, apprised the Hon'ble Minister about the important milestones of the new Scheme and briefed about the Loan Negotiation Meeting with World Bank. The meeting was attended by Additional Secretary, DoWR RD & GR and CWC delegation led by Member (WP&P), CWC.

- **CCEA Approves DRIP Phase II & Phase III :**

  The Cabinet Committee on Economic Affairs (CCEA) approved the DRIP Phase II and Phase III on October 29, 2020, to improve safety and operational performance of selected dams across the country. It envisages comprehensive rehabilitation of 736 existing dams located across the country and entails financial assistance from the World Bank (WB) and the Asian Infrastructure Investment Bank (AIIB).

3.16 NATIONAL RIVER CONSERVATION PLAN

3.16.1 NATIONAL RIVER CONSERVATION DIRECTORATE (NRCD)

Rivers are lifelines for the civilizations and need to be considered as vibrant ecological entities. They are a source of sustenance of our culture and civilization, and provide a host of ecosystem services for the human beings. The threat to rivers has been increasing over the years as a result of rapid urbanisation, industrialization and increase in population. Over-extraction of water for irrigation, industrial, drinking purposes is compounding the problem. This calls for protection, conservation and rejuvenation of these valuable resources.

Untreated municipal sewage is considered to be the major source of pollution of rivers, besides industrial and other non-point sources of pollution. The sources of pollution can be classified broadly in two categories, namely:-

i) **Point sources :** These are organized sources of pollution where the pollution load can be measured, e.g. surface drains carrying municipal sewage or industrial effluents, sewage pumping stations and sewerage systems, trade effluents from industries, etc.

ii) **Non-point sources :** These are non-measurable sources of pollution such as run-off from agricultural fields carrying chemicals and fertilizers, run-off from solid waste dumps and areas used for open defecation, dumping of un-burnt/half-burnt dead bodies and animal carcasses, dhobi ghats, cattle wallowing, etc.

Out of the total measurable pollution in the rivers from various point sources, around 75% is accounted for by municipal sewage from towns located along the banks of rivers and remaining 25% is accounted for by industrial effluents. While industrial pollution is only 25% of the pollution load, it poses a serious threat to rivers in view of its higher concentration of pollutants and complex profile due to the presence of chemicals, metals and other toxic materials.

In any stretch of river, the use demanding the highest quality of water is taken as the designated best use. A survey was carried out by CPCB on the sewage generation from Class–I and Class–II towns of the country and capacity available for its treatment. As per the report published

by CPCB in March 2015, it was estimated that around 61,948 million litres per day (mld) sewage is being generated from these towns against which total sewage treatment capacity available was 23,277 mld, or only 37% of the sewage generation.

The cities and the towns have not created adequate systems for sewage collection and its treatment and thus untreated waste water either goes into rivers or lakes or remains inundated on land causing ground water contamination. CPCB also carries out studies on status of pollution in rivers from time to time and identifies the critically polluted river stretches in the country. As per the latest CPCB Report published in February 2015, 302 polluted river stretches have been identified on 275 rivers.

Water being a State subject, it is the responsibility of the State Government/ concerned local bodies to set up proper facilities for collection, transportation and treatment of sewage being generated and ensure that untreated sewage does not fall into the rivers thereby polluting them. Steps required to be taken for control of pollution of rivers include:

- Untreated sewage shall not be disposed into the river or at any other recipient system.
- Local/urban body to set up Sewage Treatment Plants (STPs) of adequate capacity and provide sewerage system to cover the entire local/ urban areas and to ensure complete treatment of sewage generated.
- In case of disposal of effluents on land or river or any water body, the treated effluent should meet the designated standards.
- Existing STPs shall be properly maintained to comply with the standards.
- There is need to reduce the water foot print, for example, exploring the conservation possibility of water in the agriculture sector by adopting efficient irrigation system.
- Adequate flows in the rivers streams is a sine qua non sustenance of aquatic bio-diversity. This calls for lesser extraction and augmentation of river flow. Efforts to be made to re-use, recycle and reduce sewerage through best practices. This will help fresh water conservation in rivers. Treated water can be used for agriculture, pissiculture and make up water for industries.

3.16.2 NATIONAL RIVER CONSERVATION PLAN

Background: Accessing the magnitude of problems the Central Government took initiative of river pollution abatement programme with the launching of the Ganga Action Plan (GAP) in 1985. The Ganga Action Plan was expanded to cover other rivers under National River Conservation Plan (NRCP) in the year 1995. The objective of NRCP is to improve the water quality of rivers, which are major water sources in the country, through implementation of pollution abatement works in various towns along identified polluted stretches of rivers on cost sharing basis between the Central and State Governments.

The pollution abatement works taken up under the NRCP include:

- Interception and diversion works/ laying of sewerage system to capture

raw sewage flowing into the rivers through open drains and diverting them for treatment.

- Setting up of Sewage Treatment Plants (STPs) for treating the diverted sewage.
- Construction of Low Cost Sanitation Toilets to prevent open defecation on river banks.
- Construction of Electric Crematoria and Improved Wood Crematoria to conserve the use of wood.
- River Front Development works, such as improvement of bathing ghats.
- Public participation and awareness and capacity building, etc.

Presently NRCP (excluding Ganga and its tributaries) has covered polluted stretches of 34 rivers in 77 towns spread over 16 States at a sanctioned cost of Rs.5,965.90 crore. An amount of Rs.2,603 crore has been released to various State Governments for implementation of various pollution abatement schemes and a treatment capacity of 2,522.03 million litres per day (mld) has been created so far under NRCP (excluding Ganga and its tributaries).

The following rivers are covered under NRCP:

Sl. No.	River	Sl. No.	River
1	Adyar	18	Nambul
2	Beas	19	Pennar
3	Bhadra	20	Pamba
4	Brahmani	21	Panchganga
5.	Cauvery	22	Rani Chu
6	Cooum	23	Sabarmati
7	Devika	24	Satluj
8	Diphu & Dhansiri	25	Subarnarekha
9	Ghaggar	26	Tapti
10	Godavari	27	Tapi
11	Krishna	28	Tunga
12	Mahanadi	29	Tungabadra
13	Mandovi	30	Tamrabarani
14	Mindhola	31	Tawi
15	MulaMutha	32	Vaigai
16	Musi	33	Vennar
17	Narmada	34	Wainganga

From 01.08.2014, works related to Ganga and its tributaries were transferred to the then Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD & GR). Accordingly, the rivers namely Ganga, Yamuna, Gomti, Damodar, Mahananda, Chambal, Beehar, Khan, Kshipra, Betwa, Ramganga and Mandakinihave been shifted to MoWR, RD & GR along with the National Mission for Clean Ganga (NMCG). The Central Government has, vide Notification No. 1763 dated 14th June, 2019, further amended the Government of India (Allocation of Business) Rules, 1961, transferring NRCD including NRCP from Ministry of Environment, Forest and Climate Change (MoEF&CC) to the DoWR, RD&GR under the newly constituted Ministry of Jal Shakti for implementation of works in respect of pollution abatement of rivers other than Ganga and its tributaries under the NRCP.

3.16.2.1 Major works taken-up under National River Conservation Plan (Non-Externally Aided Projects)

i) **Pollution Abatement of Rivers Satluj, Beas & Ghaggar in Punjab:** Under Phase–I of NRCP, pollution abatement works in 6 towns namely Ludhiana, Jallandhar, Phagwara,

Phillaur, Kapurthala and Sultanpur Lodhi amounting to Rs.215.71 crore were sanctioned for pollution abatement of rivers Satluj and Beas. Under these projects, 8 STPs having total capacity of 461.2 mld have been created in the above mentioned towns. These STPs are being maintained by the State Government agencies, as operation and maintenance of the assets created under NRCP is the responsibility of the concerned State Governments and their agencies.

Under Phase–II of NRCP in Punjab, works for pollution abatement of rivers Satluj& Beas amounting to Rs. 501.61 crore in 11 towns have been sanctioned and the targeted STP capacity of 187 mld has been created. These towns are Banga, Bholath, Dasuya, Hoshiarpur, Moga, Mukerian, Nawanshehar, Tanda as well as the Phase-I towns of Phagwara, Phillaur and Jalandhar.

Projects amounting to Rs. 57.10 crore have also been sanctioned for pollution abatement of river Ghaggar in 4 towns, namely Patran, Moonak, Lehragaga and Khanauri and creation of 15 mld treatment capacity has been created under these projects.

ii) **Sabarmati River Conservation Project at Ahmedabad, Gujarat :** For conservation of river Sabarmati in Ahmedabad, projects amounting to Rs. 365.01 crore were sanctioned under Phase-I of NRCP works. All the works sanctioned under this Phase stand completed and a total sewage treatment capacity of 232 mld has been created in 2 STPs alongwith other sewerage infrastructure facilities, including community toilet complexes at various locations in the town.

The ongoing Sabarmati River Conservation Project Phase–II at Ahmedabad has been sanctioned at a cost of Rs.444.44 crore. Under this phase, works related to laying of new sewers, strengthening/rehabilitation of the existing sewerage system, construction of sewage pumping stations. Under the project, a STP of 48 mld has already been commissioned against the treatment capacity of 210.5 mld was envisaged.

iii) **Pollution Abatement of River Mindhola at Surat, Gujarat:** Under the project for 'Conservation of river Mindhola at Surat', works relating to sewerage networks, sewage pumping stations along with creation of sewage treatment capacity of 53 mld has been sanctioned at a cost of Rs.262.13 crore. Under the project, a STP of 53 mld has already been commissioned along with other sewerage infrastructure facilities and river front development works.

iv) **Pollution Abatement of Rivers in Odisha and Coastal area of Puri, Odisha:** For pollution abatement of rivers Mahanadi and Brahamini in the towns of Cuttack, Talcher, Chandbali and Dharamshala, projects at a total cost of Rs. 12.29 crore stand sanctioned under NRCP. The works sanctioned under the project pertain to interception and diversion of sewage, sewage treatment plants (STPs), low-cost sanitation, bathing ghats and improved wood crematoria. Sewage treatment capacity of 33mld

in Cuttack has also been created, apart from other municipal infrastructure works. For pollution abatement of coastal area in the town of Puri, a project amounting to Rs. 80.45 crore has been sanctioned under NRCP.

v) **Pollution Abatement of Rivers Devika & Tawi at Udhampur, Jammu and Kashmir:** The Project of was sanctioned in September, 2018 at an estimated cost of Rs.186.74 crore. Major components proposed under the project include laying of sewer lines 129.27 km length, setting up 3 Sewage Pumping Stations and construction of 3 Sewage Treatment Plants (STPs) of 13.60 million litres per day (mld) capacity.

vi) **Pollution Abatement of River Mula-Mutha at Pune, Maharashtra (Externally Aided Projects):** The project has been sanctioned in January, 2016 at a cost of Rs.990.26 crore. Loan assistance of 19.064 billion yen is being provided by Japan International Cooperation Agency (JICA) for the project. The project cost will be shared between Government of India and State Government/Pune Municipal Corporation (PMC), the implementing agency for the project, in 85:15 ratio respectively. The project is scheduled for completion by January, 2022.

vii) **Measures for improved implementation**: Several measures have been taken to improve implementation of projects under NRCP, which include; (i) Signing of Tripartite Memorandum of Agreements (MoAs) with the State Governments/Urban Local Bodies, (ii) Independent Appraisal of Detailed Project Reports by reputed professional/ academic institutions, (iii) Third Party Inspection for projects.

viii) **New Initiative under NRCP:** To evaluate the performance, pilot/ demonstration projects for in-situ treatment of sewage flowing in drains through bio-remediation have been set up at Budha Nala in Ludhiana (Punjab) using Green Bridge Technology, and at Bakarganj Nalla in Patna using Eco-Bio Block technology. Similarly, under the Indo-Japan bilateral cooperation programme, a pilot-cum-research project using Down Hanging Sponge system (DHS) for treatment of effluent from sewage treatment plant based on Upflow Anaerobic Sludge Blanket (UASB) technology was implemented at Agra in collaboration with a number of Japanese and Indian universities/ orgainisation, Under the project a 5 mld UASB-DHS system has been constructed in the premises of 78 mld STP at Agra.

In order to broad base the activities under NRCP and amalgamate biodiversity conservation and stakeholder participation in the river conservation process, WII (Wildlife Institute of India) has been entrusted to carry out a biodiversity study for six rivers, Mahanadi, Narmada, Godavari, Periyar, Cauvery & Barak. The first 5 rivers were mentioned in the address of Hon'ble President to the Joint Session of the Parliament in June, 2019.

3.17 GROUND WATER MANAGEMENT & REGULATION (GWM&R)

The scheme GWM&R aims at ascertaining ground water quality and quantity Preparing Aquifer Maps and Management Plans and improved information on ground water availability & sustainability. The scheme is being implemented for execution of project relating to Ground Water Management and Regulation for better ground water governance. This covers the National Aquifer Mapping Programme (NAQUIM).

As a part of the NAQUIM, during 2020 following major scientific data generation activities were carried out:

i. Construction of exploratory bore-holes: 1950

ii. Geophysical investigations: 470 vertical electrical electrical soundings (VES), 28 geophysical loggings and 54.4 km resistivity profiling

iii. Hydrochemical studies: Around 20,000 ground water samples have been analysed for basic constituents and heavy metals.

iv. A report titled "Uranium occurrence in shallow aquifers of India" has been prepared by the Board based on analyses of nearly 14,300 ground water samples analysed for uranium concentration in different parts of the country during 2019-20.

3.18 RIVER BASIN MANAGEMENT (RBM)

River Basin Management (RBM) consists of two broad components namely Brahmaputra Board and Investigation of Water Resources Development Scheme (IWRDS). IWRDS is being implemented by (i) National Water Development Agency (NWDA) and (ii) Central Water Commission (CWC).

Under this scheme, Brahmaputra Board is carrying out works of –

(a) Survey, investigation and preparation of Master Plan,

(b) Preparation of DPR of Multipurpose Projects

(c) Drainage Development Schemes

(d) Anti-erosion works including protection of Majuli Island, Balat Village in Meghalaya, Mankachar and Masalabari area in Assam etc from flood and erosion and

(e) Construction of Raised Platforms.

4

INTER-STATE RIVER ISSUES

4. INTER-STATE RIVER ISSUES

4.1 INTER-STATE RIVER WATER DISPUTES ACT, 1956

4.1.1 INTER-STATE RIVER WATER DISPUTES (AMENDMENT) BILL, 2019

The Inter-State River Water Disputes (Amendment) Bill, 2019 has been considered and passed by Lok Sabha on 31.07.2019. Subsequently, the Bill is to be considered in Rajya Sabha.

The Bill seeks to establish a single tribunal in place of multiple tribunals by way of amending the existing Inter-State River Water Disputes Act, 1956 (ISRWD Act, 1956) for adjudication of inter-State river water disputes in a time bound manner. A new tribunal with permanent establishment and its own permanent office space and infrastructure will obviate the need for establishing a separate tribunal for each water dispute, a process which has invariably been found to be time-consuming. Hearing of any dispute referred to the new tribunal can proceed without the start-up delays. In case of any vacancy or absence of a member of the bench of the new tribunal, work can continue uninterrupted by virtue of the provision for assigning his work to some other member of the tribunal till a new member is nominated by the Chief Justice of India and he assumes his charge in the new tribunal. Also, the time period for submission of report under section 5(2), which at present is three years extendable by two years, is proposed to be reduced to two years extendable by one year. Further, most of the work of the tribunal would get completed with the submission of the report and the decision given by the tribunal under Section 5(2) of the Act and only some explanation and guidance are required to be given under Section 5(3) of the Act. It is considered necessary that the time for giving 'Further Report' be restricted to a maximum of one and a half year.

Enactment of the above amendments will facilitate faster adjudication of water disputes and establish a robust institutional architecture for the purpose. Constitution of a single tribunal with different benches as envisaged in the proposed amendment will also result in about 25% reduction in staff and the consequent reduction in expenditure.

4.2 INTER-STATE WATER DISPUTES TRIBUNAL

4.2.1 MAHANADI WATER DISPUTES TRIBUNAL

The Government of Odisha had filed a complaint dated 19.11.2016 under section 3 of Inter-State River Water Disputes

Act, 1956 read with Inter-State River Water Disputes Rules, 1959. The State of Odisha requested to Union Government for constitution of a tribunal under section 4(1) of the Inter-State River Water Disputes 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 to refer the complaint to the tribunal under section 5(1) Inter-State River Water Disputes Act, 1956.

The Central Government has constituted Mahanadi Water Disputes Tribunal vide Gazette of India Notification No.114(E) dated 12.03.2018 with the headquarter at New Delhi for adjudication of the said disputes consisting of the following members nominated in this behalf by the Chief Justice of India, namely,

1. Mr. Justice A.M. Khanwilkar, Judge of the Supreme Court of India [Chairman]
2. Dr. Justice Ravi Ranjan, Chief Justice of Jharkhand High Court, Ranchi [Member – 1]
3. Mrs. Justice Indermeet Kaur Kochhar, Judge of the Delhi High Court [Member – 2]

Progress in Adjudication of the Disputes before Mahanadi WDT: 18 hearings of the tribunal have taken place till date out of which 8 hearings have been held in the year 2020-21 i.e. on 01.02.2020, 11.07.2020, 08.08.2020, 29.08.2020, 03.10.2020, 07.11.2020, 05.12.2020 and 16.01.2021. Except the hearing held on 01.02.2020, which was physical, hearings in the year 2020-21 have been held virtually through video conferencing.

The Tribunal, in the hearing held on 29.08.2020, has framed broadly 46 issues to adjudicate the matter. Further, the exercise to finalize the common data format meant to provide the necessary data by the party States to the tribunal is underway. Parallelly, the party States through various IA's have approached the tribunal for issuing necessary orders to the non-applicants (central agencies) to provide requisite data/information/ documents on the matter. The central agencies have been made necessary parties for this limited purpose and notices have been issued to these non-applicants. The exercise of collection of data from the non-applicants and forwarding the same to the party States is in progress.

Expenditure incurred by the Tribunal: -

Sl. No.	Specifications	(Rs. in lakhs)
1	Budget Allocation for 2020-21 (revised)	355
2	Expenditure from 04/2020 to 12/2020	188
3	Cumulative Expenditure upto 31/12/20 [since inception of the Tribunal]	274

4.2.2 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 of 01.02.2006. Consequently, the

term of the tribunal was extended upto 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 KWDT-II under Section 5(2) of the Act. Thereafter the party States - Andhra Pradesh, Karnataka and 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 Central Government. Arguments were advanced on behalf of the party States and Central Government on the dates of hearing before the tribunal. The tribunal concluded hearing of 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 Government and the respective party States under Section 5(3) of the Act for their information and implementation.

Meanwhile, as per Andhra Pradesh Re-organization Act, 2014(6 of 2014), the term of the tribunal was extended for two years with effect from 1st August, 2014 for forwarding 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. The tribunal after hearing the parties delivered its decision on 19.10.2016 on the preliminary issues relating to jurisdiction and scope of section 89 of Act No.6 of 2014.

After decision on preliminary issues, parties filed their pleadings on merit of the case. On completion of pleadings, issues on merits were framed and the parties adduced their evidence and have examined witnesses in support of their case. The cross-examination of witnesses of the State of Andhra Pradesh has concluded. Now the cross examination of the witnesses of State of Telangana is going on. On close of evidence of witnesses of Telangana, the parties will start their arguments. The term of the Tribunal has been extended for a further period of one year with effect from 01.08.2020.

Expenditure incurred by the Tribunal:

Sl. No.	Specifications	(Rs. in lakhs)
1.	Budget Allocation for 2020-21	383
2.	Expenditure from 4/20 to 12/20	220
3.	Cumulative Expenditure up to 31/12/2020	3113

4.2.3 VANSADHARA WATER DISPUTE TRIBUNAL (VWDT)

Hon'ble Supreme Court had directed Central Government to constitute the Vansadhara Water Disputes Tribunal before February, 2010. The tribunal was notified on 24.02.2010 under the chairmanship of Mr. Justice B.N. Agrawal with Mr. Justice Nirmal Singh and Justice B.N. Chaturvedi as its members. Mr. Justice B.N. Agrawal and Mr. Justice Nirmal Singh resigned from the posts of chairman and member of the tribunal, respectively. Thereafter, the Central Government nominated Dr. Justice Mukundakam Sharma as chairman of the tribunal who took over charge of the post on 17.09.2011 and Mr. Justice

Ghulam Mohammad as member of the tribunal who took over charge of the post on 08.04.2012.

Further, Hon'ble Supreme Court vide its order dated 13.12.2013 in I.A. No. 7 in Writ Petition (Civil) No. 443/2006 had 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 Hon'ble Supreme Court dated 13.12.2013, the Central Government vide S.O. 778(E) dated 14.03.2014 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 17thSeptember, 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 , 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 Hon'ble Supreme Court.

The Tribunal submitted its report in three 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 filed explanatory/guidance applications on 11thDecember, 2017 and 12th December, 2017, respectively under section 5(3) of the Inter-State River Water Disputes (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 the date of such reference i.e. from 11.12.2017.

The Tribunal heard the submission of the parties on 22.01.2019, 05.03.2019, 06.03.2019, 03.04.2019, 04.04.2019 and 05.04.2019. The next hearing of the Tribunal was scheduled to be held on 09.07.2019. In the meantime, on 08.07.2019, State of Odisha filed an application for modification of the Tribunal's order dated 05.04.2019. On 09.07.2019, the tribunal took up the said I.A. for hearing and directed the parties to complete the pleading. On 27.08.2019, the tribunal, after hearing the parties, reserved its order on I.A. 1/2019. On 23.09.2019, the tribunal pronounced its order dismissing the I.A. and directed to list the main matter on 10.01.2020 for further direction.

In the meantime, the State of Odisha filed a Special Leave Petition before Hon'ble Supreme Court against the order dated 23.09.2019 passed by the tribunal. On 10.01.2020, while taking note of this fact, the tribunal directed the matter to be listed on 30.03.2020 for hearing the issues arising out of section 5(3) applications filed by the State of Odisha and the Union of India.

Expenditure incurred by the Tribunal

Sl. No.	Specifications	Rs. in lakhs
1	Budget Allocation for 2020-21	748.00
2	Expenditure upto 31st December 2020	294.10
3	Cumulative Expenditure upto December, 2020	3555.69

4.2.4 MAHADAYI WATER DISPUTES TRIBUNAL

Government of India, under section 3 of the Inter-State River Water Disputes Act 1956, constituted a tribunal on 16.11.2010 known as Mahadayi Water Disputes Tribunal (MWDT) for adjudication of water disputes relating to the inter-State river Mahadayi and the river valley thereof among the States of Goa, Karnataka and Maharashtra. The tribunal comprises a chairman and two members.

The Tribunal, after completion of the procedure for examination of all the evidence, prepared its award and forwarded it to the Hon'ble Union Minister for Water Resources, River Development and Ganga Rejuvenation on 14.08.2018, thus accomplishing the task for which it was constituted. However, on 20.08.2018 the State of Goa filed an application under section 5(3) of Inter-State Water Disputes Act with additional affidavit. The State of Goa, thereafter, on 20.09.2018 filed a detailed application under section 5(3) of the Act seeking clarifications on certain points in the Award dated 14.08.2018. The States of Maharashtra and Karnataka also filed their respective applications under section 5(3) of the Act on 05.11.2018 and 13.11.2018, respectively.

References have been filed by all the three party States as well as by the Central Government under section 5(3) of the Inter State Water River Act 1956. Further, against the main Award dated 14.08.2018 all the three party States have preferred appeals before Hon'ble Supreme Court of India.

The financial expenditure of the Tribunal for the year 2020-21 are as under:

Sl. No.	Specification	(Rs in lakhs)
1.	Budget allocation for 2020-21	305 (RE)
2.	Expenditure incurred by the tribunal from 01.04.2020 to 31.12.2020	224
3.	Anticipated expenditure of the tribunal from 01.01.2021 to 31.03.2021	81

4.2.5 RAVI & BEAS WATERS TRIBUNAL

The Ravi and Beas Waters Tribunal was set up in the year 1986 as per sub-section (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 of Punjab, Rajasthan and Haryana. The tribunal submitted its report on 30.01.1987.

The Government of Punjab 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 made a reference to Hon'ble Supreme Court of India regarding the constitutional validity of the Act. The Presidential reference No.1 of 2004 under article 143(1) of the Constitution of India was disposed of by Hon'ble Supreme Court

of India vide judgment dated 10.11.2016. In its Order, the Supreme Court has answered in 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.

Consequently, the period for passing further order on the reference pending before the tribunal has been extended upto 5th August 2021. Hon'ble Justice Ashok Bhushan, Judge of the Supreme Court of India has been appointed as the tribunal's chairman and Hon'ble Justice Suman Shyam, Judge of Guwahati High Court has been appointed as its member vide gazette notification S.O. 2444(E) published on 27th July 2020. Now, the tribunal has its full strength of a chairman and two members.

The financial expenditure of the tribunal for the year 2020-21 is given in the following table:

Expenditure incurred by the Tribunal

Sl. No.	Specification	(Rs in lakhs)
1.	Budget Allocation for 2020-21 (BE)	141.13
2.	Budget Allocation for 2020-21 (RE)	139.00
3.	Expenditure incurred by the Tribunal 2020-21 (upto Dec., 2020)	82.50

5

INTERNATIONAL COOPERATION

5. INTERNATIONAL COOPERATION

5.1 BILATARAL COOPERATION

DoWR, RD & GR has signed Memorandum of Understanding (MoU) with different countries on cooperation in the field of water resources management and development.

The Memorandum of Understanding (MoU) between India and Australia has been signed in May 2020 on cooperation in the field of water resources management for a period of five years.

The first phase of India European Water Partnership concluded on 30th October 2020 and Phase-2 has started from 1st November 2020 for the next three years. Under Phase-I, the key deliverables included development of Tapi River Basin Management Plan, development of a 'Guidance for E-Flows Assessment', advisory support to NMCG on the Development of the Water Information System Ganga, development of handbook for interpretation and analysis of isotope data in India and development of approach to assess possible impacts from solar pumping on groundwater quantity/quality among others.

For effective implementation of activities under various MoUs, Joint Working Group meetings were held with Israel, The Netherlands, Australia, and Hungary via virtual platforms.

5.2 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 effective joint efforts in maximizing the benefits from common river systems. It is headed by Water Resources Ministers of both the countries.

The India-Bangladesh Water Resources Secretary level meeting under the framework of the Joint Rivers Commission was held on 16th March, 2021 at New Delhi. The Indian delegation was led by Shri Pankaj Kumar, Secretary (DoWR, RD&GR) and the Bangladesh delegation was led by Mr. Kabir Bin Anwar, Senior Secretary, Ministry of Water Resources, Government of the People's Republic of Bangladesh. Both sides agreed to expand cooperation across entire gamut of water resources issues, including framework for sharing of river waters, mitigation of pollution, river bank protection, flood management and basin management. A Joint Technical Working Group will provide inputs in this matter. The discussions were substantive and held in a cordial atmosphere. Both sides agreed to schedule the next round of Water Resources Secretary Level meeting under JRC framework at Dhaka at mutually convenient dates.

India-Bangladesh Water Resources Secretary level meeting under the framework of the Joint Rivers Commission was held on 16th March 2021 at New Delhi

5.2.1 TREATY ON SHARING OF GANGA/ GANGES WATERS AT FARAKKA

A Treaty was signed by the Prime Ministers of India and Bangladesh on 12thDecember, 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 73rd and 74th meetings of Joint Committee including field visit at Joint Hydrological Observation site at Farakka were held at Kolkata during 25-27 February, 2020. The "Ganga Water Treaty of 1996" with Bangladesh is being implemented to the satisfaction of both the countries since 1997.

India-Bangladesh 74thmeeting of the Joint Committee held at Kolkata on 27th February, 2020

The 75th India-Bangladesh Joint Committee (JC) meeting as per provisions of "Ganga Water Treaty-1996" was held on virtual platformon 5th January, 2021 for the finalisation of Annual Report on sharing of the Ganga/Ganges waters at Farakka for the lean season of the year 2020. A Technical Level Meeting (TLM) of India and Bangladesh was also held on virtual platform on 6th January, 2021. The delegation on the Indian side was headed by Shri Atul Jain, Commissioner (FM) & Member, Joint Rivers Commission and the Bangladesh delegation was headed by Mr. Md. Mahmudur Rahman, Member, Joint Rivers Commission, Bangladesh.

5.3 INDIA – NEPAL COOPERATION

5.3.1 PANCHESHWAR MULTIPURPOSE PROJECT

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. The Pancheshwar Development Authority (PDA) was also set up with approval of both the Governments in September, 2014. The project would provide hydro energy to stabilize the power grid in the region and address water deficit by long distance water transfer in due course.

The Indo Nepal Bilateral Meeting of Pancheshwar Development Authority (PDA) was held during 28th and 29th December 2020 in New Delhi, India. The Indian delegation was led by Shri U.P. Singh, Secretary, DoWR, RD & GR, and Co-Chairperson of Governing Body (GB), PDA. The Nepalese delegation was led by Mr. Dinesh Kumar Ghimire, Secretary, Ministry of Energy, Water Resources and Irrigation (MoEWRI), Government of Nepal, and Co-Chairperson of GB, PDA.

5.3.2 SAPTAKOSI 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 SaptaKosi 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.

5.4 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, alternately in both the countries. Government of India takes up relevant issues relating to trans-border rivers with the Chinese side through this Expert Level Mechanism. Twelve meetings of ELM have been held so far. The 12th meeting was held during 12-13th June, 2019 at Ahmedabad, India wherein Implementation Plan of provision of hydrological information of the river Yaluzangbu/Brahmaputra was signed for five years. The next (13th) meeting of ELM was proposed to be held in China. India and China have also signed a Memorandum of Understanding (MoU) on Provision of Hydrological Information on Brahmaputra River in Flood Season in 2002 which was renewed in 2008, 2013 and 2018.

Further, another MoU for the provision of hydrological information of the LangqenZangbo/Sutlej River in Flood Season by China to India was signed in 2005 and was renewed in 2010 and 2015 for another five years. The hydrological information received from the Chinese side is utilized in the formulation of flood forecasts by the Central Water Commission. Renewal of this MoU is under process through diplomatic channels. Besides above, the Chinese side shared the hydrological data on Brahmaputra river from three hydrological stations in Tibet Autonomous Region, TAR (China) viz Nugesha, YangcunandNuxia twice a day from 15.05.2020 till 15.10.2020 regularly at 08:00hrs and 20:00hrs (China time zone) and Tsada hydrological station on Sutlej River in Tibet Autonomous Region, TAR (China) regularly, twice a day from 01.06.2020 till 15.10.2020 at 08:00hrs and 20:00hrs (China time zone).

5.5 INDIA – BHUTAN COOPERATION

To address the problem of floods created by the rivers originating from Bhutan and coming to India, the matter was taken up with the Royal Government of Bhutan. A Joint Group of Experts (JGE) on flood management was accordingly constituted between India and Bhutan in 2004 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. Nine meetings of JGE have been held so far. The first meeting of JGE was held in Bhutan from 1st-5th November, 2004 and the 9th meeting was held during 7-8 January, 2020 at Punakha, Bhutan. A Joint Technical Team (JTT) on Flood Management between the two countries was constituted to assess the field situation and provide technical support to JGE on flood management. JTT

held its first meeting in 2005 and the last 6th meeting of JTT was held during 12-13 September, 2019 at Jalpaiguri, India. The next meeting of JTT is scheduled to be held in Bhutan.

DoWR, RD & GR is also operating a separate scheme for setting up of flood forecasting system on rivers common to India and Bhutan run by DoWR, RD & GR in Bhutan for the development of mutual cooperation between the two countries in the field of hydro-meteorological data collection and flood forecasting activities on rivers common to India and Bhutan. The present network in Bhutan comprises 32 hydro-meteorological sites on common rivers flowing from Bhutan to India for this work. The data received from these stations are utilized in India by the Central Water Commission for formulating flood forecasts. A Joint Expert Team (JET) consisting of officials from the Government of India (GoI) and the Royal Government of Bhutan (RGoB) meets twice in year to review the progress and other requirements of the scheme. The last 35thJET meeting was held at Paro (Bhutan) during 6-7March, 2019. The 36thmeeting is proposed to be held in India.

5.6 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).

116th meeting of the India-Pakistan Permanent Indus Commission

The Annual Meeting of the Permanent Indus Commission (PIC) comprising Indus Commissioners of India and Pakistan was held on March 23-24, 2021 in New Delhi. Under the provisions of the Indus Waters Treaty, signed between India and Pakistan in 1960, the two Commissioners are required to meet at least once every year, alternately in India and Pakistan. The meeting could not be held last year due to restrictions induced by the prevailing Covid 19 pandemic situation. Discussions continued on designs of two Indian projects, namely, PakalDul (1,000 MW) and Lower Kalnai (48 MW). Indian side held that these projects are fully compliant with the provisions of the Treaty and provided technical data in support of its position. Pakistan side requested India for sharing of information on design of other Indian hydropower projects being planned to be developed. Indian side assured that the information will be supplied as and when required to be supplied under the provisions of the Treaty. The meeting was held in a cordial manner. Both the Commissioners reaffirmed their commitment to interact more frequently in an attempt to resolve the issues by bilateral discussions under the Treaty. It was agreed to hold the next meeting of the PIC in Pakistan on mutually convenient dates.

In fulfillment 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 2019-20 for the Indus, the Jhelum and the Chenab basin had been compiled and sent to Pakistan as per the provisions of Indus Waters Treaty during November, 2020.

Extra ordinary flood flow data for agreed sites on the rivers Ravi, Sutlej, Tawi and Chenab was also communicated by India to Pakistan as per the provisions of Indus Waters Treaty through telephone during 01stJuly to 10th October, 2020 to undertake advance flood relief measures.

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

- Durbuk Shyok HEP (19MW) in Leh Ladakh.
- Magdam Sangra in Lakkakh Shankoo HEP (18.5 MW) in Leh Ladakh.
- Shankoo HEP (18.5 MW) in Leh Ladakh
- Nimu Chilling HEP (24MW) in Leh Ladakh
- Ans-II HEP (23MW) in Reasi, Jammu, J&K.
- Kargil-Hunderman HEP (25MW) in Kargil Ladakh
- Rongdo HEP (12 MW) in Leh, Ladakh.
- Ratan Nag HEP (10.5 MW) in LehLadakh.

Pong Dam Oustees

The 26th meeting of the High Powered Committee (HPC) under Chairmanship of Secretary (D/o WR,RD &GR) constituted for looking into the issues of rehabilitation & resettlement of Pong Dam Oustees was held on 01.02.2021 at New Delhi.

6

EXTERNAL ASSISTANCE IN WATER RESOURCES SECTOR

6. EXTERNAL ASSISTANCE IN WATER RESOURCES SECTOR

The DoWR, 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. Brief of these ongoing externally aided projects being implemented in various States of the country with the assistance from different funding agencies is given in the table below:

Sl. No.	Funding Agency	Name of State	Name of Project	Effective date/ Closing date	Project cost	Loan amount	State Govt share	Cumulative Disbursement
1	World Bank (WB)	Andhra Pradesh	Andhra Pradesh Integrated Irrigation and Agriculture Transformation Project	5.11.2018/ 31.10.2025	USD 245.9 M	USD 172.21 M	USD 73.70 M	USD 28.40 M
2	WB	Tamil Nadu	Tamil Nadu Irrigated Agriculture Modernization Project	23.01.2018/ 02.06.2025	USD 455.8 M	USD 318 M	USD 137.8 M	USD 97.86 M
3	WB	Uttar Pradesh	Uttar Pradesh Water Sector Restructuring Project, Phase-2	24.10.2013/ 31.03.2021	USD 515 M	USD 360 M	USD 155 M	USD 218.73 M
4	WB	CWC, Madhya Pradesh, Odisha, Kerala, Tamil Nadu, Karnataka, Uttarakhand & DVC	IN (IBRD): Dam Rehabilitation and Improvement Project	18.4.2012/ 30.6.2020	₹ 2642 crore	₹ 1873.9 crore (disbursed so far)	₹ 190.5 crore (disbursed so far)	₹ 1873.9 crore
5	ADB	Assam	Assam Integrated Flood and Riverbank Erosion Risk Management Investment Program Phase-2	13.12.2018/ 18.02.2021	USD 67.53 M	USD 49.16 M	USD 18.37 M	USD 36.009 M
6	ADB	Karnataka	Karnataka Integrated & Sustainable Water Resources Management Investment Program-2	24.1.2020/ 31.3.2024	USD 130 M	USD 91 M	USD 39 M	USD 7.856 M

Sl. No.	Funding Agency	Name of State	Name of Project	Effective date/ Closing date	Project cost	Loan amount	State Govt share	Cumulative Disbursement
7	ADB	Karnataka	Sustainable Coastal Protection and Management Investment Program-2	15.12.2017/ 28.09.2020 (financial closure 27.01.2021)	USD 74.95 M	USD 47.50 M	USD 27.46 M	USD 61.69 M
8	ADB	Madhya Pradesh	Madhya Pradesh Irrigation Efficiency Improvement Project	22.11.2018/ 21.11.2026	USD 464.28 M	USD 325 M	USD 139.28 M	USD 118.70 M
9	ADB	Tamil Nadu	3394-IND: Climate Adaptation in Vennar Sub-basin in Cauvery Delta Project	14.07.2016/ 30.06.2021	USD 144 M	USD 100 M	USD 44 M	USD 70.77 M
10	JICA	Andhra Pradesh	Andhra Pradesh Irrigation & Livelihood Improvement Project Phase-2	06.07.2018/ 31.07.2025	₹ 2000 crore	₹ 1683 crore	317 crore	₹ 60.68 crore
11	JICA	Odisha	IDP-244: Rengali Irrigation Project Phase -2	14.7.2015/ 14.7.2026	JPY 42,850 M	JPY 33,959 M	JPY 8,891 M	JPY 2,350,921,701
			ID P-244A: Rengali Irrigation Project, Phase-2					JPY 488,002,263
12	JICA	Rajasthan	IDP-259: Rajasthan Water Sector Livelihood Improvement Project Tranche-I	26.10.2017/ 26.10.2024	₹ 1069 crore	₹ 908.94 crore	₹ 160 crore	₹ 465.40 crore
13	NDB	Rajasthan	Rajasthan Water Sector Restructuring Project in Desert Area Tranche-I	31.3.2018/ 12.8.2023	₹ 958 crore	USD 100 M	₹ 287 crore	USD 73.94 M

The details of these projects are as under,

6.1 ANDHRA PRADESH INTEGRATED IRRIGATION AND AGRICULTURE TRANSFORMATION PROJECT

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 and improving livelihoods of farmers and other rural communities in Andhra Pradesh.

Progress of work:

- The loan is effective from 27-12-2018.
- Budget allocated for the year 2020-21 is ₹ 174.83 crore, expenditure incurred is ₹ 3.80 crore up to 31.01.2020. Bills pending for clearance are 37.23 crore.
- Project Implementation Plan, Baseline Report, ESMF and Project Manuals are prepared.
- External Monitoring & Evaluation Agency is engaged.

- 13 Support Organizations are providing support to WUAs in projectimplementation.
- 693 Civil works covering 1,000 MI tanks rehabilitation are proposed. 17 civil works covering 20 MI tanks of value Rs. 17.38 crore duly stabilizing an ayacut of 4,580 acres are completed. 193 works covering 330 tanks costing Rs. 308.51 crore are under progress.
- Administrative approval accorded for another 229 works out of which tenders are invited for 183 works and agreements are concluded for 41 works costing Rs. 27.38. Letter of Acceptance issued for 52 works and bid evaluation under progress for 90 works.
- 72 Piezometers drilled to take up PGM activities.
- Certified seed, foundationseed, greenmanure seed distributed in 2,270 ha.
- 122 farmer groups identified and trainings conducted on agricultural activities. Area expansion of horticultural crops in 342 ha., canopy management in 362 ha., water soluble fertilizers in 238 ha, permanent pandals in 1,913 ha., ICM & INM in 1,210 ha, fruit cover activities in 1,120 ha of horticulture crops were carried out.
- Administration approval accorded to establish 37 captive fish seed nurseries; 3 fish seed hatcheries and 1 fresh water brood bank. Agreement concluded for modernization of one fish seed hatchery.
- Administration approval accorded to construct one Water Users Association building.
- The website www.apcada.in/APIIATP/is designed and developed for the Project APIIATP and is in operation
- To enable real time progress monitoring and to help track and manage project activities at component level, tank level, district level and state level, computerized and web enabled MIS and GIS system is developed, and GIS Mobile App is developed.

6.2 TAMILNADU IRRIGATED AGRICULTURE MODERNISATION PROJECT PHASE - 2

Objective of the project:

To enhance productivity and climate resilience of irrigated agriculture, improve water management and increase market opportunities for farmers and agro-entrepreneurs in selected sub-basin areas of Tamil Nadu.

The project is proposed to be implemented in 66 sub-basins excluding the areas already covered under Tamil Nadu Irrigated Agriculture Modernization and Water Bodies Restoration and Management Project.

Progress of works:

a) Irrigation and water management

The project supports rehabilitation and modernization of 4,778 tanks (including 57 floods affected tanks) and 477 anicuts. Rehabilitation of all 57 flood-affected tanks has been completed. Out of 1,325 Phase-1 tank systems, rehabilitation works have been completed for 1,322 tanks and out of 107 anicuts rehabilitation of

102 anicutswere completed. In Phase-II sub basins, out of 906 tank systems, 74 have been completed and out of 181 anicuts, 16 were completed. The works in other systems are in progress.

b) Agriculture Productivity Enhancement, Diversification, Improved Livelihoods, Marketing and Value Addition

The project has continued promoting and disseminating several climate smart technology packages to farmers in support of intensification and diversification. Total area under various interventions stands at 24,648ha spread across the 18 Phase-I sub-basins and 18,517 ha under phase-II sub basins. 26 FPOs have been formed in Phase-I sub basins.A consulting firm for setting up of 24Farmers Producers Organization (FPO) in Second Phase sub basins is now onboard and all the FPO has been formed.

6.3 UTTAR PRADESH WATER SECTOR RESTRUCTURING PROJECT PHASE-2

Objective of the Project:

- Strengthening of institutional and policy framework for integrated water resource management for the entire State.
- Increase agricultural productivity and water productivity by supporting farmers in targeted irrigation areas.

Status of Progress of Project:

- Modernization and Rehabilitation of Parallel Lower Ganga Canal System.
- Agreements signed for lining work of parallel Lower Ganga Canal (10 packages) for Rs.1,104.65 crore. Present physical progress is 97.84% and financial progress is Rs. 1,099.05 crore.
- Rehabilitation of Haidergarh Branch System (Sarda Sahayak) has been completed.
- Rohini Dam canal system's physical works have been completed.
- 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, Rapti & Gandak) – All River Basin Plans have been duly endorsed by GOUP. The work is completed.
- Establishment of Flood Management Information System (FMIS) – Work is completed, FMIS centre has been established, requisite 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 and barrage site is completed. All the instruments are deployed and have started sending data.
- 1,150 DWLR, telemetry on existing piezometers completed. Target of 100 Deep Special Monitoring Wells has been achieved. 196 Medium and

Shallow Special Monitoring Wells have been completed.

- Target for establishment of 4,000 Farmer Water Schools (FWSs) has been achieved. FWS Impact assessment report of 4,000 FWS has been submitted and is under review.
- To manage canal water resources through WUAs under PIM Act, WUAs have been established at respective Minors for equitable water distribution. WALMI enhanced the capacity of engineers on PIM through training, workshops and exposure visits. 723 out of 746 WUAs are functional.

6.4 DAM REHABILITATION & IMPROVEMENT PROJECT (DRIP)

Government of India is cognizant of the need for large-scale renovation of the country's dams and safeguarding country's precious water infrastructure. In April 2012, Ministry of Water Resources, River Development & Ganga Rejuvenation through Central Water Commission with an objective to improve safety and operational performance of selected dams, along with institutional strengthening with system wide management approach, embarked upon the six-year Dam Rehabilitation and Improvement Project (DRIP) with World Bank assistance. Details are covered in Chapter 3.

6.5 ASSAM INTEGRATED FLOOD AND RIVERBANK EROSION RISK MANAGEMENT INVESTMENT PROGRAM (AIFRERMIP), PHASE-2

Objective of Project: The project aims to enhance sustainable and inclusive economic growth in flood prone areas along the Brahmaputra River in Assam covering three districts.

Work Progress:

Package No.	Name of sub project	Name of Package	Awarded amount (INR)	Physical Progress up to Feb 2021		Financial Progress up to Feb 2021	
				In %	INR	In %	INR
D1	Dibrugarh	River Bank Protection Works from Rohmoria to Nagaghuli (2700m)	11,21,51,918.00	98	10,99,08,879.64	56.72	6,36,11,309.00
D2		Rehabilitation of Oakland dyke (9100m)	18,47,02,321.00	94	17,36,20,181.74	83.13	15,35,49,821.00
D3		River Bank Protection works along DTP dyke (1.05km)	9,98,22,549.00	70	6,98,75,784.30	40.33	4,02,59,863.00
D4		Pro Siltation measures with PSC Porcupine (Lot-5) Screens in the critical section of the river Brahmaputra in DTP dyke area	26,68,42,925.00	100	29,68,42,925.00	91.68	27,21,47,380.00

Package No.	Name of sub project	Name of Package	Awarded amount (INR)	Physical Progress up to Feb 2021		Financial Progress up to Feb 2021	
				In %	INR	In %	INR
K1	Kaziranga	Construction of Sluice Gate there (3) nos. And Bank Protection Work at Kaziranga reach (4km)	25,30,14,965.78	100	25,30,14,965.78	93.02	23,53,61,372.00
K2		River Bank Protection Works at Kaziranga (Pro-Siltation measures with PSC Porcupine at vulnerable area of River Bank of Brahmaputra	13,80,73,141.00	100	13,80,73,141.00	82.37	11,37,33,588.0
K3		Emergency Rehabilitation of Brahmaputra Dyke at Kaziranga	25,20,15,345.82	100	25,20,15,345.82	88.93	22,41,13,149.00
P1	Palsbari Gumi	Bank protection works from Guimara to mnakadhuj in Palasbari area (from cb. 3000m to 6400m) including rehabilitation of a spur	39,25,80,708.00	93	36,51,00,058.44	83.02	32,59,03,764.00
P2		Bank protection works from Dekhala to Guimara in Palasbari area (from chainage 0-3000m) including rehabilitation of a spur	32,82,23,959.28	87	28,55,54,844.57	71.06	23,32,23,443.00
G1		Bank protection at Gumi (barchuta area 1.20 Km)	6,37,84,914.46	100	6,37,84,914.46	85.67	5,46,47,045.00
G2		Bank protection at Gumi (Taparpathar area 5000m)	26,65,41,447.60	100	26,65,41,447.60	91.87	24,48,84,030.00
M1	All 3 Sub projects	Supplying 400 GSM polypropylene Geotextile bags and Special Sewing Thread	87,53,55,719.64	100	87,53,55,719.64	91.75	80,31,63,227.00

Package No.	Name of sub project	Name of Package	Awarded amount (INR)	Physical Progress up to Feb 2021		Financial Progress up to Feb 2021	
				In %	INR	In %	INR
AWC-2	Baristha	Interior works and institutional setup	15,73,00,000.00	93	14,62,89,000.00	80.96	12,73,50,698.00
AWC-1		Civil works (Trache-I = 15.81 & Tranche-II = 15.87)	15,87,00,000.00	100	15,87,00,000.00	71.96	11,42,01,051.00
		Emergency works	20,65,59,173.96	99.20	20,49,06,700.57	94.35	19,48,84,030.00
Total			**3,78,56,69,088.54**		**3,65,95,83,908.56 (97%)**		**3,20,10,33,770.00 (85%)**

6.6 KARNATAKA INTEGRATED & SUSTAINABLE WATER RESOURCES MANAGEMENT INVESTMENT PROGRAM-2

Objective of the project:

- The tranche-I of the project envisages modernization of Vijayanagar Channel System and taking up Integrated Water Resources Management (IWRM) components in K8 sub-basin of Krishna River Basin. Vijayanagar Channels Irrigation System is a set of 16 channels with a total command area of about 11,222 ha and is spread across Koppal, Ballari and Raichur Districts of Karnataka.
- The program also envisages preparation of River Basin Profile for K-2, K-3 & K-4 sub-basins in Karnataka and River Basin Atlas for Ghataprabha and Malaprabha sub-basin.
- The program continues the capacity building and training of WRD staff in IWRM as done in Tranche-1.

Status of physical and financial progress:

- Modernisation works are taken up in two packages. First package of the modernisation works is awarded at Rs. 371.09 crore and is under progress.
- At present, 17.61 km out of 126.91 km of canals on the right of Tungabhadra River and 11.16 km of 69.71 km of canals on the left of Tungabhadra River are lined. 90 out of 581 structures on canals on the right of Tungabhadra River and 34 out 461 structures on canals on the left of Tungabhadra River are completed.
- The second package consisting of works in Tungabhadra Otter Conservation Reserve and Hampi Heritage Area will be taken up after clearance from National Board for Wildlife.
- Command Area Development (CAD) works will be taken up as Community Participation Packages (CPPs) in the around 30 Water Users' Cooperative Societies (WUCS) under Vijayanagar Channels command area. At present WUCS are being trained and sensitized about IWRM and about the program.
- As of 31.12.2020 an expenditure of Rs. 86.78 crore is incurred and a reimbursement of Rs.56.86 crore is received from ADB.

6.7 SUSTAINABLE COASTAL PROTECTION AND MANAGEMENT INVESTMENT PROGRAM (SCPMIP) – 2(KARNATAKA)

Objective:

The program aims to address the immediate coastal protection needs and coastal instability using environmentally and socially appropriate solutions; through economically viable long term sustainable protection works for identified sites of Karnataka, which are severely affected by beach erosion or flooding causing loss of livelihoods, public property and land.

Work Progress:

Loan 3549: Sustainable Costal Protection and management Investment Program, Project 2 (MFF 0049)/Physical and financial Status as on 28-02-2021

Sl. No.	Name of the Work	Name of Agency	Estimate Amount (in crore)	Agreement Amount (in crore)	Revised Agreement Amount (in crore)	Financial Progress (in crore)	Remarks
1	UDYAVARA construction of 35 rock groynes and beach nourishment	M/s. Yojaka Comacoe- RDS (JV)	99.85	78.44	64.03	64.02	Work completed
2	MARAVANTHE construction of 24 groynes and sand re- distribution	M/s. Comacoe-RDS- Yojaka (JV)	92.23	88.27	72.36	67.52	Work completed
3.	KODI BENGRE Rehabilitation of 4.1 km rock revetment	M/s RCCL & Dharti (JV)	75.88	61.39	72.64	72.45	Work completed
4.	1.5 Km Dune Planting Community Awareness and Trainings on Maintenance of Plantation and Nurseries	Sri Annapoorneshwari Nursery and farm	0.97	0.96	0.96	0.82	Work completed
5.	SOMESHWARA-Phase-l Construction of 10 Groynes	M/s Dharti Dredging Infrastructure Limited	32.15	27.29	26.33	23.58	Work completed
6	YERMAL THENKA Rehabilitation of 4.1 km rock revetment	M/s Sripathy Associates	53.22	40.32	45.07	43.21	Work completed
7	MUKKACHRY Rehabilitation 0.750k.m seawall	M/s Rccl&Dharti (JV)	20.19	22.08	24.82	24.72	Work Completed
8	SOMESHWARA-Phase 2 Construction of 2 offshore reefs and beach nourishment	M/s DVP Infra Projects Pvt Ltd. RDS Projects Ltd (JV)	108.80	104.82	109.95	83.19	North reef work completed and South Reef: Placing of tetra pods and beach nourishment work is under progress

Sl. No.	Name of the Work	Name of Agency	Estimate Amount (in crore)	Agreement Amount (in crore)	Revised Agreement Amount (in crore)	Financial Progress (in crore)	Remarks
9	Community subproject A	M/s Ramalingam Construction company Limited (RCCL)	10.55	8.76	8.76	0.78	As per the DPR, 6.5Km due construction was proposed. CRZ Clearance was obtained for 1.825km. 1.525Km of Dune construction is under progress and plantation is to be done.
10	Community Sub-project B		20.96	17.77	17.77	1.99	As per the DPR, 13.5 km due construction was proposed. CRZ Clearance was obtained for 4.1 km. 1.175 km of Dune construction is under progress and plantation is to be done.
11	Consultancy	M/s FCG ANZDEC LTD	16.34	49.27	49.27	45.49	Consultancy services completed on 28.09.2020.
12	Others		10.64	21.50	21.50	11.69	Paid towards survey, equipment and processing fees to obtain CRZ Clearances.
	TOTAL		**571.78**	**499.36**	**513.46**	**439.46**	

6.8 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.

Progress of work:

There are two large design, build and operate (DBO) contracts under implementation – one each for left and right bank irrigation systems. The current overall physical progress in the left bank and the right bank contracts are 61% and 54% respectively. The ongoing physical works in both the contracts include construction of pump houses, approach channels,

distribution chambers, laying of main and distributary pipelines, transmission lines and conduct of stakeholders' awareness and training programs to encourage rapid uptake of micro-irrigation by farmers after commissioning.

6.9 CLIMATE ADAPTATION IN VENNER 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 Venner sub-basin of the Cauvery Delta in Tamil Nadu.

Progress of Work:

Sl. No.	Work	Value in Rs. crore	Year of completion	Physical Progress (%) (as on 31.12.2020)	Financial Progress (%)
1.	Vellaiyar River	178.17	2021	65%	81%
2.	Pandavaiyar	100.80	2021	99%	
3.	Harichandranathi	257.74	2021	84%	
4.	Adappar River	168.35	2021	77%	
5.	Valavanar Drain	44.62	2020	100%	
6.	Vedharanyam Canal	32.18	2020	100%	
7.	Pumping Scheme	14.59	2020	100%	
8.	Other Activities	164.21	---	73%	

6.10 ANDHRA PRADESH IRRIGATION AND LIVELIHOOD IMPROVEMENT PROJECT-PHASE II

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 and improving livelihoods of farmers and other rural communities in Andhra Pradesh.

Progress of works:

- Major/Medium Irrigation Sub projects: Administrative sanctions have been accorded for 20 major/ medium irrigation sub-projects. Tenders have been called for 19 major/ medium irrigation sub-projects, out of which works are under progress in 14 sub-projects.
- Minor Irrigation sub projects: Administrative sanction has been issued for 337 tanks out of 445 minor irrigation tanks. Out of 337 tanks, tenders were finalized for 233 tanks. Works are in progress.
- Institutional arrangement: Staff in PMU has been deployed. PMC (Nippon Koei Ltd) has been actively participating in the activities of the project. Agency has been selected to carry out baseline survey.
- Participatory Irrigation Management (PIM) Project information collected for 306 WUAs out of 445 WUAs and project wise data base uploading is in process. 83 micro plans were prepared covering medium and minor irrigation projects. Trainings were conducted for 650 farmers in Participatory Irrigation Management, 332 farmers in Participatory Micro Planning, 409 members of irrigation and other line department staff on the project components.

- Promotion of Farmers Producers Organizations (FPOs): Steps are being taken to promote 20 FPOs in this project.
- Livelihood support program:(1) Animal Husbandry - Beneficiary identification is completed and technical sanctions are given for grounding of activities.(2) Fisheries - 4 captive seed nurseries are sanctioned in Guntur District for an amount of Rs 51.81 lakhs.
- Pilot programs:
  - **a) Food Value Chain:** Pilot Project Implementation Consultancy (PPIC) has been deployed to assist in implementing food value chain activities. Baseline survey completed. Productivity and quality enhancement activities are under process.
  - **b) AMTC:** Suitable sites have been identified to establish 2 AMTC's in the State - one at Agricultural College at Naira, Srikakulam and the other one at Seed Multiplication Farm at Samarlakota of East Godavari District. DPRs are under preparation.

6.11 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 through improved farming technique and other related activities; thereby, contributing to improve living standard of farmers and socio-economic development of Odisha State.

Progress of civil works :

- Construction of main canal including distribution system works are being taken up under 17 packages.
- Of the 27 civil work packages, 4 packages were completed, 6 packages are under construction costing Rs.236.63 crore and the remaining packages are at agreement, tender and estimate stages.
- Land acquisition: Out of target of 2,932.39 acre, 2,084.14 acre has been acquired.
- The total CCA in Left Canal System is 1,14,300 ha. Area to be covered by Rengali Irrigation Project, Phase-2 (JICA Assisted) is 39,416 ha.

6.12 RAJASTHAN WATER SECTOR LIVELIHOOD IMPROVEMENT PROJECT TRANCHE-I

Objective of the project:

The objective of the project is to improve livelihoods of farmers as well as promote gender mainstreaming in agriculture and irrigation sector in the State of Rajasthan, by improving water use efficiency and agriculture productivity, through improvement of existing irrigation facilities and agriculture support services.

Status of civil works:

(i) Participatory Irrigation Rehabilitation Works

- A & F of Tranche-I amount of Rs 1,069.40 crore has been issued. 65 irrigation sub-projects in the 21districts of CCA 2.62 lakh will be rehabilitated under Stage-1.

- Out of 65 sub-projects, rehabilitation works of 7 sub-projects of CCA 43,000 ha amounting to Rs 101.20 crore have been completed.
- Rehabilitation works of 46 sub projects amounting to Rs 443.45 crore are in progress and tender of remaining 12 sub-projects of amounting Rs 152.87 crore is under process.
- After survey, investigation and design of 42 medium and minor irrigation sub-projects under Stage-2, DPRs will be prepared.

(ii) Fostering and Capacity Enhancement of Water Users Organizations

- The Rajasthan Farmer's Participation in Management of Irrigation Systems (RFPMIS) Act was passed by State Assembly and was enacted in 2000. RFPMIS Rules, 2002 were formulated and issued by State Government to implement provisions of Act.
- 214 WUAs are to be formed in 65 sub-projects. 185 WUAs have been formed. Formation of WUAs in remaining sub-projects is under process.
- Training to all members of management committee by IMTI and KVK is in progress.
- WUA task force has been formed in Water Resources Department for technical support and monitoring of WUA activities.
- Technical Support Groups at District level and Sub-Project Level have been formed to strengthen the technical support to the farmers in the command area of sub-project.

(iii) Improvement of Agriculture Practices and Marketing Capacity

- The project will support for promotion of micro irrigation system among the farmers. Top up subsidy from 5 to 25% for various items of micro irrigation system will be provided from project. The project support for individual based sprinkler and drip irrigation system is to be provided for area 10 to 12% of CCA.

Interventions	**Unit**	**Existing Assistance (DoA-DoH)**	**Proposed top up Assistance (RWSLIP)**
Farm Pond	1 No	60%	15%
Diggies- Gang Bhakra	1 No	75%	0%
Diggies- Other area	1 No	75%	10%
Solar Pump	Nos	60/ 75 %	15-0%
Micro Irrigation Drip/ Mini sprinkler	1 ha	50-70%	25-5%
Micro Irrigation Sprinklers	1 ha	50-60%	25-15%
Pipe line	1No	50%	25%

- In the FY 2020-21, micro irrigation facilities to the farmers of command area of 22 sub-projects of Stage -1 will be provided. Budget of Rs 51.27

crore for top-up subsidy have been provided to Department of Agriculture & Department of Horticulture.

- For promoting high-value added agricultural produces, market-oriented target crops production in specific area as well as enhancement of bargaining power of farmers: Farmer's Interest Group (FIG) and Farmer Producer Organisation (FPO) will be promoted under the project.
- Demonstrations farms for Orange, Kinnu and Exotic Vegetables are being established by Krishi Vigyan Kendra for specific agriculture technique to improve quality.
- Training for specific cultivation techniques of cereals, pulses, oilseed, spices and medical plants are being provided to farmers by Krishi Vigyan Kendra.

(iv) Gender Mainstreaming in Agriculture and Water Sector

- The project has focus on the roles of women and their responsibility in agriculture and irrigation and has tried to accelerate the participation of women in irrigation development.
- Amendment in Rajasthan Farmer Participation in Management of Irrigation System Act, 2000 has been passed for gender mainstreaming.
- Gender Advisory Groups (GAG) have been formed for monitoring and advising on activities related to gender mainstreaming under the project.
- WUA Women wings are to be formed at each sub-project level. 98 Women wings of WUA have been formed. Training and support from project to women wings are in progress.
- In addition to smooth implementation of micro irrigation system agriculture related activities, which would be helpful in additional income generation and sustainability of women wing of WUAs viz. (a) development of small nursery, (b) bee hives, (c) HDPE Vermi bed, (d) PHM / processing units, and (e) organic farming have also been proposed.
- Training to Self-help Groups already formed by RAJEEVIKA under project area has been started for vegetable cultivation for cash and vegetable cultivation for nutrition with support from RAJEEVIKA.

Interventions	Unit	Existing Assistance (DoA- DoH)	Proposed top up Assistance (RWSLIP)
Small Nursery	1 ha	50%	25%
Bee hives	20 colonies	40%	35%
HDPE Vermibed	1 No	50%	25%
PHM/Processing unit	1 No	40%	25%
Organic Farming	1 ha	50%	25%

6.13 RAJASTHAN WATER SECTOR RESTRUCTURING PROJECT IN DESERT AREA TRANCHE - 1

Objective of the project:

The project envisages 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. This is to be achieved by strengthening/capacity building of water user associations, improving command area development activities including micro irrigation, irrigated agriculture intensification and diversification, fostering and capacity building of institutions.

Progress of works:

Name of component	Main components of the works	Total quantity as per agreement	Planned Quantity (as per milestones set for the Project up to Dec.,2020)	Cumulative Achieved quantity	% achieved of total quantity
Extension, Rehabilitation Modernization (ERM) works, Indira Gandhi Feeder (IGF) and IGMC	Earthwork (unit-cum)	15135337	9764210	9510886	62.84
	Production of concrete (unit – cum)	335909	250618	208457	62.06
	CC/PCC Block canal lining (unit – sqm)	11827747	6843671	7673661	64.88
	Brick masonry (unit- cum)	5355	5268	905	16.90
	Steel (unit – MT)	946	869	958	101.27
	Supply, install & fixing of Sluice regulator (unit-sqm)	316	316	101	31.96
	Construction of Reinforcement Cement Concrete for canal Structures (unit- cum)	11588	11588	11588	100.00

7

ORGANISATIONS AND INSTITUTIONS

7. ORGANISATIONS AND INSTITUTIONS

7.1 ATTACHED OFFICES

7.1.1 CENTRAL WATER COMMISSION (CWC)

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

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

Each wing is headed by a Member with the status of an ex-officio Additional Secretary to the Government of India. The activities of the wings are carried out by 18 functional units at the headquarters, each headed by a Chief Engineer. The Commission also has 13 Regional Organizations, each headed by a Chief Engineer. The National Water Academy, Pune headed by a Chief Engineer is also a part of the Commission. The main activities of CWC may be summarized as follows:

- Flood Forecasting and Assistance to State Governments in Flood Management
- Collection and Analysis of Hydrological Data
- Techno-Economic Appraisal of Projects
- Monitoring of Selected Projects including those receiving Central Assistance
- Planning & Design of Projects
- Surveys, Investigations and Preparation of Detailed Project Report (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

7.1.1.1 MAJOR ACTIVITIES

i) Hydrological Observations:

There is a network of 1,741 hydro-meteorological observation stations (including 193 exclusive meteorological stations) throughout

the country on all major river basins to observe water level (gauge), discharge, water quality, silt besides selected meteorological parameters including snow observations at key stations. The 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 and inter-State issues, river morphological studies, inland waterway development, reservoir siltation studies and research related activities, etc.

ii) Water Quality Monitoring:

Water quality is monitored at 658 key locations (625 on HO network and 33 Water Quality Sampling Stations) covering all the major river basins of India. In a three tier laboratory system, level- I laboratories located at field water quality monitoring stations with 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 physico-chemical characteristics and bacteriological parameters of water. 5 level-III 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. Apart from this, 13 more Water Quality Laboratories of CWC which are functioning under different Divisional Offices of CWC located at Hyderabad, Varanasi, Coimbatore, Bangalore, Agra, Kochi, Pune, Gandhinagar, Bhubaneswar, Nagpur, Lucknow, Jammu and Chennai have obtained NABL accreditation in chemical discipline.

iii) National Hydrology Project

Under National Hydrology Project, CWC has been allocated Rs. 198 crore. The major achievements/initiatives are as under:

- Finalization of hydro-meteorological network of various States
- Finalization of specifications of hydro-meteorological and survey equipments
- Finalization of reports on various modelling software's available worldwide
- Development and up gradation of old eSWIS into WIMS
- Finalization of RTDAS tender for all NE States except Assam
- Finalization of RTDAS tender for NCA

- Award of consultancy for Extended Hydrological Prediction (multi-week forecast) for three river basin namely; Yamuna, Narmada and Cauvery.
- Award of consultancy for sedimentation study in 7 river basins
- Purchase of 14 numbers of ADCP for modernization of discharge observations
- Award of contract for Reservoir Sedimentation and Bathymetric Survey of 32 reservoirs
- Study the issue of floods and siltation in river Ganga due to Farakka Barrage in the State of Bihar
- Modernization of training facilities in NWA Pune
- Modernization of water quality monitoring activity

iv) Survey and Investigation:

The survey and investigation of KalezKhola HE Project (Sikkim) has been completed. The survey and investigations for three other projects namely, Tawang HEP (Mizoram), Katakhal Irrigation Project (Assam) and Barinium HEP (J&K) are continuing. Further, DEM preparation for irrigation projects in Sitamarhi Distt. Bihar is completed.

A Joint Project Office for SaptaKosi, Sun Kosi Investigations (JPO-SKSKI) based in Biratnagar (Nepal) is carrying out surveys and investigations for preparation of DPR of SaptaKosi High Dam and Sun Kosi Storage-cum-Diversion Project jointly with Nepal for mutual benefit of both the countries.

v) Project Appraisal:

During the year 2020-21 (upto December 2020), technical examinations of 21 water resources projects (04 irrigation and 17 flood management) were completed and accepted by the Advisory Committee of DoWR, RD & GR. The irrigation projects accepted by the Advisory Committee would provide irrigation to 2,85,181 Ha area and flood management projects will provide protection to about 96.67 lakh persons and 4,92,226 Ha of land.

The appraisal of civil aspects including appraisal of cost estimates for 4 hydroelectric projects have been completed during the current year (upto December 2020). Other components of hydro-electric projects are appraised in Central Electricity Authority (CEA).

The Techno-Economic Clearance (TEC) to these projects is accorded by CEA. During the year, 2020-21 (up to December, 2020), no project has been accorded TEC by CEA.

A web-enabled Project Appraisal Management System (e-PAMS) has been developed by CWC for online submission and techno-economic appraisal of DPRs of irrigation and multipurpose projects submitted by the State Governments.

Presently, 12 irrigation projects and 6 flood projects have been submitted and are under appraisal on e-PAMS.

vi) Project Monitoring:

A three tier system of monitoring at Centre, State and Project level 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 2020-21, 47 (20 major and 27 medium) projects under general monitoring; 62 (40 major, 19 medium and 3 ERM) on-going projects under PMKSY-AIBP and 8 major & medium projects under Special Package to Maharashtra were monitored by CWC field units.

During 2020-21 (up to December, 2020), no monitoring visit was undertaken in respect of projects under general monitoring. 25 visits were undertaken and 22 status reports were issued for projects under PMKSY-AIBP and one monitoring visit was undertaken for projects under Special Package of Maharashtra.

vii) Morphological Studies:

Every year floods cause damage to life and property in spite of existing flood control measures taken both by Central and State Governments.

Consultancy works for morphological studies of 15 rivers (Ganga, Sharda, Rapti, Kosi, Bagmati, Yamuna, Brahmaputra, 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 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 of Kosi and Bagmati Submitted Final Report of Yamuna Submitted
3.	IIT Guwahati	Brahmaputra, Subansiri, Pagladiya	Final Report Submitted
4.	IIT Madras	Krishna, Tungbhadra	Final Report Submitted
5.	IIT Kharagpur	Mahananda, Mahanadi, Hooghly	Final Report Submitted
6.	SVNIT Surat	Tapi	Final Report Submitted

viii) Monitoring of Glacial lakes and water bodies:

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 to study, 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.

ix) Monitoring of E- Flow

The Government of India vide Gazette Notification dated 9th October, 2018, has notified the minimum environmental flows for river Ganga that has to be maintained at various locations on the river. The order applies to the upper Ganga River

Basin starting from originating glaciers and through respective confluences of its head tributaries finally meeting at Devprayag up to Haridwar and the main stem of river Ganga up to Unnao district of Uttar Pradesh. CWC has been entrusted the responsibility of monitoring the compliance by project authorities on maintenance of desired e-flows. Monitoring of e-flows is being carried by CWC since 1st January, 2019.

x) Hydrological Studies:

The success of a project is largely governed by the hydrological inputs. The Hydrological Studies Organization (HSO), a specialized unit under Design and Research (D&R) Wing of CWC, carries out hydrological studies for the water resources projects in the country. The inputs in Detailed Project Report (DPR) or Pre-Feasibility Report (PFR) stage are made available in the form of:

- Water availability/Yield Studies.
- Design flood estimation.
- Sedimentation studies.
- 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 sub-zone to compute the design flood in un-gauged catchments. So far, flood estimation reports covering 24 sub-zones have been published. During the year 2020-21 (up to December, 2020), technical examination of hydrological aspects of DPRs in respect of 62 projects has been carried out in CWC. Out of this, 35 projects have been cleared and comments were issued for 13 projects. In addition, CWC has also carried out Design Flood Review Studies of the 86 projects in the following States:

S. No.	Name of the State	No of Projects
1	Gujarat	6
2	Jharkhand	1
3	Kerala	23
4	Madhya Pradesh	6
5	Maharashtra	20
6	Odisha	2
7	Punjab	6
8	Rajasthan	9
9	Telangana	1
10	Uttar Pradesh	7
11	West Bengal	5

xi) Design Consultancy:

CWC is actively associated with design of majority of the mega water resources projects in India and neighboring countries viz. Nepal, Bhutan, Afghanistan, by way of design consultancy or in the technical appraisal of the projects.

At present CWC is providing design consultancy to 83 projects. Out of this, 28 projects (including 3 from neighboring countries) are at construction stage; 28 projects (including 5 from neighboring countries) are at DPR stage and 27 projects (including 4 from neighboring countries) involve special problems.

In addition to above, technical examinations of design aspects of DPRs of 72 hydro-electric/ irrigation/

flood management/ multi-purpose projects were also carried out during the year (till Dec 2020). These include 2 projects involving neighboring countries, namely, Indo-Nepal (1), Afghanistan (1). Out of these, DPRs of 18 projects have been cleared. DPRs of remaining 54 projects are at various stage of examination.

xii) National Register of Large Dams:

Dam Safety Organisation (DSO), CWC compiles and maintains the register of large dams across the country in the form of National Register of Large Dams (NRLD) based on information provided by State Govts./ PSUs. As per the latest information compiled under the National Register of Large Dams (NRLD) - 2019 maintained by CWC, there are 5,745 large dams in the country as on June, 2019. Out of these, 5,334 large dams have been completed and 411 large dams are under construction. The NRLD is available on CWC's website. National Register of Large Dams (NRLD)-2019 was released by Chairman, CWC on 27th June, 2019.

xiii) National Committee on Dam Safety (NCDS):

Ministry of Irrigation, Government of India constituted a Standing Committee under the Chairmanship of Chairman, CWC 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 (i) monitor the follow-up action on the report on Dam Safety procedures both at the Centre and at the State level; and, (ii) 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. The committee acts as a forum for exchange of views on techniques adopted for remedial measures to relieve distress in dams. So far 39 meetings of NCDS have been held. Last meeting was held on 12th February, 2019 at Bhubaneswar.

xiv) Dam Safety Bill:

The Dam Safety Bill 2019 has been passed in Lok Sabha on 2nd August, 2019. The Dam Safety Bill 2019, inter alia, provides for surveillance, inspection, operation and maintenance of the specified dams for prevention of dam failure related disasters and to provide for institutional mechanism to ensure their safe functioning and for matters connected therewith or incidental thereto. The Bill provides for the surveillance, inspection, operation, and maintenance of all specified dams across the country.

It envisages constitution of two national bodies: the National Committee on Dam Safety, whose functions include evolving policies and recommending regulations regarding dam safety standards; and the National Dam Safety Authority, whose functions include implementing policies of the National Committee, providing technical assistance to State Dam Safety Organisations (SDSOs), and resolving matters between SDSOs of states or

between a SDSO and any dam owner in that State. It also constitutes two State bodies: State Committee on Dam Safety, and State Dam Safety Organisation. These bodies will be responsible for the surveillance, inspection, and monitoring the operation and maintenance of dams within their jurisdiction. The Bill is likely to be introduced in Rajya Sabha.

xv) National Committee on Seismic Design Parameters

The National Committee on Seismic Design Parameters (NCSDP) was constituted through MoWR Order dated 21st October, 1991 with the objective to recommend the Seismic Design Parameters for the proposals received from the dam owners. Member (D&R), CWC is the chairman of the committee with 11 other experts from various engineering disciplines from different technical institutions and Government organizations as its members. Director, FE&SA, CWC is the member secretary of the NCSDP.

36th meeting of NCSDP was held on 14th August, 2020, wherein site specific seismic study report of a project was finalized by the committee.

Site specific study reports 9 river valley projects in various States namely, Bihar, Jammu & Kashmir, Jharkhand, Himachal Pradesh, Andhra Pradesh and Rajasthan and 1 river valley project named Shahtoot Storage Dam, in Afghanistan, have been examined and observation issued. Out of 10 projects, 1 project has been cleared and compliance of comments from project authorities is awaited in respect of the remaining projects.

xvi) Dam Break and Other Special Studies

Dam break analysis is carried out to prepare the inundation maps and disaster management plan in the unlikely event of dam failure. Dam Break Analysis (DBA) is also used to prepare Emergency Action Plan (EAP). It estimates the maximum water level, maximum water surface elevation and maximum velocity at the downstream locations of the dam in the event of a hypothetical failure of the dam. It also estimates the formation time of breach, arrival time of flood and time to reach peak. During the year 2020, dam break analyses of Bhakra Dam (Himachal Pradesh), Ram Ganga Dam (Uttar Pradesh), Sapan Dam (Maharashtra), Punatsangchu-I HEP (Bhutan) using 1D modelling have been carried out and report has been sent to project authorities. Dam break analyses of Sardar Sarovar Dam (Gujarat), Punatsangchu-I (Bhutan) using 2D modelling, Sankosh H.E.P (Bhutan), Lower Wunna Dam (Maharashtra), Upper Wardha Dam (Maharashtra) and Mulla-periyar Dam are under progress. Dam Break analyses of Jawahar Sagar Dam, Rana Pratap Sagar Dam and Gandhi Sagar Dam using cascading effect are also under progress.

GLOF Studies are carried out to account for the flood, resulting from the breach of moraine dams, in the design of the projects.

Backwater studies of reservoir are carried out to determine the possible

impact of reservoir on the areas close to the upstream which may be flooded because of the construction of the dam.

xvii) Technical Examination of Instrumentation aspects of the Projects

Detailed Project Report/Compliance Report of 5 river valley projects in Andhra Pradesh, Assam, Himachal Pradesh, J&K and Rajasthan, have been examined during 2020, out of which 2 projects have been cleared with respect to instrumentation aspects and observations for remaining 3 projects have been sent to the concerned project authorities for compliance.

During the year, consultancy services towards planning and preparation of instrumentation drawings / vetting of instrumentation drawings have been carried out in respect of Punatsangchu-II HE Project, Bhutan and Polavaram Irrigation Project, Andhra Pradesh.

7.1.2 CENTRAL SOIL AND MATERIAL RESEARCH STATION (CSMRS)

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 primarily functions as an adviser and consultant to the various Departments of Government of India, State Governments and Government of India Undertakings.

7.1.2.1 INVESTIGATIONS FOR PROJECTS

Thirty five projects, including four abroad and one in North-East region of India, were investigated. The investigations comprised field and laboratory investigations in the areas of soil, rock, rockfill, geosynthetics, concrete and its constituents.

The investigated projects are as under:

i) International Projects:

- Kholongchhu HE Project, Bhutan
- KuriGongri Project, Bhutan
- Shatoot H.E. Project, Afghanistan
- Punatsangchu-I H E Project, Bhutan

ii) Indian Projects:

Projects in North-East India:

- Myntdu Leskha Stage-II H E Project, Meghalaya

Projects in other parts of India:

- Adi Badri (Yamuna Nagar) Haryana
- Bowala Nand Prayag, Uttarakhand
- Bhaunrat Dam Project, UP
- Buxar - Koelwar Ganga Embankment Project, Patna, Bihar
- Chandil Dam Project, Jharkhand
- Damanganga-Vaitarna-Godavari intrastate link Project, Maharashtra
- Damanganga (Ekduare) Godavari intrastate link Project, Maharashtra
- Dam over Kalpong River, Khudirampur, Andaman & Nicobar Islands

- Devsari Hydroelectric Project, Uttarakhand
- Dibang Multipurpose Project, Arunachal Pradesh
- Ganga-Buxar Embankment Project, Bihar
- Gararda Dam Project, Rajasthan
- Icha Dam Project, Jharkhand
- Jharkhand Irrigation Scheme, Jharkhand (4 Dams-CWC, Faridabad)
- Jharkhand Irrigation Scheme, Jharkhand (8 Dams-CWC, Silchar)
- Khraswati Dam Project, Jharkhand
- Kanhar Irrigation Project, U.P.
- Luhri HE Project, Himachal Pradesh
- NathpaJhakri H E Project, Himachal Pradesh (SJVN)
- North Koel Project, Jharkhand
- Polavaram Project, Andhra Pradesh
- Tehri Pump Storage Project, Uttarakhand
- Rihand Dam Project, U.P
- Reservoir Schemes Project (CWC), Jharkhand
- Sardar Sarovar project, Gujarat
- Satyar Khad Minor Irrigation Project, Mandi (HP)
- Sirkari Bhyol Rupsiabagar HEP, Uttarakhand
- Sone Dam STG Link Canal Project, Bihar
- Vishnugad Pipalkoti HE Project, Uttarakhand
- Vyasi HE Project, Uttarakhand

Instrumentation for crack monitoring at Chandil Dam Project, Jharkhand

Bearing capacity test of foundation rock, Phina Singh Medium Irrigation Project, Himachal Pradesh

Concreting in progress and inspection of concreting at Polavaram Head Works, Andhra Pradesh

7.1.2.2 STANDING TECHNICAL ADVISORY COMMITTEE

The Standing Technical Advisory Committee (STAC) of CSMRS is an advisory body for guidance, scrutiny and review of technical matters of CSMRS. This committee also provides technical input to the Governing Council. The committee is headed by Member (D&R), Central Water Commission, New Delhi, and has a total strength of 15 members. The last STAC meeting (35th meeting) was held on 18th June 2020.

7.1.2.3 IMPORTANT ACHIEVEMENTS OF CMSRS DURING 2020-21

Success Indicators	Achievements (in numbers)
Technical reports brought out/published	38
Publication of Research Papers	27
Evaluation of Detailed Project Reports	06
Technical comments on compliance to DPR	29
Training programme organized	05

7.2 SUBORDINATE OFFICES

7.2.1 CENTRAL GROUND WATER BOARD (CGWB)

The Central Ground Water Board undertakes many scientific activities for exploration of groundwater sources, disposition and characterization of aquifers, assessment of groundwater resources, monitoring of water levels and quality, ground water management through demand and supply side interventions. Main activities of the Board are as follows:

i) National Aquifer Mapping and Management (NAQUIM) Programme

National Aquifer Mapping and Management (NAQUIM) Programme was initiated under Ground Water Management and Regulation (GWMR) scheme in the year 2012, with an objective of delineating and characterizing aquifers and developing management plans for enhancing the sustainability of ground water resources. Out of ~32 lakh sq km area of the entire country, an area of ~25 lakh sq km has been identified to be covered under aquifer mapping in phases.

As a part of the NAQUIM, during 2020 following major scientific data generation activities were carried out:

- Construction of exploratory bore-holes: 1950
- Geophysical investigations: 470 vertical electrical electrical soundings (VES), 28 geophysical loggings and 54.4 km resistivity profiling
- Hydro chemical studies: Around 20,000 ground water samples have been analysed for basic constituents and heavy metals.
- During 2020, a report titled "Uranium occurrence in shallow aquifers of India" has been prepared by the Board based on analyses of nearly 14,300 ground water samples analysed for uranium concentration in different parts of the country during 2019-20.

Findings of hydrogeological survey, water level monitoring, exploration including pumping tests, geophysical

investigations, water quality analysis are integrated for developing aquifer maps and management plans. During 2020 (Jan. 2020 to Dec. 2020), aquifer maps and management plans have been developed for an area of 2.88 lakh sq km. Since inception of the NAQUIM program (2012), an area of ~14.78 lakhs sq km has been covered. During the year 2020, one NLEC meeting (8th meeting) was held during 17th and 18th Dec 2020.

Final step in the process is dissemination of the outputs. Aquifer mapping reports are placed on website and reports are also shared with State Governments through the State Ground Water Coordination Committees (SGWCC). The interactions involve representation from panchayats, block and district level administration, NGOs, farmers, health and sanitation workers and other stakeholders. During 2020, 362 Public Interaction Programs (PIP) have been organized, with participation of around 3,000 persons, in different parts of the country. Notable outcomes of the NAQUIM study in respect of some of the States are briefly discussed below;

Kerala

During the Annual Action Plan 2020-21, Kerala Region has taken up aquifer mapping of the hard rock terrains of Malappuram and Wayanad Districts. Out of 3,266 sq km area, about 2,776 sq km area has been mapped and the aquifer management plan for 2,366 sq km area has been prepared. One of the dug wells in laterite aquifer affected by iron contamination is shown in figure 2 below,

Fig 1. Existing Vented Dam, at Malappuram.

Fig 2. Dug well tapping Lateritic Aquifer at Angadipuram (Affected by Iron contamination)

Karnataka

Micro level aquifer management plans were taken up in 12 taluks spread over nine districts of Karnataka (Tarikere and Kadur Taluk in Chikmagalur district, Gundlupet in Chamarajar District, Gadag and Ron in Gadag District, Lingasugur in Raichur district, Havi and Hanagal in Haveri Dustrict, Gauribidanur in Chikballapur district, Hassan, Hassan district, Hosadurga in Chitradurga district, Madhugiri in Tumkurditrict). Based on request from State government, CGWB carried out impact assessment study on water harvesting structures constructed under PMKSY-PDMC-OI by Watershed

Development Department of Government of Karnataka, in these 12 talukas.

The NAQUIM Report prepared for 78 talukas has been shared with State and district authorities. The reports are being used in preparing the Atal Jal Project by the State Government, particularly the Rural Development and Panchayati Raj Departments.

Maharashtra

The data and outcome of NAQUIM studies in Tapi Basin (covering 69 blocks of Amravati, Akola, Aurangabad, Buldhana, Jalgaon, Jalna, Dhule, Nandurbar, Nasik and Washim districts) was used for the filling the ground water characterization and risk assessment templates of 53 groundwater management units.

High Yielding Well at Katezari EW, Dhanora taluka, Gadchiroli District (aspirational area)

NHS Januray Monitoring at Dhamnand,RatnagiriDitrict, Maharashtra

Tamil Nadu

During 2020-21, NAQUIM studies are being carried out in 3 aquifer systems namely, Nambiyar, Kallar and ParambikulamAliyar (parts of Tirunelveli, Thoothukudi, Tiruppur and Coimbatore districts) comprising an area of 5,492 sq km.

Madhya Pradesh

As a part of the NAQUIM studies, 30 blocks (3 over-exploited, 2 critical, 12 semi-critical and 13 safe blocks) from seven districts of the State are being covered. General issues related to groundwater include decline in overall groundwater levels, concentration of fluoride in Dhar, Chhindwara and Shivpuri districts, and concentration of nitrate more than permissible limit (>45 mg/l) as patches in almost all districts of the State in the range of 50-85mg/l. Maximum concentration of nitrate 102mg/l is observed in Khargone district.

Rajasthan

NAQUIM studies were carried out in 5,020.65 sq km area covering all six blocks of Sawai Madhopur District, Rajasthan, which also includes 3 blocks in Atal Bhujal Yojna namely Sawai Madhopur, Khandar and Chauth ka Barwara. The ground water management plans were prepared for all the six blocks of the district with the objective to bring down their stage of ground water extraction.

Uttar Pradesh

Work done in Aspirational districts of Uttar Pradesh

- 62 Vertical Electrical Soundings carried out for ground water prospecting.
- 64 wells constructed in Fatehpur, Siddharthnagar, Balrampur, Shrawasti and Bahraich districts.

Telangana

Exploratory studies under NAQUIM in Gondwana Super Group in Komaram Bheem Asifabad district, Telangana State identified potential aquifer zones in depth range of 100-300 m with yield ranging from 400 to 2,160 lpm.

High Yielding well at KB Asifabad district, Telangana

Andhra Pradesh

Exploratory studies under NAQUIM in YSR Kadapa district of Andhra Pradesh identified potential aquifer zones (aquifer 1& 2) in the depth range of 200 m with yield ranging from 190 to 840 lpm.

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 91 investigations during January 2020 to December 2020.

iii) Ground Water Regime Monitoring

Ground water levels in the country are monitored through a network of about 23,000 Ground Water Observation Wells four times a year. The water levels monitoring, as per the schedule, were carried out during the months of January, April, May, August and November.

iv) Estimation of Ground Water Resources

Ground Water Resource Assessment is carried out jointly by State Nodal/ Ground Water Departments and Central Ground Water Board as per the methodology recommended by Ground Water Estimation Committee (GEC) 2015 once every three years. The previous Ground Water Resource Assessment was carried out as in 2017 and Ground Water Resource Assessment as in 2020 is currently in progress.

Ground Water Resource Assessment-2020 is being carried out through a web-based application "India-Groundwater Resourc Estimation System (IN-GRES)" developed by CGWB in collaboration with IIT, Hyderabad. The application provides a common and standardized platform for

GW Resource assessment of the entire country, thereby facilitating its pan-India operationalization.

v) Water Conservation/Artificial Recharge Initiatives

a) Water Conservation/Artificial Recharge initiatives in identified water stressed areas of nine over-exploited blocks falling in eight States i.e. Andhra Pradesh, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Telangana and Tamil Nadu have been taken up on pilot basis. The programme is being implemented in convergence with MGNREGA through technical support from CGWB. Work has been completed in Andhra Pradesh, Telangana and Tamil Nadu. In rest of the States the work is nearing completion.

b) Aquifer Rejuvenation through construction of suitable area specific Artificial Recharge structures in Aspirational districts - Aquifer rejuvenation project through Artificial Recharge (AR) has been implemented by CGWB in selected over-exploited blocks in the country. As a part of this, aquifer rejuvenation project has been initiated on pilot basis to assess the impact of artificial recharge on aquifer rejuvenation and resultant agro-economical improvements by constructing site specific artificial recharge structures. Artificial recharge structures have been constructed in parts of following three blocks of three Aspirational Districts of Maharashtra, Andhra Pradesh and Telangana State.

- Osmanabad Block, Osmanabad District, Maharashtra
- Pulivendula, YSR Kadapa, Andhra Pradesh
- Bachannapet, erstwhile Warangal, Telangana

Artificial Recharge structures constructed in aspirational districts

c) Bridge cum Bandhara in parts of Amravati and Wardha districts, Maharashtra State- Bridge cum Bandhara (BCB) have been

constructed in parts of Andhra Pradesh, Telangana and Maharashtra. The structure serves dual purpose of transportation as well as storage of water in the upstream side for drinking and irrigational needs besides other purposes such as ground water recharge. The five sites at which BCB have been constructed are-

- Sarwadi, Tehsil: Karanja, District: Wardha
- Deoli, Tehsil: Deoli, District: Wardha
- Jamni, Tehsil: Selu, District: Wardha
- Tiwasa, Tehsil: Tiwasa, District: Amravati
- AjraPhata, Tehsil: Samudrapur, District: Wardha

Bridge cum Bandhara

Sarwadi (Gates in closed position)

Jamni (Gates in open position)

vi) Rajiv Gandhi National Ground Water Training & Research Institute (RGNGWTRI)

Hon'ble Union Minister of Jal Shakti, Govt of India, Shri Gajendra Singh Shekhawat inaugurated the new building of Rajiv Gandhi National Ground Water Training & Research Institute (RGNGWTRI) at Raipur on 25.02.2020. The inaugural function was attended by Shri Sunil Kumar Soni, Hon'ble Member of Parliament from Raipur, Chhattisgarh, Shri U.P. Singh, IAS, Secretary, DoWR, RD & GR, Govt. of India and Shri G C Pati, Chairman, Central Ground Water Board.

During the period January, 2020 to December, 2020, 66 Training Courses (26- Tier I, 23- Tier II and 17- Tier III) were conducted by RGNGWTRI and 4,805 trainees (903- Tier I, 1474- Tier II and 2428- Tier III) got trained including 1,635 female participants. National Level training courses (Tier-I) were conducted at RGNGWTRI, Raipur. The State and Block Level training programmes (Tier-II and Tier-III) were organized by RGNGWTRI through the Regional Offices of CGWB. During Covid-19 period, RGNGWTRI has adopted online mode of training.

Summary of the training programmes conducted during 2020 are given as below.

Training Programmes	Total No. of Trainings Conducted	Total No. of Participants	Female participants
Tier – I (National Level)	26	903	225
Tier – II (State Level)	23	1,474	415
Tier – III (Block Level)	17	2,428	995
Total	**66**	**4,805**	**1,635**

vii) Mass Awareness Programme on Rainwater Harvesting-

Mass awareness programme on rain water harvesting and artificial recharge has been organized in Government schools/institutions. 240 such programs have been organized during 2020 in which nearly 36,000 students have participated.

viii) Central Ground Water Authority (CGWA):

CGWA has been entrusted with the responsibility of regulating and controlling ground water development and management in the country. Important activities of CGWA during the period mentioned are given below:

- **Notification of New guidelines dated 24/09/2020:** CGWA has notified its revised guidelines to regulate and control ground water extraction in the country on 24.09.2020. Guidelines primarily seek to regulate groundwater extraction for commercial usage. The guidelines have been prepared with an aim to streamline the existing procedure and make it more transparent
- **Processing of Applications for Grant / Renewal of No Objection Certificate (NOC) for Ground Water Withdrawal:** CGWA continued to evaluate applications from industries/ infrastructure units/ mining projects for grant of NOC for ground water withdrawal as per provisions of the extant guidelines. 2,496 new NOCs were issued during 2020-21 till 20th Jan 2021.
- **Monitoring of Compliance of Conditions Stipulated in the NOC:** In order to ensure compliance of the conditions of NOCs by proponents, site inspections were carried out by authorized officers of CGWA. Subsequently, show-cause notices were issued to units, which were not found to have fully complied with the NOC conditions. Orders for sealing of bore/tube wells and/or disconnection of electricity supply through the concerned DCs/ DMs were also issued in respect of units, which did not give satisfactory replies to the show-cause notices. Penalty was imposed under section 15 of EPA Act 1986 for non-compliance of NOC conditions.

7.2.2 CENTRAL WATER AND POWER RESEARCH STATION (CWPRS)

CWPRS has been working and providing specialized services through physical and mathematical model studies and field and 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.

7.2.2.1 AREAS OF EXPERTISE

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

i) **River Engineering**: Major studies related to river training and bank protection works, hydraulic design of barrages and bridges, measuring water and sediment discharge etc., are carried out under River Engineering studies. Significant studies during the period include:

- Studies for improvement and development of water transport facilities in river Jhelum.
- Studies for evolving suitable flood protection work along river Beas and its tributaries and also along river Chenab, J&K.
- Studies for the proposed river front development along river Howrah in Agartala.

ii) **River and Reservoir Systems Modelling**: Important studies related to flood estimation and forecast, reservoir sedimentation and water quality studies are carried out using mathematical models and field surveys are carried out under this discipline. Few significant studies during the period include:

- Storm water drainage studies for Navi Mumbai International Airport (NMIA), Navi Mumbai.
- Dam break analysis and providing inputs for emergency action plan for Gandhmala Reservoir (Kaleshwarm Project) near Gandhmalla village, Dist. Yadadri-Bhongir, Telangana.
- Dam break analysis of Kurumurthyraya reservoir for Palamuru Rangareddy Lift Irrigation Scheme (PRLIS), Telangana

iii) **Reservoir and Appurtenant Structures:** Hydraulic design for spillway and energy dissipation systems, reservoir sedimentation and flushing, water conductor system studies is carried out using physical and mathematical models. Sedimentation in reservoirs is also assessed through remote sensing. Few significant studies carried out under this discipline include:

- Hydraulic model studies for Kalapasar Dam spillway with downstream wave basin, Gujarat 1.50 scale 2-D sectional model
- Hydraulic model studies for the modified design of Teesta -IV Dam Spillway, Sikkim
- Hydraulic model studies for reservoir sedimentation of Kiru H.E. Project and Kwar H.E. Project, J&K
- Sluicing studies for Pakaldul H. E., J&K

iv) **Coastal and Offshore Engineering**: Major significant projects related to optimization of length and alignment

of breakwaters, jetties, berths, approach channel, turning circle etc. is undertaken for development of various ports and harbors under this discipline.

Major projects were carried out for the port development schemes of Mumbai port, Kamarajar Port, Vishkhapatnam port, Cochin port, Mormugao port, JNPT, ALHW, Kolkata port, V. O. Chidambarnar, Vadhwan port, and various fishing harbours in Karnataka, Kerala and Tamilnadu States.

v) **Foundation and Structures**: Laboratory and field test studies are carried out under this discipline to determine the soil, rock and concrete properties. Mostly the studies undertaken by this discipline pertain to dams, power plants etc. Major studies include:

- Determining in-situ strength parameters of masonry of Temghar Dam, Dist: Pune, Maharashtra.
- 2-D dynamic stress analysis by FEM stress of one deepest non overflow section of Bhasta Dam, Thane, Maharashtra.
- Analysis and interpretation of instrumentation data of power house, Indira Sagar H. E. Project, Khandwa (MP)
- 3D stress and stability analysis by FEM of one non overflow and one spillway block of Massanjore dam.

vi) **Applied Earth Sciences**: Important studies related to seismic surveillance of river-valley projects, controlled blasting studies for civil engineering projects, detection of seepage and engineering properties of structures using nuclear logging and geophysical methods are carried out for various dams, canals, nuclear and thermal power plants. Major studies carried out are indicated below :

- Vibration and sound level studies for Dudhganga Hydro Electric Power Station, Kolhapur, Maharashtra.
- Studies for conducting controlled blasting for deepening and creation of a navigational channel from MDL water front to offshore container terminal, Mumbai, Maharashtra
- Seismic hazard assessment of North East India.
- Micro earthquake study for Kirthai HEP, Kishtwar, J & K
- Site specific seismic design parameters for Damanganga (Ekdare) -Godavari Valley link project an intrastate link of Maharashtra
- Micro earthquake studies for Kuri-Gongri H. E. Project, Bhutan.

vii) **Instrumentation, Calibration and Testing Facilities**: Important studies related to installation and monitoring of instruments in dams, hydroelectric power plants etc.,

calibration of instruments and their testing are being carried out at CWPRS. Hydraulic instrumentation is being used for data acquisition on physical hydraulic models. Field data collection is being carried out for coastal parameters like water level, currents, wave-height etc. A Random Sea Wave Generation (RSWG) system is used for wave flumes and basins. Services of dam instrumentation are provided for prototype. Few important studies include:

- Bathymetry and sedimentation studies of Mahi Bajaj Sagar Dam, Banswara, Rajasthan
- Assessment of reservoir capacity and sedimentation studies using multi beam based survey along with single beam systems for Indira Sagar reservoir.
- Calibration of various types of current meters.
- Efficiency test of turbine unit (1 No) at Chiplima Power House of OPGCL, Odisha for M/s Voith Hydro Pvt. Ltd. Noida, UP, India
- Measurement of water discharge through penstocks of Koyna stage II and III generating units for MAHAGENCO, Pophali.

7.2.2.2 SIGNIFICANT ACHIEVEMENTS

i) Collaboration through MoU & MoA:

a) MoU between CWPRS, CWC and State Governments: MoU between CWPRS (as project executor), CWC (as project implementer) and the respective State Governments (as project facilitator) was signed on 06th January 2019 for implementation of the scheme of Coastal Management Information System (CMIS) at two sites in the States of Maharashtra (Northern region) and Gujarat (Southern region).

b) MoA between CWPRS & NHPC: MoA has been signed between CWPRS and NHPC Limited on 18th December 2020 for mutual cooperation in research, development and advisory services to NHPC in the area of expertise viz. spillways and energy dissipators, Control structure and water conductor system, sediment management, structural modelling and analysis, concrete technology, engineering seismology, vibration technology, geotechnical engineering, hydraulic machinery and cavitation, geophysics, isotope hydrology and dam instrumentation.

ii) Letter of Appreciation:

Received an appreciation letter from City & Industrial Development Corporation of Maharashtra (CIDCO) for successful completion of mathematical model studies for the development of Navi Mumbai International Airport at Panvel Creek. The studies to optimise safe gaurd elevation of international airport at Navi Mumbai (Panvel) under

extreme rainfall event of 26th July 2005/PMP from five rivers namely Gadhi, Kalundri, Taloja, Kasadi and Ulwe alongwith highest design tide from arabian sea was evolved using hybrid modeling technique (physical and mathematical) by optimising the dimensions of recourse channel of Ulwe river. It is informed by CIDOC that based on the recommendations of CWPRS, the Ulwe river re-course channel is functioning smoothly.

iii) Two patents have been applied with the following details :

Sr. No.	Year	Patent application number Indian Patents	Topic	Status
1.	2020	202041016472	Improved operation of reaction turbine and method for the same	Under the hearing stage and for disposal.
2.	2020	202021035700	By pass flow meter and the method for flow rate measure-ment through sloped pipelines and pen-stock	FER reply through the patent Attorney is under progress.

iv) Specific Technical Achievement

a) The application of Current Deflecting Wall (CDW) as a new technique was first time successfully introduced to improve the flow field all along the 8 km long berth/ container terminal in macro tidal region to make the development of mega port at Vadhavan, Maharashtra a techno-economically feasible development.

b) The in-house basic research carried out to minimise the sedimentation in semi-enclosed dock in macro tidal region by making the use of two CDWs as a KSO (Keep Sediment Out) technique is found to give promising results. This remedial measure happens to reduce sedimentation in semi-enclosed dock by about 30%.

c) Development of 10 e-modules of learning of hydro-met system. The e-modules were inaugurated by Shri Gajendra Singh Shekhawat, Hon'ble Union Minister, Ministry of Jal Shakti, on 06th November, 2019 during 2nd International Conference on 'Sustainable Water Management' under NHP.

d) Development of data logger room equipped with radar, ultrasonic and shaft encoder sensors for demonstration to State IAs under NHP.

v) ISO Certification

International Organization for Standardization (ISO) enables a consensus to be reached on solutions that meet both the requirements of research and the broader needs of the society. CWPRS has already been awarded **ISO 9001: 2015** by the ISO Certification Body. CWPRS has now also been awarded **ISO/IEC 17025: 2017**

for Testing and Calibration Laboratories on 10th November 2020.

7.2.3 GANGA FLOOD CONTROL COMMISSION (GFCC)

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 Commission has been assigned the following tasks:

- Preparation and updation of comprehensive plans for flood management of the river systems in the Ganga basin.
- Phasing/sequencing of programme of implementation of works included in the basin-wise plans.
- Providing technical guidance to the Ganga basin States, namely, West Bengal, Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Chhattisgarh, Madhya Pradesh, Delhi, Haryana, Himachal Pradesh and Rajasthan on flood management.
- According techno-economic appraisal and clearance to flood management schemes of the Ganga basin States with estimated cost of more than Rs. 12.5 crore and up to Rs. 25 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 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.

Achievements during 2020-21

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 18-21 October, 2020 and 29-31 October, 2020 respectively, held meetings and finalized the recommendations for flood protection works on these rivers to be taken up and completed in time bound manner.

ii) Updating of comprehensive Plan for Flood Management:

Comprehensive plans for flood management for all the 23 river systems of the Ganga basin were prepared between 1975 and 1990. The work of updating these comprehensive plans was taken up due to changes, additional information/data on hydro-meteorology and morphology in the basin in the subsequent years. All comprehensive plans except comprehensive plan for flood management for Kosi river system have been updated once. Second updating of 6 plans has also been completed. During the current year GFCC is in process of updating the comprehensive plan through State of the art technology under National Hydrology Project (NHP). In this regard GFCC has prepared Project Implementation Plan to become implementation agency under NHP.

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

Assessment of the adequacy of existing waterways activity started 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 Rudrapryag, e) Rudraprayag to Badrinath & Rudrapryag 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. Assessment study report for Haridwar to Rudrapryag, Rudraprayag to Badrinath & Rudrapryag to Kedarnath is under progress.

iv) Techno-economic Appraisal of Flood Management Schemes:

Techno-economic appraisal of flood management schemes of Ganga basin States is a continuing activity of GFCC. 77 flood management schemes were received in GFCC from Ganga basin States during 2020-21 including spill over projects from previous years, out of which 31 schemes were received in current financial year. 44 schemes were accorded techno-economic clearance, 8 schemes were dropped and 25 schemes are under examination in GFCC.

COMMITTEES

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

An India-Nepal Joint Committee on Water Resources (JCWR) headed by the Water Resources Secretaries of both the countries is functioning

with the mandate to act as umbrella committee for all other sub-committees and groups under it. Chairman, GFCC is a member of the JCWR. 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):

This Committee was constituted during the 3rd meeting of India-Nepal Joint Committee on Water Resources (JCWR) held from 29.09.2008 to 01.10.2008 in Kathmandu (Nepal). Chairman, GFCC is the Team Leader of Indian side of the Committee. 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:

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

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

Twelve meetings of JCIFM have been held. The 12th meeting of the Committee was held during 26-31 May, 2019 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 52nd meeting of Ganga Flood Control Commission (GFCC) was held on 3 June, 2019 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 com-

prehensive plans and other relevant issues were discussed.

7.2.4 BANSAGAR CONTROL BOARD (BCB)

Bansagar Control Board was set up vide Government of India, Ministry of Agriculture and Irrigation Resolution No.8/17/74-DW-II dated 30thJanuary, 1976. It was amended vide Resolution No.8/17/74-DW-II dated 28th March, 1978. This Resolution was in accordance with an agreement reached between the Governments of Madhya Pradesh, Uttar Pradesh and Bihar on 16th September, 1973 for sharing the waters of river Sone and the cost of the Bansagar Dam. The Union Minister of Jal Shakti 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 members. The expenditure on the office of the Board is met out of budge grant of Department of Water Resources and subsequently reimbursed by the three States of Madhya Pradesh, Uttar Pradesh and Bihar.

Bansagar Dam was raised to its full height along with erection of 18 Radial Crest Gates in June 2006. In 2020-21 the reservoir got filled up to Reservoir Level 341.64 (FRL) m on 02.10.2020.

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

Status of release of water to the beneficiary States from the Bansagar Dam (2019-20): As per the information provided by the Water Resource Department, Government of Madhya Pradesh, the total water released to the Sates of Madhya Pradesh, Uttar Pradesh and Bihar from November, 2019 to December, 2020 is 3508 M.Cum, 53.623 M.Cum and 299.989 M.Cum, respectively.

7.2.5 UPPER YAMUNA RIVER BOARD (UYRB)

Upper Yamuna River Board is a subordinate office under Ministry of Water Resources, River Development & Ganga Rejuvenation. 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.

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 1,324 MCM live storage & 660 MW power generation in the States of Uttarakhand & HP) & Renukaji (on the river Giri, a tributary of river Yamuna with 498 MCM live storage & 40 MW power generation in the State of HP) MPPs have been 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 Government as central assistance and rest amount will be borne by the basin States.

The Board consists of Member, Central Water Commission as part-time chairman and one nominee each from the States of Uttar Pradesh, Uttarakhand, Haryana, Rajasthan, Himachal Pradesh, and National Capital Territory of Delhi not below the rank of the Chief Engineer, a Chief Engineer from Central Electricity Authority and representatives of Central Ground Water Board and Central Pollution Control Board as part time members. The Board has a full time member-secretary who does not belong to beneficiary States.

7.2.5.1 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, Water Resources, Government 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 such directions as may be necessary for the proper development and management of the upper reaches of the Yamuna river basin upto and including Okhla Barrage.

7.2.5.2 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.

7.2.5.3 Activities of UYRB:

UYRB worked to resolve various issues amongst the basin States of upper Yamuna reaches viz. share of Yamuna water to Rajasthan at eEx-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.

The Board has been regulating seasonal distribution of water to basin States at various distribution points. In continuation to above, UYRB has made efforts in technological advancement and installed the telemetry system at 11 locations in the upper Yamuna basin and real time measurement of flow. The discharge data in the canals is available amongst basin States.

A Committee of Superintending Engineers from Haryana, UP and Rajasthan with EE, UYRB as member secretary was constituted for joint measurement of discharge and inspection of the canal system to minimize theft. Funds have been deposited by Rajasthan to Haryana for repair of canal system to improve conveyance.

UYRB has organized 59th Board meetings of the Board and 7 meetings of the Upper Yamuna Review Committee since its constitution till date. In the year 2020-21, two Board meetings viz. 58th & 59th were held on 16.06.2020 & 03.11.2020 respectively. During 59th Board meeting, in-principle approval subject to various conditions has been provided to Delhi Jal Board for raw water augmentation by utilization of effluent as raw water source for NCT of Delhi.

The issue of disruption of water supply in Delhi due to rise in ammonia levels as a result of pollutants entering river Yamuna from Panipat and Sonipat was discussed in 59th Upper Yamuna River Board meeting held on 03.11.2020. Accordingly, UYRB has been constituted Ammonia Level Monitoring Committee of Yamuna River. A surveillance visit was conducted during 8-9 February, 2021 by Specialist Environment, UYRB, Assistant Executive Engineer, Panipat and Sub Divisional Engineer, Sonipat Haryana State Pollution Control Board. The water samples were collected from river Yamuna and various drains out falling in river Yamuna. Collected samples have been sent to National River Water Quality Laboratory of Central Water Commission, New Delhi for the analysis of major cations, anions, BOD, COD and metals.

7.2.6 FARAKKA BARRAGE PROJECT (FBP)

The Farakka Barrage Project (FBP) was commissioned in 1975 for preservation and maintenance of the Kolkata port and for increasing the navigational depth of the Bhagirathi – Hooghly waterway. The Farakka Barrage Project also facilitates the sharing of Ganga waters between Bangladesh and India as per the agreement in Indo-Bangladesh Water Treaty 1996. The Farakka Barrage Project comprises 2,245 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 4,000 dwelling units. Its appurtenant structures include flood embankments, marginal bunds, afflux/guide bunds, etc.

FBP authority has been assigned following major responsibilities:

i) 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.

ii) 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.

iii) Maintenance and 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.

iv) Maintenance of Farakka township, Khejuriaghat township, Jangipur barrage colony, colony at Kalindri lock including maintenance of all civil, mechanical and electrical structures.

v) Operation & maintenance of all equipments, vehicles and machineries etc.

7.2.6.1 Major achievements

- Replacement of five barrage gates in phase-II work for replacement of 35 gates in Farakka barrage.
- Construction of boundary wall of the Khejuriaghat Colony (total length=1.185 km) at left bank of river Ganga in Farakka barrage project is going on.
- Supply, erection, installation and fixing of 3.66 m decorative ornamental poles with decorative LED light for beatification work and the renovation/rectification of the existing street lights in the reach of national highway passing over the main barrage and road over feeder canal at Farakka.
- Supplying, commissioning, installation of new water pumps for Ganga pump and upper pumphouse and modification of existing feeder canal pumps.
- Special repair of Ganga pump house, FBP.
- Digitalization of land record data and land use mapping by National Institute of Hydrology.

Details of meeting/inauguration during the period Jan 2020 to Dec 2020 are as under:

- Hon'ble Minister of Jal Shakti along with Secretary (DoWR, RD & GR), Member (D & R), CWC & other senior officers of MoJS has visited Farakka Barrage Project on 17th& 18th Dec'2020.
- 116th meeting of Technical Advisory Committee & 8th meeting of project Advisory Committee under chairmanship of Member (D & R), CWC was held on 18th& 19th Dec'2020.

7.2.7 NATIONAL WATER INFORMATICS CENTRE (NWIC)

7.2.7.1 ROLE AND PRIMARY ACTIVITIES OF NWIC

The National Water Informatics Centre (NWIC) is a newly established subordinate office of the Department set up to act as a repository of nation-wide data on water resources of the country. The centre has been established as a part of larger National Hydrology Project (NHP) approved by the Cabinet in April, 2016 to, *inter-alia*, improve the extent, quality, and accessibility of water resources information and to provide tools/systems for informed decision making for water resources assessment, planning and management.

NWIC is tasked to act as a central repository of water resources data and to provide a single window source on water resources and allied themes. It is entrusted with: -

- Maintaining, updating, collating and disseminating water data through a national web based platform.

- Sharing hydro meteorological data amongst Central and State Governments; institutions, academia, planners and general public through web portal for easy access and downloading data based on their area of interest.
- Providing technical support to organizations dealing with water emergency response for hydrological extremes.

The primary activities of the NWIC include:

- Maintenance of online web portal *www.indiawris.gov.in*, a comprehensive "Water Resources Information System" (WRIS) in public domain for awareness and involvement of all concerned for effective integrated water resources management. The data collection, generation and presentation into the portal are continuous activities. Various types of data available in India-WRIS through different modules are rainfall, reservoir storage level, river water level and discharge at hydrological observation sites, ground water level and water quality.
- Generating new content and development of new modules.
- Enriching existing content of India-WRIS by adding new layers.
- Maintenance of server and IT infrastructure.
- Sharing of hydro-meteorological and other water resources-related data amongst Central and State Government organisations, dissemination of information to various stake holders like administrators, policy makers, water planners and general public by providing easy access through web portal and facilitating data downloads based on their area of interest.

7.2.7.2 Activities undertaken during the year

Key activities performed by NWIC in during the year 2020-21 are listed below:

- Development of new modules in India-WRIS such as data input builder and viewer for artificial recharge structures.
- Transfer of IndiaWRIS portal from Tata cloud to NIC cloud.
- Shifting of development server of India WRIS (application server, database server, ArcGIS server, water data online) from NPMU to NWIC.
- Development of NWIC website.
- Data enrichment activities on India-WRIS portal like:-
  - Densified river drainage network of 14 major river basins of India and 14 sub-basins of Ganga basin of India. The network update incorporates stream line, stream polygon and water body creation/update for the gap areas. Also, for Andaman & Nicobar region river polygon and water resource project's structure lines were created and updated.
  - Village data update: Village boundaries of SOI (received through WFS of SOI) are being updated for 18 States.
  - Administrative and infrastructure themes, creation/update has been done for airport lo-

cation, town location, tehsil boundary, district boundary and State boundary.

- Water resources projects features like dams, lifts, barrages/weirs/anicuts, canals and commands update is in progress for 15 States.
- AIBP projects update for canal, command, and revision based on extension of canal network is in progress.
- Addition of litholog data for 4,748 sites.
- LULC (Land Use Land Cover) 2005-06, 2011-12, 2017-18 data updation
- Agro-ecological regions layer updated with latest available data.
- Agroclimatic zone updated with latest available data.

- Data dissemination through API to various agencies such as PSA (Principal Scientific Advisor to Government of India), NITI Aayog and NIH (National Institute of Hydrology) for utilisation in Kisan Mitra Project, NADP Project, decision support system respectively.
- Preparation of Irrigation Atlas of India.

7.3 REGISTERED SOCIETIES/ STATUTORY BODIES/ AUTONOMOUS BODIES

7.3.1 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 Jal Shakti) to study the feasibility of the links under peninsular component of National Perspective Plan. NWDA is fully funded by Government of India. The functions of NWDA have been modified from time to time and the present functions are furnished below:

(a) To carry out detailed survey and investigations of possible reservoir sites and inter-connecting links in order to establish feasibility of the proposal of peninsular rivers development and himalayan rivers development components forming part of the National Perspective for water resources development prepared by the then Ministry of Irrigation (now Ministry of Jal Shakti) and Central Water Commission.

(b) To carry out detailed studies about the quantum of water in various peninsular river systems and himalayan river systems which can be transferred to other basins/States after meeting the reasonable needs of the basin/States in the foreseeable future.

(c) To prepare feasibility report of the various components of the scheme relating to peninsular rivers development and himalayan rivers development.

(d) To carry out surveys and investigations work and prepare detailed project reports of river link proposals under National Perspective Plan for water resources development

and thereafter approach concerned States for obtaining concurrence for implementation of the project.

(e) To prepare pre-feasibility/feasibility/ detailed project reports of the intra-State links as may be proposed by the States. The concurrence of the concerned co-basin States for such proposals may be obtained before taking up their FRs/DPRs.

(f) To undertake/construct/repair/ renovate/rehabilitate/implement the projects either on its own or through an appointed agency/organization/ PSU or company and the projects forming part of interlinking of rivers, for completion of projects falling under Pradhan Mantri Krishi Sinchai Yojana (PMKSY) of which projects under Accelerated Irrigation Benefits Programme (AIBP) are also included and similar other projects.

(g) NWDA to act as a repository of borrowed funds or money received on deposit or loan given on interest or otherwise in such manner, as directed by MoWR, RD &GR (now MoJS) and to secure the repayment of any such borrowed funds/money/deposits/ loan etc. by way of mortgage, pledge, change or lien upon all or any other property, assets or revenue of the society both present and future.

(h) To do all such other things the Society may consider necessary, incidental, supplementary or conducive to the attainment of above objectives.

Hon'ble Union Minister of Jal Shakti is the President of the Society. The Governing Body (GB) of the NWDA Society under the chairmanship of the Secretary (DoWR,RD&GR), Government 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.

7.3.1.1 HIGHLIGHTS OF ACTIVITIES

i) Interlinking of Rivers under NPP.

- After concerted efforts taken by Ministry of Jal Shakti, a tripartite Memorandum of Agreement (MoA) for the implementation of the project jointly has been signed on 22.03.2021 amongst the Union of India, Governments of Madhya Pradesh and Uttar Pradesh in the virtual meeting with Hon'ble Prime Minister of India.
- Meetings of Sub-Committee-IV on consensus building through negotiations to arrive agreement among party States under the chairmanship of Chairman, CWC were held on 28.07.2020 and 10.12.2020 and the issues of water sharing in Par-Tapi-Narmada and Damanganga-Pinjal link projects were discussed.
- A Cabinet Note was circulated for Ken-Betwa Link Project for funding pattern at 90(C):10(S) among various Ministries/ Departments on 26.06.2020.
- PFR of Parbati-Kuno-Sind link project for integration of Parbati-Kalisindh-Chambal link with Eastern Rajasthan Canal Project (ERCP) of Govt. of Rajasthan was circulated in June, 2020.

- Feasibility Report of Manas-Sankosh-Tista-Ganga Link Project was circulated in July, 2020.
- Detailed Project Report of Cauvery-Vaigai-Gundar link project was finalised and circulated in August, 2020.
- Feasibility Report of Mahanadi (Barmul) – Godavari (Dowlaiswaram) Link Project (Alternative to Mahanadi (Manibhadra) – Godavari Link) was circulated in October, 2020.
- Feasibility Report of Farakka-Sundarban link project was circulated in December, 2020.
- Cabinet has reviewed the status-cum-progress report of Special Committee for ILR on 29.07.2020.

ii) Intra State Links

- The investment clearance for Kosi-Mechi link project was recommended on 22.10.2020 by Investment Clearance Committee of Ministry of Jal Shakti.
- Preparation of DPRs of Damanganga (Ekdare)-Godavari and Damanganga-Vaitarna-Godavari link project of Maharashtra are continued.

iii) Activities in the North Eastern Region

- Under the Himalayan component of NPP, the Manas-Sankosh-Tista-Ganga link project benefits the State of Assam in North Eastern Region. This link project can be considered as a mother link for diversion of waters of Brahmaputra basin to Ganga and further south through a network of link schemes upto Gundar river in Tamil Nadu. This link project will provide irrigation to about 3.41 lakh ha out of which 2.05 lakh ha lies in the districts of Barpeta, Kokrajhor, Dhubri and Bongaigaon of Assam State. Feasibility Report of Manas-Sankosh-Tista-Ganga Link Project was circulated in July, 2020.

7.3.1.2 DETAILS OF FUNCTIONS/ MEETINGS

- 17thand 18th Meetings of Special Committee for ILR were held on 26.02.2020 and 07.12.2020 respectively under the chairmanship of Hon'ble Minister of State for Jal Shakti, at New Delhi through video conference.
- 34thAnnual General Meeting of NWDA was held on 07.12.2020 under the chairmanship of Hon'ble Minister of State for Jal Shakti through video conference.
- 12th Meeting of Task Force for Interlinking of Rivers was held on 16.07.2020 under the chairmanship of Shri Sriram Vedire, Advisor, DoWR,RD&GR, Ministry of Jal Shakti.
- 67th Governing Body Meeting of NWDA was held on 24.08.2020 at New Delhi through video conference.
- Meetings of Sub-Committee-IV on consensus building through negotiations to arrive agreement among party States under the chairmanship of Chairman, CWC were held on 28.07.2020 and 10.12.2020

and the issues of water sharing in Par-Tapi-Narmada and Damanganga-Pinjal link projects were discussed during the same.

- The Working Group to suggest water sharing, exchange of water between Madhya Pradesh and Rajasthan with regard to Parbati – Kuno – Sind (PKS) Link and Eastern Rajasthan Canal Project (ERCP) under the chairmanship of Member (WP&P) has held two meetings on 04.09.2020 and 25.09.2020.
- The Sub-Committee-II for system studies for identifications of most appropriate alternate plan has held three meetings on 18.02.2020, 16.06.2020 and 17.12.2020, respectively.

7.3.1.3 FINANCIAL ASPECTS:

- The budget estimate of NWDA for the year 2020-21 was Rs. 88 crore. The revised Budget Estimate for the year 2020-21 was Rs. 74.54 crore and the actual expenditure upto December, 2020 was Rs. 51.25 crore.
- NWDA disbursed an amount of Rs. 1,275.68 crore to the State Governments, Rs.2,234.20 crore for Polavaram project and Rs. 61.52 crore for North Koel Project as central share under PMKSY/ AIBP funding during the period 01.04.2020 to 19.01.2021.

7.3.2 NATIONAL WATER MISSION (NWM)

The NWM was set up as per the National Action Plan on Climate Change (NAPCC) which was approved by the Government of India and released by the Hon'ble Prime Minister on 30th June 2008.

The five goals identified by the comprehensive mission document for National Water Mission are:

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

Activities and new initiatives taken during the year under the above goals and its strategies:

i) Preparation of State Specific Action Plans for Water Sector

National Water Mission envisaged developing State Specific Action Plans for water sector covering irrigation, industry, domestic and waste water of a State/UT. NWM is providing financial assistance of Rs. 50 lakh to major States and Rs. 30 lakh to small States/UTs as a grant for formulation of SSAPs for water sector. NWM engaged two nodal agencies for coordination and monitoring of SSAP formulation. North Eastern Regional Institute of Water and Land Management (NERIWALM), Tejpur has been engaged for coordinating and monitoring SSAP formulation for 19 States and National Institute of Hydrology (NIH), Roorkee is coordinating & monitoring with remaining 17 States/UTs. So far, 29 States / UTs have signed MoUs with the nodal agencies and 6 States have submitted the first phase draft status report.

ii) HRD & Capacity Building and Mass Awareness Programmes

Trainings/workshops are regularly organized through government agencies like National Institute of Hydrology (NIH), Roorkee, North Eastern Regional Institute of Water and Land Management (NERIWALM), Tezpur, Water & Land Management Institute (WALMI), Dharwad, Centre for Water Resources Development & Management (CWRDM), Kerala.

Besides, a number of mass awareness programmes have been taken up. The following HRD capacity building and IEC activities have been undertaken:

- Monthly Water Talks by water experts every third Friday of the month.
- Weekly dialogue series on "Catch the Rain" has also been started where Collectors/District Magistrates/ Commissioners and water activist have been invited to share their commendable work in their districts to address the water issues.
- Monthly Water Tech Talks.
- Technical webinars on catch the rain, mine water management, NGOs etc.
- Workshops on SahiFasal Campaign in water stressed areas/ districts of the country.
- Books/ Compendium on water talk, step wells of India, NWM Awards 2019.
- NWM profile movie.
- Doodle videos on urban flooding, revival of traditional water bodies.

"Catch the Rain": Dialogues with District Magistrates

iii) Setting up of National Bureau of Water Use Efficiency (NBWUE)

It is proposed to set up a "National Bureau of Water Use Efficiency (NBWUE)" through a notification under Article 3(3) of the Environment (Protection) Act, 1986. The proposed Bureau will have the overall responsibility of improving water use efficiency across various sectors namely irrigation, drinking water supply, power generation, industries, cities etc. in the whole country. As directed by Department of Expenditure, Ministry of Finance, proposal would be re-submitted for appraisal of Committee on Establishment Expenditure (CEE) in the next financial year 2021-22.

iv) Baseline Studies

NWM has awarded 26 baseline studies in association with 4 institutes (NERI-WALM, WALMTARI, WALMI and CWRDM) for improving water use efficiency in irrigation sector. These studies are done considering major – medium projects covering five States - Assam (5 projects), Andhra Pradesh (5 projects), Telangana (5 projects), Maharashtra (6 projects) and Kerala (5 projects). Inception reports of 18 studies had been approved by Core Group on baseline studies. Bimonthly meetings including webinars have been organized with stakeholders concerned during 2020 to expedite the completion of studies. As a result of continued persuasion in the recent time, Draft Final Reports (DFRs) of 10 studies are under technical evaluations with CWC, following which agencies will incorporate the changes and submit the final report.

v) Demonstration/Benchmarking/ Pilot projects

A study on 'Benchmarking Industrial Water Use to assist policy for enhancing Industrial Water use in India' is being done by The Energy & Resources Institute (TERI) with 4 industrial sectors – Thermal Power, Textile, Pulp & Paper and Steel. Current benchmarking study on industrial water use efficiency is conducted by Tata Institute of Social Sciences, Mumbai.

vi) "Sahi Fasal" Campaign

'Sahi Fasal' campaign was launched by National Water Mission to nudge farmers in the water stressed areas to grow crops which are not water intensive, but use water very efficiently; and are economically remunerative; are healthy and nutritious; suited to the agro-climatic-hydro characteristics of the area; and are environmentally friendly. Creating awareness among farmers on appropriate crops, micro-irrigation, soil moisture conservation etc; weaning them away from water intensive crops like paddy, sugarcane etc to crops like corn, maize etc which require less water; assisting policy makers to frame policies that make effective pricing of inputs (water and electricity); improve procurement and market for these alternate crops; create appropriate storage them etc.

Under Sahi Fasal, series of meetings with farmers were organized in Amritsar (Punjab) on 14.11.2019, Aurangabad (Maharashtra) on 13.01.2020 and Kurukshetra (Haryana) on 14.02.2020 and with technical experts in New Delhi on 26-27.11.2019.

vii) Catch the Rain

National Water Mission has launched a campaign – "Catch the Rain" with a tagline "Catch the Rain – when it falls, where it falls" to nudge all stake-holders to

create Rain Water Harvesting Structures (RWHS) suitable to the climatic conditions and sub-soil strata to catch the rains with the people's active participation. Under this campaign drives to make water harvesting pits, rooftop RWHS, check dams, etc; removal of encroachments and de-silting of tanks to increase their storage capacity; removal of obstructions in the channels which bring water to them from the catchment areas, etc; repairs to step-wells and using defunct bore-wells to put the water back to aquifers, etc are some of the activities suggested to be taken up.

To facilitate this, NWM has proposed to States and District Magistrates (DMs) to set-up "Rain Centres" (RCs) in every district or GP headquarters, to give technical guidance to people on Rain Water Harvesting Structures. These RCs can be developed in future as "Jal Shakti Kendras" to act as knowledge centres on water-linked topics like RWHS, restoration, desilting of water bodies, ground water recharging, water saving practices in agriculture, industry, drinking water etc.

The campaign is also endorsed by dignitaries like the Vice President of India; Vice Chairman, NITI Aayog; CEO, NITI Ayog; Senior Government Officials; water experts - Shri Sonam Wangchuck; Dr Anil Joshi etc and influencers like Shri Ravishankar ji, Shri Gopi Chand etc.

During the preparatory phase of Jal Shakti Abhiayan - II, NWM has collaborated with Nehru Yuva Kendra Sangathan (NYKS), under the Department of Youth Affairs, Ministry of Youth Affairs and Sports to undertake "JSA-II:Catch the Rain- Awareness generation campaign" to cover 31,150 villages in 623 districts. The first phase of the campaign would run from 21 December 2020 to 31 March 2021. The campaign was launched on December 21, 2020, jointly by Shri Gajendra Singh Shekhawat, Hon'ble Union Minister, Jal Shakti; Shri Kiren Rijiju, Hon'ble Minister of State (Independent Charge), Youth Affairs & Sports and Shri Rattan Lal Kataria, Hon'ble Minister of State, Jal Shakti and Social Justice & Empowerment at Dr. Ambedkar International Centre, New Delhi. The event was joined by over 1.5 lakh viewers, including the field functionaries of NYKS, virtually through the digital link.

Launching of "JSA II: Catch the Rain" Awareness Generation Campaign in Collaboration with NYKS

Hon'ble Prime Minister Shri Narendra Modi launched the "Jal Shakti Abhiyan: Catch the Rain" campaign on 22nd March 2021, on the occasion of World Water Day. He announced the commencement of the campaign that aims to drive people towards conserving water and adopt the practice of rainwater harvesting. The launch event was also joined by Shri Gajendra Singh Shekhawat, Union Minister, Jal Shakti, Shri Shivraj Singh Chouhan, Chief Minister, Madhya Pradesh, Shri Yogi Adityanath, Chief Minister, Uttar Pradesh and Shri Rattan Lal Kataria, Minister of State, Jal Shakti.

Alongside the campaign launch, a historic agreement was signed by the respective Chief Ministers of Madhya Pradesh and Uttar Pradesh to implement the 'Ken Betwa Link Project', compelling former Prime Minister late Shri Atal Bihari Vajpayee's vision forward.

While addressing fellow ministers, Central & State Government officers of Departments/ Ministries concerned, District Magistrates/ District Collectors /Deputy Commissioners of districts and Sarpanchs of all Gram Panchayats through video conferencing, Hon'ble Prime Minister emphasized that India's future progress lies in the development and efficient management of our water resources. Rainwater being the only natural source of water must be collected through appropriate structures, stored, conserved for future, used and reused. Better management of rainwater would relieve the country's dependence on groundwater resources, he added.

Prime Minister in his address reiterated the importance of 'Jan Bhagidari' ie. public participation in making the water conservation campaign a success. Contribution of every individual, especially women's role must be encouraged. He said, "The next 100 days are crucial. We all must be well-prepared in advance and gear up to catch the rain during the monsoon season. We must ensure that not a single drop of rainwater goes waste." Elaborating further he said that in the pre-monsoon period, people must aggressively work towards reviving traditional water bodies, cleaning wells, de-silting of ponds and canals, removal of encroachments, making them fit to collect water during the monsoon season.

The programme also had an interactive session between Prime Minister and five Sarpanchs from different parts of the country. The Sarpanchs in their one on one interaction with the PM shared their experiences and learnings from the unique interventions undertaken by them to improve water availability in their respective villages.

Earlier, Shri Gajendra Singh Shekhawat, Hon'ble Union Minister, Jal Shakti had expressed joy at the expansion of the revolutionary JSA campaign for 256 districts in 2019 to over 700 districts in 2021. The theme of the campaign- 'Catch the rain, where it falls, when it falls', would focus on nudging people to create rainwater harvesting structures and will be launched as a Jan Andolan to take water conservation at the grass-root level through people's participation.

The campaign will be implemented during the period 22nd March 2021 to 30th November 2021 - the pre-monsoon and monsoon period in all districts, rural as well as urban areas of the country.

Hon'ble Prime Minister Shri Narendra Modi launched the "Jal Shakti Abhiyan: Catch the Rain" campaign on 22nd March 2021

viii) Water Talks

A monthly 'WATER TALK' lecture series are an important activity undertaken by NWM with the aim to stimulate

awareness, (thinking), build capacities of stakeholders and encourage people to become active participants sustain life by saving water on earth. 'WATER TALK', the lecture series, wherein leading water experts are invited to present inspiring and broadening perspectives on current water issues in the country.

Following Government's restrictions on public gatherings due to COVID-19 pandemic, the water talks are now being organized as e-Water Talk in webinar format since May 2020. NWM has organized 'Water-Talks' on the range of topics dominating the sector concerns.

18th Water Talk in this series was held on 16th October 2020 on a virtual platform. The speaker for the 18th Water Talk was Shri Gajendra Singh Shekhawat, Hon'ble Union Minister, Jal Shakti.

ix) Water Tech Talks

The water tech talk series has been initiated in October 2020 and has been conducted ever since on second Friday of every month. These virtual sessions aimed to focus on technological and technical advancements, pioneering research and academic excellence exhibited by experts in the field on a myriad of themes related to the water sector.

x) R & D Projects

- Demonstrative project on Desalination: NWM had awarded CSMCRI to develop, test and install an RO based water purification technology to meet the drinking water needs of villager suffering from saline and contaminated ground

NWM Water Talk

water resources in the regions of Mota Asota, Devbhoomi, Gujarat.

- CEDAR Project: The project proposal titled "Hydro-Geological Assessment and Socio-Economic Implications of Depleting Water Resources in Tourist Towns of Uttarakhand" by Centre for Ecology Development and Research (CEDAR), Dehradun, Uttarakhand. Main objective of the project is to assess the critical state of water resources and to study water supply systems and demand regimes.
- IIT Roorkee Project: The project proposal titled "Irrigation Efficiency Improvement through On-Farm Water Management" by IIT, Roorkee has been approved for a duration of 3 years. Main objective of the project is to enhance water use efficiency at the farm level through various measures like micro irrigation, using internet of things (IoT), on farm water management, capacity building of various stake holders etc.

xi) Publications

- NWM has compiled a compendium on NWM Awards 2019 featuring project details and achievements in each category for which the award was given. The compendium was released by Shri Gajendra Singh Shekhawat, Hon'ble Union Minister, Jal Shakti.
- NWM has made a compilation of information on 100 unique and interesting step wells found across India. The compilation was released by Shri M. Venkaiah Naidu, Hon'ble Vice President of India.
- NWM has also compiled a book titled "Water Talks" which attempts to capture the essence of the first twelve water talks delivered from March 2019 to February 2020. The book was released by Shri Gajendra Singh Shekhawat, Hon'ble Union Minister, Jal Shakti.

7.3.3 NATIONAL INSTITUTE OF HYDROLOGY (NIH)

The NIH was established in December 1978 at Roorkee. The institute is fully aided by the DoWR, RD & GR. 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,
- 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 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. These centres are: (1) Hard Rock Regional Centre (Belagavi), (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).

7.3.3.1 Studies and Research:

Major research areas (beyond XIIthPlan) 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 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

During the year 2020-2021 (up to Dec. 2020), the institute has published 93 papers in reputed international and national journals and proceedings of international and national conferences and symposia. During the year, 49 internal and 55 sponsored R&D studies were going on. 17 consultancy projects and 4 technical services were completed and 24 are continuing in the year 2020-21.

Some of the important R & D studies completed during the year include improving our understanding of aquifer systems of Sunderban, environmental flow assessment for Yamuna river from Hathnikund barrage to Okhla barrage, rejuvenation of springs and spring-fed streams in mid-himalayan basin using spring sanctuary concept, development of four pilot riverbank filtration demonstrating scheme in different hydro-geological settings for sustainable drinking water supply, integrated study of himalayan cryosphere using space based inputs, assessment of environmental flows and development of habitat suitability curves for aquatic species of Yamuna river and some western himalayan steams.

Some of the studies under progress include simulation of non-point source pollution processes in Song river, impact on salinity of river Mahadayi due to proposed dams on river Mahadayi, impact of rainwater harvesting on groundwater quality in India with specific reference to fluoride and micro-pollutants, integrated hydrological investigations of Renuka lake, Himachal Pradesh, for its conservation and management, groundwater rejuvenation as climate change resilience for marginal-

ized and gender sensitive Ganges (GRACERS), seasonal characterization of Gangotri glacier melt runoff and simulation of streamflow variation under different climate scenarios, permafrost mapping and characterization of Ladakh region, integrated assessment of water resources for sustainable use in upper Dhasan basin in Bundelkhand region.

One of the main objectives of the institute is to transfer the developed technology to the target users. During the year 2020-21, the institute has organized 26 training programmes in VC mode for field engineers, scientists, researchers, etc.

7.3.3.2 National Hydrology Project:

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

i) **Purpose Driven Studies (PDS)**: The sub-committee on PDS at NIH is coordinating research activities and reviewing & monitoring the progress of PDSs through R&D sessions. Three R&D sessions were organized on 28-29 Jan.2020, 4-5 Aug. 2020 & 10-11 Nov. 2020. In these R&D sessions, the progress of PDS were reviewed.

ii) **Training and Workshop**: During the year, 15 trainings and workshops were organized by NIH online.

iii) **Centre of Excellence for Hydrologic Modelling**: Four studies with States (A.P., Telangana, Sikkim and Rajasthan) are under progress. Two special studies: (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 are also under progress. A joint study with IIT Kharagpur on development testing of a large scale conceptual hydrological model is under progress.

iv) **Decision Support System (DSS):** A contract for consultancy services for decision support system (planning & management) including maintenance and updating of DSS (PM) for a period of 7.5 years was signed between NIH & M/s DHI (India) Water & Environment Pvt. Ltd., New Delhi on 5th August 2019 at NIH Roorkee. Inception report (Task 1) and enhancement report (Task 2) of the DSS (PM) has been submitted by DHI (India) and approved. Preparation of different modules is under progress.

7.3.3.3 NMSHE Project:

A project entitled *"Integrated Hydrological Studies for Upper Ganga Basin up to Rishikesh"* is in progress at NIH since January 12, 2016. Some of the aspects which have been studied in the project include development of hydrological database, real-time snow cover information system, glacial lakes and GLOFs, understanding of hydrological processes by using isotopic techniques, environmental assessment of aquatic ecosystem, water census and hotspot analysis, and assessment of impact of climate change on hydrological characteristics of the basin.

SIGNIFICANT ACHIEVEMENTS

- ***Development of database:*** Detailed hydro-meteorological database for a watershed; generation of isotopic data of rainfall, snow, river flow, and groundwater (including springs) from more than 10,000 samples;

water quality observations at 15 locations in study basin; ecology/ aquatic species observations in eight zones, water census data of around 200 villages, geo-tagging of cloud burst and extreme events in basin since 2010 etc.

- A semi-automated procedure for altitude-based masking of NSIDC MODIS snow extent maps developed. Further, an improved cloud removal protocol developed for MODIS data for estimation of elevation band-wise snow cover area.
- Methodology for assessment of vulnerable glacial lakes developed and prepared the inventory of such lakes. Also estimated the change in glacier areas in some river basins of western Himalayas.
- Backward trajectory analysis for identification of vapour source for different precipitation events in upper Ganga basin.
- Trend analysis of hydro-meteorological variables and hydrological data in the basin.
- Hydrological modeling using different models under present and different climate scenarios.

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

NERIWALM is a registered society under the administrative control of the DoWR, 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. It imparts training 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. On

Instrumentation in experimental watershed

the basis of requests received from colleges/universities for BE/B.Tech/M.Tech/ Courses, training was conducted as it was required for the fulfillment of their prescribe degree course.

During the year 2020-21, the NERIWALM aims to conduct 65 programmes for different stakeholders like officers, farmers, water users associations, women groups/farmers, stakeholders and students. 1,950 participants are expected to benefit from such training programmes. The breakup of number of programmes and participants for different target groups is given in the Table.

Target group	Target for Number of training programme (January to December, 2020)	Achievement Number of training programme (January to December, 2020)	Achievement Number of participants (January to December, 2020)
Officers	12	10	407
WUAs/Farmers	6	4	413
Women groups/ farmers	2	1	186
NGO	3	2	35
Student	19	20	781
Stakeholders	15	11	148
Grant Total	**57**	**48**	**2,092**

7.3.5 NATIONAL MISSION FOR CLEAN GANGA (NMCG)

NMCG was registered as a society on 12.08.2011 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 07.10.2016, consequent to the constitution of National Council for Rejuvenation, Protection and Management of River Ganga (referred as National Ganga Council) vide notification no. S.O. 3187(E) dated. 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 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. 1,000 crore. 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 effective implementation and success of its multi-disciplinary programme.

7.3.5.1 Pollution Abatement (Nirmal Ganga)

The Department of Economic Affairs, Government of India and the World Bank signed a loan agreement on July 7, 2020 to enhance support for the Namami Gange programme for rejuvenation of river Ganga. The second National Ganga River Basin Project (Ganga-II) will help stem pollution in the river and strengthen the management of the river basin which is home to more than 500 million people. The facility approved will comprise two parts: A loan of $381 million (Rs. 2,879 crore) and World Bank Guarantees for amounts up to $19 million (Rs. 143 crore) as a payment security mechanism – another innovative feature of 'Namami Gange' program. The loan would be for a period of 5 years up to December 2026.

335 projects have been sanctioned under Namami Gange Programme at a cost of Rs. 29,578.05 crore under the various sectors of pollution abatement, biodiversity, afforestation, bio-remediation, research & studies and various institutional development projects. Out of these, 142 projects have been completed and the remaining are at various stages of execution.

Projects Status as on 31st, January, 2021					
Sl No	**Projects Undertaken**	**No of Projects**	**No of Projects completed**	**Sanction Cost (Rs in crore)**	**Total Expenditure (Rs in crore)**
Sewage Infrastructure					
1	Sewage Infrastructure	156	56	23,521.27	7,226.09
2	Modular STPs Decentralized Treatment	1	0	410.00	0.00
Ghat & Crematoria/ River Front Development					
3	Old Ghats & Crematoria (Projects under NRCP/ NGRBA-in State of West Bengal)	24	24	204.39	180.16
	Ghats & Crematoria (New Projects under NGP)	53	30	887.67	563.09
4	River Front Development	1	0	336.73	308.52
5	Ghats Cleaning	3	0	49.28	25.32
6	River Surface Cleaning	1	0	33.53	17.51
	Sub Total	**82**	**54**	**1,511.60**	**1,094.60**
Institutional Development (Non-Infrastructure)					
7	Ganga Knowledge Center	6	1	143.95	23.03
8	Ganga Monitoring Center	1	0	46.69	0.00
9	Industrial Pollution Abatement	15	0	1,267.37	187.20
10	District Ganga Committee	1	0	2.30	0.00
	Sub Total	**23**	**1**	**1,460.31**	**210.23**
Project Implementation Support/Research & Study Projects/Public Relations and Public Outreach					
11	Project Implementation Support/Research& Study Projects and Public Outreach	16	5	247.46	92.70
	Biodiversity				
12	Educating Schools & Communities for conserving habitat of Ganga River Dolphin	1	1	1.28	1.28

Projects Status as on 31st, January, 2021					
Sl No	**Projects Undertaken**	**No of Projects**	**No of Projects completed**	**Sanction Cost (Rs in crore)**	**Total Expenditure (Rs in crore)**
13	Assessment of fish & fisheries of the Ganga river system for developing suitable conservation & restoration plan	4	3	20.83	7.16
14	Biodiversity Conservation	4	2	141.95	26.30
	Sub Total	**9**	**6**	**164.06**	**34.74**
Afforestation					
15	Afforestation	26	15	392.28	231.82
Composite Ecological Task Force & Ganga Mitra					
16	Composite Ecological Task Force and Ganga Mitra	5	3	199.29	70.80
	Bioremediation				
17	Bioremediation	16	2	250.52	35.49
Construction of IHHL across Gram Panchayats near Ganga River					
18	Construction of toilets across Gram Panchayats near Ganga River (States-UK, UP,BH,JH,WB)	1	0	1421.26	1020.44
Grand Total		**335**	**142**	**29,578.05**	**10,016.91**

7.3.5.2 Hybrid annuity based PPP model

i) The Cabinet in its meeting held on 6th January 2016 has approved adoption of Hybrid Annuity Based Public Private Partnership Model for development of sewerage infrastructure under Namami Ganga.

ii) NMCG has sanctioned 27 projects in 17 packages worth of ₹ 9,504.78 crore. These projects are for the towns of Haridwar, Varanasi, Kanpur, Prayagraj, Mathura, Bareilly, Unnao, Shuklaganj, Agra, Meerut, Muzaffarnagar, Budhana, Moradabad, Patna, Kolkata Howrah, Bally, Baranagar, Asansol, Burdwan and Durgapur. These projects shall create / rehabilitate sewage treatment capacity of 1,877 MLD.

iii) Of the 17 packages taken up on hybrid annuity based PPP model, 1 package for 82 MLD STPs at Haridwar has already been implemented and commissioned in 2020; for 9 package works have already been awarded and under implementation while 7 packages are under tendering process.

iv) A historic step towards integrated project for sewage treatment and recycling of treated water on hybrid annuity based PPP mode has been initiated with MOU with IOCL for development of 20 MLD tertiary treatment plant (TTP) for supply of treated waste water to Mathura Refinery of IOCL. The project is currently under implementation.

7.3.5.3 Pollution Management

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

i) Municipal Pollution

- Estimated sewage generation from 97 Ganga front towns is 3,558.5 MLD (2017-18). As per inspection during 2020 (till 23.12.2020), there are 110 STPs installed (Uttarakhand – 44; Uttar Pradesh – 30; Bihar -02; West Bengal -34) in Ganga front towns.
- Total installed treatment capacity of 110 STPs is 2,047.9 MLD, out of which 83 are operational with total capacity of 1,617.405 MLD while 1,256.69 MLD is utilized at present.
- Total 27 STPs are non-operational with combined capacity of 430.505 MLD.
- Quarterly monitoring of STPs is being carried out for performance evaluation of STPs. Composite sampling is also being performed for STP monitoring.

ii) Industrial Pollution

- In Ganga river basin including river Yamuna, till 31st December, 2020, 1,232 Grossly Polluting Industries (GPIs) units were inspected through Third Party Technical Institutes (TPIs) and 340 inspection reports have been received. Action was completed for 54 GPIs (05 GPIs complying, 31 non-complying, 18 temporary closed). 31 Show Cause Notices (SCN) were issued by respective SPCBs to the non-complying GPIs.
- Till 31st December, 2020, out of 389, 364 Grossly Polluting Industries (GPIs) in the river Hindon sub-basin were inspected through Third Party Technical Institutes (TPIs). A total of 325 inspection reports of GPIs have been received. Out of 325 reports, action has been completed for 176 GPIs (87 GPIs complying, 49 Non-complying, 37 temporary closed, 3 permanent closed). 28 Show Cause Notices and 21 closure directions were issued by respective SPCBs to non-complying GPIs.
- Industries are facilitated through charter based participatory approach for reduction in water consumption, effluent generation and pollution load by adoption of cleaner technologies and waste minimization practices.

iii) Rural Sanitation:

Department of Drinking Water & Sanitation has constructed 11,96,261 Individual Household Latrines (IHHLs) in 4,465 Ganga bank villages under the Swachh Bharat Mission (Grameen) and all the villages declared themselves Open Defecation Free (ODF), for which NMCG has released Rs. 829 crore to Department of Drinking Water & Sanitation.

iv) Ganga Gram:

Ganga Gram initiative has been conceptualized to develop model villages by developing sustainable sanitation infrastructure and cleanliness practices in the villages located on the banks of river Ganga with an aim to reduce the pollution load on river Ganga from such villages.

Apart from construction of Individual Household Latrines (IHHLs) and other

activities, Solid Liquid Waste Management (SLWM) is one of the priority activities under the Ganga Gram scheme, which is being implemented in all the identified 4,465 villages along the Ganga river under the Swachh Bharat Mission (Grameen). NMCG has released Rs. 124 crore to Department of Drinking Water & Sanitation for the implementation of the project.

The Phase–II of SBM-G has been approved and is to be implemented from 2020-25 with focus on ODF sustainability and solid and liquid waste management in the villages situated on the banks of Ganga.

Afforestation is another priority activity under the Ganga Gram scheme, for which NMCG has released Rs. 67.44 crore to the State Forest Departments through the DoDWS for plantation in Ganga bank villages.

7.3.5.4 Monitoring of Pollution

The monitoring of water quality of river Ganga is being carried out under Namami Gange programme by Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs) in 5 Ganga main stem States at 97 manual water quality stations. Water quality of river Ganga is also carried out through a network of 36 Real Time Water Quality Monitoring Stations (RTWQMS). Data from these stations is collated and displayed at different locations of significance. In addition, 40 new RTWQM stations are being set up on river Ganga and its tributaries.

i) Bio-Monitoring

- Biomonitoring of river Ganga has been carried out in the stretch from Haridwar (Uttarakhand) to Garden reach (West Bengal) at 33 locations to assess the biological water quality using benthic macro-invertebrates. Besides, main stream of river Ganga, biomonitoring has also been carried out at 08 locations of 07 tributaries excluding Yamuna river. For river Yamuna, this study has been carried out at 12 locations in the stretch from Panipat (Haryana) to Prayagraj (Uttar Pradesh).
- It has been observed that water quality of river Ganga supports diversified macro invertebrates community and studied river stretch reflects good to moderate level of biological water quality with respect to Biological Water Quality Criteria (BWQC) which is recommended by CPCB and based on range of saprobic score.

ii) Monitoring of water quality of river Ganga during Maha Kumbh-2021 by CPCB:

- As discussed in the meeting with Uttarakhand Pollution Control Board (UKPCB) regarding monitoring of river Ganga and other polluting sources during Maha Kumbh-2021 scheduled from 14th January, 2021 to 27th April, 2021 at Haridwar, a team of CPCB officials was constituted to carry out joint survey with UKPCB of monitoring locations suggested in the meeting during Kumbh Mela.

7.3.5.5 Biodiversity Conservation:

One of NMCG's long term objectives for Ganga rejuvenation is to restore the viable populations of all endemic and

endangered biodiversity of the river so that they occupy their full historical range and fulfil their role in maintaining the integrity of the Ganga river ecosystems.

To address this, Wildlife Institute of India (WII) and Central Inland Fishery Research Institute (CIFRI) were awarded projects from 2016-2019 at a cost of Rs. 24.84 crore and Rs. 7.07 crore respectively. These projects aim to develop a science based aquatic species restoration plan for Ganga river by involving multiple stakeholders.

Few outcomes of the projects are:

- Scientific baseline information on the aquatic species availability and distribution established in the main stem of Ganga River.
- Cadre of more than 1,000 volunteers (*Ganga Praharis*) developed and trained.
- Key ecosystem services of Ganga river identified and assessment framework developed.
- 190 fish species mapped in GIS platform to understand the fish status and distribution in Ganga
- Tagging procedures have been initiated to see whether the identified fish species like Hilsa can negotiate existing barrages.

Encouraged by the successful conclusion of the phase-I projects, comprehensive projects under phase II have been awarded to WII at a cost of Rs. 113.99 crore and to CIFRI at a cost of Rs. 13.51 crore. Further, a project has also been sanctioned to Uttar Pradesh State Forest Department for expanding the conservation breeding program of freshwater turtles and Gharials at Kukrail Gharial Rehabilitation Centre, Lucknow. The project seeks to revive and restore populations of these species in river Ganga and the tributaries at a cost of Rs. 3.13 crore.

A comprehensive project is under implementation in partnership with Wildlife Institute of India (WII) to map biodiversity hotspot for the entire length of Ganga and scientific improvement of habitat, species and ensure community participation through Ganga Prahari program. A comprehensive scientific program for of fisheries resource and their conservation has been taken up in association with CIFRI.

Tagging of Hilsa to record migratory route in the upstream of Farakka of river Ganga

Ranching of Hilsa at the upstream of Farakka in river Ganga

7.3.5.6 Afforestation:

Forestry interventions for Ganga are being implemented by the five Ganga bank States under the Namami Gange programme, as per the DPR prepared by FRI Dehradun. NMCG has allocated funds to the State Forest Departments to the tune of Rs. 355.76 crore to implement the plantation activities in the five Ganga states till FY 2020-21 (including FY 2020-21).

Plantation of 26,764 ha is already completed under the sanctioned projects from year 2016-2020. For the current financial year i.e. 2020-21, NMCG has sanctioned projects amounting to Rs. 86 crore for plantation in 5,298.34 ha., which will result in a total of 32,062 ha. area of plantation under the Namami Gange programme. Further afforestation works as per the FRI-DPR will be carried out under Namami Gange programme as well as the available State & CAMPA funds through MoEF&CC.

7.3.5.7 Research, Policy and Knowledge Management (Gyan Ganga)

Leading Research and Development

- ***Ground-water- Surface-water interface:*** Namami Ganga is working with National Geophysical Research Institute (NGRI), Hyderabad to delineate the subsurface aquifers with focus on paleochannels from Kausambi to Kanpur to provide newer insights into disposition of the aquifers; extent and characteristics of the paleochannel and possible interaction of the aquifers with Ganga and Yamuna rivers.
- ***Study on Special property of river Ganga & Study for Microbial mapping:*** Namami Gange in partnership with NEERI is studying water quality and sediment analysis to understand the special property of Ganga river and also impact of human intervention on microbial diversity, study the origin of E-coli present in the river Ganga.
- ***Study on Climate Scenarios & their impact:*** NMCG is working with IIT Delhi to map out high resolution climate scenarios for basin-scale water resources management to improve understanding and scientifically rigorous estimates of climate change and its impact on water resources in the Indo-Gangetic plain.

Construction of bio floats

Release into nallas for bio- remedial intervention

- ***Rejuvenation of small rivers:*** A GIS based inventory of small rivers have being created along with district wise list of small rivers. The rejuvenation of these rivers will help in making Ganga aviral and nirmal. Recently this item has been got included as priority under MGNREGA. A number of activities are already underway towards revival of small rivers. District Ganga Committees (DGC) under the District Magistrates is being strengthened and closely monitored for this work.

7.3.5.8 People River Connect (Jan Ganga)

i) Eco Task Force / Ganga Task Force :

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

- Plantation of trees to check soil erosion.
- Management of public awareness/ participation campaign.
- Patrolling of sensitive river areas for biodiversity protection.
- Patrolling of Ghats.
- Monitoring of river pollution
- Assist during floods/natural calamity in the region.

Ganga Task Force is presently stationed at Prayagraj, Kanpur and Varanasi in the State of Uttar Pradesh and actively involved in each and every sphere of the assigned tasks.

ii) Ghat Cleaning

IL&FS Environmental Infrastructure and Services Ltd. (IEISL) has been engaged for cleaning of 84 ghats in Varanasi. 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.

iii) River Front development

Details of the river front development project are as under:–

• Cost: Rs. 336.73 crore • Expenditure: Rs. 308.52 crore (Central Share 215.97 crore and State share 92.55 crore)	• No. of Ghats: 20 (16 completed)-1 ghat is getting dropped. Design & drawing for the last 3 ghats submitted to IIT-Patna for approval along-with remaining promenade. • Promenade: 6.6 km (5 km Completed)

	• Crematoria : 1 - Completed • Buildings: 3 Completed • Completed - Audio visual Theatre at Baharwa Ghat • Completed - Eco Centre at Collectorate Ghat/Alias Ganga Research Center • Community cum Cultural Centre at Raja Ghat. • Phase -II under progress (4 ghats and 1.7 km promenade under progress)

iv) Ghats and Crematoria

Ghats and crematoria provide people better infrastructure for social and cultural activities and for cremation rituals. Such infrastructures promote tourism, transportation and promote sustainable economic development of the dwellers residing on river banks.

NMCG had identified 5 Central Public Sector Undertakings (CPSUs) for the execution of the ghats and crematoria along with few State agencies. Till 31stDec, 2020, 183 ghats and 53 crematoria have been taken up at an estimated cost of Rs. 869.19 crore. Out of these 183 Ghats and 53 crematoria, work on 143 Ghats and 41 crematoria has been completed.

Details of ghats/crematoria taken up in States are as under:

Status of Ghats and Crematoria Projects

S. No	State	No. of Projects	No. of			Sanctioned Cost (in crore)	Status					
			Ghats (G)	Crematoria (C)	Total (T)		Completed		Under Progress		Under Tendering	
							G	C	G	C	G	C
[I] NGP												
1	Uttarakhand	9	22	23	45	197.38	21	22	1	1	0	0
2	Uttar Pradesh	15	88	11	98	342.83	87	11	0	0	0	0
3	Bihar	12	25	6	31	111.57	11	1	14	3	0	2
4	Jharkhand	4	13	3	16	62.07	11	3	2	0	0	0
5	West Bengal	4	9	3	12	16.77	6	0	3	3	0	0
A	**Sub Total**	**44**	**157**	**46**	**203**	**730.62**	**136**	**37**	**20**	**7**	**0**	**2**
[II] Clean Ganga Fund												
1	Uttarakhand	3	1	2	3	35.81	0	2	1	0	0	0
2	Uttar Pradesh	1	7	3	10	27.41	7	2	0	1	0	0
3	Bihar	2	9	1	10	43.71	0	0	9	1	0	0
4	West Bengal	1	7	0	7	5	0	0	7	0	0	0
B	**Sub Total**	**7**	**24**	**6**	**30**	**111.93**	**7**	**4**	**17**	**2**	**0**	**0**
[III] CSR												
1	Uttarakhand	1	2	1	3	26.64	0	0	2	1	0	0
C	**Sub Total**	**1**	**2**	**1**	**3**	**26.64**	**0**	**0**	**2**	**1**	**0**	**0**
D	**Grand Total (A + B + C)**	**52**	**183**	**53**	**236**	**869.19**	**143**	**41**	**39**	**10**	**0**	**2**

v) Important Activities (Jan Ganga)

- **Ganga Yatra:** Five days long Ganga Yatra under the Namami Ganga campaign traversing 27 districts of Uttar Pradesh covering the stretch of approximately 1,199 kms was flagged off by Hon'ble Chief Minister Shri Yogi Adityanath from western district of Bijnore and by the Hon'ble Governor AnandiBen Patel from the eastern district of Ballia on 27th January 2020.

  Various dignitaries including Bihar Deputy Chief Minister Shri Sushil Kumar Modi, Deputy Chief Minister Dr. Dinesh Sharma, Uttarakhand Chief Minister Shri Trivendra Singh Rawat, Minister of Jal Shakti Shri Gajendra Singh Shekhawat, Union Minister Shri Sanjeev Balyan, Union Minister Shri VK Singh, Cabinet Ministers Shri Suresh Rana, Shri Kapil Dev Aggarwal, Shri Baldev Singh Aulakh, Union Minister Shri Mahendra Nath Pandey and Uttar Pradesh Jal Shakti Minister Shri Mahendra Singh, Uttar Pradesh Minister of State Shri Neelkanth Tiwari, Minister of Agriculture & Farmers Welfare and Minister of Rural Development Shri Narendra Singh Tomar, MLA Shri Ravindra Jaiswal, Minister of Urban Development Shri Ashutosh Tandon, Minister of State Shri Anil Rajbhar, Member of Legislative Assembly Ms. Geeta Balwant and other eminent dignitaries graced the events and flagged off the team of Ganga Yatra.

- **Flag-In Ganga Ceremony of Ganga Aamantaran Abhiyaan:** NMCG organized flag-in ceremony of the Ganga Aamantran Abhiyan on 13th March 2020 at New Delhi. Hon'ble Home Minister, Shri Amit Shah, flagged off the Ganga Amantaran. The programme involved open-water rafting and kayaking expedition on the Ganga river, in the august presence of Shri Gajendra Singh Shekhawat, Hon'ble Minister of Jal Shakti, Shri Rattan Lal Kataria, Hon'ble Minister of State for Jal Shakti, Shri U.P.Singh, Secretary, Ministry of Jal Shakti, Shri Rajiv Ranjan Mishra, Director General, NMCG, the expedition team and several other senior officers and distinguished guests.

Hon'ble Home Minister, Shri Amit Shah lauded the efforts of the Jal Shakti Ministry in taking Prime Minister's vision forward and doing a commendable job in rejuvenating Ganga to a great extent, in a short period of 5 years. He compared these efforts with those from around the world and said that such a big feat has been achieved in a fraction of time. The Home Minister noted the efficient planning by the Ministry for water management and maintaining the level of water flow in the river. A well laid out sewer network is being constructed in 97 towns and over 4,400 villages along the banks of Ganga and bathing ghats are being renovated, among other steps. In the near future, similar projects would be implemented on the major tributaries of the river. He also congratulated the team of Ganga Aamantran Abhiyan for conducting a month-long research expedition and awareness campaign on the river, which would play a big role in rejuvenating it. He laid stress on bringing about a behavioural change in the people, especially children, living along the banks of the river to ensure the success of the Namami Gange project.

- **Launch of Ganga River Dolphin Jalaj Safari:** The Ganga river Dolphin Jalaj Safari was launched by Shri Rajiv Ranjan Mishra, Director General, National Mission for Clean Ganga at Bijnor Barrage, Muzaffarnagar district, Uttar Pradesh. He pointed out that such initiatives will go a long way in making the people aware of the biodiversity of Ganga river and importance of conserving our National Aquatic Animal. At the same time, the initiative will link local livelihood with Ganga conservation.

- **Ganga Utsav:** The 4th edition of Ganga Utsav was held from 2nd to 4th November 2020, on a virtual platform, connecting lakhs of people across the country through a series of activities including-Ganga Dialogue, Mini Ganga Quest, Ganga Film Festival, Launch and releases, cultural programmes with vibrant mixture of storytelling, folklores, dialogues with eminent personalities, quizzers, displaying traditional artforms, dance and music performances by renowned artists, photo galleries, exhibitions and much more. Ganga Utsav was also celebrated in various districts across the Ganga basin.

- **5th India Water Impact Summit-2020:** The 5th India water Impact Summit (IWIS) was organised by National Mission for Clean Ganga and Center for Ganga River Basin Management and Studies (cGanga) from 10th to 15th December, 2020 with the theme of comprehensive analysis and holistic management of local rivers and water bodies, with focus on Arth Ganga - river conservation synchronised development. Hon'ble Minister Jal Shakti inaugurated the conference. He said that the summit aimed at discussing and disseminating the modalities of embracing Arth Ganga and the vision of Hon'ble Prime Minister in sectors that closely interweave with river conservation. He added that the summit will forge greater interaction between investors and stakeholders in the water sector and promote international cooperation between India and many foreign countries for water and river management. The summit brought together various stakeholders to discuss, debate and develop model solutions for some of the biggest water related issues in the country.

7.3.5.9 Arth Ganga:

The Arth Ganga Programme aims to garner people's participation for Ganga conservation by promoting sustainable development, so as to contribute about 3% to the GDP from the Ganga basin. It is proposed to achieve this by working on the following objectives- (a) strengthen the local economy in

the basin, (b) enhancing resource use efficiency, (c) sustainable forestry, (d) water conservation, (e) biodiversity conservation, (f) strengthening capacity and public awareness, and (g) promote multi-sectoral coordination. The focus areas of intervention will be (a) agriculture, including horticulture and floriculture, (b) fisheries, (c) tourism and culture, (d) handicrafts, including artisans in village subsistence industries, (e) renewable energy (f) sustainable forestry, and (g) biodiversity and wetland conservation.

7.3.5.10 MoU with Ministries

Being a multi-disciplinary programme, the success of Namami Gange Programme largely depends upon the support from other participating Ministries/Departments so that the multi-sectoral activities proposed in the Namami Gange programme are effectively implemented. Hence, NMCG entered into Memorandum of Understanding with several participating Central Ministries to work in close coordination and ensure better synergy:

- **Ministry of Railways** (For purchase of treated water).
- **Ministry of Drinking Water supply and Sanitation** (For rural sanitation & Ganga Gram).
- **Ministry of AYUSH** (Growing and conservation of medicinal plants in the catchment area as well as the river banks).
- **Ministry of Youth Affairs & Sports & Nehru Yuva Kendra Sangathan** (Involvement of Youth in Namami Gange programme)
- **Ministry of Human Resource Development** (Environmental literacy among the common masses along the bank of river Ganga)
- **Ministry of Rural Development** (Rejuvenation of water bodies in Ganga districts)
- **Ministry of Agriculture & Farmer Welfare** (To promote organic farming along the banks of Ganga in Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal)
- **Indian Oil Corporation Limited** (To promote the reuse of treated waste water from sewage treatment plants for non-potable purposes at different establishments of Ministry of Petroleum and Natural Gas)
- **Ministry of Tourism** (To promote eco-friendly tourism activities)
- **Ministry of Shipping** (taking initiatives and necessary efforts for sustainable shipping/river transport infrastructure in river Ganga without damaging the eco-system and bio-diversity)
- **Ministry of Skill Development and Entrepreneurship** (develop the market for reuse/recycle of treated wastewater to be released from STP/ETPs for various non-potable purposes.)

7.3.6 NARMADA CONTROL AUTHORITY (NCA)

The Authority is headed by the Secretary, DoWR, RD & GR, as its chairman, with Secretaries of the Union Ministries of Power, Environment, Forests and Climate

Changes, 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 independent members appointed by the Central Government and four part time members nominated by party States.

The Review Committee for Narmada Control Authority (RCNCA) is headed by the Union Minister of Jal Shakti, D/o WR, RD & GR and comprises Union Minister for Environment, Forest and Climate Change and Chief Ministers of four party States viz. Madhya Pradesh, Rajasthan, Maharashtra & Gujarat as members and Secretary (WR, RD&GR) is the convener.

The Narmada Control Authority has its headquarter at Indore (MP) and regional offices at Indore, Bhopal & Vadodara, liaison unit in New Delhi and field offices at Mandla, Hoshangabad, Kevadia and Indore.

In pursuance of sub-clause 16(1) clause-XIV of the Narmada Water Disputes Tribunal, Sardar Sarovar Construction Advisory Committee was constituted on 4th Sept 1980 for ensuring efficient, economical and early construction of Units-I and III of Sardar Sarovar Project. Further in pursuance of sub-clause 16(1) of clause-XIV, the Sardar Construction Advisory Committee (SSCAC) was dissolved on 11th August 2020 and the post construction management of Units-I and II will be by Gujarat under the supervision of Narmada Control Authority (NCA). Transfer of records and office equipment's from SSCAC to NCA is under process.

7.3.6.1 PROGRESS OF SARDAR SAROVAR PROJECT (SSP)

i) SARDAR SAROVAR DAM

NCA in its 89th meeting held on 16th June, 2017 granted permission to fill up the Sardar Sarovar Reservoir up to FRL i.e., 138.68 m during the monsoon 2017. Accordingly, the reservoir filling schedule was finalized in the 51st Sardar Sarovar Reservoir Regulation Committee (SSRRC) meeting on the basis of the draft schedule submitted by GoG as per the Indian Standard Code 15272:2004 guidelines and other technical standards being followed. The reservoir got filled up to 138.68 m during the monsoon 2019 on 15th September, 2019 due to intermediate catchment contribution (between OSP & SSP) of 9,738 MCM and huge inflow in order of 47,242 MCM in SSP. An expenditure of Rs.69,760.67 crore has been incurred on Sardar Sarovar Project up to March, 2020.

ii) NARMADA MAIN CANAL

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

In Gujarat the works on all branch canals of NMC from 0 to 458.318 km have almost been completed except Kachchh Branch Canal. 99.24 % of distribution systems in NMC from 0 km to 144.5 km up to minor level almost completed. In

Rajasthan portion, works pertains to distributaries (flow & lift) including sub-distributaries, minors & sub-minors were almost completed to 99.77%.

iii) UTILIZATION OF WATER

Narmada water is being supplied to Central Gujarat/ North Gujarat and Saurashtra region of Gujarat from the Sardar Sarovar Dam. Govt. of Gujarat has created an irrigation potential of 16.67 Lakh ha out of which 11.93 lakh ha has been actually irrigated during the water year 2019-20. Total quantum of 10,588 MCM was provided during the water year i.e. from July, 2019 to June, 2020 in Gujarat & Rajasthan portion, out of which 810.0 MCM water has been utilized by Rajasthan. Rajasthan has also created an irrigation potential of 2.46 lakh ha to utilize Narmada water. Drinking water is being provided to 1,541 villages & and 3 towns - Sanchore, Bhinmal and Jalore Town of Jalore District in Rajasthan. 1.84 lakh ha area has been irrigated during the water year i.e. July, 2019 to June, 2020.

7.3.6.2 RESETTLEMENT AND REHABILITATION ASPECTS OF SSP

The 37th Task Force Meeting of NCA on Rehabilitation and Resettlement issues of SSP was conducted on 26th November, 2020 and data on land and Project Affected Families (PAF) till December, 2020 were compiled as given below.

Total number of villages and families affected and resettled at FRL 138.68m

Category	State			Total
	Gujarat	Maharashtra	Madhya Pradesh	
Total number of Fully affected villages	03	00	01	04
Total number of Partially affected villages	16	33	177	226
Total	**19**	**33**	**178**	**230**
Total No. of Project Affected Families (PAFs)	4,764	4,180	23,602	32,546^
Total number of PAFs resettled in	GJ: 4,764	GJ: 752	GJ: 5,539	11,055
	MH: Nil	MH: 3,428	MH: 18,063	21,491 (MP+Maharashtra)
	MP: Nil	MP: Nil	MP: Nil	
No. of R&R sites planned/developed	236	14	288	538
No. of R&R sites Operational	223	14	283	520

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

7.3.6.3 ENVIRONMENTAL ASPECTS OF SSP

Narmada Control Authority, through its Environment Sub-group (ESG) and Environment Committee, with the active cooperation of all party States, had planned environmental safeguard measures and the same was implemented *pari-passu* with the progress of work on the project. These works were compiled and documented in the report entitled "Environment Safeguard Measures: Sardar Sarovar Project; December 2019" and circulated amongst party States, viz Madhya Pradesh, Maharashtra, Gujarat and Rajasthan vide letter No. NCA/Env./ Report 2019/88, dated 17.02.2020.

7.3.6.4 MAJOR ACHIEVEMENTS

- The releases of Narmada water from Madhya Pradesh and operations of River Bed Power House of Sardar Sarovar Project was managed to facilitate completion of works at Garudeshwar weir and impounding of water in the pool around statue of unity and Garudeshwar weir, ferry service and sea plane service at Kevadia was inaugurated by Hon'ble Prime Minister of India on 30th October, 2020.
- 14th meeting of the Review Committee of Narmada Control Authority (RCNCA) was held on 18th November, 2020 through video conferencing under the chairmanship of Hon'ble Minister for Jal Shakti to consider representation of Learned Sr. Counsel to the petitioners in pursuance of the order dated 24th October, 2019 in W.P. No. 1176/2019 of Hon'ble Supreme Court.
- Real Time Data Acquisition System having 48 remote stations were identified to be established on approval of the World Bank / NHP.
- For river basin modelling of Narmada river basin under NHP, a technical evaluation committee was formed and for providing consultancy services for water accounting and integrated reservoir operation for Narmada river basin. Subsequent to the recommendation, the work was awarded to M/s. Alluvium Consulting Australia JV with M/s. Vassar labs.
- As per the approved Annual Works Plan (AWP) for the FY 2020-21, works were identified including technical as well as strengthening of infrastructure and logistics which were approved in the MIS of NHP as well as STEP (Systematic Tracking of Exchanges in Procurement) of World Bank.
- For digitization of Narmada basin with full development scenario, the work order was issued for first phase of digitization for providing Web GIS portal to visualize and decision making purpose for an amount of Rs. 24.70 Lakhs and the process of executing the MoU with NCA is under progress.

7.3.6.5 ENERGY MANAGEMENT CENTRE (EMC)

Energy Management Centre (EMC), NCA, Indore is planning, scheduling and 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 Pow-

er Committee (WRPC), Western Regional Load Dispatch Centre (WRLDC), Central Electricity Authority (CEA) and beneficiary States & concerned State generation/transmission departments. The total energy generation at SSP complex was 4081.581 MUs (3167.332 MUs from RBPH & 914.249 MUs from CHPH) during the FY 2019-20. 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. During the FY 2019-20 SSP machines were operated for 4173:18 hours in synchronous condenser mode in.

Performance of River Bed Power House (RBPH), SSP [6 × 200 MW]

Energy generation achieved from RBPH from 1st April, 2020 to 31st December, 2020 was 1,816.606 MUs. Anticipated energy generation from RBPH, SSP for remaining months of 2021 of F.Y. 2020-21 is 160.72 MUs.

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

Energy generation achieved from CHPH from 1st April, 2020 to 31st December, 2020 was 702.225 MUs. Anticipated energy generation from CHPH, SSP for remaining months of F.Y. 2020-21 is 275.81 MUs.

7.3.6.6 WATER ACCOUNTING

NCA prepares Annual Water Account (AWA) of Narmada basin and the AWA for the year 2018-19 has been prepared and circulated to the party States. The utilizable flow at Sardar Sarovar Dam during the water year 2018-19 was 19.52 MAF (24,076.85 MCM). The share of utilizable flow for Madhya Pradesh was 12.72 MAF/15692.95 MCM, Gujarat 6.27 MAF/7738.99 MCM, Maharashtra 0.17 MAF/214.97 MCM and Rajasthan 0.35 MAF/429.94 MCM. Actual utilization by the party States were 15.55 MAF/19183.31 MCM, with break up as Madhya Pradesh 8.43 MAF/10402.91 MCM, Gujarat 6.60 MAF/8137.38 MCM, Maharashtra NIL and Rajasthan 0.52 MAF/643.02 MCM.

7.3.7 BRAHMAPUTRA BOARD

The Brahmaputra Board was constituted by an Act of Parliament and received the assent of the President on 1st September, 1980. The Brahmaputra Board Act, 1980 (No. 46 of 1980) provides for the establishment of a Board for planning and integrated implementation of measures for the control of floods and bank erosion in the Brahmaputra valley and for matters connected therewith.

The Board consists of 21 members under the chairman, Brahmaputra Board (4 full time members and 17 part time members), The jurisdiction of Brahmaputra Board covers all the North Eastern States including Sikkim and North Bengal. The organizational setup of Brahmaputra Board has been modified after restructuring order issued by GoI on 10th January, 2019 which provides for establishment of regional offices headed by Dy. Chief Engineer/Superintending Engineer in all the State capitals of North Eastern States.

A High Powered Review Board to oversee the work of the Brahmaputra Board was constituted with the Union Minister of Jal Shakti as the chairman, Chief Minister of Assam, Manipur, Meghalaya,

Renovated material testing laboratory of NEHARI

Renovated hydraulic laboratory of NEHARI

Nagaland, Tripura, Arunachal Pradesh, Mizoram, and Union Minister / Ministers of State-Finance, Surface Transport, Power, Agriculture, Ministers of State- Jal Shakti and Secretary to the Ministry of Jal Shakti, Department 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.

Ministry of Jal Shakti approved the restructuring proposal of Brahmaputra Board on 10.01.2019 creating new 9 (nine) regional offices of Brahmaputra Board with headquarter in each State capital of North Eastern Region and at Siliguri in West Bengal.

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

This institute was established under Brahmaputra Board at Rudreswar, North Guwahati as per clause 7 of Assam Accord, and operationalized during 1996. However, due to various reasons after initial functioning, the institute stopped getting samples for testing etc. in its laboratories and due to disuse, the labs become dysfunctional. It was decided to renovate the laboratories during 2018-2021. Accordingly, a project was taken up since 2018-19 which has successfully been executed, renovating the entire infrastructure of the institute by making laboratories up to date. The renovated NEHARI was inaugurated on 14.01.2021 by the Hon'ble Minister Jal Shakti at Guwahati. An MoU with IIT Guwahati is under way for research and training activities at NEHARI.

Hon'ble Minister Jal Shakti inaugurating the Renovated NEHARI

7.3.7.2 MAJOR FUNCTIONS

The main objectives of Brahmaputra Board are 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 DoWR, RD & GR 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.

7.3.7.3 ACHIEVEMENTS OF THE YEAR

i) Master Plans

Brahmaputra Board had taken up preparation of master plans of the main stem of the Brahmaputra and Barak along with 68 major tributaries of Brahmaputra including Majuli Island, river Dhaleswari and rivers of Meghalaya, Mizoram, Manipur and Tripura in three parts as under.

Eight approved Master Plans viz. Brahmaputra Main Stem, Barak, Subansiri, Jia-Bharali(Kameng), Lohit, Dhansiri(S), Beki-Manas-Aie, Kapili-Kolong to be taken up for updating/modification.

Two Master Plans (Tangani and Kynshi) are under process of approval of Govt of India. Modification of six draft Master Plans is continued. Three Master Plans are under preparation and eight are in the identified list for preparation.

ii) Survey & Investigation' and Preparation of Detailed Project Reports of Multipurpose Projects:

- Brahmaputra Board took up survey & investigation of 14 multipurpose projects in Brahmaputra and Barak basin and in the south flowing rivers of Meghalaya. Status of these projects is summerised in ***Annexure-IX.***
- Brahmaputra Board has taken up setting up of North East Water Resources Data Centre and implementation has been assigned to WAPCOS as Project Management Consultant (PMC).

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-III	Master Plan on tributaries of the Brahmaputra and rivers of Tripura including Majuli Island and Dhaleswari	68	• Approved by Government of India-50 Master Plans • Approved by the Board and under process of approval in MoJS, DoWR, RD&GR, RD&GR - 2 Master Plans • Awaiting for decision on International Aspects & Inter-state ramification – 2 Master Plan • Further updated as per suggestion of DoWR, RD&GR utilising tools of modern technology – 6 Master Plans • Basins identified for preparation of new Master Plan-8 • Preparation of Master Plan of Imphal river Basin of Manipur is taken up • 8 approved Master Plans to be taken up for updating/ modification
Total		**70**	

- Scientific dissemination and improvement of water management practices of local tribes and indigenous people of NE region has been taken up in association with NERIWALM. Four areas of NE region have been identified in first phase. Works under Ziro valley is underway.
- **Soft measures for Flood and Erosion Management-** Brahmaputra Board has proposed to take up a pilot project at two sites viz. right bank down-stream of Kordoiguri and at Dakhinpat in Majuli island in collaboration with IIT, Guwahati for "hard & soft measures" termed as bio-engineering method for flood and erosion management.
- For preparation of Detailed Project Report to check flash flood and erosion in BTC area by Pagla/Baitamari, Aie, Beki, Pagladiya, Sankosh, Gangia and Saralbhanga rivers, work has been allotted to WAPCOS as Project Management Consultant (PMC).

iii) Anti-Erosion and Flood Management Schemes

a) Protection of Majuli Island from Flood and Erosion

Majuli is the largest inhabited fresh water river island in the world. It is situated between latitudes 26º45'N and 27º10'N, and longitudes between 93º40'E and 94º35'E. Majuli has been the cultural capital and the cradle of Assamese civilization since the 16th century. Sankardeva, a pioneer of the medieval-age neo-vaishnavite movement, preached a monotheist form of Hinduism called Vaishnavism and established monasteries and hermitages known as 'Sattras'. The 'Sattras' preserve antique 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. Works under immediate measures, emergent measures, Phase I, Phase-II & III have been 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 the then MoJS and Ministry of DoNER allocated Rs 207 crore for the same. Execution of the scheme is in progress. 88% of the works has been completed so far and is targeted to completed by March 2021. Rs. 350.53 crore have been spent till December 2020 for erosion protection works in Majuli since 2004. Board has assigned work of office campus at Majuli to NPCC as PMC for monitoring of protection work and for further survey and investigation activities.

Financial Implication

Expenditure incurred by Brahmaputra Board up to 31st December 2020 on undertaking measures protection of Majuli island from floods and erosion is detailed below-

(Rs. in crore)

No	Description	Estimated Cost	Actual Exp.	Remarks
1	Phase-II & Phase-III	115.99	127.48	Completed
2	New scheme "Protection of Majuli Island from flood and erosion of river Brahmaputra"	233.57		
	i. Funded by MoDoNER	207.00	155.48	Physical progress 88%
	ii. Spent from Grants-in-aid of MoJS, DoWR,RD&GR	26.57	4.10	Maintenance of Spurs Constructed under Phase-II & III continued

Protection of Majuli Island from flood and erosion of River Brahmaputra (Bankrevetment) at Kamalabari, Majuli

b) 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" 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. 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 erosion. The desertees from the areas have returned back and restarted cultivation.

For continuation of benefits accrued from the schemes implemented in four phases of works of scheme Avulsion of Brahmaputra at Dholla Hatghuli, it is proposed to convert the existing tie-bund into a full-fledged embankment at Bahbari. Work estimated at Rs. 24.95 crore is under implementation.

c) Other Schemes:

- **Protection of Balat Village in Meghalaya on River Umngi (Estimated cost Rs. 12.87 crore): Phase- II:** DPR for Phase-II works for Rs. 12.87 crore is currently under implementation.
- **Anti-erosion works for protection of Mankachar, Kalair-Alga International Border area from erosion of river Brahmaputra, Assam:**

Work of bank revetment works with boulder spur was 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 is expected to be completed in next year. Major components of works of RCC porcupine screens have been completed and the retirement bund is also almost completed. Due to changed scenario after laying of RCC porcupine screens, a sub-committee of TAC-BB visited the area and on the basis of report of sub-committee it was decided by the TAC-BB for implementation of third component, i.e. bank revetment works. The work is being executed in 3 groups. Work of Group I has been completed. Work of Group II and Group –III are in progress and 80% progress has been achieved up to December 2020. Expenditure up to December 2020 is Rs. 16.66 crore.

Bank revetment works at Mnakachar, Kalair-Alga

- **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:**

  Execution of work for Rs. 4.90 crore is in progress. 75% physical progress has been achieved up to December 2020 with expenditure of Rs 1.15 crore.

- **Bank protection work at Bhogdebri area on the Right Bank of River Mansai in Cooch Behar district in West Bengal:**

  Execution of work for Rs. 4.68 crore is in progress. 57% physical progress has been achieved up to December 2020 with an expenditure of Rs 3.13 crore.

Bank revetment work at Bhajaner Chhera in river Mansai in West Bengal

RCC Porcupine work at Bhajaner Chhera in river Mansai in West Bengal

- **Development of Infrastructures of Brahmaputra Board to carry out the Work of protection of Majuli Island:**

  For better monitoring and implementation of the work of protection of Majuli island, Brahmaputra Board has taken up for development of infrastructure at Majuli within estimated cost of Rs. 9.47 crore and the project is under execution by NPCC in PMC mode.

- **Preparation of detailed project report to check flash flood in BTC area:**

  As a follow up action of Bodo Accord, Brahmaputra Board was entrusted for preparing DPR to check flash flood in BTC area and it is under preparation by WAPCOS under PMC mode.

- **Construction of Ghat at Kamalabari to support anti-erosion works for protection of Majuli Island***:*

  For protection of the anti-erosion works carried out at Kamalabari Ghat in Majuli under the scheme, for the protection of Majuli island and to create facilities for all season free movement of passengers from Majuli island to Jorhat, development of Kamalabari Ghat is taken up with an estimated cost of Rs. 17 crore.

iv) 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. Dharmanagar DDS has been submitted to CWC after complying to observations. DPRs of Pota Kolong, Deroi, Larsing are under modification. Regarding Demow DDS, CWC requested to get the design of the DPR of Demow DDS to be vetted from CWC.

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

Keeping in view 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. 7,984 crore. To assess the efficacy of the proposal, a research project named "Mathematical Model Study of River Brahmaputra with emphasis on climate change" was undertaken to understand the river dynamics, its problem as well as finding out long term sustainable solutions to the complex problem of floods and erosion, and an MoU has been signed with IIT Guwahati at a cost of Rs. 2.80 crore to conduct the mathematical model studies. Validation of 2D model with physical model at hydraulic model of NEHARI is in progress. It is expected to complete the study by March 2021.

vi) Monitoring of Schemes under Flood Management Program and Border Areas Programme (FMBAP) - A State Sector under Central Plan–in Brahmaputra and Barak Valley

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 Border Area Programme monitored by Brahmaputra Board upto 2020-21 are shown below:

Plan	No of Schemes	Central Assistance Release
X Plan	74	146.20
XI Plan	201	1063.58
XII Plan	64	197.27

Beyond XII Plan		
2017-18	29	267.15
2018-19	13	152.96
2019-20	18	85.03
2020-21	-	-

vii) Organising Brahmaputra Aamantran Abhiyan:

As a public outreach initiative to popularize sustainable practices and river rejuvenation, a 'Brahmaputra Aamantran Abhiyan' (BAA) was organized by Brahmaputra Board from 23rd December, 2020 to 21st January, 2021. The rafting expedition comprised two legs in India covering about 900 km. The Arunachal leg started from the Indo-China border at Gelling in Upper Siang District of Arunachal Pradesh and moved along the Siang River to Pasighat in East Siang district of Arunachal Pradesh. On entering Dhemaji district in Assam from Pasighat, the Assam leg started along Brahmaputra River and ultimately terminated at Assameralga in South Salmara Mankachar District of Assam near Indo-Bangladesh Boarder. Two pronged objective of the expedition was -

- A public outreach programme aimed specially at youths and students through a river rafting expedition to popularize the concept of "Living with the River".
- A combined data collection and sampling exercise on river water quality, river sediment, river bank erosion and fish habitat along entire route of the expedition, in collaboration with various institutes of repute.

viii) Innovative/new measures initiated by Brahmaputra Board:

The reformative measures initiated by Brahmaputra Board continued during the year 2020-21 are as under-

Public outreach programme attended by Hon'ble Union Minister of Jal Shakti and Hon'ble Minister of Assam for Commerce and Industry, Transport, Parliamentary Affairs, Skill, Employment & Entrepreneurship Development and Act East Policy Affairs

- **Rejuvenation and renovation of North Eastern Hydraulic and Allied Research Institute (NEHARI):** An institute set up under Assam Accord and lying non-functional since 2010, has been taken up for rejuvenation & renovation with special focus on hydrological laboratory that matches CWPRS facility at Pune, thus making it one of its kind facility in NE region.
- **Setting up of North East Water Resources Data Centre (NEWRDC)**: To facilitate single window for water resources data archieval & sharing for planning, research & development of integrated water resources development of NE region, Brahmaputra Board has initiated for setting up of North East Water Resources Data Centre within NEHARI campus which is also a recommendation of High Level committee set up by NITI Aayog.
- **Good Water Management Practices in NE Region for better Basin Management**: A pilot project has been taken up for scientific dissemination and improvement of water management practices of local tribes and indigenous people of North Eastern Region at (i) Apatani inhabited Ziro Valley & one more area in Arunachal Pradesh, (ii) Chakhesang tribe of Phek district in Nagaland, (iii) Bodo tribe of Baksa district in Assam
- **Restructuring the Brahmaputra Board**: Brahmaputra Board has been restructured with 9 (nine) Regional Offices to have a foot print in every State under its jurisdiction for better coordination with the States in January 2019 which have been appreciated by all the North Eastern States. All the regional offices have started functioning in close coordination with the respective State Govt to fulfil their requirements within the mandates of the Board and available resources.

7.3.8. BETWA RIVER BOARD (BRB)

7.3.8.1 ORGANISATION AND ITS COMPOSITION

A decision to harness the available water resources of Betwa river was taken in a meeting held on 22nd July 1972 between Chief Ministers of Uttar Pradesh and Madhya Pradesh. Further Uttar Pradesh and Madhya Pradesh in a meeting held on 9th December 1973 agreed for setting up of a tripartite Control Board for the speedy, smooth and efficient execution of the various inter-State projects of both the States. 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 BRB after promulgation of BRB Act 1976. The benefits and cost of the above projects are being shared equally by both the State Governments.

The Union Minister (Jal Shakti) is the chairman of the Board. Union Minister of Power, Union Minister of Water Resources, Chief Ministers and Ministers-in-charge of Finance, Irrigation and Power of the two States are its members. An Executive Committee of the Board headed by Chairman, CWC manages the activities of the Board.

7.3.8.2 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 costs as well as benefits of the project are to be shared equally by both the States. Construction works of dam and power house have been completed.

i) Land Acquisition

The dam submerges 38 villages in U.P. and 31 villages in M.P. State. Compensation in M.P. area is completed. In U.P. the District Administration, Lalitpur had paid the land compensation of 25 villages and 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 Uttar Pradesh.

ii) Planning and Present status of Rajghat Power House works

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

The three units of power house have been tested and commissioned during 1999-2000. From 1999-2000 to 2019-2020 (twenty years), electricity generation from Rajghat power house is 17,617.06 lakh units. The electricity generation during 2020-21 (upto 31.12.2020 is 805.75 lakh units.

The expenditure of dam is being booked in O&M head since October, 2005 as per decision taken in the meeting held on 02.02.2006 under the chairmanship of Secretary, MoWR. The State of U.P. has paid Rs 146.50 crore and M.P. has paid Rs 97.13 crore against their due share up to December, 2020.

7.3.9 TUNGABHADRA BOARD

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 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 the agreed ratio. 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.

7.3.9.1 Physical and Financial achievements and new initiatives

i) Irrigation Wing

a) The Tungabhadra Reservoir has been filled up to the full reservoir level 497.740 m (1633.00 ft.) in this year. The inflow into the reservoir from June 2020 to December 2020 is 8218.492 Million Cubic Meters (MCum) (290.242 TMC). The utilization by the Karnataka State, Andhra Pradesh & Telangana till end of December 2020 during the water year 2020-21 is as per the table below.

The evaporation losses from June 2020 to December 2020 is 128.073 MCum (4.523 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 12.50: 5.50. The water surplussed over spillway is 2617.644 MCum (92.444 TMC) in addition to 588.633 MCum (20.788 TMC) of water drawn for extra power generation by the power houses on both the sides without jeopardizing the irrigation interests during the water year 2020-21.

b) Due to the completion of modernization of RBHLC from km. 0.00 to 105.00 (except for widening of the few reaches), the velocity of water flow in the canal has improved a lot and the canal is now able to draw more than the designed discharge of 4,000 cusecs at head and able to deliver a discharge of 2,350 cusecs recently and is capable of carrying the design discharge of 2,575 cusecs at Andhra Pradesh border (against earlier discharge of 1,500 cusecs). The modernization of power canal is completed and modernization of RBLLC has been taken upto 115 km. and is in progress.

c) Transparency in Water Accounting and Measurement:

- Canal flow measurement with modern Acoustic Doppler Current Profiler (ADCP) techniques is being used and also telemetry system has been commissioned.
- Daily live flow data i.e. discharge in the canals at various chainage/ offtake points, reservoir water level is displayed in the website of www.tbboard.gov.in & app also available in Google play store i.e. TBBLIVEFLOW for information to member States, public and farmer community.
- This is propagating awareness among the farmer community about the over usage and misuse of water.

Sl. No.	Name of the State	Allocation as per KWDT Award (TMC)	Prorata Entitlement on Abstraction (TMC)	Actual Utilization (in TMC) (As on 31.12.2020)	Actual Utilization (in MCum) (As on 31.12.2020)
1.	Karnataka	138.990	110.143	72.071	2040.762
2.	Andhra Pradesh	66.500	52.698	34.711	982.876
3.	Telangana	6.510	5.159	0.000	0.000
	Grand Total	**212.000**	**168.000**	**106.782**	**3023.638**

- Now the TB canals are habituated to be closed during good rainy spells and adopting optimum usage of water as a mark of good water accountability.

ii) Hydro Electric Scheme

Two power houses are being maintained by the Tungabhadra Board with a total installed capacity of 72 MW and a target of 156 million units of power generation is envisaged during the water year 2020-21. Against this, the power generated till end of December 2020 is 133.36 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 comprising 3 units of 2.75 MW each generated 25.027 million units upto December 2020. 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 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., 31.08.2013. The total project capital cost is Rs.11.50 crore. The mini hydel plant comprising single unit of 1.4 MW has generated 4.97 million units upto December 2020. The power generated is purchased by the GESCOM, Gulbarga (Karnataka) at the rate of Rs.2.80 per unit. Anticipated power generation from January 2021 to March 2021 will be 43 million units worth of Rs.12.9 crore.

iii) 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 for the year 2020-21 were given to M/s Koppal Fisheries Co-Operative Society, Koppal for Rs.122 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 and fish farms upto December 2020 is Rs.28.60 lakhs.

7.3.10 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 4.36 lakh ha. The project also envisages generation of 960 MW of hydro power, drinking water supply to 28.50 lakh population, diversion of 80 TMC 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 for Polavaram Project Authority vide 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 and CSMRS, New Delhi as quality consultant.

7.3.10.1 COST OF THE PROJECT

Approved cost of PIP was Rs. 10,151.04 crore at 2005-06 price level. Thereafter, 1st Revised Cost Estimate of the project was approved by the Planning Commission for Rs. 16,010.45 crore at at 2010-11 PL.

The 2nd Revised Cost Estimate at 2017-18 PL has been examined in CWC and was placed before Advisory Committee of DoWR RD&GR in its 141st meeting held on 11.02.2019. The same has been accepted by the TAC for an amount of Rs.55,548.87 crore.

Subsequent to the approval of Advisory Committee of DoWR, RD&GR, a Revised Cost Committee (RCC) was formed under the chairmanship of JS & FA of DoWR, RD & GR on 02.04.2019 to examine the cost escalation of Polavaram Irrigation Project. The Committee recommended the RCE for 29,027.95 crore at 2013-14 PL and for Rs. 47,725.74 crore at 2017-18 PL.

In 13th PPA meeting, Polavaram Project Authority, duly considering the Revised Cost Committee Report dated 17.03.2020, approved the recommendations of the estimated cost figures for 2013-14 price level at Rs 29,027.95 crore and for the 2017-18 price level at Rs 47,725.74 crore.

7.3.10.2 STATUS OF LAND ACQUISATION AND RESETTLEMENT & REHABILITATION

A total 371 habitations of 222 revenue villages in 8 mandals are coming under submergence area and working area for head works in West Godavari and East Godavari districts in Andhra Pradesh. Out of these, 165 revenue villages in 5 mandals (Chinturu, V R Puram, Yetapaka, Kunavaram & Devipatnam) are in East Godavari District and 57 revenue villages in 3 mandals (Polavaram, Kukunoor&Velairpadu) are in West Godavari District.

Land Acquisition and Rehabilitation & Resettlement Status

Component	TOTAL		COMPLETED		BALANCE	
	Physical	Financial (Rs. in crore)	Physical	Financial (Rs. In crore)	Physical	Financial (Rs. In crore)
LA* (in Acres)	1,67,339	13,077	1,11,185	5,642	56,154	7,435
R&R (in PDF's)	1,05,601	20,091	3,110	941	1,02,491	19,150
TOTAL		**33,168**		**6,583**		**26,585**

7.3.10.3 PHYSICAL AND FINACIAL ACHIEVEMENTS

The poject is in an advanced stage of progress. The physical and financial progress of Polavaram Irrigation Project as submitted by Water Resources Department, Government of Andhra Pradesh up to December, 2020 is as follows,

Sl. No	Description	% of Physical progress (up to Dec, 2020)
1	Earthwork	85.15
2	Concrete	75.13
3	Structures	52.75

Sl. No	Description	% of financial progress (up to Dec, 2020)
1	Head works	71.09
2	Right main canal	90.20
3	Left main canal	68.90
4	Total Project (Works)	74.42
5	LA and R&R	19.85
Overall Project (Works+LA and R&R)		41.10

7.3.10.4 EXPENDITURE ON THE PROJECT

Total an expenditure of Rs.16,899.38 crore has been incurred on the project till end of December, 2020.

Funds released/ reimbursement by Central Government:

Central Assistance of Rs. 562.47 crore was provided to the State under AIBP till March, 2014. Central Government will provide 100% of the remaining cost of the irrigation component only of the project for the period starting from 01.04.2014 to the extent of the cost of the irrigation component on that date. An amount of Rs.10,848.36 crore has been released by Govt. of India so far for execution of project after declaration of project as national project including the expenditure towards establishment charges of PPA.

7.3.11 KRISHNA AND GODAVARI RIVER MANAGEMENT BOARDS

7.3.11.1 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

Two meetings of the Apex Council were held so far on 21.09.2016 and 06.10.2020 under the chairmanship of Hon'ble Minister of Jal Shakti to sort out the issues of the States of Andhra Pradesh and Telangana pertaining to Krishna River Management Board.

7.3.11.2 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, 11th and 12th Board meetings were held on 09.01.2020 and 04.06.2020 to sort out the issues of water sharing for drinking and irrigation water requirements, sharing of power generation benefits at Srisailam project and issue of submission of DPRs of water resource projects in Krishna basin by the State Governments of Andhra Pradesh and Telangana for appraisal and orders were issued accordingly.

Department of Water Resources, River Development & Ganga Rejuvenation has constituted a Committee under chairmanship of Chairman, KRMB to resolve the issue of Krishna water supply to Chennai. Five meetings of the Committee were held so far. During 2020-21 water year as on 19.01.2021, a quantity of 8.015 TMC water was released at Srisailam reservoir and the quantity realized at A.P.-T.N. border was 6.412 TMC.

Efforts in the Technological Advances

The Krishna River Management Board (KRMB) took a step towards technological advances by launching its website "krmb.gov.in" mainly for water accounting. The project authorities are uploading the data of inflows, outflows and water levels in various reservoirs. This helps KRMB to account for the water utilization in each reservoir/canal system. This also facilitates in issuing water release orders by the KRMB.

7.3.11.3 GODAVARI RIVER MANAGEMENT BOARD (GRMB)

The GRMB was constituted vide Gazette Notification No: S.O.1403 (E) dated: 28th May, 2014 in accordance with 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 2020-21, 9th Meeting of the GRMB was held on 05.06.2020 under chairmanship of Chairman, GRMB at Hyderabad. In this meeting, the issue of appraisal of DPRs was discussed in detail and finally Chairman asked both the States to submit the DPRs of all the new projects to GRMB.

The Board decided to constitute a Committee for the purpose of installation of telemetry system in Godavari basin initially at all inter-State Border points of the State of Andhra Pradesh and State of Telangana for identification of suitable sites as well as appropriate equipment for installation. The Committee would be chaired by Member, GRMB and comprises officers drawn from the State of Andhra Pradesh and State of Telangana, CWC, Hyderabad and CWPRS, Pune, as members. The Committee held two meetings.

8

PUBLIC SECTOR ENTERPRISES

8. PUBLIC SECTOR ENTERPRISES

8.1 WATER AND POWER CONSULTANCY SERVICES LIMITED (WAPCOS)

WAPCOS Limited is a "MINI RATNA-I" Public Sector Enterprise incorporated on 26.06.1969 under the Companies Act, 1956. The quality management systems of WAPCOS comply with the Quality Assurance requirements of ISO 9001:2015 for Consultancy Services in Water Resources, Power and Infrastructure Development Projects & also with the Quality Assurance requirements of ISO 9001:2008 for Engineering, Procurement & Construction Projects related to residential, office buildings, civil works, roads & highways, irrigation, agriculture and water projects, electrical power projects for generation, sub-station, transmission, distribution networks, rural electrification and renewable energy, industrial, IT, telecommunications and related projects.

OBJECTIVES

- To perform the role of a premier agency for offering integrated package of services of scientific, technological and managerial quality for optimal planning and development of projects.
- To adopt modern technology and systems to build in quality, reliability and accuracy thereby ensuring customer satisfaction.
- To continue the pace of growth of domestic and overseas business and to transfer know-how to clients.
- To adopt international standards in surveys, investigations, designs, cost estimates, project planning including environmental studies and project management services for cost-effective and integrated development of water resources, power and infrastructure projects.
- To promote research and development through interaction with other national and international agencies.
- To maintain pre-eminence in the field of consultancy through diversification in allied fields.
- To secure a fair monetary return to the enterprise as a result of its operations through improved productivity.

8.1.1 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 & land conservation
- Agriculture
- Watershed management
- Natural resources management
- Hydropower
- Thermal power
- Pumped storage projects
- Transmission & distribution
- Rural electrification
- Non-conventional sources of energy
- Water supply, sanitation and drainage
- Environment
- Ports, harbours and inland waterways
- Urban and rural areas development
- Roads and highway engineering
- Buildings & townships
- Ropeways

The company provides concept to commissioning services for developmental projects in India and abroad.

8.1.2 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

WAPCOS has conducted survey and investigation/pre-feasibility/DPRs for more than 550 projects in irrigation, water resources and agricultural etc. contributing to development of over 17 million ha irrigation potential; more than 200 projects in ports and inland navigation; over 500 projects in water supply and sanitation, rural and urban development, roads and highway engineering; EIAs for over 300 projects in the fields of irrigation, hydro/ thermal power, ports and harbours in India and abroad. Similarly, in hydro-power sector, WAPCOS has completed 52 hydropower projects in 19 countries with an installed capacity of more than 21,600 MW, and 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 and distribution, WAPCOS has accomplished more than 14 projects in India and abroad. WAPCOS operates in all the States of India through more than 100 project offices spanning across all Government and private sectors, with the experience of working in flagship schemes of Government of India.

8.1.3 REGISTRATION WITH INTERNATIONAL ORGANIZATIONS

WAPCOS is registered with various international funding agencies for participating in the funded projects, such as 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, New Development Bank, Asian Infrastructure Investment Bank, European Investment Bank, European Bank for Reconstruction and Development.

8.1.4 OPERATIONS ABROAD

In the year 2008-2009, WAPCOS had presence in 8 countries that has expanded to 51 countries by year 2019-20. Apart from India, WAPCOS has successfully completed/on-going consultancy assignments in countries covering Asia, Africa, Eurasia, CIS, South America, North America, Oceania, Pacific Islands & Europe providing consultancy services in different countries including Angola, Afghanistan, Benin, Belize, Bhutan, Burundi, Botswana, Cambodia, Cameroon, Central African Republic, Chad, DR Congo, Eswatini, Ethiopia, Fiji, Georgia, Ghana, Guinea Conakry, Indonesia, Jordan, Kenya, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mongolia, Mozambique, Myanmar, Nepal, Nicaragua, Niger, Nigeria, Papua New Guinea, Rwanda, Senegal, Sierra Leone, Sri Lanka, Suriname, Tanzania, Tajikistan, Togo, Timor Leste, Uganda, Uzbekistan, USA, Vietnam, Yemen, Zambia, Zimbabwe. WAPCOS, with highly qualified professionals, vibrant management and excellent infrastructural facilities, is poised to meet the challenges of the 21st century effectively. The works are spread across African continent with the strong presence in 28 countries.

8.1.5 DIVIDEND

For the year under review, the Board has recommended a dividend of Rs.25.00 per equity share of Rs.100 each for the year ended 31.03.2020 aggregating to Rs.25.00 crore, being 25% of the paid up capital of the company.

8.1.6 STRATEGIC INVESTMENT IN NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED (NPCC)

During the year under review, 98.89% shareholding of NPCC was acquired by making investment of Rs.79.80 crore as a result of which it became subsidiary of the company. NPCC operates in industrial infrastructure, thermal, hydro power projects, tunneling and underground projects, railways, highways, surface transport projects, dams, townships and other residential buildings, institutional buildings, office and sports complexes, bridges and flyovers, real estate works, weirs, barrages, border road and fencing, hospitals and health sector projects, environmental engineering, and flood lighting works.

8.1.7 DISINVESTMENT OF THE COMPANY AND LISTING OF ITS SHARES IN THE MARKET

The Government has approved disinvestment of the company through Initial Public Offer (IPO) and listing of its shares in the stock market. In this regard, steps were initiated and during

the year under review, with the approval of the President, membership of company was increased from four members to eight members. The two book running lead managers and a firm of advocates and solicitors were appointed by the Department of Investment and Public Asset Management, Ministry of Finance for the purpose.

8.1.8 AWARDS FOR WAPCOS

- Water Digest-Water Award 2019-2020
  - ✓ Made in India Best Water Company (Public Sector)
  - ✓ Best Consultancy Award
  - ✓ Best Water Management
- Best Consultancy Entity (for a completed project) instituted by Central Board of Irrigation and Power.
- 49th EEPC India Regional Award (Northern) for export Excellence-"Special Trophy for Excellence in Export of Engineering Services, Large Enterprise".
- Scope Corporate Communication Awards 2019
  - ✓ "Crisis Handling" First prize
  - ✓ Best Corporate Communication Campaign & Program - External Communication - First Prize
  - ✓ Best House Journal (Hindi)-Third Prize
- PSE Excellence Awards
  - ✓ Company of the Year
  - ✓ Corporate Social Responsibility & Sustainability
  - ✓ Corporate Governance-"Runner-up"
  - ✓ CMD of the year

8.1.9 INNOVATION AND CHANGE ORIENTATION

Over the last few years, WAPCOS has successfully diversified into construction sector and involved in construction of projects in various sectors such as dams, canals, buildings, WTP's/STP's, protection of archaeology sites, tourismi infrastructure, heritage etc. WAPCOS now has the requisite experience and expertise to undertake EPC projects of any scale and complexity in the sectors of its operation.

Preventive Health Checkup Camp organized in Prathamik Vidyalaya Village-Balapur, District-Shravasti, Uttar Pradesh

Watershed Development Project, Centurion University Education Model (CUTM), Paralakhemundi, Gajapati, Odisha

8.1.10 CORPORATE SOCIAL RESPONSIBILITY

WAPCOS has a two tier corporate social responsibility structure, first tier being of senior officials of the company and second tier of Board level committee. Activities have been undertaken in different States of India and in diverse fields, which include environmental sustainability, preventive health care, old age home, rural development, setting up public libraries, school education, art and culture, skill development.

The monitoring of CSR activities was done regularly by independent agencies as well as internal monitoring committee.

8.2 NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED (NPCC)

National Projects Construction Corporation Limited (NPCC) was established on 9th January 1957 as a premier construction company to create the 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 Ministry of Jal Shakti and is well established in the country with its registered office at New Delhi, corporate office at Gurugram and 15 zonal offices in State capital of different States.

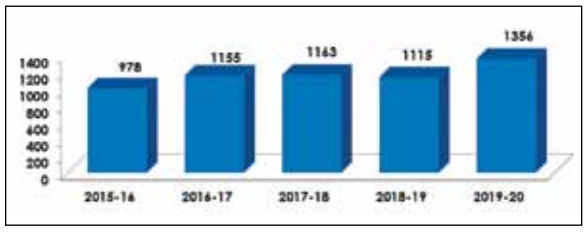
8.2.1 FIELDS OF SPECIALIZATION

Townships and other residential buildings, institutional buildings, office complexes, roads, bridges and fly-overs, hospitals and health sector projects, industrial structures, surface transport projects, environmental projects, heritage projects, thermal power projects, hydro-electric power projects, dams, barrages, canals, tunnels and underground projects and real estate works.

8.2.2 FINANCIAL STATUS

The authorized capital of the corporation is Rs. 700 crore and its paid up capital is Rs. 94.53 crore. The corporation achieved a turnover including other income of Rs. 1,356 crore (rounded off) during 2019-20. The net worth of corporation is Rs 189.66 crore with profit of Rs 19.81 crore as of 31.03.2020.

The total revenue from 2015-16 to 2019-20 has been indicated in chart below:



WAPCOS, together with NPCC, has contributed over Rs. 2 crore towards PM

Cares fund as a humanitarian gesture to fight against the unprecedented pandemic outbreak.

8.2.3 MAJOR WORKS COMPLETED:

- Construction of various buildings for Assam Riffles valuing Rs. 1,588.52 crore
- Construction of BOP, roads & fencing works for MHA valuing Rs. 1,109.00 crore
- PMGSY roads at different locations in Jharkhand valuing Rs. 969.00 crore
- PMGSY roads (640) in 6 districts of Bihar i.e., Bhojpur, Buxar, Rohtas, Kaimur, Patna, Nalanda valuing Rs. 866.00 crore
- PMGSY road works in Paschim Medinipur (W.B.) valuing Rs. 611.72 crore
- Construction of flood lighting works for MHA valuing Rs. 567.44 crore
- Development and construction of various buildings for Indira Gandhi National Tribal University Campus at Amarkantak (M.P) valuing Rs. 480.00 crore
- Construction of high altitude road along Indo-China border at Leh in the State of J&K (Phobrang to Charste) valuing Rs. 323.98 crore
- Construction of high altitude road along Indo-China border at Leh in the State of J&K (Karzok to Chumar) valuing Rs. 313.41 crore
- Dolaithabi barrage, Manipur valuing Rs. 141.66 crore
- Construction of office building of P&SB at Gurgaon valuing Rs. 34.68 crore
- Construction of agricultural management building and 100 bed Girls Hostel, Dr.R.P.C.A.U., Pusa.
- Construction & development of monuments at various locations under Archaeological Survey of India (ASI).

8.2.4 STATUS OF MAJOR WORKS UNDER EXECUTION

At present, the corporation is executing more than 370 projects spread all over the country. These include Indo Bangladesh border fencing works in Tripura, Mizoram, Assam and Meghalaya, Assam Rifle works in different States of North-East, irrigation & river valley projects, hydroelectric projects (Hathiari power house in Uttarakhand) and other miscellaneous projects. Some of the major projects are:-

i) Building Works

The corporation has undertaken several construction assignments relating to buildings, roads, hospitals, bridges, fly-overs etc.

- KVS schools in various locations valuing Rs. 736.04 crore
- AYUSH Institute at Sarita Vihar, Silchar, Shillong, Kolkata, Jaipur ,Jhajjar & Nagamangala valuing Rs. 596.07 crore
- Slum Board Dwelling Units in Bellary City Karnataka valuing Rs. 433.79 crore
- Construction of PMAY at Jamshedpur valuing Rs. 393.00 crore
- CAU Works in North Eastern States and Guwahati valuing Rs. 356.71 crore

- Navodaya Vidyalaya works at various locations valuing Rs. 290.24 crore
- Assam Rifles establishments at different locations in Shillong valuing Rs. 269.32 crore.
- Hydro electric power project in Uttarakhand valuing Rs. 250.00 crore
- ST & SC Development Deptt. Govt of Odisha valuing Rs. 230.38 crore
- Building at Dwarka for Central Excise Department valuing Rs. 219.89 crore
- Development of amenities for ASI valuing Rs. 210.00 crore
- Works under Rajendra Prasad Agriculture University PUSA valuing Rs. 186.86 crore
- NHIDCL works in Sikkim valuing Rs. 184.01 crore
- Construction of STPI infrastructure valuing Rs. 119.29 crore
- Construction of up-gradation of ITI at Jabalpur, Rewa, Shahdol & Sagar valuing Rs. 117.89 crore
- Hydro engineering college in Himachal Pradesh valuing Rs. 105.00 crore
- Development of tourist facilities at Mantalai Sudhmahadev Patnitop in J&K (Ministry of Tourism) valuing Rs. 97.82 crore
- IARI works in Assam valuing Rs. 63.77 crore
- Swadesh Darshan Yojana at Uttar Pradesh. valuing Rs. 62.73 crore
- Different works of Regional Institutes for NIELIT in North Eastern States valuing Rs. 58.39 crore
- Rajiv Gandhi National Institute and Youth Development at Sriperumbudur (T.N.) valuing Rs. 54.94 crore
- Guru Ghasidas University (GGU) at Bilaspur (C.G.) valuing Rs. 54.68.
- Seismological Research Lab., Karad for Ministry of Earth Sciences (Maharashtra) valuing Rs. 51.54 crore

ii) Road Works & Other Projects

- Indo Bangladesh border fencing and road works for MHA valuing Rs. 1,952.76 crore
- Construction of BOPs along Indo Bangla border for MHA valuing Rs. 1,007.47 crore
- Flood lighting works of Indo Bangladesh border for MHA valuing Rs. valuing Rs. 732.79 crore
- Construction/upgradation of existing road to 2-lane with paved shoulder from Ranipool to Pakyong of NH-717-A under SARDP-NE Phase 'A', (Sikkim) for National Highways and Infrastructure Development Corporation Limited (NHIDCL).
- 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 Uttarakhand
- Dolaithabi barrage, Manipur.

Inauguration of Admin cum Academic & Hostel block and Campus Development by Hon'ble Minister of Jal Shakti at RGNGWT&RI, Naya Raipur

Sports Infrastructure Facilities for Maulana Azad Stadium, Jammu (J&K)

Aerial View (Type IV (2nos) & Community Centre BGRL, Karad

Rehabilitation/Development Works of Ghats and Crematoria under NMCG Works

9

INITIATIVES IN NORTH EAST

9. INITIATIVES IN NORTH EAST

9.1 NATIONAL INSTITUTE OF HYDROLOGY

To cater to hydrological needs of the North Eastern Region, Sikkim and northern part of West Bengal (Teesta 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.

During the year 2020-21, CFMS Guwahati worked on following studies:

- Flood inundation mapping of Beki river basin of Assam
- Development of regional methods for design flood estimation in north Brahmaputra subzone 2 (a).
- Linear hydrological routing using satellite precipitation datasets for flood forecasting in parts of Brahmaputra basin
- Impact of climate change on runoff and sediment yield for a major tributary of river Brahmaputra
- Groundwater quality assessment of Morigaon district of Assam with emphasis on arsenic and fluoride contamination
- Comparison of hydrological behaviour of two mid-sized mountainous catchments under the influence of climate and land use changes
- River basin planning studies in Teesta basin up to confluence with Rangit river in Sikkim
- Study on behaviors of flooding and unexpected drought like situations in Garo Hills District of Meghalaya
- Rainfall induced flood hazard risk vulnerability assessment in East Jaintia Hills, Meghalaya

9.2 CENTRAL SOIL AND MATERIAL RESEARCH STATION

Under the 'Activities in the North-Eastern Region' CSMRS was involved in only one project for construction materials survey and their testing pertaining to use those materials in concrete for the proposed MyntduLeskha Stage-II hydro electric project, Meghalaya.

Rock Quarry Site

Myntdu Leshka Stage-II Hydro Electric Project

The Myntdu Leshka Stage-II hydro electric project proposed on Myntdu river in West Jaintia Hill District of Meghalaya. This project envisages utilization of the water of the river Myntdu for power development on a run of river type development, harnessing a head of about 233.57 m. The project with a proposed installation capacity 210 MW (3 × 70 MW) would generate 737.29 MU energy annually in a 90% dependable year. The project consists of construction of44.0 m high concrete gravity dam across the river Myntdu to provide a live storage of 2.93 M Cum, 6.257 km long and 6.0 m diameter head race tunnel, 60 m high and 15 m diameter surge shaft, 578 m long, 4.6 m diameter penstock, surface power house having an installation of 3 Francis Turbine driven generating unit of 70 MW each.

9.3 CENTRAL GROUND WATER BOARD (CGWB)

The CGWB is conducting scientific and technical studies for ground water assessment, development and management in the North Eastern Region (NER) of the country. From January to December 2020, an area of 20,639 km^2 has been covered. 2,671 ground water samples have been collected and analyzed for assessment of ground water quality. Ground water level monitoring has been carried out as per the schedule. In addition to above, 8 short-term water supply investigations have been conducted by CGWB in the region. Under PMKSY (HKKP-GW), central assistance of Rs. 400.22 crore has been sanctioned for construction of 11,939 tube wells/ dug wells in the States of Assam and Arunachal Pradesh. NE States, except Meghalaya, have submitted Detailed Project Reports (DPR) which are under scrutiny for release of fund.

Sl. No	Activities	Achievements
1.	Field Activities for Aquifer Mapping:	Under NAQUIM programme from January 2020 to December 2020 an area of 20,639 km^2 has been covered. Remaining 7,943 km^2 targeted area will be covered by 31st March 2021.
	Ground Water Exploration	From January 2020 to December 2020, CGWB has constructed 19 wells (EW- 9, OW- 10).
	Water Quality Analysis	Around 2,700 water samples were analysed for the basic constituents and heavy metals.

Sl. No	Activities	Achievements
2.	Special study on ground water regime in urban Guwahati in reference to overexploitation, contamination and climatic change	An area of 198 km^2 has been covered.
3.	Ground Water Regime Monitoring	678 ground water monitoring stations are being regularly monitored four times a year (January, March August & November).
4	Short Term Water Supply Investigation.	8 investigations carried out
5.	Preparation of report	2 District Brochures, 1 Ground Water Year Book, 5 NAQUIM report and 45 Micro Level Aquifer Management Plan reports have been prepared.
6.	Public Interaction Program (PIP)	53
7.	NHP Awareness Raising Training -Programme	01 Awareness raising training programme on "State Specific ground Water Issues of Mizoram" organised at Aizawl.
8.	Training	Tier II and Tier III trainings have been organised in NER under the aegis of RGNGWTRI (during January 2020 - December 2020). 4 trainings ere conducted with 386 partcipants including 176 female participants.

PMKSY-HKKP- Ground Water Irrigation Schemes in North Eastern States:

8 proposals from the States of NER, namely, Assam Phase I, Assam Phase II, Arunachal Pradesh Phase I, Arunachal Pradesh Phase II, Nagaland, Tripura Phase I, Mizoram and Manipur have got administrative approvals from Government of India for implementation of ground water irrigation schemes under PMKSY-HKKP (GW-component) in North Eastern States.

Six States of NER (Assam, Arunachal Pradesh, Nagaland, Tripura, Mizoram and Manipur) had got administrative approvals from Government of India for implementation of ground water irrigation schemes under PMKSY-HKKP (GW-component) during 2019-20.

DoWR, RD &GR, Government of India released 1st installment of Phase I proposal of Assam, Arunachal Pradesh during August 2019. Subsequently, DoWR, RD &GR released 1st installment of Arunachal Phase II, Tripura Phase I, Nagaland, Manipur and Mizoram proposals during January 2020 to December 2020.

S.No	State	Cost of Proposal (Rs. crore)	Central Assistance (Rs. crore)	Central Assistance released (Rs. crore)	Month of Release of CA
1	Assam- Phase-I	246.07	221.07	132.870	Aug-19
2	Arunachal Pradesh-Phase-I	45.3	40.77	24.460	Aug-19
3	Arunachal Pradesh Ph –II	44.95	40.25	24.150	Feb-20
4	Nagaland	18.15	16.25	9.750	Feb-20
5	Tripura Phase-I	13.31	11.91	7.150	Jan-20
9	Manipur	61.68	55.51	33.306	Jul-20
10	Mizoram	16.04	14.46	8.660	Jul-20
13	Assam Phase-II	292.96	Proposal submitted for IFD concurrence for 1st installment fund release		
	Total	**738.46**	**400.22**	**240.346**	

Presently, seven projects amounting Rs. 445.5 crore under this scheme are being implemented in six North Eastern States - Assam Phase-I, Arunachal Pradesh Phase-I & II, Tripura Phase-I, Nagaland, Manipur and Mizoram. The central assistance of these projects is Rs. 400.22 crore of which 240.34 crore has already been released. Under these projects, 26,500 ha command area will be created benefitting around 30,000 farmers.

9.4 DAM REHABILITATION AND IMPROVEMENT PROJECT (DRIP)

The States of Manipur and Meghalaya are partner States under DRIP Phase II & Phase III with rehabilitation provision of three and six dams having financial outlay of Rs 311 crore and Rs 441 crore, respectively. These States are eligible for central grant in the ratio of 90:10 i.e. 90% of the loan will be repaid by the Government of India, and only 10% of the loan repayment liability is to be borne by

Energisation Tube Well Schemes Under PMKSY(HKKP) Phase I Pashighat in East Siang District Arunachal Pradesh

the State Governments with respect to 80% of the project cost. The balance 20% will be the counterpart funding by the States.

Both these States have met the project readiness criteria, by publishing the required tenders. The State Government of Manipur has published 3 tenders costing Rs 133 crore whereas Meghalaya has published tenders costing Rs 112 crore.

9.5 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 up-liftment of the socio-economy of the people of North-Eastern states. Assam movement emphasized that a large chunk of Bangladeshi population has come and 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 people from Bangladesh as well as insurgent groups. Government of India started border fencing in Assam; thereafter in other North-Eastern States of Tripura, Meghalaya and Mizoram to check the influx of illegal migrant.

- **Indo-Bangladesh Border Fencing and Road Works**

NPCC is working on the construction of fencing in Tripura, Mizoram, Meghalaya for 640.73 km & 609.129 km road works for mostly in insurgency prone area. NPCC has today made the area totally accessible having network of road along the border fencing, where, there was no accessibility and BSF jawans used to move 20 to 30 km to reach the existing border. NPCC has already completed 280.55 km of fencing works and 280.52 km of road works in the border areas of Indo Bangladesh border.

- **Indo-Bangladesh Border Flood-lighting Works**

MHA, GoI sanctioned construction of border flood lighting of Tripura and Meghalaya. NPCC has completed border flood light work of 675.2 km in Tripura and 341.60 km in Meghalaya. The border flood light is helping BSF to have 24 hour vigil over insurgent groups and illegal migrants.

- **Border Out Post (BOP) Works**

NPCC has completed the construction of BOP works in difficult areas of north east: Tripura - 47 posts (total 50), Mizoram- 4 posts (total 21), Assam - 5 posts (total 6), Meghalaya- 11 posts (total 17) and West Bengal - 69 posts (total 94) for monitoring of the border activities by BSF.

- **National Institute of Electronics & Information Technology (NIELIT) Works:**

NPCC is also playing a major role in creating infrastructure for 10 extension centres and a centre of NIELIT in the North-Eastern states of Mizoram, Nagaland, Manipur, Arunachal Pradesh, Meghalaya and Assam for development of the skills of information technology which contributes towards socio-economic development.

BOP in Mizoram & Meghalaya

- **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.

9.6 BRAHMAPUTRA BOARD (BB)

Brahmaputra Board has taken up for setting up of North East Water Resources Data Sharing Centre and implementation has been assigned to WAPCOS as Project Management Consultant (PMC). Scientific dissemination and improvement of water management practices of local tribes and indigenous people of NE region has been taken up in association with NERIWALM. Four areas of NE region have been identified in first phase.

Soft measures for flood and erosion management - Brahmaputra Board has proposed to take up a pilot project at two sites viz. right bank down-stream of Kordoiguri and at Dakhinpat in Majuli island in collaboration with IIT, Guwahati for 'hard and soft measures' termed as bio-engineering method for flood and erosion management.

For preparation of Detailed Project Report to check flash floods and erosion in BTC area by Pagla/Baitamari, Aie, Beki, Pagladiya, Sankosh, Gangia and Saralbhanga rivers, work has been allotted to WAPCOS as Project Management Consultant (PMC).

The activities carried out by Brahmaputra Board in North Eastern Region have already been covered in detail in Chapter 7.

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

- **TRAINING PROGRAMS**

The institute caters to the needs of all the States of the North Eastern region. Participation of each State in the capacity building programme was recorded in the year 2020. The State of Assam recorded the highest number of participants. Details are given in the Table below:

State wise participants of training in 2020 (from January to December, 2020)

Name of state	Total Number of participant	Name of state	Total Number of participant
Assam	1,515	Nagaland	301
Arunachal Pradesh	14	Tripura	7
Manipur	35	Sikkim	1
Meghalaya	15	Other States	148
Mizoram	56		
Total:			**2092**

The gender wise representation of participants during January to December 2020 is shown in the Table below.

Category	Number	Percentage (%)
Male	1,239	59.2
Female	853	40.8
Total	**2,092**	**100**

- **OUTREACH ACTIVITY:**

NERIWALM in collaboration with Brahmaputra Board is implementing good water management practices in the NE region of India. The best practices of water management and water conservation at Ziro, Arunachal Pradesh have been taken up with community participation for replication of the best practices.

- **SPONSORED TRAINING/ WORKSHOP/SEMINARS**

Out of 48 programmes conducted during the year, institute received sponsorship for 1 training/workshop,

while 15 were conducted as self financed and remaining 32 were conducted from institute's funds. NERIWALM proposed to organize one 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, Royal Government of Bhutan. However, due to pandemic of COVID -19, it was postponed.

- **M. TECH COURSE IN WATER RESOURCE MANAGEMENT**

M. Tech. course in water resource management was started from July 2019, after getting approval from the All India Council for Technical Education (AICTE) along with affiliation from Assam Science and Technology University, Guwahati. In 2020, the second batch of M. Tech. course has students from different parts of the North Eastern Region of India. The main subjects covered in the course are surface water, ground water, drinking water, participatory irrigation management etc. to highlight the objectives of the institute.

9.8 NATIONAL RIVER CONSERVATION PLAN WORKS IN NORTH EASTERN STATES:

Achievements under National River Conservation Plan(NRCP) in various NER States are as follows:

Sikkim: Under NRCP, 8 projects were sanctioned for conservation and pollution abatement of rivers Rani Chu in Sikkim at a cost of Rs. 371.11 crore in 2 towns namely Gangtok and Singtam. The works sanctioned under the projects pertain to interception and diversion of sewage, sewage treatment plants, rehabilitation of sewer mains, low-cost sanitation, river front development and improved wood crematoria. Sewage treatment capacity of 23.37 mld is envisaged to be created in these towns. Works on 8 projects have been completed and 20.12 mld sewage treatment capacity has been created so far.

Nagaland: For pollution abatement of rivers Diphu and Dhansiri at Dimapur, Nagaland, works have been sanctioned under NRCP at an estimated cost of Rs.82.80 crore. The works envisaged under the project pertain to construction of sewage treatment plant having treatment capacity of 25.43 mld and other allied sewerage works, low-cost sanitation, afforestation, etc. The scheme is presently under implementation.

Manipur: For pollution abatement of rivers Nampul at Imphal, Manipur, works have been sanctioned under NRCP at an estimated cost of Rs.97.72 crore. The works envisaged under the project pertain to construction of 2 sewage treatment plants having treatment capacity of 17.00 mld and other allied sewerage works, low-cost sanitation, afforestation, etc. The scheme is presently under implementation.

10

ADMINISTRATION, TRAINING AND GOVERNANCE

10. ADMINISTRATION, TRAINING AND GOVERNANCE

10.1 ESTABLISHMENT MATTERS

The Administration Section of the Department is primarily responsible for the establishment, personnel and administrative matters of the officers and staff of the Department (Secretariat). The section is the cadre controlling authority of posts borne on CSS/CSSS/CSCS sanctioned in the Department (Sectt.) and its attached and subordinate offices.

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 annual performance appraisal 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.

10.2 IMPLEMENTATION OF TRAINING POLICY OF THE DEPARTMENT

Administration Division administers the budget allocated under 'Training of DoWR, RD & GR officers' under HRD and capacity building scheme to train officers/ officials of the Department in reputed institutes located in India and abroad in different fields, and induction training on selection/ recruitment in the Department. Officers 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.

During FY-2020-21, no in-house training programme could be conducted due to COVID-19 pandemic. However, a number of mandatory online training programmes conducted by ISTM were attended by CSCS/CSS/CSSS officers of this Department.

10.3 SWACHHATA PAKHWADA, 2021

As per the calendar shared by the Cabinet Secretariat, DoWR, RD & GR including all attached offices, subordinate/ autonomous & subordinate organisations and PSUs under the Department organized Swachhta Pakhwada, 2021 from 16th to 31st March, 2021 across the country. Swachhta Pakhwada, 2021 was inaugurated on 16.03.2021 with a Swachhta Pledge administered by Secretary (WR, RD & GR)

to all officers and staff of the Department at Shram Shakti Bhawan, New Delhi. This was followed by plantation activity within the premises of Shram Shakti Bhawan. More than 100 officers and staff of the Department participated in the event and pledged to contribute to the cause of swachhta. Banners were also put up at prominent places at Shram Shakti Bhawan and other buildings where Department (Sectt.) is located.

10.4 WORLD WATER DAY PLEDGE AND "PLOGGING" ACTIVITY

On World Water Day 22.03.2021, a World Water Day Pledge was administered by Secretary (WR, RD & GR) to all officers and staff of the Department at conference hall, Shram Shakti Bhawan to sensitize them about the importance of water and their role in management and conservation of water keeping in view the theme of World Water Day for the year 2021: 'valuing water' which focuses on raising awareness of the global water crisis and core focus on the achievement of Sustainable Development Goal (SDG) - 6: Water and Sanitation for all by 2030. After the pledge, senior officers and staff of the Department participated in plogging activity (jogging/walking with picking up litter) around the office complex to sensitize the general public about the importance of swachhta in day to day life.

World Water Day Pledge was administered by Secretary (WR, RD & GR) on 22.03.2021

SWACHHATA PAKHWADA & PLANTATION ACTIVITIES

11

FINANCE AND ECONOMIC ADVISORY WINGS

12

ROLE OF WOMEN IN WATER RESOURCES MANAGEMENT

13

PROGRESSIVE USE OF HINDI

11. FINANCE AND ECONOMIC ADVISORY WINGS

11.1 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 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 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 actual expenditure on net basis in F.Y. 2019-20 was Rs. 7,418.60 crore. Budget Estimate (B.E.) for FY 2020-21 for the Department was Rs. 8,960.39 crore on net basis which was reduced to Rs. 7,262.09 crore in the Revised Estimates (R.E.) and the actual expenditure till 31.03.2021 was Rs.7,244.08 crore. The scheme wise budget at a glance of the Ministry showing actual expenditure in F.Y. 2019-20, B.E. 2020-21, R.E. 2020-21 and expenditure up to 28.02.2021 is given at ***Annexure-X.***

11.2 ECONOMIC ADVISORY WING

Economic Advisory wing performs its functions through Hindi section and Planning Unit. Hindi section is dealing the matters of official Language while the Planning Unit is mainly engaged in collecting information from concerned subject matter divisions / scheme administering divisions for preparation of annual report of the Department; monitoring of National Infrastructure Pipeline projects - under which data on infrastructure projects are being collected, uploaded and monitored regularly; preparation of Output and Outcome Monitoring Framework for all central sector & centrally sponsored schemes and its quarterly updation on NITI Aayog dashboard; updation of India Code portal; collective process of third party evaluation of CS schemes of Department; liaison with NITI Aayog in context of evaluation of CSS schemes; DAPSC & DAPST components; holding of monthly Standing Audit Committee meetings; liaison on scheme related activities with NITI Aayog, Ministry of Finance, Ministry of Tribal Affairs, Ministry of DoNER, Ministry of Women and Child Development, Ministry of Social Justice and Empowerment, Ministry of Environment, Forest and Climate Change etc.

12. ROLE OF WOMEN IN WATER RESOURCES MANAGEMENT

Role of women in agriculture and irrigation development is significant. Women play a vital role in water resource management. The right approach and steps taken towards water conservation, water use in domestic as well as field (agricultural/ industrial) by women make considerable overall impact. 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.

Participatory Irrigation Management (PIM), which envisages involvement of end-users /farmers in all aspects and at all levels of irrigation management, functions through farmers groups generally known as WUAs. DoWR, RD & GR, 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. In addition to smooth implementation of micro irrigation system and agriculture related activities, this may lead to additional income generation and sustainability of women wing of WUAs viz. (a) development of small nursery, (b) bee hives, (c) HDPE vermi bed, (d) PHM / processing units, and (e) organic farming etc.

International Women's Day 2021 was organised by DoWR, RD & GR involving all women employees of the Department. A panel discussion was held on "Role of women in Sustainable Development and Management of Water Resources". The gathering was chaired by Additional Secretary (WR, RD & GR). Around 30 women officers and staff of the Department participated in the discussion.

International Women's Day 2021 – 08.03.2021

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 Department 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 seven offices of the Department of Water Resources, River Development & Ganga Rejuvenation viz. (1) CWC, Delhi (2) WAPCOS Ltd., Gurugram (3) NPCC Ltd., Gurugram (4) CGWB, Faridabad. (5) CSMRS, Delhi (6) WAPCOS Ltd., Bhubaneswar and (7) NWDA, Bhubaneswar.

Due to epidemic COVID-19, the Department has conducted one meeting of official language Implementation Committee. In this meeting, the Committee reviewed the progress made in the use of Hindi in the Department as well as in its various offices and pinpointed the shortfalls in relation to targets prescribed by Department of Official Language. Measures were also suggested for the removal of shortfalls.

In order to encourage the use of Hindi in the official work of the Department, messages were issued by the Hon'ble Union Minister of Jal Shakti and Hon'ble Minister of State for Jal Shakti with an appeal issued by Secretary, Department of Water Resources, River Development & Ganga Rejuvenation.

Hindi Fortnight was organized in the Department from 14.09.2020 to 30.09.2020, following the social distancing due to the Covid-19 pandemic; two online competitions, Hindi debate and Hindi poetry recitation competitions were organized. Officers and employees of the Department enthusiastically participated in these competitions. First, Second and Third prizes of Rs. 4,000/-, Rs. 2,500/- and Rs. 1,500/- respectively were given to winners of each of these competitions. There was also provision of four incentive prizes of Rs. 1,000/-for each of these competitions. The prizes were given to 14 meritorious participants.

Incentive schemes like 'Rajbhasha Vaijayanti Puraskar Yojana' and 'Incentive Scheme for doing work in Hindi' were implemented in the Department for promoting the implementation of official language policy. 'Rajbhasha Vaijayanti Purashkar Yojana' is for promoting Hindi work in attached and subordinate organizations of the Department. 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.

14

STAFF WELFARE

15

TRANSPARENCY & VIGILANCE

16

APPOINTMENT OF PERSONS WITH SPECIAL NEEDS

14. STAFF WELFARE

14.1 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 Officer for SCs/STs and OBCs in discharging the functions on various matters relating to reservation for SCs/STs/OBCs in Government services.

This Department is responsible for reservation of various categories in services only for Staff Car Drivers, MTS grade, etc. Implementation of reservation in these posts is followed as per Government rules. The post of MTS is filled through SSC. The vacancies in MTS grade are intimated to SSC.

Shri Mukesh Kumar, Deputy Secretary is Liaison Officer for SC/ST and Shri Binod Kumar, Director is Liaison Officer for OBC in respect of the Department (Secretariat).

14.2 COMPLAINTS COMMITTEE ON SEXUAL HARASSMENT OF WOMEN EMPLOYEES

In compliance with the guidelines laid down by the Hon'ble Supreme Court of India on prevention of sexual harassment of women employees, a committee is functioning to look into the complaints of the women working in the main secretariat of the Department. The composition of the committee is as below:

S. No.	Name & Designation (Shri/Smt./Ms.)	Designated as
1	Shalini Juneja, Under Secretary	Chairperson
2	Rajan Bhasin, Under Secretary	Member
3	Shalini Gupta, Section Officer	Member
4	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), DoWR, RD & GR for further necessary action.

During the year ending 31st December, 2020, no complaint was received by the Committee.

14.3 REDRESSAL OF PUBLIC/ STAFF GRIEVANCES

A Grievances Redressal Cell was set up in the DoWR, RD & GR which entertains the grievances of employees/officers working in various organizations under the Department. Shri Inderjit Hadda, Director (Coordination) has been designated as Director (Public & Staff Grievances) and all grievances are disposed within a period of 60 days. Centralized Public Grievance Redress and Monitoring System (CPGRAMS) software developed by Department of Administrative Reforms and Public Grievances is regularly monitored.

During the period from 01st January, 2020 to 31st December, 2020, a total number of 2,309 grievance petitions were received in this Department. Besides, 709 grievance petitions pending at the end of 31st December, 2019 were carried forward. Out of total 3,018 grievance petitions, 2,837 were settled during the above period. The list of Public/Staff Grievance Officers in the Department and its various organizations along with postal addresses is given at ***Annexure-XI.***

15. TRANSPARENCY AND VIGILANCE

15.1 TRANSPARENCY

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 Department (Sectt.) and its organizations were uploaded on the Department's website mowr.nic.in. Information of Central Public Information Officers (CPIOs) in terms of section 5 (1) and (2) of the said Act was hosted on the website of the Department and concerned organizations.

The Coordination Section of Department of Water Resources, 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 applications/ requests are forwarded to the concerned CPIOs and the fees are deposited with the DDO, DoWR, 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, DoWR, RD & GR or by cash.

During the period from 01.01.2020 to 31.12.2020, 1,177 RTI applications and 40 RTI appeals were received which were forwarded to concerned Central Public Information Officers / First Appellate Authorities in the Department/ Other Public Authorities for necessary action under RTI Act, 2005. The details of Central Public Information Officers / Appellate Authorities in the various Wings/Sections of the Department are given at ***Annexure-XII***.

15.2 VIGILANCE

The vigilance matters relating to this Department 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 and above assisted by a Director and the Vigilance Section. Various aspects pertaining to vigilance cases of all the employees of the Ministry (Sectt.) 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 CVC and other agencies/ departments.

Vigilance 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 Vigilance Division from 27th October, 2020 to 02nd November, 2020. Four preventive vigilance inspections of organizations under the purview of the Department are to be carried out with a view to check various irregularities and identify corruption prone areas; however only two PVI during the year 2020-21 could be carried out due to COVID-19 pandemic .

The Vigilance Division is also responsible for calling for the Annual Immovable Property Returns of all Group 'A','B' and 'C' Staff and monitoring them."

Sl. No.	Performance Statistics for the Period: 01.01.2020 to 31.12.2020	Count
1.	Number of complaints received	59
2.	Number of complaints disposed of	44
3.	Number of cases wherein CVC consultation sought	3
4.	Number of cases submitted to UPSC	3
5.	Number of cases where penalty imposed	1

Three CVOs with consultation of CVC and one VO are appointed in the organizations.

16. APPOINTMENTS OF PERSONS WITH SPECIAL NEEDS

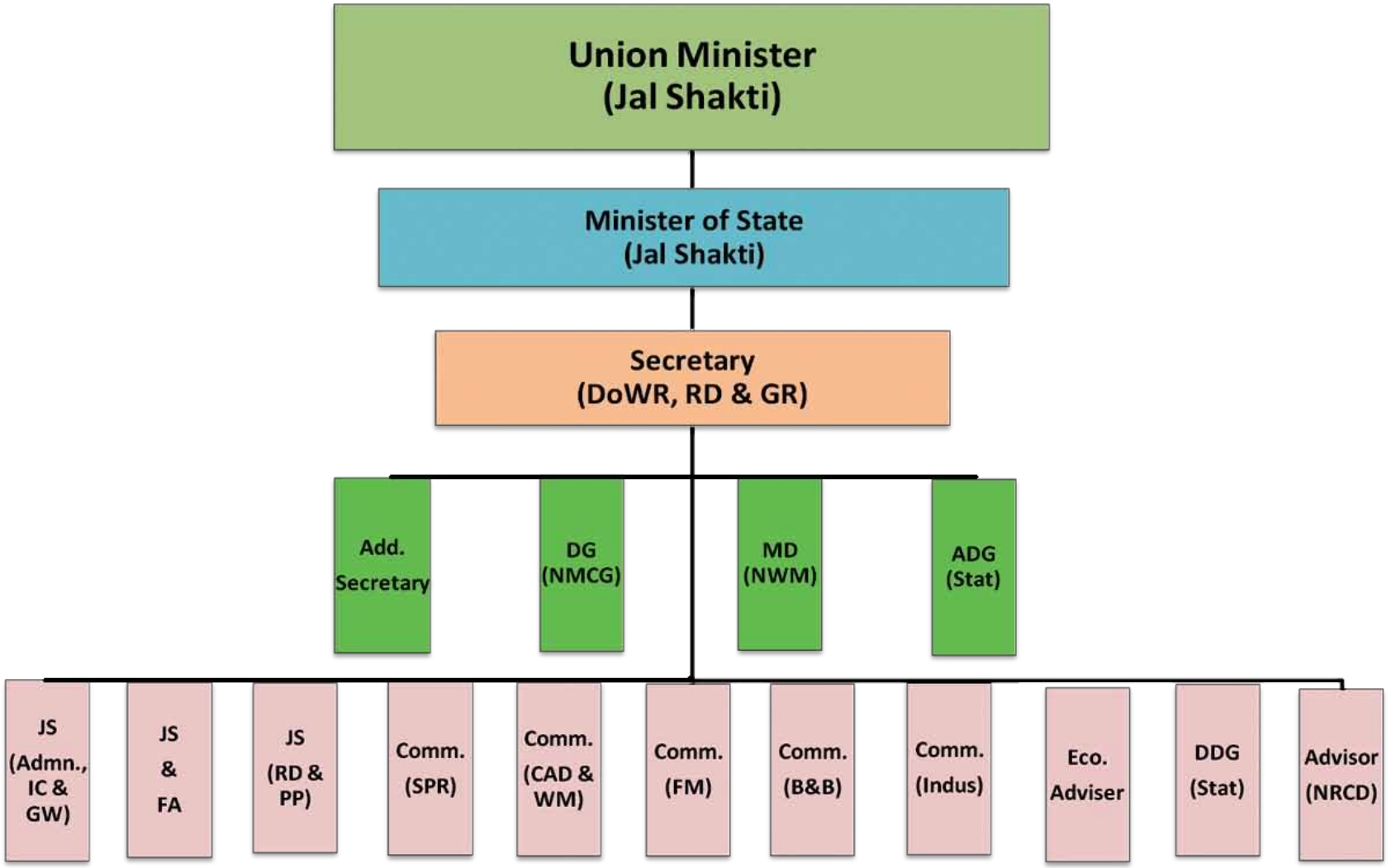
Monitoring of the recruitment of persons with special needs is being done to ensure fulfillment of prescribed percentage of reservation for the category by the Department.

Administration Section is dealing with reservation of Persons with Disabilities (Divyangjan) in MTS grade. The vacancies in MTS grade are filled through SSC. As on 31.12.2020 the total strength in MTS grade was 61 out of which 2 are persons with disabilities.

The relevant reservation rosters as prescribed by the Government are also maintained for planning the reservation of persons with special needs. Shri Mukesh Kumar, Deputy Secretary is Liaison Officer for Persons with Disabilities (Divyangjan) in respect of the Department (Secretariat).

ANNEXURES

ORGANIZATION CHART OF DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION



ANNEXURE –II

STAFF IN POSITION IN THE DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION

AS ON 31.12.2020

Group	Total Employees in position	Representation of SC/ST/OBC				PH
		SC	ST	OBC	Other	
A	119	13	05	04	97	--
B	163	17	15	30	101	3
C	122	35	09	30	48	3
Total	**404**	**65**	**29**	**64**	**246**	**6**

ANNEXURE – III

LIST OF NAMES AND ADDRESSES OF SENIOR OFFICERS & HEADS OF ORGANISATIONS UNDER THE DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION

S. No.	Name of the Organisation	Head of the Organisation/Senior Officer
1.	Department of Water Resources, RD & GR, Room No. 412, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri. Pankaj Kumar Shri U.P. Singh (till 27. 01. 2021 F.N.) Secretary, Tel No. 23710305, 23715919, Fax. 23731553.
2.	Department of Water Resources, RD & GR, Room No. 404, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Smt. Debashree Mukherjee, Additional Secretary, Tel No. 23714609, Fax. 23716894.
3.	Department of Water Resources, RD & GR, Room No. 6, 2nd Floor, B wing, Lok Nayak Bhawan, Khan Market, New Delhi.	Vacant Additional Director General (Stat.) Tel No. 24691080 Fax. 24691080
4.	Department of Water Resources, RD & GR, Room No. 403, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri Subodh Yadav Joint Secretary (Admn.,IC & GW), Tel No. 23710343 Fax:23730719
5.	Department of Water Resources, RD & GR, Room No. 406, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri Sanjay Awasthi Joint Secretary(RD&PP), Tel No. 23725477 Fax: 24369170
6.	Department 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.	Department of Water Resources, RD & GR, Room No. 411, 4th Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi.	Shri. A. S. Goel Shri K. Vohra (till 31. 12. 2020) Commissioner (SPR), Tel No. 23710107.
8.	Department 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
9.	Department of Water Resources, RD & GR, Room No. 827, 8th Floor, CGO Complex, Lodi Road, New Delhi-110 003	Shri Atul Jain Commissioner (Flood Management) Tel No. 24368238 Fax. 24362780
10.	Department of Water Resources, RD & GR, Room No. 204, 2nd Floor, CGO Complex, Lodi Road, New Delhi-110 003	Shri T.S. Mehra, Commissioner (B&B). Tel No. 24364724.

S. No.	Name of the Organisation	Head of the Organisation/Senior Officer
11.	Department of Water Resources, RD & GR, Room No. 814, 8th Floor, CGO Complex, Lodi Road, New Delhi-110 003	Shri P.K. Saxena, Commissioner (Indus) Tel No. 24361540 Fax. 24361540
12.	Department of Water Resources, RD & GR, Room No. 815, 8th Floor, Block -11, CGO Complex New Delhi-110 003	Dr. R. Sathish Economic Adviser, Tel No. 24368941
13.	Department of Water Resources, RD & GR, 2ndFloor,B wing, Lok Nayak Bhawan, Khan Market, New Delhi.	Shri A.Nandakumar Deputy Director General, Tel No. 24699496
14.	National River Conservation Directorate, Antyodaya Bhawan, CGO Complex, Lodhi Road, New Delhi- 110003	Shri B. B. Burman, Advisor (NRCD) Tel No.24365020 Fax. 24369382
	Attached Offices	
15.	Central Water Commission, Room No. 326, Sewa Bhawan, R.K. Puram, New Delhi	Shri S K Haldar, Chairman, Tel. No.26715351, Fax: 26108614.
16.	Central Soil and Materials Research Station, Room No. 111, Hauz Khas, New Delhi-110016	Dr. R Chitra, Director, Tel. No. 26961894, 26967985 Fax: 26967985
	Subordinate Offices	
17.	Farakka Barrage Project, P.O. Farakka Barrage, Distt. Murshidabad-742212 , West Bengal.	Shri R. Azhagesan, General Manager, Tel. No. 03485-253644, Fax: 03485-253608.
18.	Ganga Flood Control Commission, Sinchai Bhawan, IIIrd floor, Patna-800015	Shri M. S. Dhillon, Chairman, Tel. No. 0612-2217294 Fax: 0612-2217960
19.	Central Water and Power Research Station, P.O. Khadakwasla, Pune-411024	Shri. A. K. Agrawal, Director (additional charge) Tel. No. 020-24380552, Fax: 020-24381004.
20.	Central Ground Water Board, Bhujal Bhawan, Faridabad-121001.	Shri G. C. Pati, Chairman, Tel. No. 0129-2477101, Fax: 0129-2477200.
21.	Bansagar Control Board, Bansagar Colony, Rewa,Madhya Pradesh, 486001.	Sh. M.W. Paunikar Secretary, Tel. No. 07662-226318 Fax : 07662-242433
22.	Upper Yamuna River Board 201, "S", Sewa Bhawan, R.K. Puram, New Delhi-110016	Shri K. Vohra, Chairman, Tel. No. 26108590 Fax: 26195289

S. No.	Name of the Organisation	Head of the Organisation/Senior Officer
	Public Sector Undertakings	
23.	Water and Power Consultancy Services (India) Limited, 5th Floor, 'Kailash', 26, Kasturba Gandhi Marg, New Delhi.	Smt. Debashree Mukherjee, Chairman & MD, Tel. No.23313881 Fax: 23314924
24.	National Projects Construction Corporation Limited, Plot No.148, Sector-44, Gurugram, Haryana-122003.	Smt. Debashree Mukherjee, Chairman & MD, Tel. No. 0124-2385219, Fax : 0124-2385219.
	Registered Societies / Autonomous Bodies/ Statutory Bodies etc.	
25.	National Mission for Clean Ganga, Department of Water Resources, RD & GR, 1st Floor, MDCNS Building, India Gate, New Delhi-110002	Shri Rajiv Ranjan Mishra, Director General (NMCG) Tel No. 23049528
26.	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
27.	National Institute of Hydrology, Jal Vigyan Bhawan, Roorkee, Uttarakhand-247667 .	Sh. J. V. Tyagi Director, Tel. No. 01332-272106 Fax: 01332-272123/273976
28.	National Water Development Agency, 18-20, Community Centre, Saket, New Delhi-110017	Shri Bhopal Singh, Director General Tel. No. 26519164 Fax: 26513846
29.	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
30.	Narmada Control Authority, Narmada Sadan Sec-B, Scheme No.74-C, Vijay Nagar, Indore-452010	Sh. Aditya Sharma Executive Member &HoD, Tel. No. 0731-2557276, Fax : 0731-2559888.
31.	Brahmaputra Board, Basistha, Guwahati, 781029	Shri Rajiv Yadav, Chairman Tel. No. 0361-2301099 Fax 0361-2301099
32.	Betwa River Board, Nandanpura, Shivpuri Highway, Jhansi-284003	Sh. Anil Kumar Gupta Secretary, Telefax. No. 0510-2480183
33.	Tungabhadra Board, Tungabhadra Dam, Taluk: Hospet, Distt:Bellary, Karntaka -583225	Shri D. Ranga Reddy, Chairman, Tel. No. 040-29808740 Fax 040-29808742
34.	Krishna River Management Board, Jalasoudha, Erra Manzil, Hyderabad, 500 082.	Shri A Paramesham, Chairman, Tel. No. 040-23301659.
35.	Godavari River Management Board, 5th Floor, Jalasoudha, Erra Manzil, Hyderabad, 500 082.	Shri J Chandrashekhar Iyer, Chairman, Tel. No. 040-23313163. Fax 040-23313162.

ANNEXURE-IV

LIST OF PRIORITY PROJECTS (AIBP WORKS) REPORTED COMPLETED/ALMOST COMPLETED

S.No.	State	Name of the Project	Ultimate Irrigation Potential (in Th. Ha.)
1	Andhra Pradesh	Maddigedda	1.42
2	Assam	Champamati	25.00
3	Chhattisgarh	Maniyari Tank	14.52
4		Kharung	10.30
5	Jammu & Kashmir	Rajpora Lift	2.43
6	Karnataka	Sri Rameswar Irrigation	13.80
7		Bhima LIS	24.29
8		Karanja	29.23
9	Madhya Pradesh	Singhpur Project	10.20
10		Mahuar Project	13.78
11		Sagad Project	17.06
12		Sindh Project Phase II	162.10
13		Indira Sagar Project Canal Phase - I & II (km. 0 to km. 142)	62.20
14		Omkareshwar Project Canal Phase-IV (OSP lift)	54.63
15		Indira Sagar Project Canal Phase - V (Khargone Lift)	33.14
16		Bansagar Unit 2	154.54
17		Barriyarpur LBC	43.85
18		Sanjay sagar (Bah) Project	17.81
19		Bargi diversion Project Ph-I	21.19
20		Mahi Project	33.75
21		Mahan Project	19.74

S.No.	State	Name of the Project	Ultimate Irrigation Potential (in Th. Ha.)
22	Maharashtra	Bawanthadi (IS)	27.71
23		Lower Panzara	6.79
24		Dongargaon	2.77
25		Warna	54.75
26		NandurMadhmeshwar Ph-II	20.50
27		Upper Kundalika	2.80
28		Lower Dudhna	44.48
29		Khadakpurna	23.86
30		DhomBalakwadi	18.10
31	Manipur	Dolaithabi	7.54
32	Odisha	Upper Indravati(KBK)	85.95
33		Rukura-Tribal	7.65
34		Ret	8.50
35		Telengiri	13.83
36		Lower Indra	35.87
37	Punjab	Kandi Canal Extension (Ph.II)	23.33
38		Rehabilitation of Ist Patiala Feeder and Kotla Branch Project	68.62
39	Rajasthan	Narmada Canal	245.88
40		Mod. of Gang Canal	69.69
41	Telangana	Gollavagu Project	3.85
42		Rallivagu project	2.43
43		Mathadivagu Project	3.44
44	Uttar Pradesh	Bansagar Canal	150.13

ANNEXURE -V

CENTRAL ASSISTANCE & STATE SHARE RELEASED FOR AIBP WORKS OF 99 PRIORITY PROJECTS UNDER PMKSY

Sl. No.	State	Releases under PMKSY-AIBP (Rs. in crore)					
		2016-17 to 2019-20		2020-21 (upto 31.03.2021)		Total (2016-17 to 2020-21)	
		CA Released	State Share release through NABARD	CA Released	State Share release through NABARD	CA Released	State Share release through NABARD
1	Andhra Pradesh	22.63	489.34	0.00	0.00	22.63	489.34
2	Assam	0.00	0.00	0.00	108.10	0.00	108.10
3	Bihar	96.12	0.00	14.12	0.00	110.24	0.00
4	Chhattisgarh	34.63	0.00	6.45	0.00	41.08	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	3,905.00	3,611.03	177.96	0.00	4,082.96	3,611.03
7	UT of J&K	30.21	0.00	9.50	0.00	39.71	0.00
8	Jharkhand	756.73	518.10	0.00	0.00	756.73	518.10
9	Karnataka	955.40	0.00	231.22	0.00	1,186.62	0.00
10	Kerala	0.00	0.00	0.00	0.00	0.00	0.00
11	Madhya Pradesh	588.86	824.43	19.96	85.15	608.82	909.58
12	Maharashtra	1,562.10	10,244.42	301.85	1,003.86	1,863.95	11,248.28
13	Manipur	204.84	196.70	23.51	138.42	228.35	335.12
14	Odisha	1,132.48	2,518.17	76.39	565.89	1,208.86	3,084.06
15	Punjab	52.42	0.00	0.00	0.00	52.42	0.00
16	Rajasthan	364.95	196.32	93.61	62.69	458.56	259.01
17	Telangana	774.71	0.00	162.82	0.00	937.53	0.00
18	Uttar Pradesh	1,006.07	4,111.61	391.84	1,441.45	1,397.91	5,553.06
19	UT of Ladakh	2.17	0.00	0.81	0.00	2.98	0.00
	Total	**11,489.32**	**22,710.12**	**1,510.03**	**3,405.56**	**12,999.34**	**26,115.68**

ANNEXURE –VI

CENTRAL ASSISTANCE & STATE SHARE RELEASED FOR CADWM WORKS OF PRIORITY PROJECTS UNDER PMKSY

(Rs. in crore)

Sl. No.	State	2016-17 to 2019-20		2020-21 (till 31.03.2021)		Total 2016-17 to 2020-21	
		CA released	State Share release through NABARD	CA released	State Share release through NABARD	CA released	State Share release through NABARD
1	Andhra Pradesh	69.18	0.00	0.000	0.000	69.18	0.000
2	Assam	3.55	0.00	4.000	0.000	7.55	0.000
3	Bihar	35.82	0.00	0.000	0.000	35.82	0.000
4	Chhattisgarh	21.71	0.00	0.000	0.000	21.71	0.000
5	Goa	0.00	0.00	3.84	0.000	3.84	0.000
6	Gujarat	1,719.15	0.00	0.000	0.000	1,719.15	0.000
7	Jammu & Kashmir	1.70	0.00	1.87	0.000	3.57	0.000
8	Jharkhand	0.00	0.00	0.000	0.000	0.00	0.000
9	Karnataka	63.94	0.00	11.34	0.000	75.28	0.000
10	Kerala	0.00	0.00	2.690	0.000	2.69	0.000
11	Madhya Pradesh	251.44	174.28	43.32	0.000	294.761	174.280
12	Maharashtra	73.79	0.00	46.23	112.070	120.02	112.070
13	Manipur	0.00	15.00	0.000	19.900	0.00	34.900
14	Odisha	97.49	191.40	34.47	42.44	131.964	233.84
15	Punjab	0.00	0.00	18.080	0.000	18.08	0.000
16	Rajasthan	20.13	35.21	31.26	24.930	51.389	60.140
17	Telangana	36.34	0.00	0.000	0.000	36.34	0.000
18	Uttar Pradesh	150.00	0.00	6.000	0.000	156.00	0.000
	Total	**2,544.25**	**415.89**	**203.10**	**199.34**	**2,747.35**	**615.23**

ANNEXURE-VII

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	Funds released FY:2019-20	Funds released FY: 2020-21 (up to 31.12.2020)	Total funds released so far
1	Arunachal Pradesh	81.69	87.91	21.18	-	-	-	190.78
2	Assam	748.86	64.89	245.49	142.12	85.03	-	1,286.39
3	Bihar	723.18	184.64	-	16.58	-	-	924.41
4	Chhattisgarh	15.57	3.75	-	-	-	-	19.32
5	Goa	9.98	2.00	-	-	-	-	11.98
6	Gujarat	2.00	0.00	-	-	-	-	2.00
7	Haryana	46.91	0.00	-	-	-	-	46.91
8	Himachal Pradesh	165.98	221.87	87.50	162.60	176.41	11.87	826.24
9	Jammu & Kashmir	252.57	169.95	110.40	52.20	92.74	10.07	687.93
10	Jharkhand	18.44	4.27	-	-	-	-	22.71
11	Karnataka	23.80	0.00	-	-	-	-	23.80
12	Kerala	63.68	55.22	19.05	-	-	-	137.95
13	Manipur	66.34	24.36	-	-	-	-	90.70
14	Meghalaya	3.81	0.00	-	-	-	-	3.81
15	Mizoram	14.48	1.93	0.48	-	-	-	16.89
16	Nagaland	28.96	54.17	-	10.84	-	-	93.96
17	Odisha	101.12	0.00	-	-	-	-	101.12
18	Puducherry	7.50	0.00	-	-	-	-	7.50
19	Punjab	40.43	0.00	-	-	-	-	40.43
20	Sikkim	83.69	8.15	-	-	-	-	91.84
21	Tamilnadu	59.82	0.00	-	-	-	-	59.82
22	Tripura	23.62	0.00	-	-	-	-	23.62
23	Uttar Pradesh	290.69	111.22	13.55	15.58	39.15	-	470.18
24	Uttarakhand	49.63	153.98	-	4.63	35.58	-	243.82
25	West Bengal	643.26	158.75	65.03	23.65	117.12	-	1,007.81
	Total	**3,566.00**	**1,307.07**	**562.67**	**428.20**	**546.01**	**21.94**	**6,431.90**

ANNEXURE-VIII

STATE-WISE AREA PROTECTED AND POPULATION BENEFTTED UNDER FLOOD MANAGEMENT ROGRAMME 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 Pradesh	-	-	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 –IX

'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 and under execution by NHPC.
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.
4.	Kynshi Stage-II Dam Project	Others	450	Govt of Meghalaya assigned the project to private developers in 2011.

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. Decision for ownership for implementation is underway.
2.	Noa-Dehing Dam Project (Identified as National Project)	Arunachal Pradesh	Brahmaputra	71	Government of Arunachal Pradesh offered to execute in joint venture with NHPC and requested to Ministry of Power to allot the work to NHPC.
3.	Simsang Dam Project	Meghalaya	Others	65	Works for preparation of DPRs is entrusted to WAPCOS.
4.	Jiadhal Dam Project	Arunachal Pradesh	Brahmaputra	70	
5.	Killing Dam Project	Assam & Meghalaya	Brahmaputra	85	In dialogue with NEEPCo, for handing over the project.

ANNEXURE-X

BUDGET AT A GLANCE

(Rs. in crore)

Scheme/ Office/ Component	ACTUALS 2019-20	BE 2020-21	RE 2020-21	Exp. upto 31.03.2021
Central Sector Schemes				
Farakka Barrage Project	59.68	76.00	37.00	36.15
Emergent Flood Protection Works in Eastern & Western Sector	0.00	0.01	0.00	0.00
DRIP	41.61	55.00	30.80	30.32
National Ganga Plan	353.40	800.00	500.00	500.00
Ghat works for Beautf. of River Front	0.00	0.01	0.00	0.00
National River Conservation Plan	1,200.00	840.01	800.00	800.00
River Basin Management	148.86	200.00	149.00	148.31
Development of Water Resources Information System	128.27	140.00	130.00	128.54
Ground Water Management & Regulation	239.32	275.00	125.66	132.87
National Hydrology Project	144.71	200.00	136.00	134.44
Human Resources Development/ Capacity Building	27.73	50.00	18.52	16.97
Infrastructure Development	37.79	50.00	11.11	10.83
R&D and NWM	47.76	60.00	30.32	29.55
Sub Total	2,429.13	2,746.03	1,968.41	1,967.98
Centrally Sponsored Schemes				
PMKSY-Har Khet Ko Pani	1,054.00	1,050.50	775.95	773.49
Impact Assessment Studies	0.25	1.00	0.00	0.00
Assistance to SYLCP	0.00	0.01	0.01	0.00
FMBAP	635.94	750.00	99.63	97.01
Irrigation Census	43.09	50.00	9.88	9.54
Atal Bhujal Yojana	0.06	200.00	124.38	123.03
Servicing of loans from NABARD under PMKSY	1,999.30	2,675.00	2,980.00	2,973.81

Scheme/ Office/ Component	ACTUALS 2019-20	BE 2020-21	RE 2020-21	Exp. upto 31.03.2021
Special Package for Marathawada, Vidarbha and other drought prone areas of Maharashtra	300.00	400.00	400.00	400.00
National River Conversation Plan- Other Basins	135.86	220.00	100.00	99.87
Sub Total	4,168.50	5,346.51	4,489.85	4,476.75
Establishment				
Secretariat - Economic Services	80.51	95.00	87.16	80.42
Attached, Subordinate & Other offices				
Central Water Commission	391.15	402.54	360.00	357.34
Central Soil & Material Research Station	14.73	16.25	22.91	21.91
Central Water & Power Research Station	66.43	73.00	64.11	65.36
Sardar Sarovar Construction Advisory Committee - SSCAC	0.29	0.50	0.11	0.07
Bansagar Control Board	0.28	0.40	0.40	0.30
Upper Yamuna River Board	3.68	1.64	1.24	7.77
Central Ground Water Board	235.50	245.00	235.00	233.60
National Institute of Hydrology	23.78	25.02	25.02	25.02
National Water Information Centre	1.20	2.50	2.31	2.11
National River Conservation Directorate	3.42	6.00	5.57	5.45
Sub Total	820.97	867.85	803.83	799.35
Total	**7,418.60**	**8,960.39**	**7,262.09**	**7,244.08**

ANNEXURE-XI

LIST OF PUBLIC/STAFF GRIEVANCE OFFICERS IN THE DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION AND ITS VARIOUS ORGANISATIONS ALONG WITH POSTAL ADDRESSES

Sl. No.	Name of the Organization	Address	Name &Designation of P.G./ S.G. Officer
1.	Department of Water Resources, River Development and Ganga Rejuvenation	Room No. 01, 'B' Wing Shastri Bhavan, New Delhi-110001 (Tele No. 011-23074005)	Shri Inderjit Hadda, 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. 0731-2551144)	Smt. Suman Sinha, Secretary and Grievance Redressal Officer
3.	Bansagar Control Board	Bansagar Control Board, Samab Colony, Rewa (MP) (Tele No. 07662-226318), 07552-2551834	Mr. M W Paunikar, Secretary and Grievance Officer
4.	Betwa River Board	O/o Pay &Account Officer, Betwa River Board, Nandanpura, Jhansi- 284003 (U.P) (Tele No. 0510-2480279)	Shri. M K Jain, Assistant Engineer &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.- 6853108	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. 011 26187232) (Fax No. 26195516)	Shri Praveen Kumar Secretary &Grievances 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

Sl. No.	Name of the Organization	Address	Name &Designation of P.G./ S.G. Officer
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 Ajay Kumar, Director (MP 1) & 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.	Water & Power Consultancy Services (India) Ltd.	76, C, Sector-18, Gurugram, Haryana-122015, Tel No:- 0124-2344425	Smt. Simmi Wadhwa, Director (Staff/Public Grievance)
15.	Brahmaputra Board	Basistha, Guwahati - 781029 (Tele No. 0361-2300128)	Shri Sudhir Kumar, Secretary (Staff/Public Grievances)
16.	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
17.	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
18.	National Mission for Clean Ganga	1st Floor, Major Dhyanchand National Stadium, New Delhi 110002.	Shri Binod Kumar, Director (NMCG) & Grievance Officer

ANNEXURE – XII

LIST OF CENTRAL PUBLIC INFORMATION OFFICERS / APPELLATE AUTHORITIES IN THE VARIOUS WINGS/SECTIONS OF THE DEPARTMENT 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	S. B. Pandey, Under Secretary (Admn.) Tel. No. 011-23714350 Email id : usadmn-mowr@nic.in	Administration Section/General Admin Section/ Cash Section & SC/ ST/OBC Cell	N. P. Joshi, Deputy Secretary (Admn/GeneralAdmin/ Cash) Tel. No.011-23714734 Email id : np.joshi@nic.in
2	A.K.Das, US (E-I) Tel. No. 011-23716928 Email id : use1-mowr@nic.in	E-I Section	Chandan Mukherjee, Deputy Secretary(E-I/E-III) Tel No. 011-23711459 Email id: chandan@nic.in
3	A.K. Kaushik, Under Secretary (E III) Tel. No. 011-23738126 Email id: use3-mowr@nic.in	E-III Section	
4	B.H.ThangmawiVaiphei,Under Secretary (IEC/ID & e-Gov) Tel. No.011-23766944 Email id: bht.vaiphei@nic.in	IEC/e-Governance Cell & ID	Girraj Goyal, Director (IEC, ID&e-Gov) Tel. No. 011- 23766369 Email id : diregovmowr@nic.in
5	Rajan Bhasin, Under Secretary (Coord.) Tel. No. 011-23074033 Email id: uscoord-mowr@nic.in	Coordination Section	A. C. Mallick, Deputy Secretary(Coord) Tel No. 011-23074005 Email id: dircoord-mowr@nic.in
6	Amit Kumar Singh, Under Secretary (EA & IC & Parl.) Tel No. 011-23383078 Email id: usea-mowr@nic.in	EA&IC Parliament	Mukesh Kumar, Deputy Secretary (Parliament, EA & IC) Tel No. 011-23382428 Email id:- dsea-mowr@nic.in
7	Shalini Juneja, Under Secretary (E-IV & PSU) Tel No. 011-23711946 Email id: shalini.juneja88@gov.in	E-IV & Public Sector Undertakings (PSU)	Subrata K. Basu, Deputy Secretary (E-IV & PSU) Tel No. 011-23714374 basu-sk@nic.in
8	Arvind Joseph Soreng, Under Secretary (PP) Tel: 011-23714350 Email id: uspp-mowr@nic.in	PP	Vivek Pal, Senior Joint Commissioner (PP) Tel: 011-23719503 Email: sjcpp-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	Akshaya Kumar Sahoo, Under Secretary (GWE) Tel. No. 011-23716928 Email id: ak.sahoo38@nic.in	GWE	Ashok Kumar, Deputy Secretary(GWE) Tel No. 011-23711988 Email id: ashok.kumar@nic.in
10	Jitendra Kumar, Under Secretary (Budget/Fin-I) Tel No. 011-23719627 Email id: jitendra.kr80@nic.in	Budget / Fin-I	Ashok Kumar Patro, Deputy Secretary (Budget/Fin-I) Tel No. 011-23711360 Email id: ak.patro@nic.in
11	Y. P. Yadav, Under Secretary (IFD/ Fin-II) Tel No. 011-23719302 Email id: yp.yadav48@gov.in	IFD / Fin - II	Ashok Kumar Patro, Deputy Secretary (IFD/Fin-II) Tel. No. 011-23711360 Email id: ak.patro@nic.in
12	Prashant Malik Under Secretary (E-II & Vig) Tel. No. 011-23350131 Emai id: use2-mowr@nic.in	E-II	Vijay Kumar Srivastava, Deputy Secretary (E-II) Tel No. 011-23711486 Email id: vijayk.srivastava25@nic.in
13		Vigilance	Ashish Kumar, Director (GW & Vigilance) Tel. No. 011-23716747 Email id ashish.kumar74@gov.in
14	Bisny Suresh Kumar, Under Secretary (GW) Tel. No. 011-23716928 Email id: usgw2-mowr@nic.in	Ground Water	Ashish Kumar, Director (GW & Vigilance) Tel. No. 011-23716747 Email id : ashish.kumar74@gov.in
15	Anil Kumar, Assistant Director (OL) Tel. No. 011-23714374 Email id : hindi-mowr@nic.in	Official Language Section	Vijay Singh Meena, Director(OL) Tel. No. 011-23714374 Email id: vs.meena25@nic.in
16	B. L. Meena, Under Secretary (B&B) Tel. No. 011-24367116 Email id: bl.meena15@nic.in	Matters of Brahmaputra & Barak Wing	Ajay Kumar Gupta, Senior Joint Commissioner (B&B) Tel No. 011-24367128 Email id: ak.gupta28@gov.in
17	Dr. Rajaram Purohit, Deputy Director (NHP) Tel. No. 011-21420148 Email id: rr.purohit@nic.in	National Hydrology Project	Rakesh Kashyap, Senior Joint Commissioner (NHP) Tel. No. 011-24367081 Email id: sjc3nhp-mowr@nic.in
18	Mithlesh Garg, Under Secretary (FM) Tel No. 011-24362517 Email Id: mithlesh.garg@nic.in	Flood Management Wing	D. K. Jena Sr. Joint Commissioner (FM) Tel No. 011-24392095 Email id: sjcfm4-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)
19	Bamane Mohan Jinnappa, Deputy Director(Planning) Tel No. 011-23466683 Email id:- bamane.m@gov.in	Planning Unit	Ch. David, Director(Planning) Tel No. 011-24366683 Email id:- david.ch63@gov.in
20	Saurabh Kumar, Deputy Secretary (CADWM) Tel. No. 011-23388977 Email id: saurabh.k01@nic.in	CAD related matters	Dr. B. R. K. Pillai, Commissioner (CAD) Tel. No. 23382256 Email: ravi.pillai@nic.in
21	R.N.Singh, Deputy Commissioner(Basin Management) Tel. No. 011-24368344 Email Id: dcbm-mowr@nic.in	River Basin Management, Administration of UP, Bihar, MP Reorganisation Act, Inter State Water Disputes Act, Inter State Water Disputes Tribunal, technical matters of NWDA and Inter-linking of Rivers	T. D. Sharma, Sr. Joint Commissioner (Basin Management) Tel. No. 011-24367109 Email id: sjcbm-mowr@nic.in
22	Sh. Veeresh, Deputy Commissioner (SPR-I) Tel No. 011-23385186 Email Id:- veeresh-cwc@gov.in	SPR-I	Anup Kr. Srivastava, Sr. Joint Commissioner(SPR-I), Tel No. 011-23385186 Email Id:- aksriv-cwc@nic.in
23	Abhiram Kumar Section Officer (Pen. River) Tel No. 011-23383261 Emailid: sopenriv-mowr@nic.in	Peninsular River Wing	Kanchan Bala Hamza Under Secretary (Pen. River) Tel. No. 011-23383059 Emailid:uspenriv-mowr@nic.in
24	Anil Kumar Verma, Assistant Commissioner (Minor Irrigation) Tel No. 011-23387834 Email Id: a.verma22@nic.in	Minor Irrigation	Rahul Kumar Singh, Sr. Joint Commissioner (MI) Tel. No. 011-23387834 Email id : sjcmi-mowr@nic.in
25	Pramod Kumar, Section Officer (Projects) Tel No. 011-23711370 Email Id: pramod.kumar12@nic.in	Project Section	Ashwani Kumar Shukla, Senior Joint Commissioner (SPR-II), Tel No.011-23710131 Email Id: sjcpr-mowr@nic.in
26	Rajveer Singh, Deputy Commissioner (Indus) Tel. No. 011-24360332 Email id: dcindus-mowr@nic.in	Indus Wing	Manoj Kumar, Sr. Joint Commissioner (Indus) Tel No.011-24362539 Email Id: sjcindus1-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)
27	Anshika Bhatnagar, SEO (MI Stat) Tel. No. 011-24656135 Email id: bhatnagar.anshika@gov.in	Minor Irrigation Statistics	Smt. Soumya P Kumar Director (MI Stats) Tel. No. 011- 24647129 Email id: soumya.kumar@gov.in
28	Tejdeep Singh, Scientist 'D', (National Water Mission) Tel. No. 011-24362133 Email id: t.singh-cgwb@gov.in	National Water Mission	G.Asok Kumar, Additional Secretary & Mission Director (NWM) Tel. No. 011-24365200 Email id: md.nwm@gov.in
29	Krishan Lal Ahuja,UnderSecretary, NMCG Tel. No. 011-23049506 Email Id:- krishanahuja63@gmail.com	NamamiGange	Binod Kumar, Director, National Mission for Clean Ganga Tel. No. 011-23049417 Email Id:- binodkumar.ofb@nic.in
30	Pramod Kumar Patra, Under Secretary (National River Conservation Directorate) Tel No. 24361057 Emailid:- pramod.patra1983@gov.in	National River Conservation Directorate (NRCD)	Arvind Prasad Singh, Deputy Secretary (NRCD) Tel No. 24369380 Email id: arvindp.singh@nic.in

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 OTHER IMPORTANT PUBLICATIONS OF DOWR, RD & GR AND ITS ORGANIZATIONS DURING 2020-21

Sl. No.	Publication	Release month	Published by	Website
1.	Hydrological Data (Unclassified) Book-2020 (Annual)	April, 2020	CWC	cwc.gov.in
2.	Compilation of Status of Ongoing Major and Medium Projects-2020 (Annual)	December, 2020	CWC	cwc.gov.in
3.	Financial Aspects of Irrigation Projects in India-2020 (Quinquennial)	December, 2020	CWC	cwc.gov.in
4.	Abstract on Water Sector-2020 A new initiative of ISO (Annual)	December, 2020	CWC	cwc.gov.in
5.	Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects	November, 2020	DRIP/ CWC	www.damsafety.in
6.	Guidelines for Classifying the Hazard Potential of Dams	November, 2020	DRIP/ CWC	www.damsafety.in
7.	Manual for Assessing Structural Safety of Existing Dams	November, 2020	DRIP/ CWC	www.damsafety.in
8.	DRIP Bulletin	December 2020	DRIP/ CWC	www.damsafety.in
9.	Jal Charcha (Monthly)	Monthly	DoWR, RD & GR	http://mowr.gov.in/
10.	Jalansh (Monthly)	Monthly	CWC	cwc.gov.in
11.	Bhujal Samwad (Quarterly)	2020	CGWB	http://cgwb.gov.in
12.	"Water Talks" (Compilation:March 2019 to February 2020)	March,2020	NWM	http://nwm.gov.in
13.	Compilation of information on 100 unique and interesting stepwells found across India.	June,2020	NWM	http://nwm.gov.in

ABBREVIATIONS

ADB	Asian Development Bank
AfDB	African Development Bank
AGGS	Association of Global Groundwater Scientists
AIBP	Accelerated Irrigation Benefits Programme
AICTE	All India Council for Technical Education
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
AMTC	Agriculture Mechanisation and Training Centre
AR	Artificial Recharge
ASCI	Administrative Staff College of India
AWA	Annual Water Account
BB	Brahmaputra Board
BCB	Bansagar Control Board
BCM	Billion Cubic Meter
BRB	Betwa River Board
BOD	Bio-chemical Oxygen Demand
BOP	Border Out Post
BOOT	Build, Operate, Own and Transfer
CA	Central Assistance
CAD&WM	Command Area Development & Water Management
CAU	Central Agricultural University
CCA	Culturable Command Area
CEA	Central Electricity Authority
CGWB	Central Ground Water Board
CLA	Central Loan Assistance
CMC	Cauvery Monitoring Committee
CMIS	Coastal Management Information System

CPCB	Central Pollution Control Board
CPGRAMS	Centralized Public Grievance and Monitoring System
CPIOs	Central Public Information Officers
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
CVC	Central Vigilance Commission
CWC	Central Water Commission
CWES	Central Water Engineering Service
CWPRS	Central Water & Power Research Station
CWDT	Cauvery Water Disputes Tribunal
DBE	Design Basic Earthquake
DDRP	Dam Design Review Panel
DDS	Drainage development Scheme
DDUGJY	DeenDayal Upadhyaya Gram JyotiYojana
DEM	Digital Elevation Models
DHARMA	Dam Health and Rehabilitation Monitoring Application
DoDWS	Department of Drinking Water & Sanitation
DoLR	Department of Land Resources
DoNER	Department of North Eastern Region
DoWR,RD& GR	Department of Water Resources, River Development and Ganga Rejuvenation
DPR	Detailed Project Report
DRIP	Dam Rehabilitation and Improvement Project
DSB	Dam Safety Bill
DSO	Dam Safety Organisation
DSRP	Dam Safety Review Panels
DVC	Damodar Valley Corporation
DWRIS	Development of Water Resources Information System
EFC	Expenditure Finance Committee
e-HRMS	Electronic-Human Resource Management System

EISL	Environmental Infrastructure and Services Limited
EPA	Environment Protection Act
EPC	Engineering Procurement and Construction
EPFO	Employees Provident Fund Organisation
ERM	Extension, Renovation and Modernization
ETP	Effluent Treatment plant
ETF	Empowered Task Force
FBP	Farakka Barrage Project
FR	Feasibility Report
FF	Flood Forecasting
FMBAP	Flood Management and Border AreasProgramme
FMP	Flood Management Programme
FMIS	Flood Management Information System
FRL	Full Reservoir Level
GFCC	Ganga Flood Control Commission
GHLSC	Gandak High Level Standing Committee
GPIs	Grossly Polluting Industries
GRA	Grievances Redressal Authority
GTF	Ganga Task Force
GWM& R	Ground Water Management and Regulation
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
HRD-CB	Human Resource Development and Capacity Building
HSO	Hydrological Studies Organisation
IAs	Implementing Agencies
IARI	Indian Agricultural Research Institute
ICAR	Indian Council of Agricultural Research
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 House hold Latrine
IMD	India Meteorological Department
INCCC	Indian National Committee on Climate Change
INCGW	Indian National Committee on Ground Water
INCID	Indian National Committee on Irrigation and Drainage
INCWR	Indian National Committee on Water Resources
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-SaptaKosi& Sun Kosi Investigation
JRC	Joint Rivers Commission
KHLC	Kosi High Level Committee
KNNL	Karnataka Neeravari Nigam Limited
KRMB	Krishna River Management Board
KWDT	Krishna Water Disputes Tribunal
LI	Lift Irrigation
LTIF	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
MLD	Million Liters per Day
MMI	Major & Medium Irrigation
Mha	million hectare
MI	Minor Irrigation

MoEF&CC	Ministry of Environment, Forest and Climate Change
MoES	Ministry of Earth Science
MoFPI	Ministry of Food Processing Industries
MoJS	Ministry of Jal Shakti
MoU	Memorandum of Understanding
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
NBWUE	National Bureau of Water Use Efficiency
NCA	Narmada Control Authority
NCDS	National Committee on Dam Safety
NCSDP	National Committee on Seismic Design Parameters
NDB	New Development Bank
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
NRCD	National River Conservation Directorate
NRCP	National River Conservation Plan

NRLD	National Register of Large Dams
NRSC	National Remote Sensing Centre
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
OCEMS	Online Continuous Effluent Monitoring Stations
OFD	On Farm Development
O & M	Operation and Maintenance
OW	Observatory Well
PAC	Project Advisory Committee
PAF	Project Affected Families
PDS	Purpose Driven Studies
PDA	Pancheshwar Development Authority
PDMC	Project Development & Management Consultant
PER	Pre-Feasibility Report
PES	Performance Evaluation Studies
PHED	Public Health Engineering Department
PIC	Permanent Indus Commission
PIM	Participatory Irrigation Management
PIP	Polavaram Irrigation Project
PIRC	Project Implementation Review Committee
PMA	Project Management Agency
PMC	Project Management Consultants
PMGSY	Pradhan Mantri Gram SadakYojana
PMP	Pancheshwar Multipurpose Project
PPA	Polavaram Project Authority
PMAY	Pradhan Mantri AwasYojana
PMKSY	Pradahan Mantri Krishi SinchayeeYojana
PZ	Piezometer
QPF	Quantitative Precipitation Forecast

R & D	Research and Development
R&R	Rehabilitation and Resettlement
RFD	Results Framework Document
RGNGWTRI	Rajiv Gandhi National Ground Water Training & Research Institute
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
SMD	Subject Matter Division
SMI	Surface Minor Irrigation
SMP	Sediment Management Policy
SOP	Standard Operating Procedure
SPCBs	State Pollution Control Boards
SSCAC	Sardar Sarovar Construction Advisory Committee
SSP	Sardar Sarovar Project
STP	Sewage Treatment Plant
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

ULBs	Urban Local Bodies
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

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