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R. K. Jain,
Chairman, CWC
Message

Continuing with emphasis on the water sector, Hon'ble Prime Minister launched Atal Bhujal Yojana (ATAL JAL) on 25-12-2019 which envisages promoting panchayat led groundwater management and behavioural change with a primary focus on demand-side management. During the inaugural function, a guideline related to the Jal Jeevan Mission was also released.

The year 2019 saw several initiatives with regard to water governance and programmes in the country such as bringing together of erstwhile MoDW&S; MoWR, RD&GR and National River Conservation Directorate of MoEF&CC under a single Ministry of Jal Shakti, nation-wide Jal Shakti Abhiyan, embarking upon ambitious Jal Jeevan Mission & initiation to revise the National Water Policy-2012, etc. Considering the success and achievement of the Dam Rehabilitation and Improvement Project (DRIP), the Government of India has initiated the next

phases of DRIP involving more participating States and covering more dams. Various initiatives in the field of water sector at the State level were also witnessed.

Considerable debate on key legislations related to water sector namely Dam Safety Bill and Inter-State River Water Disputes (Amendment) Bill, 2019 took place in the Parliament. The former envisages prevention and mitigation of dam failure related disasters through proper surveillance, inspection, operation and maintenance while the latter seeks to provide for a single standing Tribunal (with multiple benches) with permanent establishment and infrastructure so as to obviate with the need to set up a separate Tribunal for each water dispute which is invariably a time-consuming process. Both bills were passed by Lok Sabha and are to be taken up by Rajya Sabha.

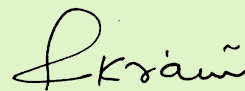
Bountiful rainfall during the monsoon season has filled the major reservoirs of the country to about 80% of their storage capacity. This level of storage is 40% more than the average storage for the last 10 years which has resulted in increased acreage for Rabi crops and very good agricultural production is expected in the year. However, the seasonal and spatial variability of rainfall and need for more water

storage is highlighted from the fact that in one state Rajasthan, an Inter-Ministerial Central Team for Flood visited the State during October and a similar team for drought assessment visited the State in December.

Series of international events such as International Micro Irrigation Conference, International Dam Safety Conference, 6th India Water Week and 2nd Sustainable Water Management conference were organized in India during the year 2019 which provided an important platform for sharing the best practices across the world and guidance to Indian policy and programmes in the water sector. CWC was actively associated in organizing and participating in all these events.

During December 2019, the 143rd meeting of the Advisory Committee of DoWR, RD & GR, Ministry of Jal Shakti on Irrigation, Flood Control & Multi-purpose projects was held on 09.12.2019 under the chairmanship of Secretary, DoWR, RD & GR. Ten schemes pertaining to five states/UTs, estimated to cost Rs. 14688 crore were accepted by the Committee.

I wish everyone a happy, prosperous and healthy New Year 2020.



Launch of Atal Bhujal Yojana



Launch of Atal Bhujal Yojana (ATAL JAL) and release of Guidelines for JJM

On 25-12-2019, Prime Minister Shri Narendra Modi launched Atal Bhujal Yojana (ATAL JAL). Along with the inauguration of other projects, a guideline related to the Jal Jeevan Mission was also released on this occasion.

Prime Minister said that this water crisis is worrying for us as a family, as a citizen and it also affects development of the country. New India has to prepare itself with every situation of the water crisis. For this, we are working together on five levels. Prime Minister emphasized that Jal Shakti Ministry freed the water out of Compartmentalized Approach and laid stress on a Comprehensive and Holistic Approach. In this monsoon, we have seen how extensive efforts have been made for water conservation on behalf of the society and from the Jal Shakti Ministry. He said that on one hand, Jal Jeevan Mission, will work towards delivering piped water supply to every house, and on the other hand Atal Bhujal Yojana, will pay special attention to those areas where groundwater is very low.

Prime Minister emphasized that water-related schemes should be planned according to the situation at every village level. This has been taken care while making the guidelines of the Jal Jeevan Mission, he added. He also said that both Union and State Governments will spend Rs 3.5 lakh crore on water-related schemes in the next 5 yrs. He requested the people of every village to make a water action plan and create a water fund. Farmers should make a water budget where groundwater is very low.

Atal Bhujal Yojana (ATAL JAL)

ATAL JAL has been designed with the principal objective of strengthening the institutional framework for participatory groundwater management and bringing about behavioural changes at the community level for sustainable groundwater resource management in seven States, viz. Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh. Implementation of the scheme is expected to benefit nearly 8350 Gram Panchayats in 78 districts in these States. ATAL JAL will promote panchayat led groundwater management and behavioural change with a primary focus on demand-side management.

Out of the total outlay of Rs. 6000 crore to be implemented for 5 years (2020-21 to 2024-25), 50% shall be in the form of World Bank loan, and be repaid by the Central Government. The remaining 50% shall be through Central Assistance from regular budgetary support. The entire World Bank's loan component and Central Assistance shall be passed on to the States as Grants.

Jal Jeevan Mission

To fulfil the aspirations of the people, the focus for providing potable water has been shifted from habitation to the rural household. Accordingly, the National River Drinking Water Programme (NRDWP) has been re-structured and subsumed into Jal Jeevan Mission (JJM). JJM aims at providing universal coverage through functional household tap connection (FHTC) to every rural household in the country by 2024, at a service level of 55 litres per capita per day, with an outlay of Rs. 3.60 lakh crore with central share of Rs. 2.08 lakh crore. As reported on 01.04.2019, there are 17.87 Crore rural households in the country and about 14.6 Crore, which accounts to 81.67% are yet to have household water tap connections.



The Operational Guidelines released on 25.12.2019 seeks to map out the implementation of this flagship scheme based on the principles of strong cooperative and collaborative federalism. This document chalks out Strategy for Planning and Implementation, Institutional Mechanism, Financial Planning and Funding, Technological Interventions/ Innovations, Monitoring and Evaluation etc. for the ambitious programme. To ensure source sustainability in the schemes implemented under JJM, convergence with the existing schemes of Government of India like MGNREGS and such Central or State schemes with similar objectives, for taking up construction of water conservation/groundwater recharge structures will also be taken up. JJM will focus on following 8 components.

- Development of in-village piped water supply infrastructure to provide tap water connection to every rural household;
- Development of reliable drinking water sources and/or augmentation of existing sources to provide long-term sustainability of water supply system;
- Wherever necessary, bulk water transfer, treatment plants and distribution network to cater to every rural household;
- Technological interventions for removal of contaminants where water quality is an issue;
- Retrofitting of completed and ongoing schemes to provide FHTCs at minimum service level of 55 lpcd;
- Greywater management;
- Support activities, i.e. IEC, HRD, training, development of utilities, water quality laboratories, water quality testing & surveillance, R&D, knowledge centre, capacity building of communities, etc.; and
- Any other unforeseen challenges/ issues emerging due to natural disasters/ calamities which affect the goal of FHTC to every household by 2024, as per guidelines of Ministry of Finance on Flexi Funds.

Ground Breaking ceremony for Luhri Stage – I HEP & Dhaulasidh HEP in Shimla

Hon'ble Union Minister of Home Affairs, Shri Amit Shah presided over the Ground Breaking ceremony for 210 MW Luhri Stage – I HEP & 66 MW Dhaulasidh HEP at Shimla in the benign presence of Hon'ble Governor of Himachal Pradesh Sh. Bandaru Dattatraya & Hon'ble Chief Minister of Himachal Pradesh Shri Jai Ram Thakur on 27.12.2019.

The 210 MW Luhri Stage – I HEP is located on river Satluj in Kullu & Shimla districts, while 66 MW Dhaulasidh HEP is located on river Beas in Hamirpur & Kangra districts. On completion, 210 MW Luhri Stage – I HEP will generate 758 Million Units of electricity annually while 66 MW Dhaulasidh HEP will have the potential to generate 247 Million Units of electricity annually. The construction of these two projects will bring in an investment of around Rs. 2400 crore and will generate employment for nearly 3500 persons.



143rd meeting of the Advisory Committee of DoWR, RD & GR, Ministry of Jal Shakti

The 143rd meeting of the Advisory Committee of DoWR, RD & GR, Ministry of Jal Shakti on Irrigation, Flood Control & Multi-purpose projects was held on 09.12.2019 under the chairmanship of Secretary, DoWR, RD & GR.

A total of 10 schemes viz. Renuka National Project of HP, 3 irrigation projects of Maharashtra, 5 flood protection/anti-erosion schemes (2 from Bihar, 2 from HP and 1 from J&K) and 1 coastal protection scheme of Karnataka were techno-economically considered and accepted. The total estimated cost of these schemes is Rs. 14688 crore. The details of the scheme are summarized in the table as under.



S.N.	Name of the Project	State/UTs	Type of Project	Cost of the Project (in Rs. Crore)	Benefits
1	Renukaji Dam Project	Himachal Pradesh	Multipurpose National Project	6946.99 (PL-Oct, 2018)	Drinking water project. Firm water supply to the tune of 23 cumecs during 9 months (Sep to June) & Power generation of 40 MW
2	Seven Pneumatically Operated Gated Weirs in Series on Gima River	Maharashtra	Medium Irrigation	781.32 (PL-2017-18)	CCA-5540 ha
3	Shelgaon Barrage Medium Irrigation Project, Revised Cost Estimate (RCE)	Maharashtra	Medium Irrigation, RCE	961.11 (PL-2017-18)	CCA- 9589 ha
4	Bodwad Parisar Sinchan Yojna	Maharashtra	Major Irrigation, RCE	3763.60 (PL- 2017-18)	CCA - 53025 ha
5	Providing flood protection/stabilization work to Naker Khad and its tributaries from Rainta to Sour Kalan Bridge	Himachal Pradesh	Flood Control	231.02 (PL-Dec. 2018)	Benefitted area- 274 ha Benefitted population- 3678
6	"Providing Flood Protection Works/Anti erosion measures for Sakrain, Malthod, Thothu, Dol and Samour Khad in Dharampur Constituency, Distt Mandi (HP)	Himachal Pradesh	Flood Control	145.73 (PL-June, 2019)	Benefitted area- 300 ha Benefitted population- 3289
7	Revised DPR for protection work of left edge of River Ganga from Kewala village to Baghmara village in the length of 5200m.	Bihar	Flood Control	105.60 (PL-2017)	Benefitted area- 55000 ha Benefitted population- 60000
8	Anti Erosion Works in between 0.00 km to 35.00 km of PP Embankment and at GH Embankment.	Bihar	Flood Control	44.53 (PL-2017)	Benefitted area- 4,20,000 ha Benefitted population- 2,20,000
9	"Comprehensive Flood Management Plan Works on River Jhelum and its tributaries, Phase-II (Part A)"	J&K	Flood Control	1623.43 (PL-Sep-2019)	Benefitted area- 280000 ha Benefitted population- 906091
10	Implementation of coastal protection measures at Someswara, Mangalore taluk, Dakshina Kannada Distt, Karnataka.	Karnataka	Coastal Protection Externally funded project (ADB) under Sustainable Coastal Protection and Management Investment Program (SCPMIP) Tranche-II Karnataka	84.87 (PL-2016-17)	Length of protection- 3 km

PL- Price Level

5th Visit of the Expert Committee on Polavaram Irrigation Project

The 5th visit of the Expert Committee constituted under the Chairmanship of Member (WP&P), CWC to overview the implementation of the Polavaram Irrigation Project (National Project), Andhra Pradesh took place from 27th to 31st December 2019.

The committee started its site visit from Kanithi Balancing Reservoir (source of water for Vizag Steel Plant) and visited Left Main Canal, Varaha Aqueduct @ 138.075 RD, NH-LMC crossing, Yelluru CD Works, Spillway Portion, Approach Channel, Spill channel, Pilot channel, Gap-II & Gap-III, Diaphragm Wall for ECRF Dam, Coffor Dams for Gap-II, Radial Gates Fabrication Yard, Left Connectivities, R&R village namely Indukuru-I (For 306 PDFs) etc. Thereafter, a Wrap-up meeting with all the members of the Expert Committee and State Govt. Officials was undertaken on the last day.



Flood Forecasting during 2019

Central Water Commission (CWC) through its field divisions collects hydro-meteorological data on a real-time basis during the flood season every year. Using this data, flood/inflow forecasts are formulated for 325 locations (197 Level and 128 Inflow Forecast Stations) and disseminated to various user agencies through Fax/e-mail/SMS and Website.

Flood Forecasting activity commenced on 01.05.2019 and culminated on 31.12.2019. During, 2019, due to an increase in the number of Stations and heavy rainfall, the number of flood forecasts issued was more than previous years. Year-wise level/inflow forecasts issued during the last three years have been summarized in adjacent Table.

Extreme Flood Situation

Due to heavy monsoon rainfall, Highest Flood Level crossed at 37 Hydrological Observation/Flood Forecasting Sites of CWC. Month-wise summary of the crossing of HFL (also known as Extreme Flood Situation for FF Sites) is given in the Table below.

Severe Flood Situation

Severe Flood Situation was observed on 96 CWC FF Stations in Arunachal Pradesh, Assam, Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Himachal Pradesh, Kerala, NCT Delhi, Odisha, UP, Uttarakhand, MP

Month	HO/FF Stations
May	0
June	0
July	6
August	25
September	4
October	1
November	1*
December	(* Same station)
Total	37

Uttarakhand, West Bengal, Maharashtra and Gujarat.

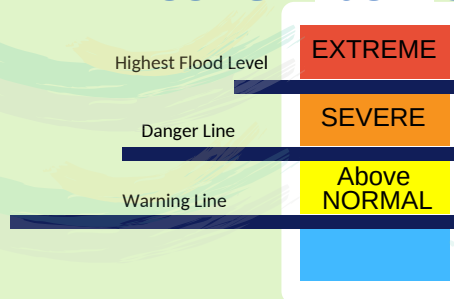
Above Normal Flood Situation

52 CWC Stations in Assam, West Bengal, Bihar, Maharashtra, Madhya Pradesh, Haryana, Odisha, Kerala, Telangana, Gujarat, Uttarakhand, Uttar Pradesh, Tamilnadu, Andhra Pradesh and Jammu & Kashmir observed Above Normal Flood Situation.

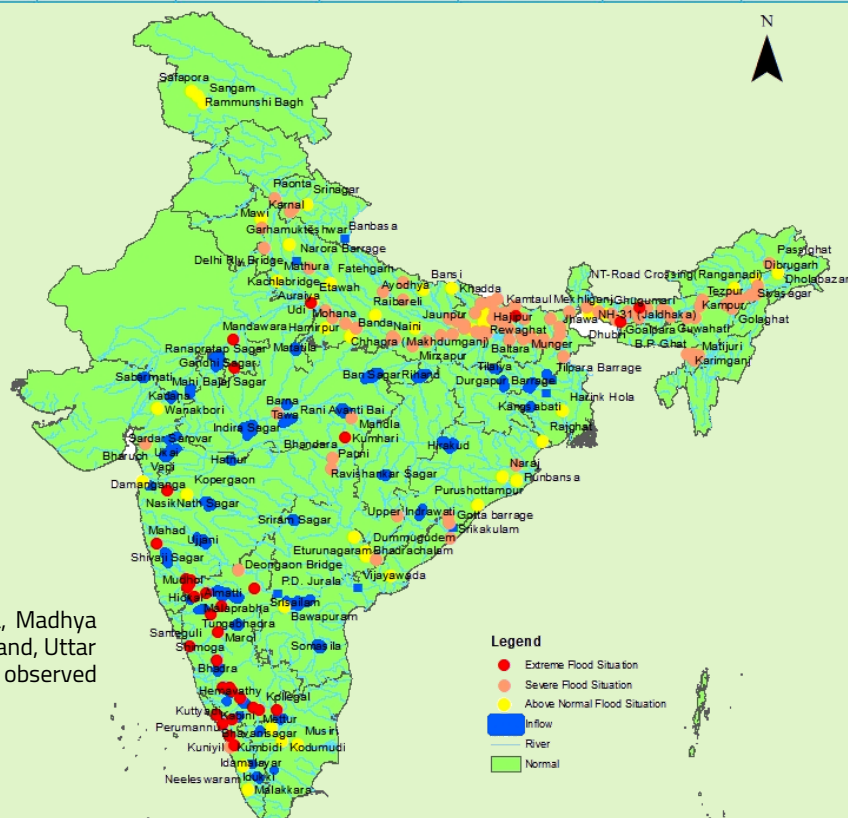
Inflow Forecasts

Inflow Forecasts were issued for 75 Reservoirs and Dams.

FLOOD CATEGORIES



Year	Level		Inflow		Total	
	No. of Stations	No. of Forecast	No. of Stations	No. of Forecast	No. of Stations	No. of Forecast
2017	166	5085	60	1212	226	6297
2018	174	4969	75	1882	249	6851
2019	197	6004	128	3750	325	9754



Flood Management Works on River Jhelum & its tributaries

A Detailed Project Report for "Comprehensive Flood Management Works on River Jhelum & its tributaries- Phase-II-part-A" has been accepted in the 143rd meeting of Advisory Committee of DoWR, RD&GR held on 09.12.2019, for an estimated cost of Rs 1623.43 Crore.

The scheme envisages various works viz Re-sectioning of channels, bank protection works in the form of revetment, retaining walls, gabions & flood management works in form of Raising & strengthening of embankments. The project area lies in the districts of Anantnag, Pulwama, Kulgam, Shopian, Srinagar, Budgam, Ganderbal, Bandipora, Baramullah and Kupwara. Implementation of this scheme will benefit 0.28 mha area with a population of more than nine lakh.



Coastal Protection works in Karnataka- Alternative way of Coastal Protection

Considering the problems faced by the State Govts./Union Territories in taking up the anti-sea erosion works due to paucity of funds in the early 1990s, the erstwhile Beach Erosion Board (now renamed as Coastal Protection & Development Advisory Committee) headed by Chairman, CWC requested the maritime States to formulate the proposals for protection of vulnerable coastal reaches from sea erosion in their respective states and send the proposals to Central Water Commission who will coordinate and prepare a consolidated National Coastal Protection Project (NCPP) based on proposals received from State Govts. for posing the same for external assistance.

Also, as an outcome of discussions between the Government of India and the Asian Development Bank (ADB), a Project Preparatory Technical Assistance (PPTA) programme for preparing a Sustainable Coastal Protection and Management Project for the states of Maharashtra, Karnataka & Goa was taken up. Under PPTA an investment programme estimating to USD 404.6 million (revised) including ADB loan of USD 250 million was envisaged.

After acceptance of Advisory Committee of ministry, two projects namely Ullal Coastal Erosion & Inlet Improvement Project in Karnataka and Mirya Bay Coastal Erosion and Protection Project in Maharashtra were taken up under First Tranche of loan from ADB under Sustainable Coastal Protection and Management Investment Program(SCPMIP).

Ullal Coastal Protection project had proposed combined solution involving offshore artificial reefs, beach nourishment, Groynes and breakwater rehabilitation. The structures created under Ullal project are biggest large-scale artificial reefs in India to protect against coastal erosion along with additional benefits. It was marked shift from earlier approach to protect coastline through structures such as Seawall, Groynes etc.

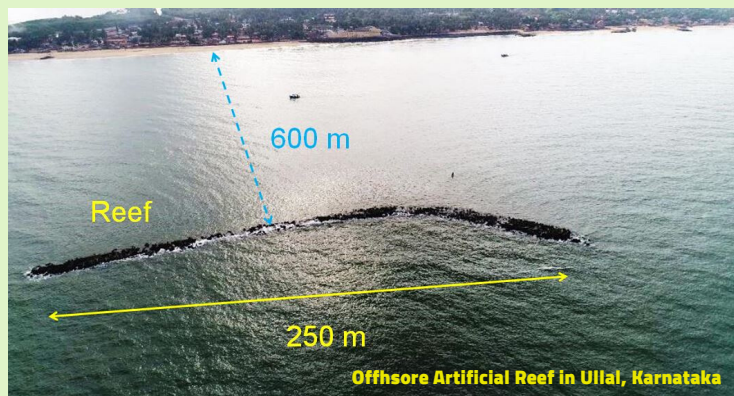
In addition to above, the above programme has incorporated international best practices in coastal protection and management in Indian context in participating states such as:

- Development of Shoreline Management Plan
- Development of Coastal Management Information System
- Institutional realigning and capacity building
- Factoring climate change considerations

In furtherance to above, the Govt. of Karnataka is undertaking several sub-projects under Tranche-2 loan. One of the sub-projects is related to coastal protection at Someshwara in Dakshina Kannada District of Karnataka. The proposed solution is construction of two offshore reefs and beach nourishment alongwith 10 nos. of Groynes. Two reefs will be each 200 m long and placed 600 m offshore at 6.3 m (relative to Chart datum) water depth.

The project has been planned as per the reference manual published under Climate Resilient Coastal Protection and Management Project (CRCMPM) considering climate change aspect and sustainable & environment friendly combined soft and hard solution for coastal erosion.

The above sub-project proposal was submitted by project authorities for the acceptance of the Advisory Committee of DoWR, RD&GR. The Project site was visited during 12-15th December 2019 by a team of CWC officers



lead by Sh. S.K. Haldar, Member (WP&P), CWC. This sub-project was accepted in the 143rd meeting of Advisory Committee of Ministry held in December, 2019.

Visit of Chairman, CWC to Uttarakhand

Chairman, CWC along with Chief Engineer, UGBO, CWC, Lucknow and other officers inspected various gauging sites namely Haridwar, Satyanarayan, Rishikesh and Roorkee under UGBO and Poanta Sahib site under YBO during 14-15th December 2019. In addition to above, Chairman, CWC inspected the works under Dam Rehabilitation and Improvement Project (DRIP) for Pashulok Barrage, Rishikesh, Dakpathar Barrage and Asan Barrage at Dehradun and had interaction with officials of Uttarakhand Jal Vidyut Nigam Limited (UJVNL). Following works have been completed for different projects under DRIP.

ASAN BARRAGE

De-siltation of reservoir, protection works on upstream and downstream, special repairs to damaged power channel, repair to the eroded portion of piers and barrage floor, repair of silt ejector channel, laying of concrete canvas and repair of Kulhal powerhouse intake. Automation of barrage control and monitoring system. Overhauling and repair of HM system.

DAKPATHAR BARRAGE

Special repair of the glacis, cracks on piers/abutments, Repair of Damaged Panels of Power Channel, design manufacturing and installation of TRCM, automation of barrage control and monitoring system.

VIRBHADRA BARRAGE RISHIKESH

Repair and restoration of civil structures, repair of damaged lining, repair of the glacis. Repair and maintenance of barrage gates, fabrication and erection of under sluice gate no. 1 and design, manufacturing, supply, erection, testing and commissioning of a set of stop log gate.



Sh. R. K. Jain, Chairman, CWC & Sh. Bhopal Singh, CE, UGBO, CWC, Lucknow at CWC G&D Site Rishikesh



A trash remover machine at Asan Barrage has helped in reducing the plant closure due to clogging. Demonstration was held during Inspection of CWC Team.

Dam Rehabilitation and Improvement Project (DRIP)

Tripartite Portfolio Review Meeting

Tripartite Portfolio Review Meeting organised by DEA, was held in Bhopal on 05.12.2019 to review the status of externally aided projects. This meeting was attended by the officials of various ongoing externally aided projects in the country. DRIP team also participated in the meeting in which deliberations regarding DRIP progress were done. Since DRIP is scheduled for closure in June 2020, DEA and World Bank recommended for fast-tracking the remaining activities to successfully close the project on time.



Tripartite Portfolio Review Meeting

Seismic Hazard Assessment Information System (SHAISYS)

A meeting to review and validate the Seismic Hazard Assessment of South India carried out by the Earthquake Engineering Department of Indian Institute of Technology, Roorkee was held in CWC, New Delhi under the Chairmanship of Chairman, CWC on 12.12.2019. Based on the points raised during the meeting, IIT Roorkee agreed to revise the Seismic Hazard map for South India. CWPRS which is working on the Seismic Hazard mapping of North India will integrate both the maps to develop Seismic Hazard Assessment Information System (SHAISYS) which will be used while designing the dams and their rehabilitations to take care of the seismicity at the dam location.



Review Meeting for SHAISYS

International Cooperation

Officials from IC-IMPACTS (the India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability), Delhi office visited DRIP office on 10.12.2019 to explore the possibilities for cooperation between DRIP and IC-IMPACTS. IC-IMPACTS is the first, and only, Canada-India Research Centre of Excellence established through the Canadian Networks of Centres of Excellence (NCE) as a new Centre dedicated to the development of research collaborations between Canada and India.



Meeting with IC-IMPACTS

Project Visits

Visit to Periyar Valley Irrigation Project, Idukki Dam and Malampuzha Dam, and Moolathara Dam were organized during 16-17th December 2019 to review the progress of ongoing DRIP rehabilitation works for the preparation of dam rehabilitation reports.

Consultation and Appraisal meeting for DRIP II and III

Consultation and Appraisal meeting with Goa WRD and Jharkhand WRD was organized on 18.12.2019 and 27.12.2019 respectively to review the progress of preparatory activities for DRIP Phase II and Phase III and to provide any guidance required in the matter. CWC officials along with the representative of World Bank were part of the delegation.



Moolathara Project



Additional CS, WRD, Govt. of Jharkhand along with officials of CWC and Jharkhand

Release of CWC Publications

Sh. U. P. Singh, Secretary, DoWR, RD & GR released two publications prepared by P&D Organization, CWC on 09.12.2019 in the presence of Chairman, CWC and other senior officers of Dept. & CWC.

1. Status of Trace & Toxic Metals in Indian Rivers
2. Effect of Time & Temperature on DO levels in River Waters

Status of Trace & Toxic Metals in Indian Rivers

The revised and comprehensive Third edition of Status of Trace & Toxic Metals in Indian rivers comprises the data of eight elements viz; Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Nickel and Zinc for the period from May 2014 to April 2018. Heavy metal elements have at least four to five times the specific gravity of water at the same temperature and pressure. Metal contamination is a persistent global issue, having environmental, political and medical implications. Heavy metals are toxic, carcinogenic and bio-accumulative in organisms which render serious health effects on humans and the flora & fauna. For the above study, 2959 no. of river water samples from 424 water quality monitoring stations spread over major river basins in India were collected in three different seasons viz, monsoon, summer and winter and were analyzed at National River Water Quality Laboratory, CWC, New Delhi. The results reveal that water samples collected at 137 stations are found within the limit as per BIS: 10500-2012. Results of 101 stations were beyond the limit due to the presence of two or more toxic metals. Iron concentration was beyond the limit (0.3 mg/L) at 156 stations. Similarly, results of samples were above the acceptable limit at three stations due to presence of cadmium, at six stations due to presence of Chromium, at nine stations due to presence of nickel and twelve stations due to presence of lead contamination. Nevertheless, it was concluded that Arsenic and Zinc concentrations are found within the limits during the study period.

Effect of Time & Temperature on DO levels in River Waters

Dissolved Oxygen (DO) concentrations in a water body can fluctuate largely within a short period of time due to the dynamics of physical, chemical, and biological processes in that system such as Photosynthesis adds oxygen to a water body, while respiration and degradation of organic matter consume oxygen. Aeration may add or remove DO from the water depending on the DO saturation level. Water temperature is an important parameter which can influence oxygen dissolved in water because it effects on the maximum oxygen-holding capacity of water, and also has direct influence on rates of biochemical reactions and transformation processes. At many quarters, concerns were raised about variation of DO in the rivers with the time and seasons and its reduction during night times. It was alleged that in such conditions aquatic life comes under stress. To clarify the above apprehension, CWC conducted a study to

National Hydrology Project

CWC is one of the Implementing Agencies of World Bank aided National Hydrology Project (NHP). Under the project, CWC has invited International Competitive Bidding for Consultancy services of Basin-wise Extended Hydrologic Prediction (Multiweek forecast) in Cauvery, Narmada & Yamuna basin. Three International Company M/s Research Triangle Institute (RTI) International, M/s Haskoning DHV, Nederland and DHI (India) Water & Environment Pvt. Ltd. have participated in the bid. Bid is under finalisation.

CWC also initiated the procurement of Real Time Data Acquisition System (RTDAS) for RTDAS stations (119 ARG, 159 AWLR, 37 AWS, 9 Evaporimeter, 3 Snow Gauge) on behalf of North Eastern States of Meghalaya, Manipur, Mizoram, Tripura, Sikkim, Arunachal Pradesh & Nagaland except Assam and in Narmada Basin (48 ARG, 27 AWLR, 5 Velocity radar, 6 AWS, 9 Gate Sensor) for Narmada Control Authority. In addition, CWC has invited International Competitive Bidding for Consultancy services of Physical based mathematical modelling for

Project Monitoring

During the year 2019-20, Rs. 138403.3 Lakhs Central Assistance (CA) has been sanctioned to the states for ongoing projects under PMKSY. During December, 2019 CA of Rs. 47,114.30 lakhs has been sanctioned. During 2019-20, a total of 47 (20 Major and 27 Medium) projects under General Monitoring, 149 (73 Major, 55 Medium and 21 ERM) on-going projects under PMKSY-AIBP are targeted by CWC field units. During 2019-20 (up



monitor DO for river waters at selected locations round the clock (every 3 hours) at least for one week in different seasons at 19 water quality stations at major rivers of India having different climatic condition & anthropogenic activities. Obtained results shows that DO and water temperature exhibited considerable diurnal variations at almost all the 19 WQ stations. 11 WQ stations (Pandur, Ramamangalam, Vikram Chowk, Phulgaon, Satapur, Jenapur, Khanpur, Garudeshwar, Koteswar, Varanasi and Poanta) for all classes of water, 4 WQ stations (Thengudi, Mantralayam, Gandhighat and Hoshangabad) for Class B, C & D water, 1 WQ station i.e. Amabarampalayam for Class C & D water were found within prescribed limits. 2 WQ stations (T. Bekuppe and Agra (P.G)) were found below the limits prescribed for all classes of water according to the DO limits by CPCB water quality criteria for designated best use. At Delhi Railway Bridge WQ station, DO level was Zero during 14.01.2019 to 16.01.2019 irrespective of variation in temperature. The diurnal variation in DO is primarily caused by the variation of sunlight, photosynthesis, respiration of algae & aquatic plants and water temperature. Nevertheless, photosynthesis causes a much larger DO variation than water temperature.



estimation of Sediment Rate and Sediment Transport in Seven River Basins Ramganga, Barak, Narmada, Cauvery including three West Flowing rivers in western Ghats viz Kuttidipuzha, Peechi & Mangalam Basin.

to December, 2019), 01 monitoring visit was undertaken in respect of projects under General Monitoring. Similarly, 50 visits were undertaken and 34 Status Reports were issued (up to December, 2019) for projects under PMKSY-AIBP. Bhaskaracharya Institute for Space Application and Geoinformatics (BISAG) has agreed to make a GIS based application for the monitoring of projects for the Ministry from their own resources.

Water Sector in News

- TN rain wreaks havoc, claims more than 20 lives (The Statesman, 02.12.2019)
- HP Govt decides to sell water of Yamuna (Pioneer, 03.12.2019)
- Arsenic and iron in water : 30k rural habitations, 20k in 2 states (The Indian Express, 04.12.2019)
- India's first HAM project in sewerage sector, the 14 MLD STP at Sarai, Haridwar completed before time (Focus News, 06.12.2019)
- National Green Tribunal directs 100% treatment of sewage entering rivers (Millennium Post, 07.12.2019)

HYDRO-2019

HYDRO-2019, International Conference on "Hydraulics, Water Resources & Coastal Engineering" was held during 18-20th December 2019, under the aegis of Indian Society of Hydraulics (ISH). Hydro 2019 was organised by the Civil Engineering Department, of University College of Engineering, Osmania University, Hyderabad. Krishna & Godavari Basin Organisation field unit of Central water Commission located at Hyderabad actively participated in the conference which had over 300 papers presented under themes such as Hydro Environment, Ground Water Hydrology, Ports & Coastal Engineering, Water Management & Hydro Informatics, River Hydraulics, Climate Change & Extreme Events, Water & Waste Water Modelling, Geo-Spatial Techniques, Soft Computing Techniques and Modelling Techniques.

During the event, Shri D.Ranga Reddy, Chief Engineer, KGBD delivered a keynote lecture on "River Basin Approach in Water Management", Shri M.Raghuram, Superintending Engineer, Godavari Circle, chaired the session on River hydraulics and Smt K.Rekha Rani, Deputy Director, M&A (TS) co-chaired the session on soft computing techniques.

- Scientists find evidence of Saraswati's existence (The Times of India, 09.12.2019)
- Tropical glaciers may be wiped out by next decade (The New Indian Express, 11.12.2019)
- No proposal to transfer water from state list to concurrent list (The Statesman, 11.12.2019)
- Cabinet approves World Bank-funded Atal Jal, PM to launch scheme today (The Indian Express, 25.12.2019)
- Glacial lakes increasing in Himachal river basins (The Statesman, 31.12.2019)



History- Inter State Water Disputes Tribunal

Name of the Tribunal	States Concerned	Date of Constitution	Present Status
Godavari Water Disputes Tribunal	Maharashtra, Andhra Pradesh, Karnataka, Madhya Pradesh & Orissa	April 1969	Decision given in July 1980
Krishna Water Disputes Tribunal - I	Maharashtra, Andhra Pradesh, Karnataka	April 1969	Decision given in May 1976
Narmada Water Disputes Tribunal	Rajasthan, Madhya Pradesh, Gujarat and Maharashtra	October 1969	Decision given in Dec 1979. Narmada Control Authority (NCA) was constituted to give effect to the decision
Ravi & Beas Water Tribunal	Punjab, Haryana and Rajasthan	April 1986	Report & Decision given in April 1987. Further Report under Section 5(3) of ISRWD Act is pending
Cauvery Water Disputes Tribunal	Kerala, Karnataka, Tamil Nadu and Puduchery	June 1990	Decision given on 5.2.2007. Hon'ble Supreme Court slightly modified the decision on 16.02.2018. CWMA & CWRC were constituted to give effect to the decision of CWDT as modified by the Hon'ble SC
Krishna Water Disputes Tribunal -II	Karnataka, Andhra Pradesh and Maharashtra	April 2004	Report & Decision given on 30.12.2010. SLPs filed pending in the Court. Term of the Tribunal has been extended after the bifurcation of united Andhra Pradesh State. The matter is therefore under adjudication in the Tribunal
Vansadhara Water Disputes Tribunal	Andhra Pradesh & Odisha	February 2010	Report & Decision submitted on 13.09.2017. Further Report under Section 5(3) is pending
Mahadayi Water Disputes Tribunal	Goa, Karnataka and Maharashtra	November 2010	Report & Decision submitted on 14.08.2018. Further Report under Section 5(3) is pending. Basin States have filed separate SLPs and the State of Goa filed a contempt petition against Govt. of Karnataka in Hon'ble SC
Mahanadi Water Disputes Tribunal	Chhattisgarh & Odisha	March 2018	Under Adjudication by the Tribunal. Report & Decision are awaited

Gallery



Meeting of Committee under the chairmanship of Dr. Mihir Shah to draft the National Water Policy including process of consultation with stakeholders (NGOs, Academic Experts, etc.).



Member (RM), CWC reviewed the works of MTBO, CWC, Gandhinagar and inspected Chhassara (G&D), Gungan (G&D) and Una (G&D) sites during 28.12.2019 to 02.01.2020. He also held a meeting with Secretary (WR), Govt. of Gujarat and discussed various issues related to cooperation between the Government of Gujarat and CWC



Central Water Commission

An attached office of Dept. of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti, Govt. of India

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2nd Floor(South), Sewa Bhawan, R K Puram, New Delhi-110 066
E-mail: media-cwc@gov.in

