



JALANSH

The Monthly Newsletter of Central Water Commission



Message

R.K. Jain
Chairman,

Country is facing unprecedented situation due to COVID-19 pandemic. Throughout the country, severe restrictions were put in place on movement of people during the initial phase of lockdown declared by the Central Government. Subsequently, during the 2nd phase of lockdown, Central Govt. offices were opened on 20-04-2020 with certain restrictions. However, CWC, being one of the agencies involved in the early warning system for floods, was allowed to function without any restrictions.

Most disasters, covered by the guidelines under the Disaster Management Act, 2005 for providing financial assistance for emergency response and relief, arise due to Hydro-meteorological events and flood is one of them. Role of Flood Forecasting is very important in minimizing the losses due to floods and it is one of the important functions of CWC since 1958. The 15th Finance Commission has recommended additional resources for Disaster Response and its Management with specific provisions to address the risk of Urban Flooding in 7 major cities, preparation of Drought Mitigation Plans in 12 states, mitigation measures to prevent coastal and river erosion and resettlement of displaced people affected by such erosion. CWC is directly or indirectly involved in all these activities.

It is a matter of pride and satisfaction that CWC has successfully discharged most of its functions during the period of lockdown, utilizing the latest technologies such as Video Conferencing (VC) and e-office platforms. A sustained effort to set up the requisite infrastructure in CWC has immensely helped in the current situation. Our Training institute, National Water Academy at Pune has also dovetailed several distance learning courses for CWC officers as well as outside audience.

Several virtual meetings were taken by the Hon'ble Union Minister of Jal Shakti and Secretary, DoWR, RD & GR on wide-ranging issues of the Water sector. Myself and other senior officers of CWC participated in those meetings. In one of the meetings related to National Water Policy, we highlighted that there is a need for construction of large dams and bigger storages for utilisation of stored water during lean season for various beneficial uses and construction of the same should be given due importance in the new policy. It was also stated by Member(WP&P) that the revised National Water Policy should give emphasis to recycle and reuse of water wherever feasible. We have also prepared a document on 'Reforms in water sector in the aftermath of Covid-19' and furnished the same to Niti Aayog for further consideration.

We conducted several meetings for reviewing the ongoing PMKSY-AIBP projects, preparedness for flood forecasting activities and important National projects such as Polavaram Irrigation Project and the proposed Ujh Multipurpose Project with the Project authorities and concerned officials of CWC and other organizations. These meetings have been summarized in the subsequent sections of the newsletter. CWC's field offices observed the data of rivers and

analysed the effect of lockdown on various parameters such as discharge, sediment and water quality across the country. Summary of their findings are also highlighted in the newsletter.

As per IMD's first stage long range forecast, the Southwest monsoon seasonal (June to September) rainfall over the country as a whole is likely to be normal (96-104%) during 2020. IMD will issue the updated forecasts in the last week of May or first week of June 2020 as a part of the second stage forecast. Around 75% of annual rainfall is received during this season. The Long Period Average of the SW monsoon rainfall over the country as a whole for the period 1961-2010 is 88 cm.

123 reservoirs being monitored by CWC, present a comfortable position at national level in comparison to previous years. As per reservoir storage bulletin dated 30.04.2020, live storage available in these reservoirs is 70.506 BCM, which is 41% of the total live storage capacity of these reservoirs. The storage available in these reservoirs is much better than the storage of last year and average storage for the last ten years.

CWC and 16 other Implementing Agencies have readied themselves for the upcoming Loan Negotiation Meeting for World Bank aided Dam Rehabilitation and Improvement Programme (DRIP) Phase-II and Phase-III.

I am happy to share that Officers/Staff of CWC have voluntarily contributed one day's salary amounting to Rs. 62,50,349 to PM CARES fund to fight COVID-19 pandemic. I request everyone to take care of their health and follow the directions of authorities during this pandemic.

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Review Meetings by Hon'ble Union Minister of Jal Shakti

1. National Water Policy

A meeting to discuss the National Water Policy (NWP), currently under revision, was held on 02.04.2020 through VC under the Chairmanship of Shri Gajendra Singh Shekhawat, Hon'ble Union Minister of Jal Shakti.

In the meeting, the Hon'ble Minister asked various officers present to express their views on drafting of NWP. Shri U.P. Singh, Secretary, DoWR, RD&GR, Ms. Debashree Mukherjee, Additional Secretary, DoWR, RD&GR and Shri Rajiv Ranjan Mishra, Director General, NMCG presented their views and stated that water footprint, water auditing, improvement in water use efficiency, demand management, agricultural reforms, water quality, democratisation of water, river rejuvenation, protection of traditional water bodies, protection of wetlands etc., need to be addressed and incorporated in the new National Water Policy. Shri Sriram Vedire, Advisor, Ministry of Jal Shakti and Member of the Drafting Committee of NWP, stated that the committee will have consultations with the concerned Central Ministries for their views on NWP. Further, officers of CWC, CGWB, NMCG, Jal Jeevan Mission, etc., should also be consulted for their views on the revised National Water Policy. Shri R. K. Jain, Chairman, CWC stated that there is a need for construction of large dams for storage of water for utilisation during non-monsoon season for various beneficial uses and construction of the same may be given due



importance in the new policy. He emphasized that earlier policies which were prepared based on extensive consultation with different stakeholders, should also be given due consideration while revising it. Shri S. K. Halder, Member(WP&P), CWC, stated that the revised National Water Policy should give emphasis to recycle and reuse of water wherever feasible.

2. Flood Forecasting by CWC

A meeting was convened under the chairmanship of Shri Gajendra Singh Shekhawat, Hon'ble Minister of Jal Shakti through video conferencing (on Skype) on the subject of 'Flood Management and Flood Forecasting' on 03.04.2020.

The meeting started with a presentation by Sh. Sharad Chandra, Director(FFM), CWC on 'Flood Management & Flood Forecasting'. Main conclusions of the presentation were as follows:

- To reduce the flood risk, it is very essential to manage various vulnerabilities viz. floodplain encroachment, faulty reservoir operation, etc., effectively.
- Integrated Flood Management approach i.e. a judicious mix of structural & non-structural measures with hydrological basin as a planning unit needs to be adopted for effective flood management.
- Dams/Reservoirs are designed for flood moderation, if their flood cushion is used effectively. Rule curve for all reservoirs should be prepared & updated from time to time. Rule curves of major reservoirs, where flood cushion is not in-built, need to be reviewed to have some dynamic flood cushion for major part of the flood season. While planning new water resource projects, storage capacity may be fixed with provisions for flood moderation.
- Inflow forecasting is an important tool for utilizing it in real time reservoir operations.

- Emergency Action Plans for dam break/extreme flood situations with dam break flood inundation, flood waves & time analysis need to be prepared for all dams.
- There is a need for better coordination among different agencies for faster communication of data/information.
- There should be regular revision of danger & warning levels of level forecasting stations and threshold values for inflow forecasting.
- There is a need for more impact based warning at micro level i.e. upto taluka or village level.

Hon'ble Minister, while appreciating the work of CWC in flood forecasting, highlighted the need to project the same among the public through social media for its better appreciation. He also stressed upon the preparation of a roadmap for the new activities to be started in the coming flood season.

The importance of real time data acquisition system (Telemetry) with least human intervention was also highlighted during the meeting.

Regarding implementation of flood plain zoning in all major flood prone States in the country, the Hon'ble Minister desired that a meeting may be convened with Ministers and Secretaries of concerned flood prone states after the lockdown. Presentations from IMD and NDMA may also be made during the meeting.

3- Water Quality Activities of CWC

Shri Gajendra Singh Shekhawat, Hon'ble Union Minister of Jal Shakti held a meeting through video conferencing on 10.04.2020 to review the 'Water Quality Activities of Central Water Commission'. Shri U. P. Singh, Secretary, DoWR, RD & GR, Shri R. K. Jain, Chairman, CWC, Shri R. K. Sinha, Member(RM), CWC and senior officers of DoWR, RD & GR/CWC/NMCG/NRCD also attended the meeting through VC. Shri Pankaj Kumar Sharma, Director(RDC-2), CWC gave a presentation on water quality activities of CWC. He briefly informed the Hon'ble Minister and meeting participants about the CWC water quality network, 3-tier laboratory system, NABL status of labs, achieved targets in water quality areas and current ongoing activities related to water quality. Many important decisions were taken in this meeting viz. setting up of lab in Rajasthan, upgradation of water quality network of CWC, NABL accreditation of Lab, water quality testing of canals of Rajasthan and Punjab (Rajasthan feeder and Indira Gandhi Canal Project) etc.



CWC officers observing river parameters in Yamuna

4- Ujh Multipurpose Project

As per the Indus Waters Treaty, 1960 provisions, India has been authorised for unrestricted usage of available waters in the Eastern Rivers of the Indus system viz. Ravi, Beas & Sutlej. Surplus waters of Ravi and Beas over and above pre-partition uses was shared amongst the states of Punjab, Rajasthan, Patiala and East Punjab States Union (PEPSU) and Jammu & Kashmir through an agreement of 1955 and subsequently, a tripartite agreement was entered into in the presence of the Prime Minister of India and Chief Ministers of Punjab, Haryana and Rajasthan on 31.12.1981.

The issue of flowing of Ravi water D/S of Madhopur Head works to Pakistan has been discussed at different form. As per Indus water Treaty provisions, for fully utilized of these water, a Ujh Multipurpose project across Ujh river is proposed. The Ujh River Joins river Ravi D/S of Madhopur HW. The work of preparation of revised DPR is under progress. Hon'ble Ministry of Jal Shakti Sh. Gajendra Singh Shekhawat took a review meeting on 13.4.2020 with senior officials of Ministry,

5-Review of PMKSY Projects

Hon'ble Minister Jal Shakti reviewed project under PMKSY for the states of Karnataka, Goa, Kerala, Bihar & Maharashtra on 21.04.2020, 23.04.2020 & 29.04.2020. The meeting was held through video conferencing in which senior officers from DoWR, RD&GR, CWC-HQ, CWC field office and State authorities participated. During the meeting the issues which are affecting the progress of the project were discussed. Hon'ble Minister emphasise that all out efforts may be

Review Meetings in CWC

Polavaram Irrigation Project

Chairman, CWC reviewed the status of designs and drawings of Polavaram Irrigation Project through Video Conferencing (VC) on 08.04.2020. Member (D&R), CWC Chief Engineer, Designs(NW&S), CWC and other concerned officers attended the review meeting. During the meeting, Chairman, CWC gave directions to request agencies for expeditious submission of designs and drawings to CWC for their timely vetting /approval to facilitate construction of the project. 9 nos. of drawings pertaining to Polavaram Irrigation Project were approved by the Design Unit of CWC.

Polavaram Irrigation Project is a National Project. As reported by Govt. of Andhra Pradesh, the overall progress of the Polavaram Irrigation Project (PIP) is 69.54% up to 27.02.2020 and it is planned to be completed by December, 2021.

12th (Emergency) Meeting of PPA

The 12th (Emergency) meeting of Polavaram Project Authority (PPA) was held through VC on 21.04.2020 under the chairmanship of Shri J. Chandrashekhar Iyer, Chief Executive Officer, PPA. Chairman, CWC, Member(D&R), CWC, Member(WP&P), CWC and other officers from CWC-HQ attended the meeting through VC as special invitees.

Extended Hydrological Prediction

Extended Hydrological Prediction (EHP) is the prediction of hydrological variables, most commonly the monthly/seasonal streamflow. In simple terms, it is the prediction of water availability in a catchment at the time scale of days/weeks/seasons in future. The skillful and reliable forecasts of stream-flow are highly valuable input for providing water allocation, managing drought and planning & managing water use. EHP study of 3 basins (Yamuna, Narmada, and Cauvery) is proposed to be

Meeting by Member(RM), CWC

A Preparedness Review Meeting with CWC Regional Organisations in r/o States where flood season starts from 1st May was conducted on 22.04.2020 through VC under the Chairmanship of Member(RM), CWC. The meeting was attended by all the concerned officers upto Executive Engineer level.

In addition to above, Superintending Engineer (HOC), CWC, Guwahati organized a VC with all stakeholders covering State WRDs & DMAs, IMD, NESAC, NEEPCO, NHPC, NF Railway, NHAI, MoRT&H etc on 20.4.2020 on flood preparedness before monsoon.



CWC and J&K U.T Govt. officials with regards to Ujh Multipurpose Project revised DPR preparation work. Hon'ble Minister asked officials to expedite the work and complete the same at the earliest. CWC worked with J&K U.T Govt. officials to complete the appraisal of Project timely inline to direction issued by Hon'ble Minister.

made to complete the projects before March 2021 as the PMKSY scheme is only up to March 2021.

Earlier from 1st to 6th April 2020, Chairman CWC also reviewed projects of PMKSY for the states of Madhya Pradesh, Chhattisgarh, Telangana, AP, UP, Bihar, Jharkhand and Odisha. Projects of Maharashtra under Special Package were also reviewed. Officers from CWC-HQ and CWC field units participated in the above meetings.



In the meeting, it was decided to constitute a committee to examine the current construction schedule of Polavaram Irrigation Project and come up with an updated project schedule encompassing all interconnected activities and backed with adequate and timely resource mobilization for early completion of the project. It was also emphasized that the agencies shall be submitting the balance drawings to CWC at the earliest for vetting/approval.

conducted under National Hydrology Project (NHP). The complete proposal for approval of award of work amounting to about Rs. 22.67 crore to the selected consultant was sent to the Ministry during March 2020. This Matter was discussed in the meeting taken by Chairman, CWC on 29.04.2020. Member(WP&P), Member(RM), Chief Engineer(BPMO), Director(WP&P-C), Director (RDC-I) were present in the meeting.



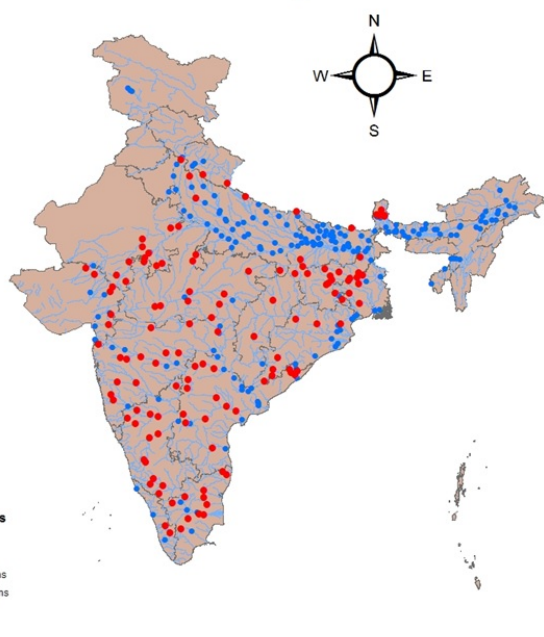
Scientific Assessment of Flood Prone Areas of India

Dr K. H. V. Durga Rao, Head, Disaster Management Support Division, NRSC presented the study carried out on preparation of flood hazard maps using remote sensing technique, through VC on 28.04.2020 to Chairman, CWC & other senior officers of RM Wing, CWC. Dr P. V. N. Rao, Deputy Director, Remote Sensing Applications Area (RSAA), NRSC was also present in the meeting. The methodology adopted, resources used and limitations of the studies carried out by CWC & NRSC were discussed. This was done as per the decision taken during the 5th meeting of the Expert Committee for Scientific Assessment of Flood Prone Areas in India held under the Chairmanship of Chairman, CWC on 19.03.2020.

Flood Forecasting training to CWC field offices on MIKE Software

Currently, flood forecasting is being done at division level by conventional gauge to gauge correlation technique. FCA-I/II Directorates at CWC-HQ, New Delhi have taken an initiative to impart training to CWC field offices on rainfall-based mathematical modelling using MIKE 11 software. The training aims to increase the lead time of flood forecasting. The basic overview of MIKE environment was given in the first module of the training which was conducted on 13th and 14th April 2020 involving all the CWC Divisions. The 2nd module of the training is specific to Division and was started from 30.04.2020 and is expected to be completed by 22.05.2020.

Operational Flood Forecasting Network for 2020



Status of Appraisal of Irrigation/Multi-purpose Projects by CWC

The appraisal status of Medium and Major Irrigation and Multipurpose projects was reviewed through VC by Member(WP&P), CWC on 08.04.2020. Presently, 17 Major Irrigation & Multipurpose projects and 3 Medium Irrigation projects are being appraised in CWC-HQ and CWC Regional Offices, respectively. Among these 20 Projects, five projects (three at CWC, HQ and two at Regional Office) are under appraisal through Project Appraisal Management System (e-PAMS). e-PAMS is a workflow and web based system to facilitate Project Submission, Appraisal and Acceptance. The stakeholders of this system are DoWR, RD&GR, CWC, GFCC and Project Authorities. In addition, five FMP projects are also under appraisal through online platform.

Status of Appraisal of Flood Management Schemes by CWC

Compliance has been requested from Project Authorities in respect of following six schemes under appraisal in CWC.

Sl. No.	Name of works/scheme	State	Estimated Cost (Rs. Crore)
1.	Integrated Water Resources Management of Buridehing Basin [DPR proposed under Assam Integrated River Basin Management Project (AIRBMP) Phase-1 funded by World Bank]	Assam	635.22
2.	Integrated flood and erosion management of Manas and Beki river in districts of Baksa and Barpeta in Brahmaputra valley within Assam(Review)(DPR proposed under Assam Integrated River Basin Management Project (AIRBMP-phase-I) funded by World Bank)	Assam	231.547
3.	DPR for protection of Neamatighat area from flood and erosion of river Brahmaputra, Phase-I	Assam	50.25
4.	Channelization of Markanda River in Dist. Sirmour H.P.	Himachal Pradesh	114.05
5.	Critical flood control and anti-erosion works along rivers in Manipur river basin	Manipur	371.98
6.	An integrated approach to flood management & control on rivers/ streams and drainages in Loktak sub-basin of Manipur	Manipur	60.28
	Total		1463.33

Meetings on Punatsangchhu-I Hydroelectric Power Project, Bhutan

Considering the COVID-19 situation, multiple meetings were held through VC regarding the ongoing Punatsangchhu-I HEP (PHEP-I) in Bhutan. On 10.04.2020, Dr. R. K. Gupta, Member(D&R), CWC chaired a meeting through VC with Chief Engineer, Designs (E&NE) and concerning Directors, wherein various design issues of PHEP-I were addressed. On 17.04.2020, Shri S. N. Sahai, Secretary, Ministry of Power was briefed on progress of PHEP-I through VC by Dr. R. K. Gupta, Member(D&R), CWC & Shri T. K. Sivarajan, Chief Engineer, Designs(E&NE), CWC. The representatives of WAPCOS and CEA were also present during the meeting.

Another meeting on the project was taken on 23.04.2020 through VC in which all the technical concerned organisations of PHEP-I have participated. The meeting was attended by officers of CWC, WAPCOS, CEA & NHPC to discuss the various technical aspects and challenges in PHEP-I.



PHEP-I (1200MW) is under construction Project in Bhutan with Indian assistance (under Inter-Governmental Mode of Implementation).

Cooperation with China on Transboundary Rivers

The Government of India had entered into a Memorandum of Understanding (MOU) with China for sharing of hydrological information (Water level, discharge and rainfall data) in respect of three stations in Tibet Autonomous Region (TAR), China, namely Nugesha, Yangcun and Nuxia located on the main river on Yaluzangbu/Brahmaputra River. The data is shared from 15th May to 15th October twice a day at 0800hrs and 2000hrs (China time zone). This is as per the provisions contained in the MoU signed between India and China on 09.06.2018 at Qingdao, China and the subsequent Implementation Plan signed on 13.06.2019 at Ahmedabad.

Similarly, the hydrological data of Tsada station on river Sutlej/Langquin Zangbo in TAR, China shall be initiated w.e.f. 01.06.2020 as per the MoU and the Implementation Plan signed between the two countries in the year 2015 and 2016 respectively. The data from Tsada station shall be received up to 15.10.2020, twice a day as above.

For this purpose, an amount of RMB Yuan 10,25,555.00 will be paid to the Govt. of China for the flood season 2020. The above hydrological data is utilized in the flood forecasting by CWC for the rivers Brahmaputra and Sutlej in India.

FBP Review Meeting

Shri U.P. Singh, Secretary, DoWR, RD&GR, Ministry of Jal Shakti chaired a review meeting regarding Farakka Barrage Project on 15.04.2020. The meeting was attended by Member(D&R), CWC, GM FBP, Commissioner(FM), DoWR, RD&GR and all the concerned Directors of Design(E&NE) Unit of CWC. In the meeting various issues such replacement of Gates, electrification of FBP, timely completion of Anti-erosion works, encroachment and budget related matters related to FBP were discussed.

DRIP Phase-II and Phase-III

1. World Bank Appraisal Mission for DRIP Phase-II and Phase-III

World Bank completed Virtual Appraisal Mission for DRIP Phase-II and Phase-III. 15 agencies from 13 States (Chhattisgarh, Gujarat, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Manipur, Meghalaya, Odisha, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh) and 2 Central (BBMB and CWC) agencies were invited for the Virtual Appraisal Mission. The World Bank evaluated the preparedness of these agencies on ten parameters namely;

1. Establishment of State/ Agency Project Management Unit (PMU)
2. Constitution of Dam Safety Review Panel (DSRP)
3. Inspection of selected dams by DSRP
4. Review of Design Flood Review
5. Creation of Project Budget Line,
6. Approval of Project Screening Template (PST) for at least one dam to be supported under DRIP-2 for the State/Agency
7. Completion of environmental and social safeguards in accordance with the World Bank Environmental and Social Framework (ESF)
8. Preparation of Project Procurement Strategy for Development (PPSD)
9. Preparation of Procurement Plan (PP) and
10. Preparation of Project Implementation Plan (PIP)

2. Environment and Social (E&S) Safeguards Documents

The CWC has prepared three most important documents to meet the Environment & Social safeguards of the World Bank. These are

1. Environment & Social Management Framework (ESMF)
2. Environment & Social Commitment Plan (ESCP)
3. Stakeholder Engagement Framework (SEF)

These have been approved by the World Bank and endorsed officially by all participating agencies of DRIP Phase-II. They are published on DRIP website www.damsafety.in and respective websites of participating agencies. These documents will act as guiding documents to participating agencies to meet the E&S safeguards during Project implementation. CWC has also prepared a draft Environment & Social Management Plan (ESMP) document which will act as a model document for Low to Moderate Risk Category dams to guide dam owners and various contractors about dos and don'ts during the execution of the rehabilitation works under DRIP.

Data Corner-Employee Position in CWC

Type of Post	Sanctioned Post	Filled Post	% Filled Post
Regular Employee			
Group A	713	551	77.28%
Group B Gazetted	589	427	72.50%
Group B Non-Gazetted	1053	512	48.62%
Group C	1552	614	39.56%
Total	3907	2104	53.85%
Work Charged Employee	4863	2488	51.16%
Grand Total	8770	4592	52.36%

(As on 30.04.2020)



Screen view of the Virtual Appraisal Meeting with officials of Manipur WRD

3. Environment and Social Due Diligence Reports (ESDD)

This ESDD document is one of the requirements under the new Environment & Social Framework of the World Bank. The dam specific ESDD is to be prepared for each dam to assess the risk category of each dam and accordingly prepare ESMP to guide the contractor about various safeguards requirements while executing the rehabilitation works. The ESDD Report publication is a precondition to tender publication.

In order to help various participating agencies, CWC has prepared 10 ESDD Reports (8 for Rajasthan and 2 for Manipur which have been published by the concerned States. These reports are available on DRIP official website as well as official websites of the concerned States. In addition, 15 more such reports (one each for Gujarat, Maharashtra, MP, Chhattisgarh, Meghalaya, UP, Punjab, Odisha, Two for Karnataka & Tamil Nadu and three for Kerala) are under finalization and publication.

Reservoir Monitoring

CWC is monitoring the live storage status of 123 reservoirs of the country on a weekly basis and is issuing a bulletin every Thursday. The total live storage capacity of these 123 reservoirs is 171.091 BCM which is about 66.36% of the live storage capacity of 257.812 BCM which is estimated to have been created in the country. As per reservoir storage bulletin dated 30.04.2020, live storage available in these reservoirs is 70.506 BCM, which is 41% of the total live storage capacity of these reservoirs. However, last year the live storage available in these reservoirs for the corresponding period was 43.384 BCM and the average of the last 10 years live storage was 44.422 BCM. Thus, the live storage available in these reservoirs is 163% of the live storage of corresponding period of last year and 159% of storage of average of the last ten years.

National Water Academy

Being a component of Regional Training Centre of World Meteorological Organisation, an International Distance Learning Course on "Basic Hydrologic Sciences" for Asian Region (WMO RA-II) will be organized by National Water Academy (NWA) in association With World Meteorological Organization (WMO) during 27th July-11th September 2020. Nominations are being sought from various stakeholders of water sector.

NWA has developed, in-house, first Purpose Oriented Training to be delivered through Distance Learning tools on "Drainage & Watershed Delineation and Jurisdiction Demarcation using GIS" on Google

RBM-IWRDS Component for CWC

During the 12th plan, River Basin Management (RBM) Scheme was approved with outlay of Rs. 975 crore to support various activities of Brahmaputra Board, CWC and NWDA related to water resources development. Expenditure of Rs 746.77 crore was incurred during 12th plan period.

The River Basin Management Scheme (RBM) comprises of 2 main components namely:-

- 1) Brahmaputra Board
- 2) Investigation of Water Resource Development Scheme (IWRDS)-
 - CWC Sub-component.
 - NWDA Sub-component.

The aim of IWRDS is to plan and develop our water resources projects in a holistic manner. It has two subcomponents corresponding to CWC and NWDA.

CWC Sub-Component

The first and basic requirement for a project is to locate a suitable site to establish its techno-economic viability. For establishing techno-economic viability, Detailed Project Report is prepared after detailed Survey and Investigations and studies on hydrological, Irrigation Planning, environment aspects, cropping pattern, Crop water requirement etc.

The States/UTs have been identified, as given below, for providing hydropower and increasing irrigation potential in:

- North-Eastern States
- Jammu & Kashmir
- Ladakh

Administrative and Financial Reforms

CWC is a technical organization which has its foot hold across the length and breadth of India. It has come into this form after undergoing several reforms and organizational changes. Continuing with this dynamism, Teesta Basin Organization has been restructured as Teesta & Bhagirathi-Damodar Basin Organization (TBDBO). Administrative control of Hydrological Observation Circle, Maithon and its sub-ordinate offices has been transferred from LGBO, Patna to TBDBO,

Region/State	Total No. of Reservoirs	Live Storage Capacity (BCM)	Reservoirs under CWC monitoring		
			No.	Live Storage Capacity (BCM)	% of total capacity
Northern Region	224	25.93	8	19.17	73.93%
Eastern Region	290	33.69	18	19.43	57.67%
Western Region	2205	60.2	42	35.24	58.54%
Central Region	1220	59.74	19	44.45	74.41%
Southern Region	622	78.25	36	52.81	67.49%
TOTAL	4561	257.81	123	171.09	66.36%

Classroom platform. The program is scheduled during 26th May to 5th June 2020. Nominations are being sought from CWES officers. Preparation of other Purpose Oriented Training Programs through Distance Learning Tools by In-house faculty of NWA is underway. A meeting between NWA officials and ICID officials in the presence of Chairman, CWC was convened on 30.04.2020 through Webex to explore the collaboration between NWA Pune and ICID for conducting training programs through the Distance Learning Program (DLP) for the benefit of various stakeholders in the water sector. Training calendar for 2020-21 has been finalized and submitted to Ministry for approval.

Physical status of projects under RBM Scheme- IWRDS Component- CWC sub-Component

S. No.	Name of the Projects	Physical Status	% of Achievements
1	Rukni Irrigation Project, Assam	DPR prepared and submitted to the State Government.	100
2	Sonai Irrigation Project, Assam	DPR prepared and submitted to the State Government.	100
3	Ujh, J&K	DPR prepared and submitted to the State Government.	100
4	Kirthai, J&K	DPR prepared and submitted to the State Government.	100
5	Stately HEP, Sikkim	DPR prepared and submitted to the State Government.	100
6	Kalez Khola HEP, Sikkim	Survey & Investigation are completed. Printing of DPR is under process.	95
7	Barinium HEP, J&K	Investigation works continued	25
8	Katakhal Irrigation Project, Assam	Investigation works continued	20
9	Preparation of Digital Elevation Models for Adhwara Group of rivers in Sitamarhi Dist, (Bihar)	Digital Elevation Model (DEM) and contour maps prepared.	100
10	Hydro-met & seismic observations in Sankosh Basin of Bhutan	Seismic observations continued.	Continued
11	Tlawng HEP, Mizoram	Survey & Investigation are almost completed. DPR preparation is under progress.	85

Kolkata. Also, the Administrative control of Circle office at Varanasi and its sub-ordinate formation has been transferred from UGBO, Lucknow to LGBO, Patna.

In addition to above, more financial autonomy has been provided to regional Chief Engineers in modification of allocation in various non-scheme object heads.

VC Meetings

Date of Meeting	Meeting Chaired by	Meeting attended by	Subject of Meeting
01-04-2020	Chairman, CWC	CWC Officials(HQ & Field)	Review of PMKSY-AIBP Projects of Madhya Pradesh and Chhattisgarh
02-04-2020	Hon'ble Minister, MoJS	Chairman, CWC and others	Revision of National Water Policy
02-04-2020	Chairman, CWC	CWC Officials(HQ & Field)	Review of PMKSY-AIBP Project of Bihar, UP and Jharkhand
03-04-2020	Hon'ble Minister, MoJS	Chairman, CWC and others	Flood Forecasting
04-04-2020	Chairman, CWC	CWC Officials(HQ & Field)	Review of PMKSY-AIBP Project of Odisha and Jharkhand
04-04-2020	Chairman, CWC	Member(RM) and others	Policy on Sediment Management
05-04-2020	Hon'ble Minister, MoJS	Concerned Officers	Polavaram Project Review
05-04-2020	Chairman, CWC	CWC Officials(HQ & Field)	Review of Projects under Maharashtra Special Package
07-04-2020	Chairman, CWC	CWC Officials(HQ & Field) and State/UT officials	Ujh project- review meeting
08-04-2020	Chairman, CWC	Officials of CWC	Review of Polavaram Irrigation Project
09-04-2020	Chairman, CWC	Officials of CWC	Reassessment of Water Availability in India using Space Inputs
10-04-2020	Hon'ble Minister, MoJS	Chairman, CWC and others	Water Quality Monitoring by CWC
11-04-2020	Chairman, CWC	Officials of CWC	Studies on Reservoir Sedimentation and Draft Sedimentation Management Policy
12-04-2020	Hon'ble Minister, MoJS	Chairman, CWC and others	BBMB Projects
13-04-2020	Hon'ble Minister, MoJS	Chairman, CWC and others	Ujh project- review meeting
14-04-2020	Chairman, CWC	Officials of CWC	Meeting regarding Administrative/RM works
15-04-2020	Secretary, DoWR, RD & GR	Member(D&R) and others	Farakka Barrage Project
17-04-2020	Secretary, MoP	Member(D&R) and others	Punatsangchu-I HE Project
21-04-2020	Chairman, CWC	CWC Officials(HQ & Field)	PMKSY projects review
22-04-2020	Chairman, CWC	CWC Officials(HQ & Field)	Review of Rajasthan Projects
23-04-2020	Chairman, CWC	Officials of CWC	Review of RM wing activities
24-04-2020	Chairman, CWC	Officials of CWC	Review of Ujh project
27-04-2020	Chairman, CWC	CWC Officials(HQ & Field)	Review of PMKSY-AIBP (99 projects) of Gujarat and Goa States.
28-04-2020	Chairman, CWC	Officials of CWC and NRSC	Scientific Assessment of flood prone area in India - Meeting with NRSC
29-04-2020	Hon'ble Minister, MoJS	Chairman, CWC and others	PMKSY projects - Kerala State
29-04-2020	Chairman, CWC	Member (RM)/(WP&P) and others	Presentation on Extended Hydrological Prediction (Multiweek Forecast)
30-04-2020	Secretary, DoWR, RD & GR	Chairman, CWC and others	Status of hydrological observation works and preparedness of Flood Forecasting activities in all field organizations of CWC
30-04-2020	Chairman, CWC	Officials of CWC and ICID	Collaboration between NWA Pune and ICID

Promotion

Shri A. Parmeshan, an officer of Central Water Engineering Service, Group 'A' has been promoted to Higher Administrative Grade (HAG) in Pay-level 15.

Effect of Lockdown on Indian Rivers

In the lockdown period, CWC has monitored Gauge & Discharge (GD) at 57 locations and Water Quality (WQ) of rivers at 128 key locations covering major river basins in India. Out of 57 GD sites, there are no significant changes in water level and discharge at most of the sites. 8 GD sites have shown increase in water level and discharge which may be due to unseasonal rainfall that has also been observed in some parts of India during lockdown period.

The analysis of WQ data for these various stations during the lockdown period is summarized as under.

Sl No.	Parameter	No. of Stations for which data Analyzed	No. of Stations Positive Trend	No. of Stations Reported negative trend	No. of Stations Reported neutral trend	% of Station reporting Positive Trend
1	DO	97	76	14	7	78.35%
2	Electrical Conductivity	100	70	27	3	70.00%
3	BOD	31	29	2	0	93.55%
4	Total Coliform	28	27	1	0	96.43%
5	Turbidity	10	7	3	0	70.00%
6	COD	37	23	14	0	62.16%
7	Total Dissolved Solids	13	9	3	1	69.23%

The ban on industries that discharge effluents in rivers and lack of anthropogenic activity due to nationwide lockdown has had a positive effect on water quality of Indian Rivers at most of the places. period is summarized as under.

Summary Report for important Rivers

Sl. No.	River	Location	Remark
1	Ganga	Rishikesh	Tremendous increase in DO
		Kanpur	Tremendous increase in DO
		Patna	Significant increase in DO
		Balua ghat, Allahabad,	Increase in DO
		Ghazipur, Mirzapur, Saidpur, Shastri Bridge, V.S. Bridge, Varanasi	Decrease in BOD Decrease in Total Coliform
2	Yamuna	Poiyaghat, Pratappur, Etawah and Hamirpur, Poanta, Kalanaur, Maw i, Delhi rly. bridge and Mathura	Increase in DO
3	Chenab	Akhnoor	Increase in DO, Decrease in EC
4	Tawi	Jammu city	Increase in DO, Decrease in EC
5	Godavari	Perur, Polavaram and Bhadrachalam	Decrease in EC and pH
6	Krishna	Karad, Arjundwad	Increase in DO Decrease in EC
		Kurunwad, Vijaywada,, Palerubridge, Wadenapalli	Decrease in EC and pH
7	Narmada	Hoshangabad	Significant increase in DO Decrease in pH, TDS, hardness, BOD and Turbidity
8	Cauvery	Kollegala	Decrease in BOD, COD, TC and EC
		Kodumudi	Decrease in EC and TC
		Musiri	Decrease in EC and TC Neutral Trend in fluoride and DO values
9	Brahmaputra	Bhomoraguri	Neutral Trend in DO values
		Pandu	Decrease in TDS, EC, Turbidity and Iron
		Guwahati	Decrease in COD and Turbidity
10	Wainganga	Kumhari, Keolari	Increase in DO and neutral trend in EC
		Ashti, Satrapur	Increase in DO and Decrease in EC
11	Mahanadi	Basantpur	Considerably decrease in EC
12	Periyar	Arangaly, Neeleswaram	Slight decrease in EC, Total hardness, BOD

Water Sector- News

- Lockdown does what decades of schemes couldn't: Clean Ganga- (Hindustan Times, 04.04.2020)
- Lockdown impact: Is Yamuna cleaner, fuller? (Millennium Post, 06.04.2020)
- More freshwater, fewer pollutants behind Yamuna's new blue hues (Indian Express, 07.04.2020)
- No effluents, Yamuna Water is much cleaner (Indian Express 14.04.2020)
- Lockdown filter: Ganga water at Haridwar is 'fit for drinking' (Times of India, 20.04.2020)
- Oxygen levels in Yamuna up nearly 33% (Times of India, 21.04.2020)
- We have 56% more water in reservoirs than we had last year (The Hindu, 28.04.2020)
- Lockdown improves water quality of Hussainsagar (Deccan Chronicle, 28.04.2020)
- Lockdown effects: Water quality of Brahmaputra, other rivers improves (Assam Tribune, 29.04.2020)



75 Years of CWC

CWC (erstwhile Central Waterways, Irrigation and Navigation Commission) was established on 05.04.1945 by the Government on the advice of Dr. B.R. Ambedkar, Member (Labour) in Viceroy's Executive Council. Since then CWC has evolved as a premier technical organization in the country in the field of Water Resources and is functioning as an attached office of the Dept. of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti. In last 75 years, CWC has played a pivotal role in the development of irrigation potential in the country from a mere 22.6 million ha in the pre-plan period to 126.73 million ha till the end of 12th Five Year Plan. This has been an important factor in the increase of annual food grain production from about 50 million tonnes to about 280 million tonnes. CWC renders consultancy to various State Governments, Central Public Sector Undertakings and to a number of Foreign Countries in the development of water resources. CWC has been directly or indirectly associated with almost all the major and medium projects in the country as well as in the neighbouring countries. CWC has contributed immensely in development and management of water resources of the country in last 75 years.

History- Nathpa Jhakri Hydro Power Station

The Nathpa Jhakri Hydro Power Station (NJHPS) of 1500 MW capacity is the country's largest hydropower plant commissioned by Satluj Jal Vidyut Nigam Limited (SJVN) which was earlier known as Nathpa Jhakri Power Corporation (NJPC). The run-of the river project is located on River Sutlej, one of the Eastern Rivers of Indus River system, in Shimla district of Himachal Pradesh in North India. The Nathpa Jhakri plant is designed to generate 6950.88 (6612) million units of electricity each year but quality management at the plant has enabled generation to exceed yearly targets. In year 2019, it achieved a major milestone of generation of 100 Billion Units of electricity since its inception. During 2019-20, it has generated 7447.48 Million Units of electricity exceeding the design energy comfortably. Incidentally, this plant is generating maximum hydropower in the country.

A Memorandum of Understanding for execution of the Nathpa-Jhakri project was signed between Government of India and Government of Himachal Pradesh in July, 1991. The Nathpa Jhakri Hydroelectric project has been financed on a 50:50 debt equity ratio basis and was externally aided by the World Bank. First Unit of the Project was commissioned on 14.10.2003 and whole project was officially dedicated to the nation on 28.05.2005. The project was completed at a cost of Rs 8187 Crore Power allocation from Nathpa Jhakri hydroelectric plant to the North Indian states/UTs of Haryana, Himachal Pradesh, Punjab, Jammu & Kashmir, Rajasthan, Uttar Pradesh, Uttarakhand and the cities of Delhi and Chandigarh has enabled the grid to overcome power shortages in the region.

Role Played by CWC

CWC was the Principal Consultant for the civil component of the Project. The consortium of Nippon Koei Ltd., Japan, WAPCOS Ltd., India and Electrowatt Engineering Services, Switzerland was the Retainer Consultant. CWC as Principal Consultant was responsible for the overall guidance and approval of specification and construction drawings and interaction with CEA, NJPC, Retainer Consultants and World Bank experts. The planning and design aspects of the civil components were examined in detail and substantial modifications were introduced by CWC to effect economy. Member(D&R), CWC was one of the 10 members of the Board of Director of erstwhile Nathpa

Jhakri Power Corporation (NJPC) which was charged with the responsibility to plan, promote, execute, operate and maintain hydro-electric projects in Sutlej Basin in Himachal Pradesh. In year 2000, a devastating Flood in Sutlej River heavily damaged the under construction Power House of the Project. Later, based on the request of Govt. of Himachal Pradesh, CWC setup flood forecasting network on Satluj basin with its 1st base site at Titang, 2nd Base site at Powari and 3rd Base site at Nathpa for forecasting at Rampur City. Gol has also entered into a MoU with Peoples Republic of China for hydrological data exchange of Satluj/Lenquen Zangbo during flood season and CWC office at Shimla is associated with implementation of IP plan of MoU. The Hydrological data being received from Chinese side is being provided to Project Authorities.

The Projects has many unique features. It has one of the largest underground desilting complexes (525 m x 16.31m x 27.5m) of the World, one of the deepest surge shafts (301 meter deep and 21.60 diameter) of the world, and an underground power house with large cavern of 222 m X 20 m X 49 m. The project is one of the Engineering marvels of India and is constantly setting up higher benchmark for generation of electricity.



Central Water Commission

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

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Designed & Published by

Water Systems Engineering Directorate
Central Water Commission

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