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JALANSH

The Monthly Newsletter of Central Water Commission

Contents

R. K. Jain,

Chairman, CWC

Message

Month of August witnessed record breaking rainfall in the country. Several states were badly affected due to the flood situation. Hon'ble PM reviewed the Flood Situation in the country on 10.08.2020 with Hon'ble Chief Ministers of flood affected States such as Assam, Bihar, Maharashtra, Karnataka, Kerala, Uttar Pradesh. The meeting was attended by Secretary, DoWR, RD&GR and myself through Video-Conference. Hon'ble Prime Minister appreciated the works done by CWC & IMD and also called upon these Early Warning Agencies to utilise the latest technologies like remote sensing, artificial intelligence and machine learning.

Various Inter-Ministerial Central Teams (IMCT) were constituted by Ministry of Home Affairs in the Month of August for an on-the-spot assessment of the situation in the wake of the flood/landslide during South West Monsoon-2020. Some CWC officers were nominated to represent DoWR, RD&GR in those IMCTs.

India has been grappling with the problem of floods for very long time. Various structural and non-structural measures have been evolved and implemented to minimize the impact of flood. Flood-plain zoning has been recognized as an effective non-structural measure for flood management which aims at demarcating zones or areas likely to be affected by floods of different magnitudes or frequencies and probability levels, and specifying the types of permissible developments in these zones. For flood plain zoning, Central Water Commission prepared a model bill way back in 1975, which was circulated by the then Ministry of Irrigation to all the States advising them for enactment of suitable legislation. Only few states such as Manipur, Rajasthan, erstwhile State of Jammu & Kashmir and Uttarakhand enacted bills in this regard however, full implementation of all the provisions could not be achieved. Other States having more flood prone areas viz. UP, Bihar, West Bengal, Assam etc. have yet not taken any action for enactment of legislation in view of various reasons. Recently, DoWR, RD&GR has constituted a Committee under the chairman-ship of Member(RM), CWC to review the Model Flood Plain Zoning Bill prepared by CWC.

The 13th Meeting of Investment Clearance Committee of DoWR, RD&GR, MoJS was held on 07.08.2020 under the Chairmanship of Secretary, DoWR, RD&GR through VC. In the meeting, a total of 10 projects/schemes were considered and recommended for the Investment Clearance. During the month, two flood control projects of the state of Manipur were accepted by the Advisory Committee of DoWR, RD&GR on Irrigation Flood control & Multipurpose Projects in its 146th meeting held on 14.08.2020.

The Second Sub-Committee of Parliament Committee on Official Language carried out inspection of Central Water Commission (Headquarters) on 20.08.2020. Hon'ble Convenor Ms. Rita Bahuguna expressed satisfaction over the progress of implementation of Official Language in Central Water Commission and commended the Commission for its achievements.

India was the one of the founding members of International Commission on Irrigation and Drainage (ICID) which has contributed significantly in the field of water resources on global scale. Dr. A. N. Khosla who later became Governor of Odisha was the founding president of both CWC (then CWINC) and ICID . Last year, Ministry had reconstituted the Indian National Committee on Irrigation and Drainage (INCID) which represents India in ICID and its various bodies to ensure effective participation of India in the international events sponsored by ICID. The first meeting of the reconstituted INCID was held on 06.08.2020 wherein future course of action was discussed.

All the offices of CWC celebrated Independence Day with great zeal and fervour, the glimpses of which have been captured in the relevant section of the newsletter.

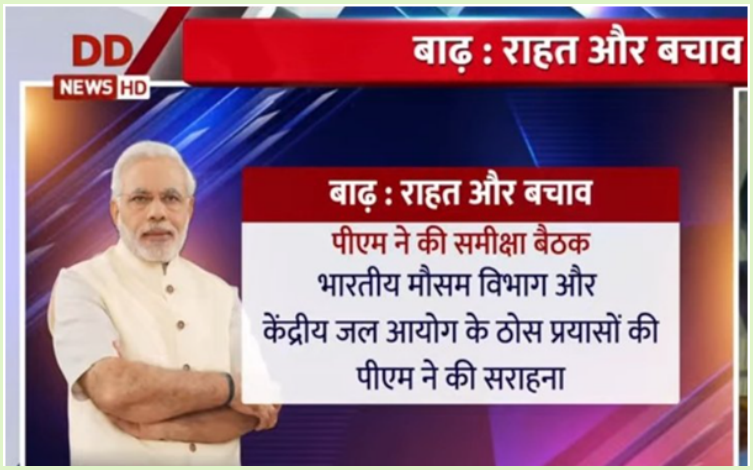
A meeting on Saraswati River revival project was taken by Hon'ble MoS on 20.08.2020. Meeting was attended by Member (D&R), CE, Design (N&W) and Director, CMDD (N&W).

The Spillway and Sluices of Tungabhadra Dam

Meeting by Hon'ble PM to review flood Situation and flood management in the country

Hon'ble PM reviewed the Flood Situation in the country on 10.08.2020 with Hon'ble Chief Minister's of flood affected States such as Assam, Bihar, Maharashtra, Karnataka, Kerala, Uttar Pradesh. The meeting was attended by Secretary, DoWR, RD&GR and Chairman, CWC through Video-Conference facility available in Committee Room of Ministry of Home Affairs in North Block. Before discussion with concerned State Hon'ble Chief Minister, Home Secretary presented brief on flood situation in the country. Hon'ble Prime Minister appreciated the work done by CWC& IMD and also called upon these Early Warning Agencies to utilise the latest technologies like remote sensing, artificial intelligence and machine learning for predicting floods.

The Flood situation was also reviewed by Hon'ble Minister, DoWR, RD&GR on 10th August 2020 which was attended by the Chairman, CWC, Member (RM), CWC and Director (FFM). A presentation on prevailing flood situation was made by Director (FFM) during the meeting.



संसदीय राजभाषा समिति की दूसरी उप-समिति द्वारा निरीक्षण

संसदीय राजभाषा समिति की दूसरी उप-समिति द्वारा दिनांक 20.08.2020 को केंद्रीय जल आयोग (मुख्यालय) का राजभाषाई निरीक्षण किया गया. श्री राजेंद्र कुमार जैन, अध्यक्ष, केंद्रीय जल आयोग, श्री मोती लाल, संयुक्त सचिव, केंद्रीय जल आयोग तथा श्रीमती रजिंदर पाल, उप निदेशक (रा. भा.) समिति के समक्ष प्रस्तुत हुए. समिति की संयोजक महोदया सुश्री रीता बहुगुणा तथा समिति के अन्य सदस्यों ने अध्यक्ष, केंद्रीय जल आयोग तथा राजभाषा अधिकारियों से मुख्यालय में राजभाषा नीति व नियमों के कार्यान्वयन के संबंध में प्रश्न किए, जिनके संतोषजनक उत्तर दिए गए. माननीय संयोजक महोदया ने केंद्रीय जल आयोग में राजभाषा कार्यान्वयन की प्रगति पर संतोष व्यक्त किया तथा प्रशंसनीय उपलब्धियों के लिए आयोग की सराहना की.

Meeting of INCID

Shri R. K. Jain, Chairman, CWC and Chairman, Indian National Committee on Irrigation and Drainage (INCID) took a virtual meeting of INCID Committee members on 06.08.2020. Meeting was attended by representatives from Ministry of Agriculture, ICAR, ICID, CADWM MoJS, CGWB, NIH, CWPRS, GERI Gujarat, Irrigation Dept. / WRD of States (Rajasthan, Haryana, Karnataka, Punjab), WALMI (Dharwad, Karnataka) & IIT (Roorkee). Future course of action for the newly constituted INCID was discussed. It was also discussed that there should be more nominations from India under various awards category such as WatSave (Water Saving award) and WHIS award (World Heritage Irrigation Structures). Shri S. K. Haldar, Member(WP&P), CWC and Shri A.B. Pandya, Secretary General, ICID made a detailed presentation on INCID and ICID respectively.

The mandate of INCID is as follows:

- To simulate appropriate application of engineering, agriculture, economic, environmental, legal, and social science technology to improve irrigation, drainage, and flood control practices.

- To stimulate and promote research, development, and application of technology in the field of irrigation and drainage.

- To crystallise and resolve pertinent issues confronting sustainable irrigated agriculture including sustainable participatory irrigation management, expansion of micro-irrigation in canal irrigated command, conjunctive use of groundwater in canal irrigated command, reuse of wastewater in agriculture, and levying of irrigation service charges on volumetric basis.

- To identify technology upgradation needs of country and suggest import of technology from appropriate countries / organisations.

- To publish proceedings, reports, bulletins, and newsletters to facilitate information dissemination relating to technologies of irrigation and drainage development in the country.

- To propose measures for promoting education and training in the field of irrigation and drainage.

- To host national and international conferences, seminars, symposiums, workshops, and study tours for dissemination of information in the field of irrigation and drainage.

- To represent India in ICID and its various bodies to ensure effective participation of India in the international events sponsored by ICID.

- To promote collaboration of government and public sector agencies with the Technical / Scientific Institutions, Non-Governmental Organisations, and Private Sectors of the country.

- To empanel experts in the country in the field of irrigation and drainage for facilitating expert services / engagements as per demands of the sector.

World Heritage Irrigation Structure (WHIS) are more than 100 year old structures functionally related to present or past agricultural water management activity. The objective of this recognition is to trace and understand the evolution in the irrigation in the civilization across the world and to protect and preserve such structures. Currently, two structures of states of Telangana are included in WHIS namely·

- Sadarmatt Anicut
- Large Tank (Pedda Cheru)

Secretariat of INCID in CWC had received a nomination request from Sajag Nagrik Manch to include Dhamapur Lake situated in Malwan Taluk, Sindhugarh District, Maharashtra as World Heritage Irrigation Structure (WHIS). This lake was constructed in 1530 (about 500 years old structure) by building an earth-fill dam and is still operational. Ground truth verification for this scheme was done by CE, MSO, Bengaluru. Chairman CWC (Chairman INCID) has approved the nomination, and the same has been recommended by Member Secretary (INCID) to ICID.

146th Advisory Committee Meeting

The 146th Meeting of Advisory Committee of DoWR, RD & GR on Irrigation Flood control & Multipurpose Projects, was held under the Chairmanship of Shri U. P. Singh Secretary, DoWR, RD & GR, through video conferencing (VC) on 14.08.2020. The members of Advisory Committee from DoWR, RD & GR, CWC, CEA, MoTA, MoA&FW, MoF, MoEF&CC and NITI Aayog attended the meeting. From CWC side, Chairman CWC, Member(WP&P) and Member(RM) and Chief Engineer(PAO) &Chief Engineer(FMO) attended the meeting.

In the meeting two flood control schemes of Manipur were considered. Smt. Jacintha Lazarus, Commissioner (Water Resources), Govt. of Manipur made a detailed presentation on these schemes. Chief Secretary, Govt. of Manipur, Dr. Rajesh Kumar along and Shri G. Robindro Sharma, Engineer-in-Chief and other concerned Water Resources Department officials attended the meeting.

After detailed deliberations, two flood control scheme of Manipur were accepted by Committee.

Sl No.	Scheme	Estimated Cost (Rs crore) & Price Level	Benefit
1	An integrated approach to flood management & control on rivers/streams and drainages in Loktak sub-basin of Manipur	62.14 (2017)	Benefitted area- 10000 ha Benefitted population- 55000
2	Critical flood control and anti-erosion works along rivers in Manipur river basin	460.426 (2017)	Benefitted area- 25000 ha Benefitted population- 250000

Presentation on WR Assessment and Activities of NWA to Hon'ble Minister

Presentations on 'Reassessment of Water Resources using space technology ' & 'Activities of NWA, Pune' was made by CWC before Shri Gajendra Singh Shekhawat, Hon'ble Minister, MoJS on 23.08.2020 through Video-Conferencing.

The study for "Reassessment of Water Availability of River Basins in India using Space Inputs" for assessing the average annual water resources in the country has been conducted by Central Water Commission (CWC) with technical support of National Remote Sensing Centre (NRSC), Hyderabad. The average annual water resource of the 20 basins of the country has been assessed as 1999.20 Billion Cubic Meter (BCM). Fully science based state-of-the-art modeling tools and satellite data have been used in this study. Various technical aspects of the study were highlighted during the presentation made by Shri Sunil Kumar, Director, CWC.

Shri Ashok Kumar Kharya, Chief Engineer, NWA, CWC, Pune gave a presentation on the "Role of National Water Academy in Training & Capacity Building of Water Sector Professionals". He highlighted the tremendous improvement in outreach of training programmes of NWA utilizing the IT solutions/Video-conferencing. Hon'ble Minister appreciated the efforts of NWA, Pune for conducting the training programmes for School Teachers and sought the details of their feedback.

Revised Layout Plan of Dagmara Multipurpose Hydroelectric Project (130MW), Bihar

Dagmara Multipurpose Hydropower project is proposed to be developed as a run of the river scheme for power generation across Kosi River in Bihar State. It envisages utilization of water flows in Kosi River, for power generation, flood control and other benefits. A meeting was held with design team of project developer (M/s Rodic Consultant on behalf of BHPC) on 10.08.2020 wherein main issues of the project planning namely sediment management, low soil bearing capacity at powerhouse, single v/s twin powerhouse etc. were discussed.

Technical Expert Committee on Delhi Drainage System under Chairmanship of Member(RM)

3rd Meeting of Technical Expert Committee was held on 20.08.2020 to review the progress under the chairmanship of Member(RM), CWC through Video Conferencing made so far on the finalization of Delhi Drainage Master Plan submitted by the IIT, Delhi.

In this meeting, following directions have been given to all the stakeholders for strict compliance: -

1. One month time for ground validation / verification of 10-20% data of the drains, which has been relied upon by IIT Delhi in the formulation of its report.
2. Each department has to appoint Nodal Officer to access the GIS portal provided by GeoSpatial Delhi Limited (GSDL) Delhi, user id and password thereof shall be made available by GSDL with proper training.
3. Soft copy of the IIT report should once again be made available by the Irrigation & Flood Control Department (IFCD).
4. The issue may be flagged at the highest level by the IFCD since despite continuous persuasion by the IFCD and even after the direction of the Chairperson, TEC, majority of the departments have not taken the adequate step to read the report properly and have taken initiative to verify the 10-20% data at the field site to arrive any authentic conclusion on the available scenario as projected in the report vis-a-vis physically available on the ground.
5. Deliverables should be tangible and implementable. Further, the framework is not acceptable so IIT has to provide workable, practical solution and for that at least, IIT should provide practical solution for a minimum of 50 hotspots like Airport, Hospital, Minto Bridge, Prahladpur Under Pass, Bheron Marg & other Sub ways etc out of more than 330 hotspots- water logging points identified by the Delhi Traffic Police so that the impact and on field practical solution of the water logging problem in consonance with IIT Report could be worked out. Generic report is not viable for implementation on the field.
6. In the report of IIT Delhi current volume of flooding and reduction in flooding volume for all the scenarios in each zone, as a whole, should be mentioned in tabular form so that it is easily implementable and workable.
7. IIT Delhi was asked to submit its replies on the observations in the right earnest and also incorporat their replies in its Report with practical solutions in a time bound manner so that final call on the implementation part of the report may be taken prior to making recommendations or otherwise to the government.
8. IFCD, Govt of NCT Delhi should work in hand- in glove with IIT Delhi on regarding above observations for ground verification of model's output and framing the implementable recommendations.

Integrated mechanism for 100 Lakh ha Micro-Irrigation target

A target has been set for bringing 100 lakh ha agriculture land under micro irrigation in coming 5 years together with fertigation to promote water use efficiency along with judicious use of fertilisers.

A VC meeting under the Chairmanship of Additional Secretary, Department of Agriculture & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Govt. of India was convened on 04.08.2020 for discussing contours of integrated mechanism to fulfil the target of 100 lakh ha agriculture land under micro irrigation. Shri S.K. Haldar, Member(WP&P), CWC and Shri Yogesh Paithankar, Chief Engineer, PMO, CWC attended the meeting.

CWMA/CWRC Meetings

8th meeting of Cauvery Water Management Authority (CWMA)

The 8th meeting of Cauvery Water Management Authority (CWMA) was held under the chairmanship of Shri R.K. Jain, Chairman, CWC and Chairman, CWMA on 28.08.2020, through video conference. Representatives from Ministry of Jal Shakti, Ministry of Agriculture & Farmers Welfare, all the party States namely Karnataka, Tamil Nadu, Kerala and UT of Puducherry were present and the meeting was held in a cordial atmosphere.

The status of hydro-meteorological condition in the Cauvery basin (as reviewed in the 33rd meeting of CWRC based on the information provided by IMD, CWC and the Party States) was presented during the meeting and the details are given as under:

As per IMD rainfall data, Southwest monsoon rainfall till 26.08.2020 shows that the overall % departure from normal over the Cauvery is (+) 31% and it remains in normal category.

Information about 8 designated reservoirs of Karnataka, Tamil Nadu and Kerala was presented during the meeting viz.

- Available live storage as on 25.08.2020,
- Live storage as on 25.08.2019
- Average of last 30 years live storage as on 25th August (14 years in case of Kerala reservoir)
- Cumulative inflows and outflows into reservoirs

Some of the details are summarized in below tables.

(in TMC)

Sl No.	Dams in State	Available Live Storage as on 25.08.2020	Live Storage as on 25.08.2019	Historical Average Live Storage as on 25th Aug
1	Karnataka (4 No.)	103.508	103.673	87.116 (30 Years)
2	Tamil Nadu (3 No.)	93.705	115.712	75.327 (30 years)
3	Kerala (1 No.)	5.147	5.591	5.385 (14 years)

Sl No.	Dams in State	Cumulative inflow from 01.06.2020 to 25.08.2020 (TMC)	Cumulative inflow from 01.06.2019 to 25.08.2019 (TMC)	30 Year's Average Cumulative inflow as on 25th Aug
1	Karnataka (4 No.)	164.842	203.350	199.821

According to CWC, the cumulative observed flow at Billigundulu during the current water year of 2020-21 i.e. from 01.06.2020 to 25.08.2020 was 72.133 TMC. It was also noted that combined cumulative flow at 7 CWC G&D sites in Karaikal region was 1.634 TMC during this period. During the meeting, it was noted that flows realized during the past few days at Billigundulu site of CWC were of the order of about 0.5 TMC daily and if the same trend is assumed to be continued up to end of month, the cumulative observed flows at Billigundulu from 01.06.2020 to 31.08.2020 would be of the order of about 75 TMC, which comes to about 87 % of the flows to be ensured at Billigundulu during a normal year.

The issue of release of water to Tamil Nadu by Karnataka was discussed. The representative of Tamil Nadu stated that the IMD record shows that the rainfall in the catchment area upstream of Billigundulu is more than normal up to 25.08.2020 and accordingly requested to direct the State of Karnataka to ensure realization at Billigundulu in accordance with the schedule fixed by the Authority in its first meeting. The Member from Karnataka, in this regard stated that the inflows into the four designated reservoirs of Karnataka being sub-normal, distress is being observed at these reservoirs. However, Karnataka has ensured more than what was supposed to be ensured during distress situation.

In this regard, the Chairman expressed that in the absence of data of minor irrigation projects and anicut channels, it is difficult to understand the position of water availability in the basin correctly. He, therefore, directed representatives of the Government of Karnataka to furnish at least following data initially with respect to such projects latest by 15.09.2020 so as to have at least some idea about the water utilization by such projects:

- Name/ number/ location of such projects
- Command area
- Cropping pattern
- Planned water utilization

Apart from the above, a system needs to be developed to furnish actual utilization from such project on monthly basis for which CWRC should recommend a mechanism at the earliest.

The issue of release of water to Tamil Nadu by Karnataka was further discussed and it was observed that as on 25.08.2020, Mettur dam had a live storage of 60.772 TMC. On a query by the Chairman, the representative from Tamil Nadu informed that the irrigation water requirement to be met from the releases from Mettur Dam at present is about 1.56 TMC per day (about 18000 cusec). It was informed that besides the releases for irrigation, water is also released from the Mettur dam for meeting domestic/ industrial water requirements. Keeping in view the current available live storage in Mettur Dam, and the quantity of daily flows being observed at Billigundulu at present, it was felt that the State of Tamil Nadu can easily meet their requirement from the Mettur Dam, for irrigation and other uses for more than a month or so.

Upon detailed discussions, it was decided that the party States would closely monitor the hydro-meteorological conditions in the basin. Further, the Authority discussed about the data requirement and the rule curves for the 8 reservoirs in Cauvery basin. The rule curve for the Banasurasagar reservoir of Kerala was shared with the opening remarks of Member from Kerala. For the other reservoirs, Members from party States were requested to furnish the rule curves for their respective reservoir. In case, the same are not available, the following data may be furnished to the CWMA Secretariat by 15.09.2020, so that rule curves may be developed by CWMA:

- 10 daily/monthly inflow series,
- 10 daily/monthly scheduled demand
- 10 daily/monthly average evaporation losses from the reservoirs
- Latest elevation-area capacity tables

32nd and 33rd meetings of Cauvery Water Regulation Committee (CWRC)

During the month, two meetings (32nd and 33rd) of the Cauvery Water Regulation Committee (CWRC) were held under the chairmanship of Shri Navin Kumar, Chairman, CWRC on 13.08.2020 and 27.08.2020 respectively at New Delhi. During the meetings, the hydro-meteorological situation in Cauvery Basin during the water year 2020-21 was reviewed and discussions were held on the draft seasonal and annual report of the water account for the water year 2019-20. Chief Engineer, C&SRO, CWC is the Member of CWRC and data from CWC hydrological observations at relevant sites are regularly shared in the CWRC meetings.

Status of projects of Godavari Basin

Meeting to discuss the Status of two Projects of Telangana in Godavari Basin namely, Kaleshwaram Project and Sita Rama Lift Irrigation, Phase-I was held on 06.08.2020 through VC.

Advisor, DoWR RD&GR, Member, WP&P, CWC and Chairman, GRMB were also present in the online meeting along with other senior officers of CWC & GRMB. This meeting was held as a preparatory meeting for the 2nd APEX Council meeting which was scheduled for 29.08.2020 (now, postponed).

During the meeting, it was decided that some more information needs to be obtained from the Govt of Telangana through the Regional office of CWC at Hyderabad (KGBO) as well as through GRMB, Hyderabad.

Meeting under the chairmanship of Member(D&R) for discussion on feasibility report on Dam Safety measures of Gandhi Sagar Dam

In continuation to the last meeting held on 12.06.2020, a meeting under the Chairmanship of Dr. R. K. Gupta, Member(D&R) for discussion on feasibility report on Dam safety measures of Gandhi Sagar Dam was held on 04.08.2020 at CWC, New Delhi. During this meeting, Shri S. K. Sibal (Chief Engineer, Design N&W), Shri Gulshan Raj (Chief Engineer, DSO), Shri N. N. Rai (Director, Hydrology(S) Dte.), Shri Anil Jain (Director, Emb (N&W) Dte.) and other officials of CWC were present.

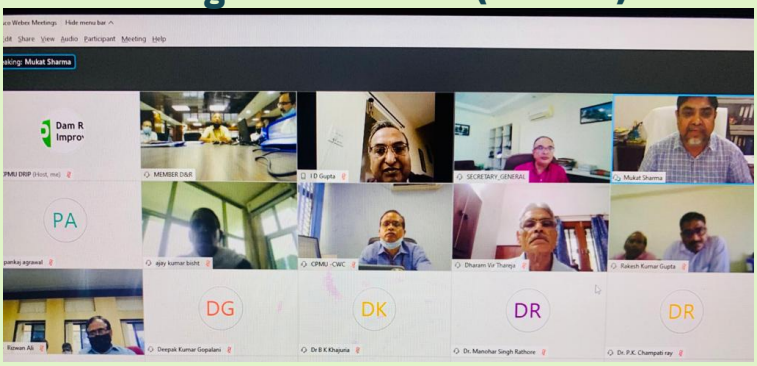
The Gandhi Sagar Dam which is located in Madhya Pradesh and was commissioned in the year 1960, can pass a maximum discharge of 13705 cumecs (4.84 lakh cusec). Review of design flood revised by CWC in the year 2000 was discussed.

The following three options were discussed for flood moderation to accommodate recommended PMF:

- Pre-depleting the project reservoir
- Providing additional spillway capacity of 5000 cumecs by the construction of additional tunnels
- Raising the dam top by 2.0 m

36th Meeting of National Committee on Seismic Design Parameters(NCSDP)

The 36th Meeting of the National Committee on Seismic Design Parameters (NCSDP) for River Valley Projects was held on 14.08.2020, at Central Water Commission, New Delhi under the chairmanship of Dr. R.K. Gupta, Member(D&R), CWC.

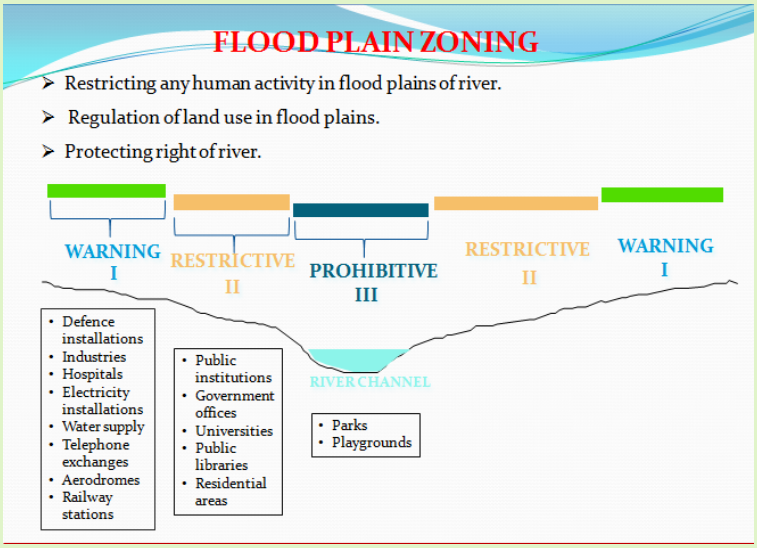


In the meeting, Two Micro Earthquake (MEQ) projects and One site specific project were cleared. The projects are:

- Umngot H.E. Project, Meghalya (MEQ)·
- Thana Plaun H.E. Project, Himachal Pradesh (MEQ)
- Pinnapuram Pumped Storage Project, Andhra Pradesh (Site Specific project)

Meeting of the Committee to Review Model Flood Plain Zoning Bill

Central Water Commission prepared a model bill for flood plain zoning, way back in 1975, which was circulated by the then Ministry of Irrigation to all the States thereby advising them for enactment of suitable legislation. This model bill had various provisions viz. appointment of Flood Plain Zoning Authority, surveys and delineation of flood plain area by the authority, notification of limits of flood plains by States, prohibition or restriction of the use of the flood plains, suitable measures for compensation to any person who suffers damage as a result of prohibition and restriction imposed etc.



Only few states namely Manipur, Rajasthan, erstwhile State of Jammu & Kashmir and Uttarakhand enacted bills in this regard. However, full implementation of all the provisions could not be achieved. Other States having more flood prone areas viz. UP, Bihar, West Bengal, Assam etc. have not yet taken any action for enactment of legislation due of various reasons.

In August, 2020, DoWR, RD&GR constituted a Committee under the Chairman-ship of Member(RM), CWC to review the Model Flood Plain Zoning Bill prepared by CWC in the year 1975. The Committee is represented by officers from DoWR, RD&GR, CWC, NMCG and NRCD.

First meeting of the committee was held through VC on 10.08.2020 wherein Committee Members provided their inputs regarding updation of Model FPZ bill 1975. The Committee is expected to finalize its report within one month.

Vetting of Surge Shaft Transient Analysis of Kholongchuu Hydro Electric Project (600MW), Bhutan by CWC

The Kholongchhu Hydro Electric Project (600 MW), a Run-of-river scheme, is located on the lower course of Kholongchhu river just before its confluence with Drangmechhu (Gongrichu) in Trashiyangtse district of Bhutan. The project envisages construction of 95m high concrete gravity dam, above deepest foundation level, for diverting the river Kholongchhu into the Water Conductor System. The annual design energy generation at 90% dependable year is estimated at 2568.88 MU.

The design memorandum on Surge Analysis submitted by WAPCOS was discussed in 3rd TCC meeting of KHEL held on 04.03.2020 at Thimpu during which it was desired that the vetting of design memorandum may be carried out by Central Water Commission. Consequently, the studies of hydraulic transient analysis are being vetted by CWC on the request of WAPCOS. A meeting was held on 31.08.2020 to discuss the input parameters and results of analysis.

Polavaram Project – Water Resources Development

A meeting between Chairman CWC, Member (WP&P), CWC and Dr. Srinivas Chokkakula, Research chair, MoJS, Centre for Policy Research was held on 26.08.2020 through VC for convening a brain storming session with key Policy Makers /thinkers from Govt. of A.P., CWC, PPAs, ICID to come out with a publication to explore inter section between dams and people and address some of the critical knowledge gaps about water resources development taking Polavaram Project as an example.

It was also agreed to discuss the idea further with officers of Govt. of AP.

Review Meeting taken by Member(D&R) of Jharkhand projects for DPR preparations

A MoU was signed between Water Resources Department (WRD), Jharkhand and Central Water Commission (CWC) on 29.08.2017 for preparation of Detailed Project Reports (DPRs) of various Irrigation Projects in Jharkhand. The projects were distributed between Brahmaputra & Barak Basin Organisation (B&BBO), CWC, Shillong and Planning Circle, CWC, Faridabad under Yamuna Basin Organisation (YBO), CWC, New Delhi.

Design Units of CWC are supporting the above field units for preparation of DPRs of these projects. The progress of same is being reviewed from time to time. In a joint meeting held on 10.08.2020, presided by the Member(D&R), CWC, it has been informed by YBO, that they intend to submit the four Minor Irrigation DPRs by December 2020. Accordingly, it was inter-alia decided to furnish design drawings along with design chapters for 2 of the schemes (Kharswati & Palemura Irrigation scheme, Jharkhand) from Design, NW&S by 15.09.2020

Data Corner

The average annual per capita availability of water in the country

Year	Population (In crore)	Per Capita average Annual Water Availability(m3/year)
2001	102.9[1]	1816[3]
2011	121.0[1]	1545[3]
2021	134.5[2]	1486[4]
2031	146.3[2]	1367[4]
2041	156.0[2]	1282[4]
2051	162.8[2]	1228[4]

1- Census Data
2- Projected Population as available on erstwhile Planning Commission website
3- Reassessment of Water Resources Potential of India, CWC, 1993
4- Reassessment of Water Availability in India Using Space Inputs, CWC, 2019

Inter-Ministerial Group on Environment Economic Accounting

Eighth meeting of the 'Inter Ministerial Group on Environmental-Economic Accounting - India' was held under the Chairmanship of Director General (Social Statistics), National Statistical Office (NSO) on 26.08.2020 through virtual mode. Ms. Jiju Kurian, Advisor(ISO), CWC, Shri P. Dorje Gyamba, Director, CWC and Shri Basant Kumar, Director, CWC attended the meeting from CWC.

In the meeting, representative from CWC suggested that the possibility of using remote-sensing data sets like the ones being generated by NRSC could be explored in addition to the current source of data for Crop Land and Net Sown area so that more recent estimates could be made available.

DRIP

25th Technical Committee Meeting of DRIP

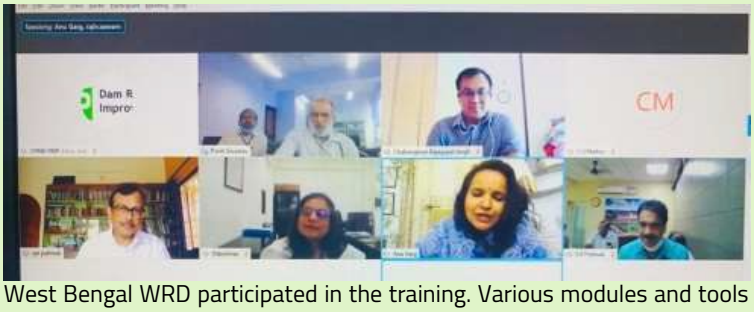
Twenty fifth Technical Committee Meeting of Dam Rehabilitation and Improvement Project (DRIP) was held virtually on 05.08.2020 under the chairmanship of Member(D&R), CWC, wherein project implementation status including physical and financial progress, important issues related to all project partners were deliberated. The meeting was attended by the representatives of Ministry, CWC, DRIP Implementing Agencies and 10 nos. of Academic partners of DRIP.

Meeting to review the preparedness of Odisha WRD for DRIP Phase II & Phase III

A virtual Meeting was held on 21.08.2020 with Odisha WRD to jointly review the preparedness of Odisha WRD for DRIP Phase II and Phase III. The meeting was attended by Additional Secretary, DoWR RD & GR, Principal Secretary, WRD, Govt. of Odisha, officials of CPMU, SPMU OWRD and World Bank.

Online Training Programme on DHARMA for officials of West Bengal WRD

A one day induction workshop on DHARMA was held virtually on 28.08.2020.The main objective of the training was to introduce DHARMA as an asset management tool. Thirty five no. of engineers of



West Bengal WRD participated in the training. Various modules and tools of DHARMA were introduced to the participants along with hands on session.

Sixty-seventh Meeting of the Governing Body of NWDA (under Ministry of Jal Shakti, Govt. of India)

The Sixty Seventh meeting of the Governing Body (GB) of National Water Development Agency was held on 24.08.2020 through video conference under the Chairmanship of Shri U. P. Singh, Secretary, DoWR, RD&GR, MoJS, New Delhi. Shri R. K. Jain, Chairman, CWC and Shri S. K. Haldar, Member(WP&P), CWC participated in the meeting as Members of the GB.

The Governing Body approved the Annual Report & Audited Accounts for the year 2018-19 for placing the same on the table of both the houses of Parliament. The Governing Body also noted the progress on various DPRs, FR, PFR for inter-state and Intra-state river links and discussed various administrative and financial matters of NWDA.

Flood Situation in the Country

Regular Flood Forecasting Activity commenced on 01.05.2020 in Brahmaputra and Barak basins. During the period from 01.05.2020 to 31.08.2020, 7474 flood forecasts (5844 Level and 1630 Inflow) were issued, out of which 6437 (5799 Level and 638 Inflow) forecasts were within the limit of accuracy with a percentage accuracy of 86.12%. 228 nos. of Orange Bulletin (for severe flood situation) and 248 number of Red Bulletin for Extreme Flood Situation were issued in the month of August from Central Flood Control Room till 31st August.

One new Flood Forecasting site named Indirasagar (Polavaram) Dam on River Godavari in West Godavari district of Andhra Pradesh was added during August 2020.

Summary of Flood Situation during 01.05.2020 to 31.08.2020

Extreme Flood Situation

Six FF station observed Extreme Flood Situation during 01.05.2020 to 31.08.2020. 3 stations in the Month of August 2020 observed Extreme Flood Situation:

Sl. No	State	District	River	Station	Period
1.	Assam	Sivasagar	Dikhow	Sivasagar	July
2.	Bihar	Gopalganj	Gandak	Dumariaghat	July
3.		Muzzafarpur	Gandak	Rewaghat	July
4.		Samastipur	Burhi Gandak	Rosera	August
5	Odisha	Balasore	Subarnarekha	Mathani Road Bridge	August
6	Andhra Pradesh	East Godavari	Sabari	Chinturu	August

26 Flood Monitoring Stations observed Extreme Food Situation during this period.

Severe Flood Situation for FF Stations

91 FF Stations observed 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

Above Normal Flood Situation

28 FF Stations in Assam, Bihar, Uttar Pradesh, Gujarat, Rajasthan, Andhra Pradesh, Jharkhand, Odisha, Telangana, Uttarakhand and West Bengal observed Above Normal Flood Situation.

Reservoirs having Inflow above threshold limit

75 reservoirs received inflows above its threshold limit in West Bengal, Chhattisgarh, Andhra Pradesh, Bihar, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Tamilnadu, Telangana, Rajasthan, Uttar Pradesh and Uttarakhand.

Extreme Flood Situation During August 2020

Water Sector News

- IMD : Normal monsoon second half of season (The Statesman, 01.08.2020)
- Assam flood better, 10.63 lakh affected (Millennium Post, 02.08.2020)
- Bihar flood situation worsens, 53.67 lakh people affected(Millennium Post, 03.08.2020)
- Krishna River Board allocates water to Telugu States (Telangana Today, 06.08.2020)
- AP, TS urged to stop river projects (Deccan Chronicle, 09.08.2020)
- Kharif cultivation all set for new record this year (The Pioneer, 10.08.2020)
- India for virtual Indus talks, Pak insists on Wagah meet (the Tribune, 10.08.2020)
- Modi reviews flood situation with CMs of 6 States (The Pioneer, 11.08.2020)
- Guwahati : Early warning system for floods launched (The Statesman, 14.08.2020)
- Godavari receives copious inflow, 6 lakh cusecs released into sea (Deccan Chronicle, 14.08.2020)
- Punjab should honour SC verdict on SYL, says Khattar (The Tribune, 19.08.2020)
- Kerala landslide toll rises to 61, flood situation grim in Bihar (Millennium Post, 19.08.2020)
- Water sharing issues : Telangana CM welcomes Centre's decision to hold Apex Council meeting (Millennium Post, 20.08.2020)
- Bihar flood situation grim, 83.62 L people affected (The Pioneer, 23.08.2020)
- TS, AP CMs' meet on water dispute postponed (Deccan Chronicle, 24.08.2020)
- Ropeway over Brahmaputra opened in Guwahati (Assam Tribune, 25.08.2020)
- Mullaperiyar dam not in danger : AG (The Hindu, 26.08.2020)
- India's August rain highest in 44 years with 25% excess (Hindustan Times, 29.08.2020)
- Jal Shakti ministry wants direct control of Swachch Bharat fund (Asian Age, 30.08.2020)
- 21. Water projects worth Rs.10 K cr sanctioned for Bundelkhand (Millennium Post, 30.08.2020)
- Deluge kills 1,200 cripples 1.72 cr in 11 states (The Pioneer, 31.08.2020)
- Over 14 lakh affected, 17 killed in Odisha floods (The Tribune, 31.08.2020)

PMC Meeting for CMIS in Gujarat

Considering the importance of collection of data on coastal processes relevant for evolving plans and coastal protection measures, a new component in the XII-Plan (2012-17) period for creation of "Coastal Management Information System (CMIS)" was approved by the then Ministry of Water Resources, Government of India under the Plan Scheme "Development of Water Resources Information System (DWRIS)".

Under CMIS, it is proposed to set up sites along the coast of the maritime states of India for collecting data of relevant coastal processes. The task would involve identification of suitable sites preferably at vulnerable reaches, finalizing the parameters to be collected, procurement & installation of state-of-the art equipment, real time recording and reporting of data to the shore station/site office/Data Processing Centre, running and maintenance of sites, processing of the raw data, validation and transmitting to the Centralized Data Centre.

CMIS is to be implemented by CWC, however it was felt that a tripartite MoU wherein CWC would be the project implementer, an expert agency would be the project executor and the concerned State/ UT Government would be the project facilitator would be a preferred option. Since then, various tripartite MoU have been entered into. CW&PRS has been entrusted the work of project executor for state of Gujarat and northern Maharashtra. Project Monitoring Committee (PMC) headed by the concerned Chief Engineer of Regional office of CWC oversee the implementation of activities under CMIS.

The second meeting of Project Monitoring Committee (PMC) Constituted to oversee the implement functional CMIS Project in Gujarat and Maharashtra was held through video conferencing to review and discuss the progress of CMIS project under the Chairmanship of Shri M. P. Singh, Chief Engineer, MTBO, CWC and Chairman of PMC, on 11.08.2020. Shri Yoki Vijay Superintending Engineer (Coordination), CWC, Member Secretary, PMC, & Dr. Prabhat Chandra, Scientist 'E', Nodal Officer, CMIS and other members participated in the meeting. A presentation of the progress of CMIS activities was made by Nodal Officer, CMIS-CWPRS and discussions were held as per the Agenda points.

Further, officers also participated in Training on CIMS Project in the State of Gujarat and Maharashtra organized by CWPRS, Pune through Video Conferencing on 28.08.2020.

Training Activities during the Month

Training Organized by NWA, CWC, Pune

S. No.	Topic of Programme	Date	Venue	Participants
1	6th International Distance Learning Course on Basic Hydrologic Sciences for Asian Region (WMO RA-II) being organized by the National Water Academy (NWA) in association With World Meteorological Organization (WMO)	27 July -11 Sept 2020	DL Mode	137 professionals working in Water Resources Sector & Officials of RA-II regions nominated by WMO
2	Distance Learning Program on Water Resources Sector of India for School Teachers : Batch IV	03-05 August 2020	DL Mode	152 School Teachers and DIET Faculty
3	Purpose Oriented Training programme through Distance Learning on Data Collection at Hydrometerorological site	03-14 August 2020	DL Mode	395 Various officials and staff of CWC
4	Distance Learning Program on Water Resources Sector of India for School Teachers : Batch V	04-06 August 2020	DL Mode	157 School Teachers and DIET Faculty
5	Distance Learning Program on Water Resources Sector of India for School Teachers : Batch VI	05-07 Augsut 2020	DL Mode	191 School Teachers and DIET Faculty
6	Distance Learning Program on Water Resources Sector of India for School Teachers : Batch VII	10-12 August 2020	DL Mode	144 School Teachers and DIET Faculty
7	Distance Learning Program on Water Resources Sector of India for School Teachers : Batch VIII	11-13 August 2020	DL Mode	153 School Teachers and DIET Faculty
8	Purpose Oriented Training Through Distance Learning on Project Hydrology	17-28 August 2020	DL Mode	57 Officers from State, CWC, PSUs, Pvt.Org
9	Purpose Oriented Training Programme on GIS Based Mapping of Irrigation Assets	24-28 August 2020	DL Mode	45 Officers from States and CWC

Shri N.N. Rai, Director Hydrology (South), delivered two lectures on a) Grid point location of SPS/PMP and hourly distribution co-efficient selection from PMP atlas and b) Storm Transposition and Design Flood Estimation & Ms. Isly Issac, Deputy Director Hydrology (South), delivered lecture on "Design Flood Estimation for Gauged and Ungauged Catchment using FER" through online Zoom platform for training course conducted by IIT Roorkee during 17th to 21st August, 2020.

Investment Clearance Committee Meeting

The 13th Meeting of Investment Clearance Committee of DoWR, RD & GR, MoJS, was held on 07.08.2020 under the Chairmanship of Secretary (DoWR, RD & GR) through VC. In the meeting total 10 projects/schemes were considered and after deliberations the Committee recommended Investment Clearance for the following proposals;

Sl.	Project Name	Name of the State	Category of Project	Estimated Cost in crore (Price Level)	Benefits
1	Renukaji Dam Project	Himachal Pradesh	Multipurpose (National Project)	6946.99 (October, 2018)	Drinking water project
2	Revised Cost Estimate (RCE) of Ghungshi Barrage Medium Irrigation Project	Maharashtra	RCE, Medium Irrigation	498.46 (2016-17)	CCA- 6343 ha AI-6660 ha
3	Shelgaon Barrage Medium Irrigation Project, Revised Cost Estimate (RCE)	Maharashtra	RCE, Medium Irrigation	961.11 (2017-18)	CCA- 9589 ha AI-11318 ha
4	Varkhede-Londhe Barrage Medium Project,	Maharashtra	New, Medium	526.65 (2016-17)	CCA- 9428 ha AI-7919 ha
5	"Providing Flood Protection Works/Anti erosion measures for Sakrain, Malthod, Thothu, Dol and SamourKhad in Dharampur Constituency, DisttMandi (HP)	Himachal Pradesh	Flood Control	145.73 (June, 2019)	Benefitted area- 300 ha Benefitted population- 3289
6	Providing flood protection/stabilization work to NakerKhad and its tributaries from Rainta (RD 0) to Sour Kalan Bridge (RD 30000) in Kangra District (HP)	Himachal Pradesh	Flood Control	231.02 (Dec, 2018)	Benefitted area- 274 ha Benefitted population- 3678
7	Providing flood and erosion protection measures along the Right bank of river Yamuna & its tributaries in Tehsil Paonta Sahib, District Sirmour (H.P)	Himachal Pradesh	Flood control	250.46 (April, 2019)	Benefitted area- 480.13 ha Benefitted population- 23485(census 2011)
8	Flood protection/channelisation of Seer Khad from barchhawar to Jahu Bridge in Tehsil Sarkaghat	Himachal Pradesh	Flood Control	157.66 (Feb 2018)	Area protected 115 Ha; population benefitted 10000
9	Formation of Flood Carrier Canal from Kannadian Channel to drought prone area of Sathankulam, Thisaiyanvilay by interlinking Tamirabarani, Karumediyar and Nambiyar Rivers in Tirunelveli and Thoothukudi Districts, Tamil Nadu	Tamil Nadu	Major Irrigation	872.45 (2014-15)	AI- 23040 ha
10	Channelisation of River Pabbar from Tikkari to Hatkoti, TahsilRorhu, Distt. Shimla	Himachal Pradesh	Flood Control	190.82 (2014)	Area Protected - 177 Houses Protected- 2000

Constitution of IMCT in wake of Flood/Landslide

Various Inter-Ministerial Central Teams (IMCT) were constituted in the month of August for an on-the-spot assessment of the situation in the wake of the flood/landslide during South WestMonsoon-2020. IMCTs are led by officers from Ministry of Home Affairs having representation from Agriculture, Finance, Road Transport & Highways, DoWR,RD&GR and Rural Development. CWC officers were nominated to represent DoWR, RD&GR.

Sl. No.	State	Nominated Officer	Purpose
1	Assam	Shri Sudhir Kumar Director, CWC, Guwahati	Flood/Landslide
2	Arunachal Pradesh	Shri Abhishek Sinha, Superintending Engineer, CWC, Shillong	Flood/Landslide
3	Sikkim	Shri Shiva Prakash, Superintending Engineer, CWC, Gangtok	Flood/Landslide
4	Bihar	Shri Sanjeev Kumar Suman, Director, CWC, Patna	Flood
5	Karnataka	Shri Guru Prasad J., Superintending Engineer, CWC, Bengaluru	Flood/Landslide

During the month, visit was carried out for the State of Assam. The IMCT lead by Shri Sandeep Poundrik, IAS, Joint Secretary, NDMA having members from other Ministry had a brief meeting with Additional Chief Secretary on 26.08.2020. IMCT was divided into three teams for on the spot assessment of damages in different districts of Assam. Team comprising of Shri Sudhir Kumar, Director, CWC, Guwahati representing Ministry of Jal Shakti and Abhishek Agarwal, Assistant Executive Engineer representing Ministry of Road Transport & Highways visited Lakhimpur & Majuli districts on 27.08.2020 and 28.09.2020 respectively.

Alternatives for passing excess flood of Hirakud Dam

Hirakud Dam Project is built across river Mahanadi about 15 km upstream of Sambalpur, town in the state of Odisha. It is a Multipurpose Project and is the longest Earthen Dam in Asia. It is a composite dam of Earth, Concrete and Masonry structure. There are spillways in the main dam both on the left and right sides located on the two channels of the main river. The left spillway of the Hirakud dam has 40 no. of sluice gates and 21 no. of crest gates. The right spillway has 24 no. of sluice gates and 13 no. of crest gates. The total discharging capacity of both the spillways is 42450 cumec. The project was commissioned in the year 1957. Central Water Commission (CWC) reassessed the Inflow Design Flood with up to date data and revised the design flood to 69,632 cumec. In order to safely pass the additional flood of 27182 cumec, it is proposed to provide two additional spillways, first at the left bank 1st gap dyke of Hirakud Dam near 2nd saddle of Gandhi hillock with 5 nos. of spillway gates of size 15m x 15m each to discharge 9122 cumec and another additional spillway at Right dyke with 8 nos. of spillway gates.

However, Right Bank side alternative was not found suitable because of R&R and other problems. Accordingly, a meeting was held under the chairmanship of Member(D&R) to discuss possible measures on 26.08.2020. Project authorities have proposed three different alternatives to safely pass the excess flood. These three alternatives were discussed in the meeting.

Rain Water Harvesting/Ground Water Recharge Pond Created at NEID-I, CWC, SILCHAR by Shramdaan

A rain water harvesting cum ground water recharge pond has been created at the office cum residential complex of CWC at North Eastern Investigation Division-I, CWC, Silchar under B&BBO, CWC, Shillong. The reservoir has been created by SHRAMDAAN by the officials, staff of NEID-I, Silchar and their family members.

During 2018-19, under the umbrella of Swachh Bharat Mission, the area was cleaned and jungle was cleared. With the thought that the responsibility of government organization as well as individual to harvest each drop of water falling on earth surface and to recharge the ground water table, the staff and officials of NEID-I, CWC, Silchar, came forward to use this area for rain water harvesting by digging a pond.

During the lock-down period for COVID-19 (March to April 2020) the residents of colony campus (officers, staff and their families), 15 to 20 persons did Shramdaan for the noble cause for average 3 hrs./day for 40

to 45 days to dug the pond of an area of approx 250 sq-m with an average depth of 2.5 m. The pond has been protected along its perimeter by fencing in which scrapped G.I. pipes have been used.

After the first filling of the pond, the staff and officials got enthusiastic seeing the results of their dedicated effort and decided to utilize this water for fish production for community.

Monitoring Visit to Ans Irrigation Canal, Rajouri, Jammu and Kashmir

Shri Rakesh Gupta, Deputy Director, Shri Govinder Singh, AD-II along with other state officials monitored the progress of the Ans Irrigation Canal at Rajouri on 27.08.2020. Ans Irrigation Canal is an ongoing approved MI scheme under the Cluster of 158 SMI scheme included under the PMKSY-AIBP-HKKP. The estimated cost of the scheme is Rs. 53.99 Cr. The project component includes construction of a main canal of length 6933m, a tunnel having a length of 1386m and 4 distributaries having a total length of 43120m. The culturable command area (CCA) of project is about 2000 Ha and it will benefit 6300 farmers. Expenditure incurred on Ans Irrigation Canal till date is Rs. 8.4928 Cr. i.e. 15.73% of the approved cost and 9.92% of the revised cost.

Second Public hearing of Ujh Multipurpose Project

The Ujh Multi-Purpose Project, located in the District Kathua of UT of J&K, has been envisaged to utilize the water of River Ujh, a tributary of River Ravi, which is one of the three eastern Rivers of Indus Basin system. As per provisions of the Indus Water Treaty between India and Pakistan, India has the right to unrestricted use of all the waters of Eastern Rivers namely, Sutlej, Ravi and Beas. Hence, Ujh Multi-Purpose Project is crucial for optimal utilization of Ravi water and accordingly it was declared a National Project in the year 2008.

The project envisages construction of a concrete face rock-fill dam of 116 m. height, canal system, Main Power House of 186 MW capacity and Dam Toe Power House of 10 MW capacity. The estimated cost of the project is Rs. 9167 Cr. (at December, 2019 Price level). The project has 40716 Ha. CCA and Annual Irrigated area of 76929 Ha. The Detailed Project Report (DPR) of the Ujh MPP was initially prepared by CWC, Jammu.

Shri Ravi Ranjan, Director, attended the 2nd Public Hearing of Ujh Multipurpose Project (196 MW) conducted by the J&K Pollution Control Board Jammu at village Jatwal in Sambla District of Jammu and Kashmir on 26.08.2020. A brief Presentation was given to the Public Hearing Committee and the Public Representatives of Samba District on the benefits of the Ujh Multipurpose Project. The efforts of CWC in preparation of DPR were duly appreciated.

Shongtong-Karcham Hydro Electric Project (450 MW), Himachal Pradesh

Shongtong-Karcham Hydro Electric Project (SKHEP) is located on River Satluj in Kinnaur district of the Himachal Pradesh. The project is envisaged as a run-of-river scheme having installed capacity of 450MW and is being developed by M/s HPPCL. Civil construction work for SKHEP is going on and is in the advance stage. However, the right bank slope in the barrage area is found to be creeping with differential magnitude of movements which led to suspension of financing by KfW (a German Bank)..

As desired by Department of Economic Affairs, Ministry of Finance, GoI and on the request of project authority, CWC has agreed for vetting the Concept Design of Slope Stabilization of Right Bank of Barrage of this Project which is being studied by M/s AF Consultants.

To deal with this complex issue, CWC is providing its expert advice to M/s HPPCL, since last couple of months, in developing the concept design considering estimated creep movement and transferring this load by barrage structure itself along with provisions of compressible

layer towards the right bank to absorb the residual forces during the design life of the project.

Now, AF Consultants has submitted Concept Design Report (Draft) based on the inception and Design Creep Rate Report submitted earlier and observations of CWC has been conveyed thereon. A meeting was held in CWC on 21.08.2020 to discuss the draft report which was attended by officers of Designs (N&W) unit of CWC and design team of M/s AF Consultants on behalf of M/s HPPCL.

Mullaperiyar Rule Curve

To discuss the technical observation of CWC on methodology adopted in Rule Curve prepared by Cauvery Technical Cell (CTC), Govt. of Tamil Nadu, a meeting under the chairmanship of Shri Gulshan Raj (Chief Engineer, DSO & ex-officio Chairman, Supervisory Committee on Mullaperiyar Dam) on the virtual platform was held on 19.08.2020. In the meeting Shri R. Subramanian (Chairman, CTC), Shri Rishi Srivastava (Remote Sensing Dte.), Shri N. N. Rai (Director, Hydrology (S) Dte.), shri Amit Kumar Jha (Director, DSM Dte.) , and other officials of CWC and CTC were present. The examination of Rule Curve was done by Shri Rishi Srivastva and Shri N.N. Rai from CWC side.
Various issues related to data and preparation of rule curve of

Mullaperiyar dam were discussed. It was finalized that Cauvery Technical Cell (CTC), Govt. of Tamil Nadu will reaffirm the data after consultation with field offices and review the methodology adopted.

Polavaram Irrigation Project, Andhra Pradesh

It is a multipurpose project located 42 km upstream of Sir Arthur Cotton Barrage on Godavari River near Ramayyapeta, Polavaram in West Godavari district, Andhra Pradesh. The project envisages irrigation benefits to 4.0 lakh acres in East Godavari, Visakhapatnam districts under Left Main Canal and to 3.2 lakh acres in West Godavari, Krishna districts under Right Main Canal with generation of 960 MW Hydro Electric Power, water supply for industries in Visakhapatnam and drinking water supply to villages & towns. Further, it is also proposed to release 15 TMC of stored water to downstream existing Sir Arthur Cotton Barrage in lean period and 80 TMC of stored water to be diverted to Krishna River through Right Main Canal.

The project components include:

i) Earth dam in Gap I on left bank of river.
ii) Earth cum rock fill dam in Gap II located in main flow channel of Godavari River.
iii) Earth dam in Gap III located on right bank.
iv) Ogee type Concrete spillway located on right bank along with connecting approachchannel and spill channel & 10 river sluices in the OF blocks for releasing 15 TMC ofwater in the downstream.

During the month of August- 2020 following drawings of different components of the project were vetted and released for construction:

a. 3 No. of drawings pertaining to Normal Pier (5.50 m thick) with foundation level EL. +10.00 m (Block No. 3, 4, 15 to 19 and 38 to 49) from EL. + 52.0 m to top of Spillway

b. 7 No's of drawings pertaining to NOF Block No. 1 & 51 with stop-log gate storage arrangement to top of the dam including key blocks 0 & 52.

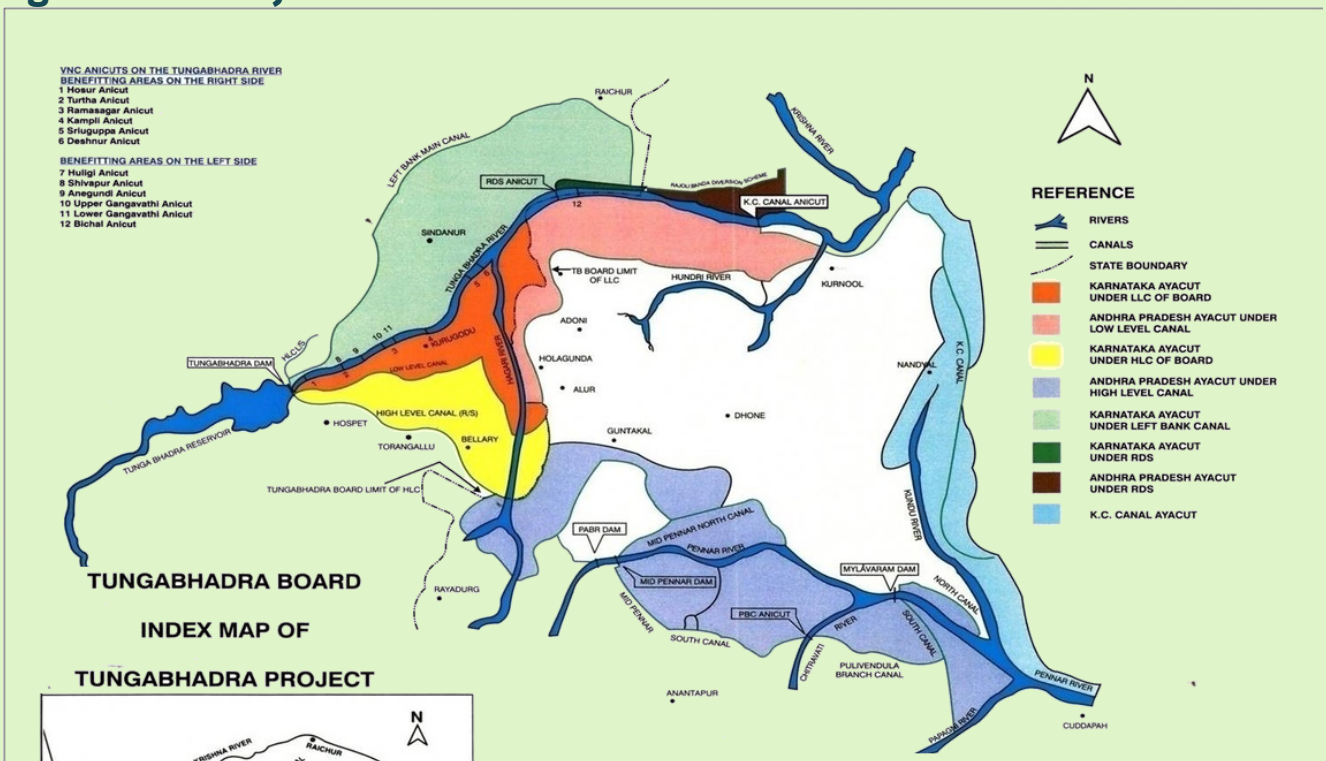
c. 6 No. of drawing pertaining to of River Sluice Pier (6.50 m thick) with foundation level EL. +10.00 m (Block No. 5 to 14) from EL. + 52.0 m to top of Spillway.

d. 5 No. of drawing pertaining to 5.50 m thick Spillway Right Abutment Pier (Block No. 50) with foundation level EL. +10.00 m from EL. + 52.0 m to top of Spillway.

e. 6 No. of drawing pertaining to Normal Pier (5.50 m thick) with foundation level EL. -9.25 m and EL. -18.50 m (Block No. 19 to 25 and 27 to 34) from EL. + 52.0 m to top of Spillway.

f. 1 No. of drawing pertaining to deck slab of Spillway Bridge.

History-Tungabhadra Project



The river Tungabhadra derives its name from two streams viz. the Tunga about 147 km long and the Bhadra about 178 Km long which rise in the Western Ghats. The river after the confluence of the two streams near Shimoga runs for about 531 Km to join the river Krishna at Sangamaleshwaram in Andhra Pradesh.

The endemic famine region of Rayalseema, comprising the districts of Bellary, Anatapur, Kurnool and Cuddapah attracted the attention of the British Engineers as early as 1860. To relieve the intensity of famine in these districts proposals were made in 1860 to utilize the waters of Tungabhadra through a storage reservoir and a system of canals to provide irrigation to the lands.

Sir Arthur Cotton originally conceived the Tungabhadra Project in the year 1860. The proposals were further modified and developed subsequently evolving it into a joint scheme with Hyderabad. Protracted negotiations and investigations lasted for several years. The Agreement of June 1944 between Madras and Hyderabad enabled the Madras and Hyderabad Governments finally to start the construction of the Tungabhadra project.

The Tungabhadra Project was formally inaugurated by laying foundation stone on 28.02.1945 by "Prince of Berar" on the left side and by" Sir Arthur Hope" Governor of Madras on right side. However, much headway could not be made up to January 1949. Difference of opinion in certain technical matters and settled political situation in Hyderabad were the reasons for the slow progress. These differences were referred to a Board of Engineers under the Chairmanship of Sri M. Visveswaraya, Statesman-cum-Engineer to whom the people of Mysore owe a lot for his foresight and ingenuity for having launched many schemes during his tenure of Dewanship.

Subsequently, the works resumed at full speed and the water was led down into the canal on the 01.07.1953 to derive partial benefits. The reservoir formed by the Dam can store about 133 TMC (Thousand Million Cubic Feet) of the river flow and was impounded for the first time in 1953. All the works including the dam, the spillway, bridge road on the top of the dam, construction of utility tower, manufacture of crest grates for storing water upto 1633 ft level were completed in all respects by the end of June 1958. The cost of dam and appurtenant works was Rs. 16.96 crores. The construction of the Tungabhadra project was finally completed in 1970 with completion of Right Bank High Level Canal.

The project comprises of a dam across the river Tungabhadra at Mallapuram with a main canal running on each side and to develop electric power with installed capacities of 72 MW at two stations on the right side and 104.5 MW at four stations on the left side. The total areas localised for irrigation under the project is around 4.9 Lakh ha. Other schemes are also benefitted with the assistance of water from the Tungabhadra Reservoir.

The Tungabhadra Dam consists of three parts: the main Dam in stone masonry across the river, an earthen dam and a composite dam to close two low level saddles on the left flank of the main Dam. The main Dam is a giant vertical wall of stone with a central portion to spill over the surplus flood waters to the river below the dam. The stone dam is 5712 ft long and 162 ft high over the deepest foundation. The spillway consists of 33 vents of 60 ft to be fitted with shutters of 20 ft high. The rivers, in floods, with the water falling over the spillway form a height of nearly 90 ft the foaming and Spraying turbulence of the water after impact with its glossy mist is a magnificent sight to witness. The roar of the hurtling waters can be heard miles away in the stillness of night. The mortar used for the Dam is red cement mortar in the spillway section and sluices and lime-surki mortar at other places.

The dam carries a roadway 22 ft wide on the top and serves as an important highway link between Mysore (now Karnataka) and Hyderabad (now Telangana). It is constructed with hard granite stones available nearby. In the body of the Dam a tunnel has been constructed, termed as the drainage gallery, which runs right through the Dam except at the ends to facilitate inspection of the interior of the Dam and to collect any seepage water coming through. The magnitude of construction can be visualised from the fact that nearly 32 million cu ft of stones, 12 million cu ft of sand, 3 million cu ft of lime, 3.5 million cu ft of surki, 2 million cu ft of cement and 4,000 tons of steel have been used for the major structure.

Tungabhadra Board

With the creation of state of Andhra on 01.10.1953, the project became responsibility of three Govt. viz. Andhra, Mysore and Hyderabad. The Tungabhadra Board was constituted by the President of India in exercise of the powers vested under sub section (4), Section 66 of the Andhra Pradesh State Act, 1953 for completion of the Tungabhadra Project and its operation and maintenance. Further after reorganization of states on 01.11.1956, it became the concern of two Governments viz. Andhra Pradesh and Karnataka. After bifurcation of Andhra Pradesh in 2014, the successor state of Telengana was also represented in the Board. Currently, Chief Engineer, KGBO, CWC is the chairman of the Board. Tungabhadra Board is responsible for the preparation of working table for operation of Tungabhadra Reservoir, water accounting and maintenance of the common portion of the works for the States of Karnataka, Andhra Pradesh and Telangana. It is also responsible for the hydro power generation and fisheries development.

This project is a successful example of inter-state co-operation for development and management of water resources project.

Findings of the study of Sedimentation Assessment of Watrak Reservoir Gujarat using SRS (Satellite Remote Sensing)

The Watrak Reservoir is located on river Watrak in Sabarkantha district in the North Eastern region of Gujarat. Watrak River is one of the important rivers of Gujarat with total Catchment area of 1113.7 sq. Km. The Watrak river has its origin in Aravali hills in southern Rajasthan and flows in the South Western direction for a distance of 178.63 Km before it confluences with river Sabarmati.

The project consists of a Earth storage dam across the river Watrak near Pahadia village. The work on this project was completed in 1984. The canal system on both banks of the river taking off from the dam, GRBC of length 23.54 Km and irrigating an area of 3258 ha and GLBC of length 7.64 Km having two branches of 19.05 Km and 16.74 Km length provide irrigation to an area of 15103 ha.

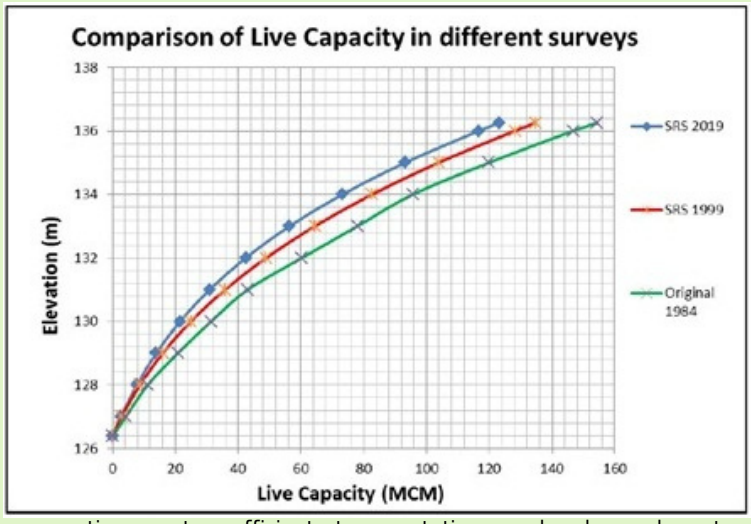
Method of Analysis

Satellite images for different dates at different elevations were downloaded from Copernicus hub. Then using Snap processing software, images were processed. Water spread areas of reservoirs in different images were calculated using ArcGis. Post that, using Area elevation curve, live capacity for the reservoir at various intervals were calculated.

	Original Survey (1984)	SRS (1999)	SRS (2019)
Live Capacity (MCM) at FRL 136.25 m	154.35	134.79	123.15
Loss in Capacity (MCM)	-	19.56	31.20
% Live capacity loss (since 1984)	-	12.67%	20.21%

Results of study

- The Live storage capacity of Watrak reservoir, Gujarat has been found to be 123.15 MCM in year 2019.
- Live storage capacity loss of 31.20 MCM (i.e. 20.21 %) was witnessed in a period of 35 years during years 1984 to 2019. This accounts for Live storage capacity loss of 0.578% per annum since year 1984.



News around the States

The State of Israel and the Government of Uttar Pradesh have signed an agreement to establish the India-Israel Bundelkhand Water Project. The project aims to demonstrate and implement the Israeli model for water management tailored to the water challenges of Bundelkhand, Uttar Pradesh. The project comprises three key-components viz. water conservation, water efficient transportation, and advanced water practices for agriculture.

https://embassies.gov.il/delhi/NewsAndEvents/Pages/Israel%20Signs%20Agreement%20on%20Water%20Cooperation%20with%20the%20Government%20of%20Uttar%20Pradesh.aspx#p

Water Sector-Myths and Facts

Myth: Experts have predicted the drying up of many rivers in the country soon.

Fact: There are two types of rivers in the country; (1) perennial rivers and (2) Non-perennial rivers. In perennial rivers, water remains available throughout the year, while non-perennial rivers are rain fed rivers in which water flows only during the rainfall period. The flow in the rivers is dynamic and depends on many parameters such as rainfall, its distribution and intensity in the catchment, catchment characteristics and withdrawals/ utilisation of water in the basin. Central Water Commission (CWC) monitors important rivers in the country. Considering annual average flow of last 20 years of terminal sites of important rivers, no appreciable increasing/decreasing trend in total water availability has been observed.

Gallery-Independence Day Celebration

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