



**Shri Kushvinder Vohra**  
Chairman, CWC

## Message

As we reflect on the events of the past month, it's heartening to acknowledge the significant strides we've made in our collective efforts towards water resource management and dam safety.

Country celebrated its 77th Independence Day on 15.08.2023. The Honorable Prime Minister of India addressed the countrymen from the iconic Red Fort. During his address, the Hon'ble Prime Minister emphasized the pivotal role of the recently established Ministry of Jal Shakti. He highlighted the ministry's dedication to providing pure drinking water to every citizen of the country. In pursuit of this goal, the government has allocated a substantial budget of 2 lakh crore rupees to the Jal Jeevan Mission, a monumental effort to ensure access to pure water in every household.

On this momentous occasion, the national flag was ceremoniously hoisted at the Central Water Commission (CWC) Headquarter at New Delhi symbolizing unity and national pride. The celebration continued with a spirited Tiranga Rally. Regional offices of CWC, dispersed throughout the country, enthusiastically celebrated the 77th Independence Day. The festivities included a series of events organized to mark the occasion, showcasing the patriotic spirit and unity of the organization across various regions.

One of the key functional domains of the CWC is flood forecasting. In our ongoing efforts to enhance public safety, we have successfully launched the "FloodWatch" mobile app. This in-house developed app provides real-time flood situation information and forecasts up to 7 days. Its user-friendly interface, readable and audio broadcasts, and availability in both English and

Hindi make it an invaluable tool for disseminating critical information to the public. The contribution of Miss Lovy Agarwal, AD in developing this app is praiseworthy. It is heartening to note that more & more officers of CWC are making efforts to bring innovation in the works.

CWC is instrumental in the implementation of the Dam Rehabilitation and Improvement Project (DRIP) Phase II and Phase III. It covers nineteen states and three central agencies. I am pleased to inform that the Contract Agreement for Engineering and Management Consultancy was signed on 14.08.2023, marking a significant milestone. My sincere appreciation goes to the entire team for their dedication and hard work in this regard.

Furthermore, our reservoir monitoring efforts have expanded, with the inclusion of four additional reservoirs in August 2023. The Central Water Commission now oversees the real-time storage levels of 150 reservoirs nationwide on a weekly basis. The storage position of reservoir is very critical in drought mitigation efforts. CWC provides regular updates to crop weather watch group in this regard.

We have actively engaged in outreach activities to promote dam tourism. Cultural and awareness activities were organized in collaboration with dam authorities and state authorities at various locations, fostering a sense of community and appreciation for the importance of our water infrastructure.

I extend my gratitude to all the officer/officials and each member of the CWC for their unwavering dedication and hard work. Together, we are making a positive impact on water resource management in the country.



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- Second Meeting of Neutral Expert
- The 1st Meeting of the Steering Committee constituted for 25th ICID Congress & 74th IEC Meeting
- Launch of 'FloodWatch' Mobile app
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## NDSA AND DRIP

## Discussion with IIT, Roorkee the establishment of the International Centre of Excellence for Dams

Shri Sanjay Kumar Sibal, Member(D&R) attended the Online Meeting with the Director, IIT Roorkee under the chairmanship of Shri Kushvinder Vohra, Chairman, Central Water Commission, to discuss the establishment of the International Centre of Excellence for Dams(ICED) at IIT Roorkee CWC on 01.08.2023. The meeting was attended by Shri Vijai Saran, CE, DSO, Shri Vivek Tripathi, CE, Designs (N&W), Shri Anil Jain, CE, Designs (NW&S) and other officers from CWC; and from IIT Roorkee delegation was led by Shri K.K. Pant, Director, IIT Roorkee.

Under the ongoing DRIP Phase II & III Scheme, a MoA has been signed between IIT-Roorkee and CWC, DoWR, RD & GR on 14.02.2023 for establishment of International Centre of Excellence for Dams (ICED) at IIT Roorkee. As per the agreement, the Centre shall carry out fundamental and applied research on the broad themes of Reservoir Sedimentation Management and Seismic Hazard Mapping & Analysis of dams. The ICED will also act as a technological arm of the MoJS to provide specialized technical support and



solutions to various emerging challenges faced in dam safety through scientific research. It will also provide trainings/knowledge transfer to Central/State Govt officers/staff on regular basis. Chairman, CWC highlighted the long association between CWC and IIT Roorkee and welcomed the onboarding of IIT Roorkee for ICED. He emphasized to undertake applied research to provide solutions to practical issues being faced by dam owners in the country. He also stressed upon that capacity building at Central level, State level & PSU officials in dam safety area would be the most important thing which ICED should strive to deliver through this association.

## Technical Committee for International Conference on Dam Safety

Shri Sanjay Kumar Sibal, Chairman NDSA and Member (D&R) attended the second meeting of the Technical Committee (TC) for organising International Conference on Dam Safety (ICDS) 2023 at Jaipur on 17.08.2023 under the chairmanship of Shri Kushvinder Vohra, Chairman, CWC in Hybrid mode. Officials of CWC, DoWR, RD&GR, NDSA, World Bank, IIT

Roorkee and IISc Bengaluru also attended the meeting.

In this meeting, matter related to scrutinizing the technical papers & presentations, finalisation of Chair & co-chair for Technical sessions, finalisation of standard template of oral or physical document etc. has been discussed.

## Implementation of DRIP II & III and discussion on Dam Safety Paradigm in India

Shri Sanjay Kumar Sibal, Chairman NDSA & Member (D&R) attended the Consultative Committee meeting on Implementation of DRIP II & III and discussion on Dam Safety Paradigm in India at Committee Room-C, Parliament

Annexe, New Delhi on 07.08.2023. The agenda of the meeting were Dam Safety Paradigm in India after Implementation of Dam Safety Act, 2021 and on Implementation of DRIP II & III.

## Signing of Contract for Engineering and Management Consultancy (EMC) Services for Central Project Management Unit (CPMU) under Dam Rehabilitation and Improvement Project (DRIP) Phase-II and Phase III

Shri Sanjay Kumar Sibal, Member (D&R) attended the signing of Contract for Engineering and Management Consultancy (EMC) Services for Central Project Management Unit (CPMU) under Dam Rehabilitation and Improvement Project (DRIP) Phase-II and Phase III. CPMU led by Shri Vijai Saran, Chief Engineer, DSO, CWC & Project Director, DRIP signed Contract Agreement on 14.08.2023 for Engineering and Management Consultancy for duration of 10 years to provide technical and managerial support to States for implementation of DRIP Phase II and III with JV of SMEC-Stucky in the presence of Smt. Debashree Mukherjee, Special Secretary, Shri S.K. Sibal, Member D&R, CWC and Shri Anand Mohan, JS, RD&PP, DoWR. Shri S.S. Bakshi, Director, DSR and Shri Siddhant Azad, Dy. Director, DSR were also present during signing of the contract.

Ministry of Jal Shakti is implementing externally funded Scheme DRIP Phase II and Phase III. This Scheme has provisions for nineteen (19) States, and three Central Agencies (Andhra Pradesh, Chhattisgarh, Goa, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand, West Bengal; Central Water Commission, Bhakra Beas Management Board, and Damodar Valley Corporation). The budget outlay is Rs 10,211 Cr (Phase II: Rs 5107 Cr; Phase III: Rs 5104 Cr) with rehabilitation provision of 736 dams. The Scheme is 10 years duration, proposed to



be implemented in two Phases, each of six year duration with two years overlapping. Each Phase has external assistance of US\$ 500 M. The Union Cabinet has approved the Scheme on 29.10.2020.

The Phase II of the Scheme is being co-financed by two multi-lateral funding Agencies - World Bank and Asian Infrastructure Investment Bank (AIIB), with funding of US\$ 250 million each. The Loan Signing with World Bank (US\$ 250 M) was held in August, 2021 in which 10 States (Gujarat, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Rajasthan, Odisha, Tamil Nadu, Chhattisgarh) participated. The Phase II has been declared effective by the World Bank in October 2021. Loan signing for another US \$250 million with AIIB was done in May 2022. This Loan has been declared effective by AIIB in December 2022. The inclusion of four additional States (Karnataka, Uttarakhand, Uttar Pradesh, and West Bengal) was notified by World Bank in June 2022 and their loan declared effective in January 2023.

## Various issues related to Dam Rehabilitation and Improvement Project (DRIP) Phase-II and National Dam Safety Authority (NDSA)

Shri Sanjay Kumar Sibal, Chairman, NDSA and Member (D&R) attended Monthly Review Meeting held on 18.08.2023 under the Chairmanship of Secretary, DoWR, RD & GR regarding various issues related to Dam Rehabilitation and Improvement Project (DRIP), Phase-II and National Dam Safety Authority (NDSA).

The meeting encompassed a comprehensive discussion on various agenda points, including the progress of updating the National Level Database for specified dams across the country. Additionally, deliberations focused on the appointment process for the Engineering and Management Consultant for the Dam Rehabilitation and Improvement Project (DRIP), the establishment of Centers of Excellence (CoE) for Dam Safety, and the MNIT proposal for creating a Centre for Seismic Safety Evaluation of Dams.

The status of proposals from NWA Pune, CSMRS, and NIT

Rourkela were reviewed, along with the progress of regulations to be formulated by the National Dam Safety Authority (NDSA) in adherence to Section 54 of the Dam Safety Act, 2021. Further considerations included the constitution of Sub-Committees of the National Committee on Dam Safety (NCDS), the creation of posts for NDSA, formulation of recruitment rules, and the provision of office space for NDSA.

The meeting also addressed the status of dam inspections, both pre-monsoon and post-monsoon, as well as the 3rd Party Evaluation Report conducted by IIT Delhi. Capacity building initiatives for Central and State Government officials in various aspects of Dam Safety were discussed, along with the safety protocols for non-specified dams, the implementation progress of DHARMA, and the upcoming 2nd Meeting of the Technical Committee of DRIP.

## Third meeting of steering committee for guiding and coordinating the organization of the International Dam Safety conference, 2023

Shri Sanjay Kumar Sibal, Chairman, NDSA and Member (D&R) attended the Third meeting of Steering Committee for guiding and coordinating the Organization of the International Dam Safety Conference, 2023 under the chairmanship of Spl. Secy, DoWR at Committee Room, SSB on 23.08.2023. The action plan for the conference was presented in the meeting.

### MEETING REGARDING PROJECT

## Issue of less availability of water from Nohar Feeder and Baruwali Distributary to Rajasthan

Shri Sanjay Kumar Sibal, Member (D&R), participated in a meeting on 01.08.2023 chaired by Shri Kushvinder Vohra, Chairman, CWC, addressing the water availability issue from Nohar Feeder and Baruwali Distributary to Rajasthan. Decisions included BBMB rectifying G&D curves, joint discharge observations at different points, and collaborative efforts for land demarcation and re-sectioning of Nohar

Feeder. On 07.08.2023, Hon'ble Minister Shri Gajendra Singh Shekhawat led a meeting where consensus was reached on key issues, such as rectifying G&D curves, repairing Fatehabad Branch, installing SCADA systems, and joint regulation at CP-4. The Hon'ble Minister directed prompt action for Nohar Feeder re-sectioning to increase its capacity to 332 cusecs, emphasizing the importance of joint regulation/observation to address concerns effectively.

## The 31st Meeting of Technical Evaluation Committee (TEC) for completing the balance works of North Koel Project

31st meeting of the Technical Evaluation Committee (TEC) for completing the balance works of North Koel Reservoir Project (NKP) was held on 25th August 2023 at CWC, New Delhi under the Chairmanship of Member (WP&P), CWC and Chairman (TEC), NKP. The officers from DoWR, CWC HQ & field units, State Governments of Bihar, Jharkhand and WAPCOS participated in the meeting.

There were discussion on important agenda items such as status of land acquisition by WRD Bihar/Jharkhand, progress of various components of the balance works of the project by the WAPCOS, consideration and firming up the quantities for the Tendering process for the work of "Lining Repair and Construction of RMC and its structures from RD 31.4 to 68.37 km in Bihar by WAPCOS, status of unspent balance amount lying parked with Govt. of Jharkhand and WAPCOS etc.



On the agenda point of consideration and firming up the quantities for the Tendering process, TEC did not suggest any change in quantities and cost mentioned in the tender document. TEC also suggested the member from WRD, Jharkhand to take up matter with his Department for returning the balance amount as it appears to be no longer required for the purpose for which the same was released.

## Presentation by Inter Governmental Group (IGG) on Punatsangchhu-I Hydroelectric Project

Shri Sanjay Kumar Sibal, Member (D&R) attended the Presentation by Inter Governmental Group (IGG) on

### Renukaji Dam Project

Shri Sanjay Kumar Sibal, Member (D&R) chaired the meeting to review the progress of field investigation works at Renukaji Dam site on 18.08.2023 at his chamber at 4th Floor, CWC through Video Conference. The meeting was convened between officials of DoWR, RD&GR, CWC, CSMRS, GSI, HPPCL and Panel of Geological Experts.

Punatsangchhu-I Hydroelectric Project in the presence of Secretary DoWR, RD&GR and Secretary, Power Committee Room, 1st Floor, C-Wing, DoWR, SSB on 14.08.2023.

### Lakhwar Project

Shri Sanjay Kumar Sibal, Member (D&R) chaired the Online Meeting between official of CWC, Project Authorities and Group of Geological Experts (GGEs) to review the progress of Lakhwar MPP works and related studies pertaining to Lakhwar MPP on 21.08.2023 at 3 PM at Conference Room, 3rd Floor, CWC.

## TRAINING/WORKSHOP

### Canada-India International Workshop on Dam Safety and Management from 7th-18th August 2023 in Canada

31 Participants from various states in India along with 10 officers from MoJS/CWC participated in the training.

The objective of the training was to establish a forum that provides cooperation among dam safety experts, practitioners, facility owners, operators, policy makers and managers.

The training consisted of classroom lectures at Concordia University, Montreal and site visits to laboratories and dam sites.



### Workshop on Methodology adopted for fixation of water rates and Physical & Financial Aspects of Major and Medium Irrigation Projects in India

The Central Water Commission conducted a workshop on the "Methodology for Fixation of Water Rates and Physical & Financial Aspects of Major and Medium Irrigation Projects in India" on 24.08.2023. Presided over by Shri Pankaj Kumar, Secretary (WR, RD&GR), Ministry of Jal Shakti, and Shri Kushvinder Vohra, Chairman, CWC & Ex-officio Secretary to Govt. of India, the workshop aimed to discuss water rate fixation methodologies with States/UTs and gather additional data. Chairman, CWC highlighted that over 80% of water is used for irrigation in India, with efficiency estimated at 35 to 40 percent. Emphasizing the importance of water pricing, he cited the National Water Policy (2012) recommendation for fair pricing to reflect efficient use and conservation. The workshop aimed to foster cross-learning



and active discussions for a better understanding of water rate fixation methodologies by different states.

### First All India Training Workshop on 7th Minor Irrigation Census, 2nd Census of Water bodies, 1st Census of Major & Medium Irrigation projects and 1st Census of Springs

The 1st All India Training Workshop for the conduct of the 7th Census of Minor Irrigation, 2nd Census of Water Bodies, 1st Census of Major & Medium Irrigation Projects, and 1st Census of Springs under the "Irrigation Census" Scheme concluded successfully on 17.08.2023 in New Delhi. Chaired by Shri Pankaj Kumar, Secretary, DoWR, RD & GR, the event witnessed participation from various dignitaries, including Chairman, CWC, and officers from NITI Aayog, Central Ministries, and States/UTs. The emphasis was on a digital approach to enhance efficiency and data quality. Chairman, CWC highlighted the importance of a reliable database for effective planning in the irrigation sector. The workshop featured technical sessions, with discussions on schedules and methodologies. The Deputy Director General expressed



satisfaction with the workshop's success, emphasizing the importance of the deliberations. The Secretary, DoWR, RD & GR, encouraged states to adhere to census timelines for efficient results. The Workshop concluded with gratitude to the chair.

## OTHER ACTIVITIES OF CWC

**The 4th Meeting of the Consultancy Monitoring Committee**

Shri Sanjay Kumar Sibal, Member (D&R) chaired the 4th meeting of the Consultancy Monitoring Committee to monitor "2D and 3D Numerical Hydraulic Model Studies for Reservoir Sedimentation of Ratle HE Project (J&K)" being carried out by DHI at his chamber in 4th Floor, CWC on 08.08.2023. Shri Vivek Tripathi, CE Designs(N&W), Shri Narendra Singh Shekhawat, Director, HCD(N&W), other Officers from CWC and NHPC attended the meeting.

**Finalization of Memorial for Sediment analysis-Neutral Expert (NE) related matters**

Shri Sanjay Kumar Sibal, Member (D&R) attended the meetings chaired by Shri Kushvinder Vohra, Chairman, CWC regarding finalization of Memorial for Sediment analysis-Neutral Expert (NE) related matters. The 9th Meeting of

"Technical Sub-Committee" to finalise "Draft Memorial Chapter-6" for the NE proceedings-Indus Waters Treaty was held on 17.08.2023 and the 10th Meeting of 'Technical Sub-Committee' was held on 19.08.2023 at CWC.

**Second Meeting of Neutral Expert**

The second meeting of NE appointed to resolve point of differences between India and Pakistan is IWT issues was held at Vienna, Austria during September 20-21, 2023. Shri Kushvinder Vohra, Chairman, CWC, Shri S.K. Sibal (Member, D&R), Shri Narendra Singh Shekhawat (Director) and M.S. Harshitha (Deputy Director) were part of Indian delegation

who attended the meeting. The Indian delegation was led by Secretary, DoWR, RD&GR.

Neutral Expert was appointed by World Bank under Article IX of Indus Water Treaty specifically to address technical difference between the two nations regarding Kishenganga and Ratle HEPs.

**The 1st Meeting of the Steering Committee constituted for 25th ICID Congress & 74th IEC Meeting**

The 1st Meeting of the Steering Committee constituted for planning and advising for organization of 25th ICID Congress & 74th IEC Meeting was held on 25.08.2023 in hybrid mode under the chairmanship of Secretary, DoWR, RD&GR at Shram Shakti Bhawan, New Delhi.

The committee held discussion on inauguration of event by Hon'ble Prime Minister of India, political and security clearance from Ministry of External Affairs (MEA) and Ministry of Home Affairs (MHA) for smooth Visa approval, status of activities in different areas of event planning, management, execution, logistics support, promotion etc.

Chairman CWC/INCID stressed on the need to sign a tripartite MoU among INCID, ICID, and Govt. of Andhra Pradesh. The Venue has been finalized and WAPCOS has been assigned the event management responsibilities of the event.

The Govt. of Andhra Pradesh committed to contribute Rs. 5 Cr for the event and the revenue from registrations and sponsorships is expected to be around Rs. 2.20 Cr. During the meeting, it was proposed to cover the remaining amount of Rs. 3.05 Cr by Govt. of India (out of estimated total expense of Rs. 10.25 Cr for the event) and approval from Ministry of Finance may be sought.

**The 8th meeting of Technical Sub-Committee to discuss and finalize Draft Memorial Chapter 6 titled "Importance of Sediment Management for Sustainability of the Projects"**

Shri Sanjay Kumar Sibal, Member (D&R) attended the 8th meeting of Technical Sub-Committee under the chairmanship of Shri Kushvinder Vohra, Chairman, CWC to

discuss and finalize Draft Memorial Chapter 6 titled "Importance of Sediment Management for Sustainability of the Projects at CWC on 09.08.2023.

**Meeting on the Committee for carrying out an "Internal Review of the India-Bangladesh Treaty of 1996 on sharing of the Ganga/Ganges Waters at Farakka"**

Shri Sanjay Kumar Sibal, Member(D&R) chaired the Meeting regarding Committee for carrying out an "Internal Review of the India-Bangladesh Treaty of 1996 on sharing of the

Ganga/Ganges Waters at Farakka" at Conference Room, CWC on 22.08.2023. Various TOR of the committee were discussed in the meeting.

## Launch of 'FloodWatch' Mobile app

Shri Kushvinder Vohra, Chairman, CWC & Ex-officio Secretary to Govt. of India in the presence of media and flood disaster monitoring officials launched 'FloodWatch', a Mobile App for Flood Forecasting. The app aims to use the most common platform today i.e., mobile phones to disseminate information related to the flood situation and forecasts up to 7 days on a real-time basis.

"FloodWatch" utilizes advanced technologies such as satellite data analysis, mathematical modelling, and real-time monitoring to deliver accurate and timely flood forecasts. With this app, users can access essential information regarding flood situations in the country. The user-friendly interface will make it easy for anyone to stay informed and minimise risk during flood events.

The in-house developed user-friendly app has readable and audio broadcast and all the information is available in 2 languages, viz. English and Hindi. Key feature of the app includes real-time flood monitoring where users can check



up-to-date flood situations throughout the country. The app utilizes near real-time river flow data from various sources. The app also provides flood forecasts at the nearest location where users can check the flood advisory at the station nearest to them on the Home Page itself. The app can be downloaded for Android phones. It shall also be made available on IOS platform soon.

## Flood Situation in the country -August 2023

Regular Flood Forecasting Activity commenced on 01.05.2023 in Brahmaputra and Barak and Jhelum basins. During the period from 1st May to 31st August 2023, total 4876 (3791 level+1085 Inflow) flood forecasts were issued, and 4625 (3612 Level+1013 Inflow) forecasts were within permissible limit with a 94.85 percent accuracy. 71 nos. Red Bulletin (for Extreme flood situation) and 124 nos. Orange Bulletin (for severe flood situation) were issued in the month of August 2023 from Central Flood Control Room.

### Summary of Flood Situation during 01.05.2023 to 31.08.2023

#### Extreme Flood Situation

4 FF station observed Extreme Flood Situation.

S. No.	State	District	River	Station	Period	
					From	To
1	NCT Delhi	North Delhi	Yamuna	Delhi Railway Bridge	12/07/2023	15/07/2023
2	Uttar Pradesh	Budaun	Ganga	Kachlabridge	14/07/2023 16/07/2023 22/07/2023 29/07/2023 18/08/2023	15/07/2023 22/07/2023 01/08/2023 20/08/2023
3	Assam	Sivasagar	Dikhow	Sivasagar	17/07/2023 11/08/2023	17/07/2023 12/08/2023
4	Telangana	Kumurambheem	Wardha	Sirpur Town	24/07/2023 29/07/2023	24/07/2023 29/07/2023

38 flood monitoring station observed Extreme flood situation.

#### Severe Flood Situation

69 FF Stations observed Severe Flood Situation in Assam, Bihar, Uttar Pradesh, Andhra Pradesh, Telangana, West Bengal, Jharkhand, Odisha, Madhya Pradesh and Uttarakhand.

51 monitoring Stations observed Severe Flood Situation in Assam, Bihar, Uttar Pradesh, Kerala, Karnataka, Tripura, Uttarakhand, Jammu & Kashmir, Maharashtra,

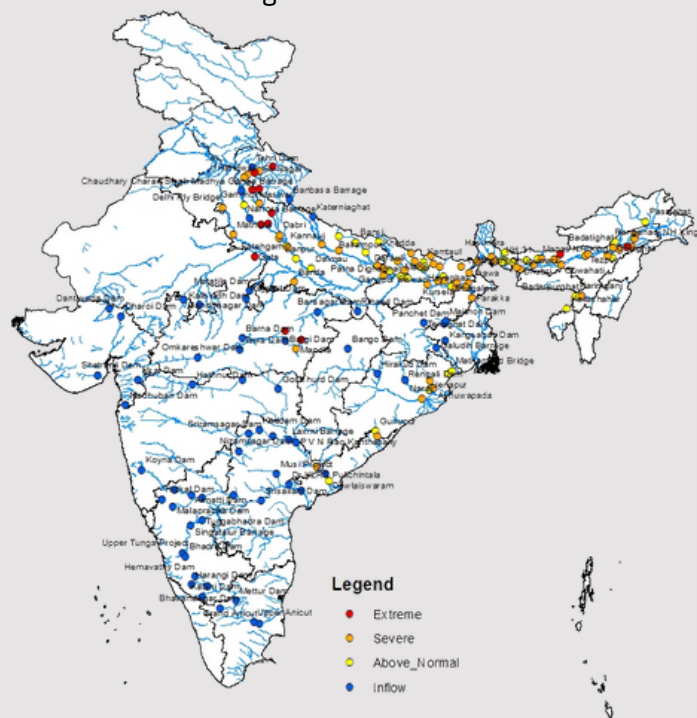
Madhya Pradesh, Telangana, Dadra & Nagar Haveli, Odisha & Jharkhand.

#### Above Normal Flood Situation

42 FF Stations in Arunachal Pradesh, Assam, Bihar, Jammu and Kashmir, Rajasthan, Uttar Pradesh, West Bengal, Himachal Pradesh, Haryana, Andhra Pradesh, Telangana, Kerala, Maharashtra, Tripura and Odisha observed Above Normal Flood Situation.

#### Reservoirs having Inflow above threshold limit

61 reservoir received inflows above their threshold limit in Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamilnadu, Telangana, Uttar Pradesh, Uttarakhand, West Bengal, Jharkhand and Chhattisgarh.



## Financial Progress of Schemes as on 31.08.2023

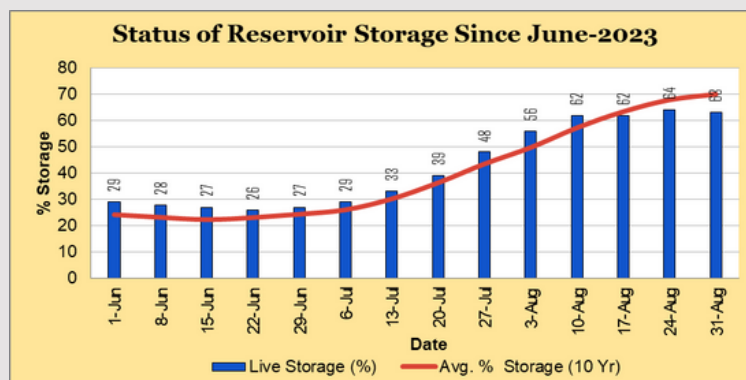
(Amount rounded-off in ₹ Crore & Specific to CWC's component)

Sl. No.	Scheme/Component Name	BE(2023-24)	Expenditure	Expenditure (in %)
1	Development of Water Resources information System (DWRIS)	162.130	43.9259	27.09%
2	Investigation of Water Resources Development Schemes (IWRD)	20.000	3.827	1.91%
3	Flood Management & Border Areas Programme (FMBAP)	20.310	3.321	16.35%
4	Direction & Administration (D&A)-Major Works and OE (SAP)	11.000	1.5376	13.98%
5	National Hydrology Project (NHP)	31.58		

## Reservoir Monitoring

Four more reservoirs, named below have been added in the month of August 2023 in CWC's Reservoir Storage Monitoring System (RSMS).

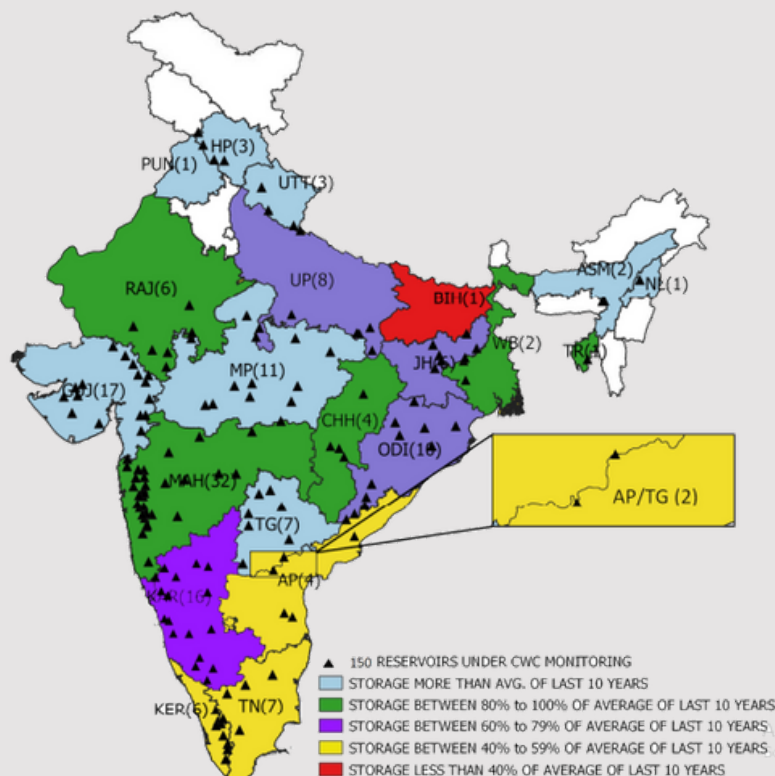
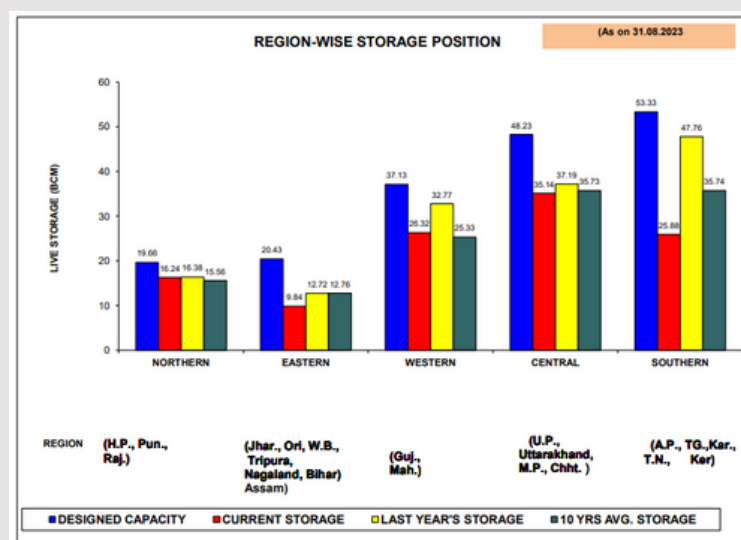
Name of Reservoir	State	Live Storage Capacity
Umrong	Assam	0.159 BCM
Khandong	Assam	0.180 BCM
Musi Project	Telangana	0.123 BCM
Kaddam (KNR)	Telangana	0.137 BCM
<b>Total=</b>		<b>0.599 BCM</b>



CWC is monitoring live storage status of 150 reservoirs of the country on weekly basis and is issuing weekly bulletin on every Thursday. Out of these reservoirs, 20 reservoirs are of hydro-electric projects having total live storage capacity of 35.299 BCM. The total live storage capacity of these 150 reservoirs is 178.784 BCM which is about 69.35% of the live storage capacity of 257.812 BCM which is estimated to have been created in the country.

reservoirs. However, last year the live storage available in these reservoirs for the corresponding period was 146.828 BCM and the average of last 10 years live storage was 125.117 BCM. Thus, the live storage available in 150 reservoirs as per 31.08.2023 Bulletin is 77% of the live storage of corresponding period of last year and 91% of storage of average of last ten years.

As per reservoir storage bulletin dated 31.08.2023, live storage available in these reservoirs is 113.417 BCM, which is 63% of total live storage capacity of these



# OUTREACH PROGRAM FOR PROMOTING DAM TOURISM UNDER AKAM



**Teesta-V, Sikkim organised by T&BDBO, CWC, Kolkata, National Dam Safety Authority in collaboration with NHPC**



**Bichom Dam, Kameng HPS, Arunachal Pradesh organised by BBO, CWC Guwahati, NDSA in collaboration with NEEPCO Ltd. Arunachal Pradesh**



**Srisailem Dam, Andhra Pradesh organized by KGBD, CWC, Hyderabad, NDSA, Southern Region in collaboration with Water Resource Department, Andhra Pradesh**



**Hirakud Dam, Odisha, organized by M&ERO, CWC, Bhubaneswar, NDSA in collaboration with Water Resource Department, Odisha.**



**Salaulim dam , Goa organized by MSO, CWC, Bangalore, NDSA in collaboration with Water Resource Department, Goa**



**Rihand Dam, Uttar Pradesh organised by LGBO, Patna, NDSA in collaboration with UPIVN, Uttar Pradesh**

## Independence Day



CWC HQ, New Delhi



CWC HQ, New Delhi



KGBO, Hyderabad



MTBO, Gandhinagar



NWA, Pune



UGBO, Lucknow



Shri Rakesh Kashyap, Chief Engineer, IBO, CWC, Chandigarh alongwith SE(C), IBO and team of CWC, Jammu visited the Survey and Investigation site of Drass Suru Link Project on 26.8.2023.



Member (RM), Central Water Commission inspected Karnal & Mawi Hydrological observation site under Yamuna Basin Organisation, New Delhi on 13.08.2023.

## History- Idikki Hydroelectric Project

KERALA has abundant natural wealth. The rivers, rainfall and the terrain contribute between them huge blocks of hydroelectric potential.

After the successful completion of Pallivasal, Sengulam, Poringalkuthu, Neriamangalam, Panniar, Sabangiri and Sholayar hydroelectric projects, the State Electricity Board has launched the giant Idikki Hydroelectric Project which will have an installed capacity of 780 MW.

The Idikki in the Periyar valley will be a major power project of the State as well as in the Southern Region of India. The potentialities of Idikki as a source of power were reported upon as early as 1932. But only in 1957 could the Central Water and Power Commission (now Central Water Commission) take up the investigation of the scheme. This project, located in the high ranges of the Western Ghats, built by the Kerala State Electricity Board in collaboration with the Central Water and Power Commission and the Canadian International Development Agency. The project is intended to regulate the flow of the Periyar and Cheruthoni rivers for power and irrigation purposes.

### Project Features

The Idikki envisages (a) a reservoir with a gross capacity of 2107 million cum by the construction of three high dams, one across the Periyar at Idikki gorge, the other across the Cheruthoni, and the third across the Kilivallythodu at Kulamavu, and (b) diversion of the impounded waters through a water conductor system consisting of a power tunnel and two underground pressure shafts and an underground power house, for generating 780 MW of electrical energy at about 30 percent load factor.

It was the largest project in Kerala located in the largest drainage basin in the State. The arch dam at Idikki was

the first of its kind and the second highest dam in India. It introduces the largest underground power station in India, though only the second of its kind. Again, the dam across the Cheruthoni was the largest of its kind in Kerala and the third highest in India.

### THREE DAMS

As stated above, the Idikki reservoir is created by three high dams, the 100 m Kulamavu masonry gravity dam, the 135.63 m Cheruthoni concrete gravity dam, and the 170.68 m high Idikki concrete arch dam. Of these, the Idikki arch dam requires special mention.

### Idikki Arch Dam

The Idikki site lies in an ideally narrow gorge of the Periyar river with very steep banks. The gorge opens out from 9.14 m at the bottom to 320.04 m at the top. Excellent charnockite rock without any visible faults makes the site suitable for a high arch dam.

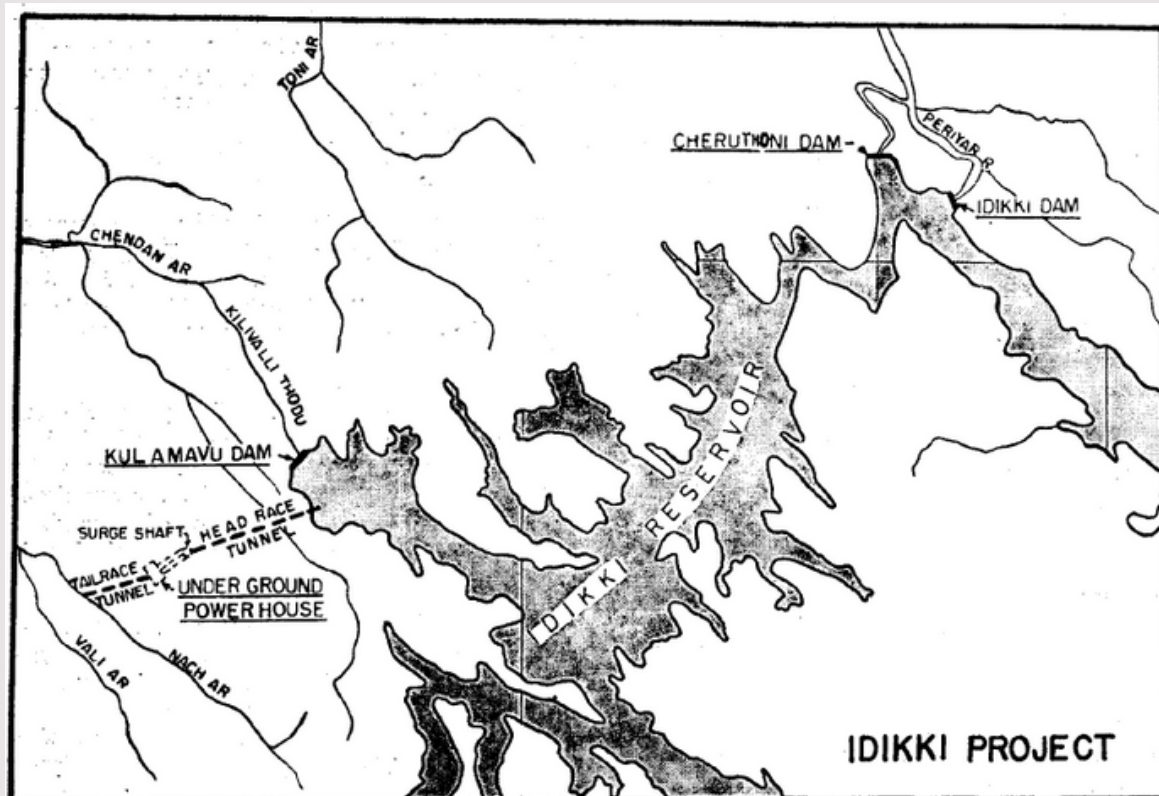
The Idikki dam has a unique shape. The horizontal sections of the dam are parabolic in shape with a symmetrical legs and varying thicknesses. The vertical sections are so shaped both on the upstream and downstream faces that the resulting membranes are of double curvature shape. The dam profile has been designed by 'trial load analysis'.

The final approved profile for the Idikki arch dam has a top width of 7.62 m and a base width of 19.81 m. This dam was ranked among the first ten high arch dams in the world. It was also one of the thinnest arch dams in the world.

Concreting of the Idikki arch dam commenced on 30 April 1969. It started generating power on 4 October 1975.

### Cheruthoni Dam

The dam across the Cheruthoni is of straight gravity



type in concrete, rising to a maximum height of 135.63 m above deepest foundation. It run for 650.75 m at the top, with a width of 9.14 m. At the deepest foundation, the width is 108.2 m. The total volume of concrete required about 1.7 million cum. The spillway for the Idikki reservoir located in this dam, with five vents of 12.19 m x 9.14 m each, controlled by five radial crest gates of 12.19 m x 9.75 m. Two large outlets in this dam discharge 849.5 cum per sec.

### Work Progress

The first bucket of concrete for the Cheruthoni dam was poured on 8 March 1969. It completed in 1976.

A high degree of quality control is proposed for the concrete of both Idikki and Cheruthoni dams. For this purpose, a well-equipped laboratory of international standards has been set up at Idikki.

### Kulamavu Dam

The third dam, at Kulamavu, is stone masonry, and of gravity type, 100 m high above deepest foundation. The Dam opened in February 1977.

### Reservoir

The reservoir formed by the three dams has its full reservoir level (F.R.L.) at 732.43 m above sea level. The waters spread over 59.83 sq km. The gross storage capacity of the reservoir is 2107 million cum, while the live storage is 1544.47 million cum.

### Power Plant

The underground power house at Idikki has been hewn out of rock. A cavern, 141.12 m x 19.81 m x 35.05 m, it has approached by a D-shaped tunnel, 599.23 m long. The switch-yard located above ground, and cables run from the power station to the switchyard through two cable tunnels which also act as ventilation tunnels. Six generating units of 130 MW each installed and powered by six hydraulic turbines of the Pelton type. Of these, three units imported from Canada and the other three was manufactured in India.

The tailwaters from the power station discharged into the Nachar, a tributary of the Muvattu-puzha River, through a tunnel and an open channel.

### Cost and Benefits

The estimated cost of the first stage of the project is Rs 68.21 crore.

The then Prime Minister Smt. Indira Gandhi dedicated the Canadian-aided Rs 110 crore Idikki Hydro Electric Project in Kerala to the Nation on 12 February 1976. The project, largest of its kind in the State, comprises three

dams in the Periyar valley for creating a common water storage, the Idikki Reservoir. The arch dam across the Periyar at Idikki gorge is the first of its kind and the second highest dam in India. The second is across the Cheruthoni, the largest and highest concrete gravity dam in the State, and the third across the Kilivallythodu at Kulamavu. The power station, the largest underground station in India, will add 780 MW of power to the State grid. On completion the project will also provide irrigation facilities to 60703 ha of land and moderate the heavy flood flows of river Periyar.

The project benefits the people of the Southern Region by its abundant power which is being utilised for industrial development as well as for raising agricultural production through lift irrigation. It is also permit navigation in the Muvattupuzha river between the Vembanad Lake and the Muvattupuzha, since there is a regular discharge of 41 cum per sec of water from the power station. The provision of a flood absorption capacity is of about 170 million cum in the Idikki Reservoir protect crops and life in the low-lying areas along the banks of the Periyar to a considerable extent. The silting in the Cochin harbour area also reduced considerably. Besides, the reservoir provides opportunity for development of fish culture.

### Foreign Aid

During 1964, the Government of Canada agreed to finance the project with a long term loan of \$19.8 million (Canadian) for the purchase of permanent plant equipment, \$ 7.8 million (Canadian) as a grant for the purchase of construction equipment and for engineering consultancy services.

IDIKKI HYDRO-ELECTRIC PROJECT			
(Features at a Glance)			
LOCATION : Dams across the Periyar, the Cheruthoni and the Kilivallythodu in the Kottayam district of Kerala.			
DAM:	Idikki	Cheruthoni	Kulamavu
Type	Concrete Arch	Concrete straight gravity	Masonry straight gravity
Length	365.76 m	650.24 m	384.96 m
Maximum Height	170.68 m	135.63m	100 m
RESERVOIR			
Gross Storage Capacity	2 107 million cum (74 400 million cu ft)		
Live Storage Capacity	1 544 .47 million cum (54 543 million cu ft)		
BENEFITS	I Stage		II Stage
	Three Units of 130 MW		Three Units of 130 MW

(Source: Bhagirath January 1970)



### 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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Water Systems Engineering Directorate  
Central Water Commission

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