

## FOREWORD



India has built 5334 large dams which includes dams like Bhakra, Tehri, and Sardar Sarovar and 411 dams are under construction. The Dam industry in India has contributed significantly towards meeting the water and power demand of the country, yet India is facing increasing pressure for additional water storage due to population growth, urbanization, change in use pattern and creeping effect of climate change.

To focus on the sustainable development of dams and river basins, INCOLD in collaboration with CWC, DRIP and NHP is organising Symposium on “Sustainable Development of Dams and River Basins” under the aegis of ICOLD at New Delhi as Hybrid event from 24th - 27th February 2021. The above symposium is being organised to provide an excellent opportunity to Indian Dam Engineering Professionals and Agencies to share their experiences, ideas and latest developments

in new materials and construction technologies, advancement in investigation techniques, best engineering practices, dam safety issues etc. Besides opportunity to networking with the world renowned dam experts from different countries and global organizations involved in Dam Construction, management and operation and maintenance for mutual benefits.

The Symposium would provide an interactive platform for eclectic brainstorming and sharing pathbreaking ideas & case studies in respect of the theme which will be addressed through oral presentations on the topics viz. Modern Technologies in Survey and Investigation for Sustainable Dam Development; Simulation Methodologies for Dam Analysis and Design; River Basin Development and Management including Optimization of Reservoirs Operation and Innovative Construction Methodology and Contracting Practices; Impacts of Climate Change – Sustainable Dams and Hydropower development including Pumped Storage and engineering challenges and safety of Tailing Dams and Advances in Dam Safety, Risk Assessment & Management and Rehabilitation of Dams to address vulnerable issues regarding Sustainable Management of Water Resources. I anticipate very enlightening deliberations on these facets. Concurrent with symposium, an exhibition on virtual platform is also being organized to showcase the latest products and services in the dam engineering field besides the seven workshops to focus on the different aspects of dam engineering.

The delegates have the chance to participate in the deliberations of the Symposium on “Sustainable Development of Dams and River Basins” and APG Symposium in “Water and Dams”, which will focus on important topics such as Dam Safety, River Basin Development, flood management and extreme events, Tailings Dams - Life Extension and Rehabilitation Strategies, sedimentation management, and reservoir seismicity. The expected outcomes of ICOLD Symposium in India will certainly be indispensable for the global dam community. In view of the many opportunities and challenges in our industry, I advise you to attend ICOLD Symposium, and to discuss the emerging professional topics of the Symposium and Workshop, which will be of a high quality.

More than 800 delegates representing international experts, policy and decision makers from Central and State Governments, officers of Irrigation and Water Resources Department, Agriculture, donor agencies, academician, consultants as well as NGO's are likely to participate in the event.

From 43 countries, 285 full text of technical papers received from dam professionals are incorporated in the Proceedings volume which would certainly add new dimensions to the body of knowledge on the subject. We are grateful to authors of the various papers for their efforts in preparation of abstracts, papers and their presentations. About 130 presentations will be made during the 27 technical sessions besides more than 30 presentations in the seven workshops are being organized on 27th February 2021 on virtual platform.

We are sure that the deliberations of the ICOLD Symposium would help the participants in better understanding of the various aspects of Sustainable Development of Dams and River Basins in the country.

In view of the many opportunities and challenges in our industry, I request you to attend ICOLD Symposium, to discuss the emerging professional topics of the Symposium and Workshops, which will be of a higher quality technical interest.

I am looking forward to welcoming and meeting the ICOLD and INCOLD family, old members as well as newcomers on Virtual Platform.



**A.K. Dinkar**  
*Secretary General*

Indian National Committee on Large Dams