ICOLD Symposium on
Sustainable Development of Dams and River Basins
&
APG Symposium on Water and Dams

24th - 27th February 2021, New Delhi

PROGRAMME

Supported by

Ministry of Jal Shakti

Department of Water Resources, River Development & Ganga Rejuvenation

Ministry of Power

Under the aegis of

CIGB ICOLD

Organised by

INCOLD

Asia Pacific Group (ICOLD)

in collaboration with

CWC

DRIP Dam Rehabilitation & Improvement Project

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HYDROPOWER & DAMS

PROGRAMME

Wednesday, 24th February, 2021 – Hybrid Event (on Physical and Virtual platform both)

09-00-10-00 hrs — **Registration**

10-00-11-00 hrs — **Inaugural Session**

- Inaugural Address Hon'ble Minister for Jal Shakti, Shri Gajendra Singh Shekhawat
- Presidential Address Hon'ble Minister of State for Power & Renewable Energy, Shri R. K. Singh
- Secretary- Ministry of Jal Shakti, Shri Pankaj Kumar, IAS
- Secretary- Ministry of Power, Shri Alok Kumar, IAS
- Chairman- Central Electricity Authority - Shri Prakash S Mhaske
- Chairman- Central Water Commission - Shri S.K. Haldar
- President- ICOLD - Michael Roger
- General - ICOLD - Michel de Vivo
- President - INCOLD – Chairman of the Organising Committee, Shri D.K. Sharma
- Chairman - Asia Pacific Group-Dr. Ali Noorzad, Vice President, ICOLD

11-00-11-30 hrs — **Tea/ Coffee break**

11-30-13-00 hrs — **Plenary Session**

Chairman - *Shri S.K. Haldar, Chairman, Central Water Commission*

Co-Chairman - *Ms. Debashree Mukherjee, Additional Secretary, Ministry of Jal Shakti*

- Sustainable Development of Dams and River Basin – Indian Scenario – *A.B. Pandya, Chairman Technical Committee and Secretary General, ICID*
- Innovative financing of dam projects – *Junaid Ahmad Kamal, Country Director, World Bank*
- Challenges in Dam Engineering – *Dr.Jia Jinsheng, Hon. President, ICOLD and Secretary General, CHINCOLD*
- Hydropower and dams as a catalyst for the energy transition in Europe - *Prof.Dr. Anton J. Schleiss, Hon. President, ICOLD*
- Climate Change Impact on Sustainable Development of Dams & River Basins – *Shri D.K. Sharma, Vice President, ICOLD and President, INCOLD and Chairman, HPERC*
- Overview of dam safety management in India - *Dr. R.K. Gupta, Vice President, INCOLD and Member (D&R), CWC*

13-00-14-00 hrs — **Lunch Break**

14-00-15-30 hrs — Special Session on Innovative financing of dam projects Moderated by World Bank

Topic	Presenter
Welcome & Introduction	Satoru Ueda, Lead Dam Specialist, World Bank
Opening and Overview of Financing the Life Cycle Costs Associated with Dams	Marcus J. Wishart, Lead Water Resources Management Specialist, World Bank)
Dam Financing in India	Rajeev Sharma, Former CMD, PFC
Case study of Rusumo Dam Project Financing Mechanism	Rusumo Project Authority, Africa
Dam financing model including cross subsidies	Europe
Financing Operation & Maintenance Cost of Dams	Australia
Dam safety/ Rehabilitation Funds (Incentive model linking to policies & protocol) including financing institution and capacity building	US
Discussion	Moderator: Ms. Soma Ghosh Moulik, Practice Manager, world Bank
Closing	ICOLD representative

15-30-16-00 hrs — **Tea/ Coffee break**

On Virtual Platform

	Hall 1	Hall 2	Hall 3
	TS 1A	**TS 2A**	**TS 3A**
16-00-17-30 hrs	**Modern Technologies in Survey and Investigation for Sustainable Dam Development** **Chairman & Keynote Speaker -** Modern Geophysical Investigations for New Dam Site Selection & Existing Dam Health Monitoring – *Dr. Sanjay Rana, MD, Parson Overseas* 1. Proposal for the inclusion of the dynamic monitoring in the scope of regular monitoring of Slovenian run-of-the-river dams - *Mateja Klun* 2. Japan's overview of the Follow-up System for Management of Dams and its achievements -*Yukako Mogami* 3. Subsurface Investigation of a Major Dam Founded in Karstic Terrain -*Veerraja Malyala* 4. Assessing reservoir capacity using advanced hydrographic survey techniques - *P.S. Kunjeer* 5. A few considerations on earthquake monitoring in dams - *Masayuki Kashiwayanagi* 6. Deciphering the shape of the valley Geological Investigations at Dam site of the Mangdechhu HE Project: *Vachaspati Pandey*	**Engineering Challenges and Safety Aspects of Tailing Dams** **Chairman & Keynote Speaker -** *Dr. Harvey Mc Lead* 1. Rockfill test fill to determine the parameters for construction control in El Llagal tailings dam. Comparison of dry density by water replacement and scanning survey methods - *Leonardo Moreno* 2. The View Inside Tailings Dams - *Breno Castilho* 3. Dam Safety handbook and application of technology - *Hrushikesh Sandhe* 4. *EMBREA-MUD a tool for the simulation of tailings dams breaching: M. Hassan, G. Petkovsek and C. Goff*	**APG 2020 Symposium - Design and Analysis Methods of Dams** **Chairman & Keynote Speaker -** *Dr. Ali Noorzad, Chairman APG* 1. Are Higher Seismic Safety Standards Required for Dams Forming Dam Cascades along Rivers? - *Dr. Martin Wieland* 2. Operation of the selective water intake facility of Sameura Dam, taking account of downstream water temperature and turbidity – *Morimasa Tsuda* 3. Backwater effect and compensation due to dam construction on Nam Ngiep 1 Hydropower Project in Lao PDR -*Takahisa Tabuchi* 4. Adopted Measures for Evaluation and Remediation of the Damages Occurred in Darbandikhan Dam due to a Major Earthquake - *Kawa Abdulrahman*

Thursday, 25th February, 2021

	TS 1B	TS 2B	TS 3B
09-30-11-00 hrs	**Advances in Dam Safety, Risk Assessment and Management** **Chairman & Keynote Speaker -** *Advances in dam safety, risk assessment and management for the seismic hazard Dr. Martin Wieland* 1. Changes to expect in seismic safety assessment of large storage dams in future - *Dr. Martin Wieland* 2. Documentation, records and reporting. Smart management of dam safety documentation and records - *Oscar Perez* 3. The Need for Dam Safety Management Program in Nepal -*Mohan Acharya* 4. A Practical Risk Management Approach for Impounding Karun 3 Dam Reservoir A Real-Life Case Study in Iran -*Dr. Saied Yousefi* 5. Overall Stability Analysis of Jinping I Arch Dam at Initial Water Storage Stage Considering the Left Abutment Slope Deformation Effect -*LijunXue* 6. Breach analysis of embankment dams using soft computing techniques - *Dr. Deepak Verma*	**Rehabilitation Technologies to Enhance Dam Safety -Innovations and Adaptations in Intakes, Spillways and Gates** **Chairman & Keynote Speaker -** *Masayuki Masuda* 1. Study of computational fluid dynamics analysis with design on the spillway of hydroelectric power plant - *Masayuki Masuda* 2. Hydraulic model studies for optimizing layout of power intakes in run-of-the-river projects - *Parag Patil* 3. Innovative research methodology in evolving design of spillways for Himalayan H. E. Projects -*Dr.PrajaktaGadge* 4. Future Challenges in Design of Spillways and Energy Dissipators- *Ravindra Bhate* 5. Rehabilitation Works for Isalnita Gated Dam -*DanStematiu* 6. An Introduction to Structural Condition Evaluation of Dam Appurtenant Structures - Radial Gates and Spillways - *Veerraja Malyala*	**River Basin Development and Management including Optimization of Reservoirs Operation** **Chairman & Keynote Speaker -** River Basin Development and Management including Optimization of Reservoirs Operation - *A.B. Pandya* 1. Forecasting Hydropower Generation Using Artificial Neural Networks and the Effect of Various Environmental Factors for the Optimal Operation of The Spillway Gate - *Kemoh Lumei* 2. One Percent Annual Chance Flood Risk-Solutions to Communication and Technical Challenges Involving Levees and Dams - *Douglas Bellomo* 3. Flood control measures in the Lower Rhine basin - *ChristophIngenhoff* 4. Optimising the Layout and Design of Cascade Hydropower Projects in Ravi Basin, Himachal Pradesh, India - *Dr. M R. Bhajantri* 5. Effective reservoir operation for flood control based on rainfall - runoff-inundation analysis considering extreme events in the Katsura River basin, Japan - *Maki Iwamoto* 6. Rehabilitation of Gaulwerk hydropower plant considering environment, sediment management and flood protection - *Christian Auel* 7. Analytical Study of Sediment Yield Characteristics of Tehri Catchment in Upper Himalayas *: Dhirendra Singh* 8. Efficient Management of Multipurpose And Multi-Stakeholder Water Projects - Damodar Basin Water Management System - A review on critical issues and performance *: Satyabrata Banerjee*
11-00-11-30 hrs.	**Tea/ Coffee break**		
	TS 1C	**TS 2C**	**TS 3C**
11-30-13-00 hrs	**Advances in Dam Safety, Risk Assessment and Management** **Chairman -** *Dr. Martin Wieland, Swaziland* 1. Dam breach analysis, case study of PhukotKarnali and KimathankaArun hydroelectric project in Nepal -*Anil K.C.* 2. Drawdown capacity for reservoir safety and emergency planning, development of guidance for UK reservoirs -*Andy Courtnadge* 3. Ensuring safety of hydraulic structures against ground vibrations generated during blasting operations - *Dr. Prakash Palei* 4. Seismic Safety of Dams in India - *Bal Rastoogi* 5. Development and implementation of Emergency Action Plan for Konar Dam - A Case Study - *Abhishek Shukla*	**Rehabilitation Technologies to Enhance Dam Safety - Innovations and Adaptations in Intakes, Spillways and Gates** **Chairman –** *Mr. Anupam Mishra, Director, WAPCOS* 1. Risk-based stability evaluation of the upper spillway middle pier Isimba HEPP Uganda - *Mukwanason Darren* 2. Innovative methodology to control seepage of Pathazhakkundu earthen dam in Kerala, India - *Santhosh Puthenpurayil* 3. Seepage control in masonry gravity dams through dam body grouting - A case study - *Vigneswaran Ramaraj* 4. Innovative remedial design of Barrel arch dam - *Veerraja Malyala* 5. Evolving Repair Methodologies for Spillways and Stilling Basins in Himalayan Region - *Ajay Mittal* 6. Development of plastic concrete for deep cut-off walls and study on QC testing - *Cemal Maslak*	**River Basin Development and Management including Optimization of Reservoirs Operation** **Chairman & Keynote Speaker** – *Gabriel Troncoso Boys, Ingeniería Proyectos Minería y Energía* Basin stakeholders involvement in risk management and planning a real challanges 1. Integrated approach on circular sediment management in reservoirs - A case study of Dakpathar Barrage in India - *Sanjay Giri* 2. Numerical model simulations for sedimentation in run-of-the-river projects - *Dr. Neena Isaac* 3. Sediment management in hydro-electric projects by operating reservoirs for desilting - *Harsha Choudhary* 4. Scenario analysis of reservoir operation - A case study of MuguKarnali storage hydroelectric project, Nepal - *Khem Regmi* 5. Cascading hydropower projects on Teesta River Basin - *V P. Gadhe* 6. Dam break accident and resulting sediment management at downstream dam in Laos -*Takahisa Tabuchi* 7. Sediment Yield and Depostion Pattern in Long Conical Tehri Reservoir : *Dhirendra Singh*

13-00-14-00 hrs	Lunch Break		
	TS 1D	**TS 2D**	**TS 3D**
14-00-15-30 hrs	**Advances in Dam Safety, Risk Assessment and Management** **Chairman and Keynote Speaker** – *Gulshan Raj, CE-DSO, CWC* 1. Rehabilitation of Hydro-Mechanical Components under DRIP - *Gulshan Raj* 2. Geodetic structural monitoring of concrete gravity dam – A case study - *K. Sudhakar* 3. Experimental Breach and Overtopping Study in Earth Dams by Physical Models - *Prof. Fardin Jafarzadeh* 4. Asset Management and Dam Safety - *Bob Leitch* 5. Landslide investigation near Bhakra dam- An integrated approach of remote Sensing and GIS - *Ms. Arpita Pankaj*	**Rehabilitation Technologies to Enhance Dam Safety - Cause of Damages and Structural Performance Evaluation of Dams** **Chairman** - *S.K. Sibal, Chief Engineer, CWC* 1. Numerical simulation of a stage constructed rockfill dam on plastic clay foundation -*Anil Jain* 2. Significance of stress-sensitivity analyses and monitoring of structural behavior of concrete double curvature arch dams using Finite Element Modeling for the safety evaluation of existing dams - *JIJI K* 3. Arching Phenomena and a Modification Method on the Recorded Earth Pressure Cell Data in Earth Dams - *Prof. Fardin Jafarzadeh* 4. The Toddbrook Reservoir spillway incident and emergency response - *Alan Warren* 5. Assessment of Concrete Properties of Bhakra Dam In India - *P.N. Ojha* 6. Evaluation of the permitted risk level for aged dams during monitoring, inspection, and expertise - *Mikhail Goncharov*	**River Basin Development and Management including Optimization of Reservoirs Operation** **Chairman** - *Joop Stoutjesdijk, Lead Water Resources Management Specialist, World Bank* 1. Flood Retentions Dam for Controlling Flash Floods in Oman - *Ronald Haselsteiner* 2. Dealing suspended sediment for optimal operation of hydro projects - *Manoj Verma* 3. Intervention in existing Spillway Gates by providing Flap Type Radial gate to tackle Floating trash -*Suveer Pandey* 4. Sustainable integrated river basin management of upper Wardha project, India - A case study -*Viraj Loliyana* 5. Introduction of Linear Programming for Optimal Management of River Basins in India – The Case Studies of Narmada and Damodar River Basins - *Nesallich* 6. Integrated Basin Development of Damodar Valley - DVC and Lower Damodar - *Siba Sen* 7. Evaluating methods for estimating evaporation in major reservoirs – Srisailam Project : *Irrigation and CAD, Govt of Telangana* : *Narasimha Rao* 8. Flood Management at Kamala Dam – *Arun Mehta*
15-30-16-00 hrs	Tea/ Coffee break		
	TS 1E	**TS 2E**	**TS 3E**
16-00-17-30 hrs	**Advances in Dam Safety, Risk Assessment and Management** **Chairman & Keynote Speaker:** *Biju D, CE, IDRB, Kerala* 1. Kerala floods risk assessment and need for flood control dams a perspective - *Biju D* 2. Implementation of tablets for periodical calibration of monitoring sensors and data reading -*Stefan Hoppe* 3. Dam break flood wave analysis from Ukai dam in Lower Tapi River, India - *P.V. Timbadiya* 4. Safety aspects of Rudbar Lorestan rockfill dam located in a narrow canyon on multiple seismic faults -*Hossein Roshanomid* 5. A review of site specific estimation of seismic design parameters -*Dr. Suman Sinha*	**Rehabilitation Technologies to Enhance Dam Safety** **Chairman & Keynote Speaker** : *Marcus J. Wishart, Lead Water Resources Management Specialist, World Bank* 1. Seepage control in Masonry Dams with Modern Technology using Innovative Techniques and Execution Methodologies Case Study - The Bhavanisagar dam, Tamil Nadu, India - *Suresh Balaji Rangarajan* 2. Maneri Dam - Repair of Spillway and its Energy dissipater severely damaged by rolling boulders during floods Case study - *Vinod Verma* 3. Appraisal of Spillway Capacity and Storage Augmentation for Dam Safety using Piano Key Weir and Fuse Plug for Climate Change Effects - *Gopal Singhal, Dr. Nayan Sharma* 4. Restoration and Rehabilitation of Spillway with Modified Energy Dissipator - A Case Study - *Amit Kulhare* 5. Mosul Dam A Multinational Dam Foundation Rehabilitation Effort - *Veerraja Malyala*	**Young Engineers Presentations** Overview of Young Professionals activities - by President YM Presentation by Indian Young Members Representatives • Welcome Remarks • YEF General Information - Elias Baptista, Chair ICOLD-YEF • Keynote Presentation – Role of YEF for development of water security : Elias Baptista, Chair ICOLD-YEF • Address by Mr. Michel de vivo, Secretary General, ICOLD • Address by Mr. Devendra Kumar Sharma, Vice President, ICOLD and President, INCOLD Address by Mr. Michel Rogers, President ICOLD • **Open House Session** : Small Group Discussions and Discussion Recap • Closing Remarks • Vote of thanks
Friday, 26th February, 2021			
	TS 1F	**TS 2F**	**TS 3F**
09-30-11-00 hrs	**Advances in Dam Safety, Risk Assessment and Management** **Chairman & Keynote Speaker:** *Prof. Ignacio Escuder - Bueno* 1. What India can do for the world on dam safety risk governance - *Prof. Ignacio Escuder - Bueno* 2. Seismic hazard assessment of Palghar district - A structural perspective - *Dr. G.D. Naidu*	**Rehabilitation Technologies to Enhance Dam Safety - Underwater Inspection, Robotics and Repair Methodologies for Dams** **Chairman & Keynote Speaker :** *George Dabre* 1. Underwater diagnosis in repair and rehabilitation of dams - *Sasikala P* 2. Unmanned maintenance work with underwater Remotely Operated Vehicle for discharge facilities of dams - *Sota Uchida*	**Impacts of Climate Change - Sustainable Dams and Hydropower Development including Pumped Storage** **Chairman & Keynote Speaker** : *Devendra Kumar Sharma, Chairman, HPERC* 1. Climate Change Impact on Sustainable Development of Dams & River Basins - *Tarun Agarwal* 2. Hydropower Development on Glacial Lakes - *Charles Donnelly*

	3. Establishment and implementation of the emergency action plan on the Nam Ngiep 1 Hydropower Project in Laos -*Takahisa Tabuchi* 4. Dam Safety situation in Finland - *EijaIsomaki* 5. Challenges Associated with Implementation of Federal Energy Regulatory Commission Risk Informed Decision Making Process - *Dean Durkee* 6. Risk Assessment in dam safety -the past, the present and the future - *Przemyslaw*	3. A Preliminary Analysis of Underwater Maintenance Technology to the Water Cushion Pool of Xiluodu Hydropower Station -*Tian Jingjie* 4. Inspection of Dam Infrastructures using ROVs - An Innovative Approach - *Kannappa P* 5. Underwater repair of dams with flexible geomembranes - Recent Cases - *Mr. Alberto M Scuero*	3. New engineering challenges through European environmental laws on the example of a flood protection basin in Germany - *Daniel Kerres* 4. Role of Flood Control Dams in Managing Extreme Climatic Events - *Joshy A* 5. Climate change adaptation : A golden opportunity for defining new vision and missions for dam and hydropower development in Iran *: Dr. Saied yousefi*
11-00-11-30 hrs.	**Tea/ Coffee break**		
	TS 1G	**TS 2G**	**TS 3G**
11-30-13-00 hrs	**Advances in Dam Safety, Risk Assessment and Management** **Chairman :** *R.K. Vishnoi, Director (Tech.), THDC Ltd.* 1. Studies on mass concrete design mix towards temperature control in gravity dam, A case study - *Sunil Pillai* 2. Sonic wave Velocity Measurement for Evaluation of In-situ Quality of Dam -*Vijay Ghodake* 3. Risk Management for Dam Rehabilitation Projects - *Daniel Johnson* 4. Optimization in design of energy dissipation arrangement for overflow, orifice and tunnel spillway using hydraulic modelling – *Dr. M.R Bhajantri* 5. Monitoring and instrumentation strategies for new and existing dams - *Dr. Georgios Ntounias*	**Rehabilitation Technologies to Enhance Dam Safety - Modernization, Optimization and Rehabilitation of Aging Dams** **Chairman :** *S.P. Bansal, Director-Civil, SJVNL* 1. Deployment of a fibre optic leaks and seepages detection system below a waterproofing geomembrane on Upper Bhavani Dam - *Cyril Guidoux* 2. Application of a granular filter for the rehabilitation of the primary flood defense at Gameren- *Andre Koelewijn* 3. Mosul Dam Conclusions Post 3 Years Emergency Drilling and Grouting - *Dr. Georgette Hlepas* 4. Hydraulic model studies for additional spillway of Hirakud dam, Odisha - *Ms. Sangeeta Patnaik* 5. Innovative seepage and spillway remedial designs of a puddle clay core dam - *Ed Toms* 6. The Rehabilitation of Levees with Large Trees by Equivalent Statical Systems - *Ronald Haselsteiner* 7. Pragmatic approach for concrete dam rehabilitation projects – *Mr. Richard Guimond*	**Simulation Methodologies for Dam Analysis and Design** **Chairman & Keynote Speaker :** *Ms. Neeta Arora, Director, SMEC* 1. A finite element framework for the seismic analysis of concrete gravity dams considering fluid-structure-soil interaction - *Damodar Maity* 2. Road map for advanced analysis of concrete dams - *Boris Jeremic* 3. Unsteady Seepage Flow Through Levees within The Lower Rhine Region - *Ronald Haselsteiner* 4. Aspects of 3D Seepage Analysis of Dams and Levees / Case Studies - *Burcu Ersoy* 5. Dynamic analysis, design dependency and the sustainable use of industrial raw materials for embankment dams - *Dr. Mathias Smesnik*
13-00-14-00 hrs	**Lunch Break**		
	TS 1H	**TS 2H**	**TS 3H**
14-00-15-30 hrs	**Special Session on Use of Geosynthetic Material for Dam Repair and Rehabilitation** **Chairman & Keynote Speaker -** Application of Geosynthetics in Restoration of Dam Components subjected to Dynamic Loads; Case Studies of India **–** *Vivek Kapadia, Director-Civil, Sardar Sarovar Narmada Nigam Ltd.* 1. Embankment Dam Rehabilitation and Repair incorporating Geosynthetic Materials - *Mr. Kelvin Legge, Department of Water Affairs and Forestory, South Africa* 2. Use of Geosynthetic Material for Dam Repair and Rehabilitation- *Mr. Alberto M. Scuero, Managing Director, CARPI Group, Switzerland* 3. Fabric Formed Concrete Revetments for Large Dam Infrastructure - *Mr. Markus Wilke, Business Development Manager-Hydraulics & Dewatering, HUESKER Synthetic GmbH, Germany*	**Modernization, Optimization and Rehabilitation of Aging Dams** **Chairman -** *Kushvinder Vohra, Member (WPrP), CWC* 1. Storm Analysis And Quasi Distributed Hydrologigal Modelling for Design Flood Review of Ukai Dam, Gujrat - *Nitya Nand Rai* 2. Heightening of Dhanikari dam- hydraulic design of spillway and energy dissipator- *V.S. Ramarao* **3**. Long term structural performance monitoring of gravity dams through analysis and interpretation of instrumentation data - A Case Study - *Hanumanthappa S.* 4. An extraordinary event at the Mariborskiotok Dam - *Dr. Pavel Zvanut* 5. Performance of Dam and Foundation System - Case study of Concrete Gravity Dam of Shrinagar Hydroelectric Project, India - *Rakesh Khali* 6. Safety Inspection of Dams in India - *Rajeev Singhal* 7. Early prediction of RCC Dam body permeability during construction case study dyraaba dam srilanka - *Seyyed Roozbeh Daregholi*	**Simulation Methodologies for Dam Analysis and Design** **Chairman -** *Y.K. Chaubey, Director-Tech., NHPC Ltd.* 1. Computational Fluid Dynamics Simulation Methodologies for Designing Stilling Basins - *Pankaj Lawande* 2. Numerical simulation of air entraining characteristics over high head chute spillway aerator - *Ms. Prajakta Gadge* 3. Unique design of concrete gravity high dam on permeable foundations - Application of numerical simulation tool - *Girish Deexit* 4. On the required thickness of grout curtains under dams - *Suihan Zhang* 5. Numerical Design Analysis of Foundation for an RCC Dam on Deep Himalayan Alluviums -*WesleySaleira* 6. Inter-basin Approach based on System Dynamics Simulation for Five Dams - *Dr. Agus Rudyanto* 7. Review Dam-Blocking Tunnel Buffer System Of Bener Dam, Purworejo, Jawa Tenga : *Muhammad Satya Danuartha*

15-30-16-00 hrs	**Tea/ Coffee break**		
	TS 1I	**TS 2I**	**TS 3I**
16-00-17-00 hrs	**Innovative Construction Methodology and Contracting Practices** **Chairman & Keynote Speaker –** *Mr. Anupam Mishra, Director, Commercial, WAPCOS Ltd.* 1. Mid-course corrections in significant project parameters due to extreme event of flashflood in Vishnugad Pipalkoti Hydro Electric Project 444MW, Uttarakhand, India : *Rajeev Vishnoi* 2. Slope stability of hillock near Banda branch canal using GTX Software- a case study - *Sanjay Burele* 3. The introduction effect of 3D information models in Koishiwaragawa Dam Construction Project - *Tomoya Miyazaki* 4. Ranganadi Dam - A success story of fool proof planning and speedy construction - *Rakesh Khali* 5. Sensitive analysis for assessment of criticality of Abutment slopes through Numerical modeling - A case study of Koteshwar HEP, Uttarakhand, India: *Rajeev Vishnoi* 6. An innovative approach for construction of large adit through River Borne Material at Vishnugad Pipalkoti Hydro Electric Project 444MW, Uttarakhand, India : *Dhirendra Singh*	**Rehabilitation Technologies to Enhance Dam Safety - Dam Surveillance and Monitoring** **Chairman -** *Sanjay Srivastava, Chairman, BBMB* 1. Applying early concrete compressive strength prediction in infrastructures construction - *Seyyed Roozbeh Daregholi* 2. Long-term monitoring of sub-surface changes in earth embankment dams - *Prof. Jonathan Chambers* 3. DHARMA - Development of Software for the Effective Management of Dam Asset and Health Data - *Yogesh Nanasaheb Bhise* 4. Improving Dam Surveillance and monitoring in countries with non-existent legal and regulatory dam safety frameworks Case of Isimba Hydrpower Plant in Uganda - *Rwakafunjo Godfrey* 5. Case History and Lessons Learned Early Warning System Mosul Dam Iraq - *James Hummert* 6. Cahora Bassa Dam Spillway Rehabilitation Emergency Stoplog Operation and Regulating Gates Instrumentation - *Jose de Melo*	**Sponsor's Presentation** **Chairman -** *Atul Kapole, CE, WRD, Govt. of Maharashtra*
17-00-18-00 hrs	**Valedictory Session** **Chief Guest :** Mr. S.K. Haldar, Chairman, CWC *Address* : Mr. D.K. Sharma, Vice President, ICOLD and President, INCOLD and Chairman, HPERC *Overview of the Symposium* : Mr. A.B. Pandya, Chairman of the Technical Committee *Address* : Dr. R.K. Gupta, Vice President, INCOLD and Member – D&R, CWC *Address* : Mr. A.K. Singh, CMD, NHPC Limited *Address* : Mr. R.K. Vishnoi, Vice President, INCOLD and Director – Technical, THDC India Ltd. *Vote of Thanks* : Mr. A.K. Dinkar, Secretary General, INCOLD and Secretary, CBIP		

Saturday, 27th February, 2021							
	WS 1	**WS 2**	**WS 3**	**WS 4**	**WS 5**	**WS 6**	**WS 7**
10:00–13:00 hrs	**Workshop on Roller Compacted Concrete Dams** Presentation by ICOLD Experts- 1. Welcome & Introduction - *Marco Conrad* 2. World Trends in RCC Dams- *Malcolm Dunstan* 3. Bulletin Introduction & Design of RCC Dams - *Dr. Quentin Shaw* 4. Materials & Selection of RCC Mixture Proportions - *Francisco Ortega* 5. RCC Dam Construction - *Rafael Ibanez de Aldecoa* **Break : 30 minutes** 6. Quality Control - *Marco Conrad* 7. RCC Dam Performance -*Timothy Dolen* 8. Other Uses for RCC in Dam Construction - *Michael Rogers* 9. RCC Arch Dams - *Quentin Shaw* **Discussions & Closing**	**Workshop on Reservoir Operation for Handling of Extreme Events** 1. Application of optimization techniques for short term and long term reservoir operations with RTC-Tools Continued……short hands-on training unit of three hour 2. Optimal operation technology, decision-making systems, optimal scheduling platforms, new technology applications in related fields, etc. - *Dr. Kees Bons* 3. Overview of Impact of climate change on Bhakra Reservoir operation – A Case Study - *D.K. Sharma* 4. Optimal Operation of Cascade Hydropower Stations and Reservoirs - *Quebbeman Jonathan* 5. Importance of dam operation for downstream river health – *Vivek Kapadia* 6. Tehri Dam A savior from climate change led extreme events - *Atul Singh* 7. Analysis of Artificial Lake formed on river Phutkal, J&K and Management of Outburst Flood at Nimmo-Bazgo Dam - *Balraj Joshi, Keshav Deshmukh, Rajeev Baboota, Bharti Gupta*	**Workshop on Sediment Management in Reservoirs for Sustainable Development** 1. Overview of the Importance of Sediment Management for Ensuring the Sustainability of reservoir and run-of- River Projects - *Martin J Teal* 2. Sediment management in cascade reservoirs after introducing upstream sediment bypass schemes or sediment sluicing operations - *Prof.Tetsuya Sumi* 3. World Bank's global study in sediment management for storage and Run-of-the-River projects - *Dr Nikolaos Efthymiou* 4. International Reservoir Sedimentation Management Practices and Experiences - *Hans G. Enggrob* 5. Sedimentation management utilizing sluicing operation at the Setoishidam -*Hirofumi Okumura* 6. Bedload transport and abrasion monitoring at the Koshibu Dam sediment bypass tunnel and proposing countermeasures against the abrasion problem -*Takahiro Koshiba*	**Workshop on Tailing Dam Safety - Half day workshop** 1. Introduction to ICOLD Technical Bulletin of Tailings Dam Safety (Include introduction of presenters) - *Harvey McLeod* 2. TSF Governance - engaging an Engineer of Record (Brief overview of chapter but focus on EOR) - *Andy Small* QUESTIONS 3. TSF Closure - The importance of Starting with a Closure Plan -*Annika Bjelkevik* 4. Understanding dam failure Consequence Categories - What, Why and How (overview and discussion of purpose. Description of dam breach methods for TSFs) - *David Brett* QUESTIONS **Break : 30 minutes** 5. Slope Stability Assessment for Tailings Dams (discussion of FOS, liquefaction, etc) - *Jiri/Paul/Imran* QUESTIONS 6. Hydro-technical design (Flood design, environmental design) - *David Brett* QUESTIONS 7. Training Initiatives for Tailings - *Harvey McLeod*	**Workshop on Numerical Analysis of Dams** 1. Current challenges for seismic numerical modelling of dams - *Dr. Ignacio Escuder* 2. Design of Optimum Remedial Measures and Its Effect on Seepage and Stability Aspects of an Earth Dam - *Jaee Edlabadkar* 3. A multidisciplinary approach for the understanding of unusual behavior of Bhakra dam a case study - *Bikram Kesharee Patra* 4. Summary Results of 2019 ICOLD Benchmark Workshop on Seismic Analysis of Pine Flat Dam : *Jerzy Salamon* 5. Overloading performance of typical block in the left bank abutment of Baihetan arch dam in China : *Daoping* 6. Response Behavior of Reinforced Concrete Piles- In Rock-Rock System having shear zone - *Amit Gautam*	**Workshop on Seismic Analysis for Dam Design and Safety Evaluation of Existing Dams** 1. Seismic safety evaluation of existing dams - *Dr. Martin Wieland* 2. Determination of ground motion parameters for large dams - Himalayan experience - *Dr. Ishwer Datt Gupta* 3. Numerical analysis of RCC dam in the high seismic zones of Higher Himalayas - *Ravi Sharma Bhandari* 4. Seismic fragility analysis of a concrete gravity dam-acase study - *Bikram K Patra* 5. 3D stress analysis of ageing dam by finite element method towards strengthening – A Case Study -*Rizwan Ali*	**Workshop on Life Extension Technologies and Strategies for Aging Dams** **Chairman** : *Prof. Ignacio Escuder - Bueno* **Keynote** : *Pramod Narayan* 1. Dam Safety Rehabilitation – Indian Experience and Lesson Learnt – *Pramod Narayan* 2. Noise Interpretation as a Diagnosis Tool for Gate Deficiencies : *Dinkar Mahajan* 3. Indian Experience in Flexible Geomembrane for Watertightness of Ageing Dams : *Jagadeesan Subramanian* 4. Upgrading of Pikes Creek Dam Spillway with the Fusegate System : *Hasan Kocahan* 5. EMBREA Web a Tool for the Simulation of Breach through Dams and Embankments – *Mohamed Hassan, HR Wallingford, UK* 6. Mosul Dam – Data Management – *Veerraja Malyala, Technical Leader, AECOM, USA* 7. Documentation, Records and reporting, Smart management of dam safety documentation and records – *Oscar Perez, Msc. Civil Engineer, OFITECO, Spain*
13-00-13-30 hrs	**Lunch Break**						
13-30-16-00 hrs	1. The Progress of Roller Compacted Concrete Technology in China - *Zhang Guoxin (Vice Secretary General of CHINCOLD)* 2. Numerical Analysis of RCC Dam In The High Seismic Zones of Higher Himalayas – *Mohan Acharya* 3. Construction of Roller Compacted Concrete Gravity Dam- A case study at Teesta Low Dam Stage-IV Dam - *Sudhir Yadav and B.K. Chaudhary* *4.* Effectiveness of Roller Compacted Concrete adoption in place of Conventional Vibrated Concrete in an envisaged dam *: Seema Pandey*		7. Sustainable Reservoir Management Through Sediment Flushing: A Case Study of Betan Karnali Hydroelectric Project Nepal - *Dhiraj Acharya* 8. Analysis on sediment transport processes around estuary and coastal shoreline area in the Sagami River Basin to promote reservoir sedimentation countermeasures and integrated sediment management - *Makoto Hyodo* 9. A case study on sedimentation and sustainable plans and approaches for Nizamsagar and Sriramsagar reservoirs : *Narasimha Rao* 10. Sediment management practices in NHPC Power Stations *: Manjusha Mishra* 11. Addressing sediment - induced problems under the Dam Rehabilitation and Improvement Project in India *: Sanjay Giri* 12. Sedimentation of Reservoirs In India - *Anuj Kanwal*		Continued		