



**88<sup>th</sup> Annual Meeting**  
**INTERNATIONAL COMMISSION ON LARGE DAMS**  
**&**  
**Symposium on**  
**SUSTAINABLE DEVELOPMENT OF DAMS AND RIVER BASINS**  
**APRIL 4-10, 2020 - NEW DELHI, INDIA**

**Second Bulletin**

Organised by



Hosted by



Supported by

**Ministry of Jal Shakti**

**Department of Water Resources, River Development & Ganga Rejuvenation**

**Ministry of Power**

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## THE HOST

INCOLD is proud to host the 88<sup>th</sup> Annual Meeting of the International Commission on Large Dams in India's National Capital Region of New Delhi. INCOLD has a long tradition of collaboration with other National Committees of ICOLD and participation in the development of large Dams as well as leading in providing guidance for engineers and other professionals.

All the dam professionals contribute their expertise in developing large dams for irrigation and other multipurpose uses such as power generation with eco-friendly measures. India is 3<sup>rd</sup> in terms of number of large dams in the world after USA and China. In terms of irrigation, India ranks 2<sup>nd</sup> worldwide. The irrigated area in India is the largest, covering – 160 million ha of cultivated land out of which 39 million ha irrigated by ground water and 22 million ha by canals. About two third of cultivation in India is still dependent on monsoon. India is the 7<sup>th</sup> largest producer of hydroelectric power in the world. As on 31.03.2019, India's installed utility-scale hydroelectric capacity is 45,399 MW which is 13.10% of its total generation capacity.

India's state-of-art technology being illustrated by constructing large dams like Bhakra, Tehri, Sardar Sarovar and many more mega projects. The participation in ICOLD 2020 shall encourage the Indian experts as well as global experts from Dam industry to share their experiences among dam community. This event will provide an excellent opportunity to know recent trends in Dam engineering.

## VENUE

The event will take place in the India Expo Centre, most suitable Venue for ICOLD 2020 Event. The venue is located in the National Capital Region of New Delhi i.e., Greater Noida. The Expo Centre is within easy access from the metro station and shopping malls. The India Expo Centre is at a distance of 45 minutes drive from the Indira Gandhi International Airport, Delhi



This state-of-the-art, multi-functional venue with a rare combination of technology merged with world-class facilities and safety standards is suitable for hosting international business-to-business exhibitions, conferences, congresses, product launches, promotional events and most predominantly act as a centralized contact point for overseas buyers and the cottage based manufacturer exporters for conducting business.

## FOR INFORMATION, PLEASE CONTACT

### ICOLD 2020 Annual Meeting/Symposium Secretariat

Indian Committee on Large Dams (INCOLD)  
Plot No. 4, Institutional Area, CBIP Building  
Malcha Marg, Chanakyapuri, New Delhi, India-110 021  
Ph. 91-11-26115984 / 26116567, Fax : 91-11-26116347  
E-mail : [abstracts-papers@icold2020.org](mailto:abstracts-papers@icold2020.org)

### SPONSORS AND EXHIBITION MANAGEMENT

#### Sunil Sharma

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**Please visit our website** for up-to-date information including registration, sponsorship, exhibition hall layout and submission of abstracts  
**[www. ICOLD2020.org](http://www.ICOLD2020.org) E-mail : [abstracts-papers@icold2020.org](mailto:abstracts-papers@icold2020.org); [sunil@cbip.org](mailto:sunil@cbip.org)**



## INVITATION FROM THE INCOLD PRESIDENT AND CHAIRMAN OF THE ORGANISING COMMITTEE



Dear ICOLD Members, Colleagues, Ladies and Gentleman,

Greetings from the Indian National Committee on Large Dams (INCOLD).

On behalf of the Indian National Committee on Large Dams (INCOLD), it is an honour for me to cordially invite you and your accompanying person to attend the 88th Annual Meeting of the International Commission on Large Dams and Symposium on Sustainable Development of Dams and River Basins being held in New Delhi from 4-10 April, 2020. I would also like to invite all the Departmental Heads and professionals dealing with Dams in India to this event.

India has built 5264 dams which includes Bhakra, Tehri, Sardar Sarovar and many more mega projects and 437 dams are under construction. The Dam industry in India has contributed significantly towards meeting the growing water and power demand of the country, yet India is facing increasing pressure on water resources due to population growth, urbanization and creeping effect of climate change.

The 88th ICOLD Annual Meeting and Symposium will provide an excellent platform for researchers, scientists, engineers, policy makers and young professionals working in the field of energy and water resources management around the world. This meeting will definitely act as confluence of brilliant minds and provide an interactive platform to share path breaking ideas on the theme 'Sustainable Development of Dams and River Basins' besides Special Workshops including the workshops of the ICOLD Technical Committees.

The Indian National Committee on Large Dam (INCOLD) has prepared an excellent program in an exciting venue for the 88th Annual Meeting of ICOLD and Symposium. In view of our challenges to further develop dams and reservoirs worldwide and combating the effects of climate change, I invite you to the 88th Annual Meeting and Symposium to discuss and deliberate on emerging professional issues along with meeting the ICOLD family. Special programs have been planned for the accompanying persons. Delegates would enjoy social evening program. Besides visiting excellent technological examples of dams and hydropower projects, the delegates will also have opportunity to discover beautiful and impressive tourist sites in New Delhi and other parts of India get a taste of rich cultural heritage of the country during different tours being organized for the foreign guests to explore India.

I am looking forward to welcoming and meeting the ICOLD family, old members as well as newcomers in New Delhi.

Warm Regards

A handwritten signature in blue ink, appearing to read 'Devendra Kumar Sharma'.

**Devendra Kumar Sharma**

*President*

Indian National Committee on Large Dams

and

*Vice President*

International Commission of Large Dams (ICOLD)



## INVITATION FROM ICOLD PRESIDENT



Dear ICOLD Members, Colleagues, Ladies and Gentlemen,

On behalf of the Directors and Central Office of International Commission of Large Dams (ICOLD), it is an honor for me to invite our 100 National Committees to send delegates and their accompanying persons to the 88<sup>th</sup> Annual Meeting of ICOLD. The meeting will be held from the 4<sup>th</sup> to 10<sup>th</sup> April 2020 in New Delhi, the modern and vibrant capital city of India.

The ICOLD, National Committee of India, has prepared an excellent program in an exciting location. India is a strong and important long-standing member of ICOLD. In a country with 5264 dams and 437 dams under construction, India is a top leader in the world in the development of critical water infrastructure, including important mega-projects such as Bhakhra and Tehri Dam projects and the World Bank supported Dam Rehabilitation Improvement Project. With the support of INCOLD, these modern water infrastructure projects have significantly contributed to the sustainable growth of the agriculture, water supply and power sectors in India to meet the increasing requirements of a strong nation.

I am looking forward to an exciting and memorable ICOLD 2020 Annual Meeting based on the successful past meetings organized by INCOLD, including Congresses in 1951 & 1979 and Annual Meeting in 1998. For ICOLD 2020, the ICOLD technical committees will have the opportunity to organize meetings and workshops to deliberate on recent advances and challenges being faced by dam industry. The delegates of 88<sup>th</sup> Annual Meeting will also have the chance to participate in the Symposium on “Sustainable Development of Dams and River Basins”, 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 88<sup>th</sup> Annual Meeting and Symposium in India will certainly be indispensable for the global dam community.

In view of the many opportunities and challenges in our industry, I encourage you to come to the ICOLD 88<sup>th</sup> Annual Meeting in India, not only to discuss the emerging professional topics, but also to see friends in our ICOLD family. I am confident that INCOLD will arrange a high-quality technical content for the meeting along with attractive social and accompanying persons programme.

I'm looking forward to welcoming the ICOLD Family – old friends as well as new-comers in April 2020 in New Delhi, India.

Warmest regards,

A handwritten signature in black ink, appearing to read 'M. Rogers', written in a cursive style.

**MICHAEL F. ROGERS**

President of International Commission on Large Dams (ICOLD/CIGB)

The International Commission on Large Dams (ICOLD) is a non-governmental international organization which provides a forum for exchange of knowledge and experience in dam engineering. ICOLD is a leader in setting standards and guidelines to ensure that dams are built and operated safely, efficiently and economically, and are environmentally sustainable and socially equitable. Every year, ICOLD holds an Annual Meeting and Symposium in a selected country. ICOLD membership consists of the National Committees of more than 101 countries. The Indian National Committee on Large Dams (INCOLD) is the National Committee representing India. Technical Committees of ICOLD are the heart of the organization. Membership on each Committee is determined by the needs of the Committee and the countries that choose to be represented. An important part of the annual ICOLD event is the opportunity for all delegates to observe the meetings and workshops of the Technical Committees and interact with experts from other countries.



## ICOLD INFORMATION

The International Commission of Large Dams (ICOLD) is a international organization that provides a forum for exchange of knowledge and experience in dam engineering, construction and operation at the international level, ICOLD leads the profession in ensuring that dams are built safely, efficiently and without detrimental effects for the environment, ICOLD was founded in 1928 with HQ at Paris and includes 101 National Committees.

### President

Mr. M. ROGERS, ICOLD, USA (2018 - 2021)

### Secretary General

Mr. M. DE VIVO, France (2006 - Cont.)

### Vice Presidents

Mr. A. NOORZAD, Iran (2018-2021)

Mr. J.P. TOUNIER, America, Canada (2017-2020)

Mr. M. ABEBE, Africa, Ethiopia (2018-2021)

Mr. G. ZENZ, Europe, Austria (2017-2020)

Mr. Devendra Kumar Sharma, India (2019-2022)

Dr. Enrique Cifres, Spain (2019-2022)

## ICOLD TECHNICAL COMMITTEES

A Computational Aspects of Analysis and Design of Dams	J Sedimentation of Reservoirs	Q Dams Surveillance
B Seismic Aspects of Dam Design	K Integrated Operation of Hydropower Stations and Reservoirs	RE Resettlement Due to Reservoirs
C Hydraulics for Dams	L Tailings Dams and Waste Lagoons	S Flood Evaluation and Dam Safety
D Concrete Dams	LE Levees	T Prospective and New Challenges for Dams and Reservoirs in the 21 <sup>st</sup> Century
E Embankment Dams	M Operation, Maintenance and Rehabilitation of Dams	U Dams and River Basin Management
F Engineering Activities with the Planning Process for Water Resources Projects	N Public Awareness and Education	V Hydromechanical Equipment
G Environment	O World Register of Dams and Documentation	W Selection of Dam Type
H Dam Safety	P Cemented Material Dams	Y Climate Change
I Public Safety Around Dams		Z Capacity Building and Dams

## INTERNATIONAL ADVISORY COMMITTEE

Mr. M. ROGERS, President – ICOLD, USA

Mr. J. ZHOU, China

Mr. ALI NOORZAD, Vice President, ASIA PACIFIC

Mr. J.P. TOURNIER, Vice President – AMERICA (Canada)

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Mr. M. ABEBE, Vice President – AFRICA, Ethiopia

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Dr. C.V.J. VARMA, Hon. ICOLD President, India

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Mr. CHHEWANG RINZIN, President, Bhutan, ICOLD National Committee

Mr. UJWOL KOIRALA, President, Nepal, ICOLD National Committee

Dr. WIELAND MARTIN, Chairman, ICOLD Committee on Seismic Aspects of Large Dams

Mr. U.P. SINGH, Secretary, Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation, Govt. of India

Mr. S.C. GARG, Secretary - Ministry of Power, Govt. of India

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Mr. DEVENDRA KUMAR SHARMA, President, INCOLD

Mr. JUNAID KAMAL AHMAD, Country Director, World Bank

Mr. KENICHI YOKAYAMA, Country Director, Asian Development Bank

Mr. A.B. PANDYA, Secretary General, ICID



## ORGANIZING COMMITTEE

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### Co-Chairmen

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Mr. D.V. Singh, CMD, THDC

Mr. N.L. Sharma, CMD, SJVNL

### Organizing Secretary General

Mr. V.K. Kanjlia, Secretary General, INCOLD & Secretary, CBIP

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Mr. S.K. Prabakar, Principal Secretary (PWD), Tamil Nadu

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Mr. Sanjay K. Ghanekar, Secretary, Project Coordination, WRD, Govt. of Maharashtra

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Mr. Pawan Gupta, VP, Water Urban Development, AECOM India Pvt. Ltd.

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Mr. Surbjit Singh, Principal Secretary, WRD, Govt. of Punjab

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Mr. Naveen Mahajan, Secretary (WR), Govt. of Rajasthan

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Mr. Dasho Chhewang Rinzin, MD, Druk Green Power of Bhutan

Mr. N.C. Bansal, Managing Director, PHPA-II, Bhutan

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Mr. Ashish Gupta, President, Gammon Engineers & Contractors Pvt. Ltd.

Mr. Hari Saxena, VP (Technical), AF Consult India Pvt. Ltd.

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Mr. Alok Dube, Member, CGWB, Faridabad

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Mr. Sanjay Kundu, Principal Secretary to Chief Minister, Himachal Pradesh

Secretary-WRD, Govt. of Manipur

Mr. B. Ashoke, Secretary (WR), Govt. of Kerala

Shri Shashi Bhushan Kumar, Secretary (WR&CADA), Govt. of Andhra Pradesh

Chief Engineer (Irrigation), Irrigation Department, Assam

The Chairman, Damodar Valley Corporation

Shri Tarun Agarwal, Secretary, BBMB

Shri Satish K. Sharma, CTO, HCC Ltd.

Shri A.K. Jha, EVP, TRECTABEL Engineering Pvt. Ltd.

Ms. Neeta Arora, Director-HP & Dams, SMEC India Pvt. Ltd.

Mr. Biswajit Das, Executive Director, SOMA

Mr. Gulshan Raj, Chief Engineer, DSO, CWC

Dr. V.V. Bhosekar, Director, CWPRS

Dr. C. Rajagopal Singh, TTL, DRIP, World Bank

Dr. M. Mohapatra, DG, IMD

Mr. Pramod Narayan, Director-DRIP, CWC

Mr. Munish Malhotra, Regional Sales Manager Asia Pacific, Trimble Navigation India Pvt. Ltd.

## ICOLD-2020 WORKING GROUP

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<b>Co-Chairmen</b>	: 1. Mr. Pramod Narayan, Project Director (DRIP), CWC 2. Dr. C. Rajagopal Singh, TTL (DRIP), World Bank 3. Mr. V.K. Kanjlia, Secretary General, INCOLD
<b>Members</b>	: 1. Dr. G.P. Patel, Director – WR, CBIP 2. Shri Rajendra Kumar, FA & CAO, BBMB 3. Mr. Tarun Agarwal, Secretary, BBMB 4. Mr. Saurav Sharan, Deputy Director – DRIP, CWC 5. Mr. Gaurav Singhai, Deputy Director – DRIP, CWC 6. Mr. Yogesh N. Bhise, Deputy Director – DRIP, CWC 7. Officers from NHPC, THDC, SJVNL and NEEPCO
<b>Member Secretary</b>	: 1. Mr. Sunil Sharma, Chief Manager – Technical, INCOLD 2. Shri M. Bhaskara Reddy, CPMU, DRIP



## TECHNICAL COMMITTEE

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### Co-Chairmen

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Dr. R.K. Gupta, Chairman, Krishna River Management Board

Mr. R.K. Vishnoi, Director (Tech.), THDC

**Convener :** Dr. G.P. Patel, Director-WR, CBIP

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Mr. R.N. Mishra, Former CMD, SJVNL

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Mr. J.S. Bawa, CE - HPI, CEA

Mr. Deepak Nakhasi, CGM, SJVNL,

Mr. V.K. Singh, CMD, NEEPCO

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Dr. M. Mohapatra, DG, IMD

Mr. Tarun Agarwal, Secretary, BBMB

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Director, SSNNL

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Mr. K.A. Keshvani, Director, GERI

Mr. H.K. Gosavi, Director General, MERI

Dr. Virendra M. Tiwari, Director, NGRI

### Consultants

Mr. Anupam Mishra, Director, WAPCOS

Mr. Hari Saxena, Vice President, AF Consult

Dr. A.K. Jha, Vice President Tractabel

Ms. Neeta Arora, Director- Dams, SMEC

Mr. Pawan Gupta, Vice President, AECOM

### Contractors

Mr. R.K. Khali, Group Project Manager, HCC Ltd.

Mr. Amarpal Singh, L&T

Mr. Biswajit Das, Executive Director, Soma

**Others**

Dr. C Rajagopal Singh, World Bank

Dr. Sanjay Rana, MD, Parsan Overseas

Dr. Wieland Martin, Chairman, ICOLD Committee on Seismic

Prof. Dr. Ignacio Escuder Bueno, Spain

## REGISTRATION FEE

Registration Category	Registration Fee*
ICOLD Member Countries	USD 1450
ICOLD Non-Member Countries	USD 1650
Young Professionals (age 35 and younger)	USD 750
Symposium Only	USD 750
Workshops Only - 6 Nos.	USD 750
Accompanying Person	USD 750
Indian Delegates	Rs. 35,000

\*GST extra @ 18%.

**Early Bird discount @ USD 150 up to 31-12-2019**

**On Full Registration of delegate from Member and Non-Member Countries**

### PAYMENT

• Registration fees will be paid in USD by Credit Card (Visa, Master Card or American Express) through website [www.icold2020.org](http://www.icold2020.org)

• *By bank transfer as per details given below :*

**Bank Details :** **Name of Account :** CBIP ICOLD 2020; **Account No.** 50100305465202; **Bank Name & Branch :** HDFC Bank Ltd, 209-214, Kailash Building, 26, Kasturba Gandhi Marg, New Delhi-110001; **IFSC Code :** HDFC0000003; **MICR Code :** 110240001;

**SWIFT Code :** HDFCINBBDEL **PAN No. of CBIP :** AAAJC0237F **GST Number of CBIP :** 07AAAJC0237F1ZU

• All Registration and activity fees are subject to Tax (GST @18%)

## PROGRAM AT A GLANCE

Date	Technical Programme	Accompanying Person Programme	Social Programme
<b>Saturday</b> 4 <sup>th</sup> April 2020	<ul style="list-style-type: none"> <li>ICOLD Board Meeting (09:00 – 18:00 hrs.)</li> </ul>		Dinner of ICOLD Board + INCOLD Reps. (19:30 – 22:00 hrs.)
<b>Sunday</b> 5 <sup>th</sup> April 2020	<ul style="list-style-type: none"> <li>Registration Opening (09:00 – 17:00 hrs.)</li> <li>ICOLD Board Meeting (09:00 – 12:00 hrs.)</li> <li>Meeting of ICOLD Board and Chairmen of Technical Committees (14:00 – 17:00 hrs.)</li> <li>ICOLD Board + Local Organizing Committee (17:00 – 19:00 hrs.)</li> <li>Congress Questions Panel meeting (17:00 – 19:00 hrs.)</li> </ul>	New Delhi City Tours	Dinner of Board + LOC and Tech. Comm. Chairmen (20:00 – 22:00 hrs.)
<b>Monday</b> 6 <sup>th</sup> April 2020	<ul style="list-style-type: none"> <li>Registration (09:00 – 17:00 hrs.)</li> <li>Technical Committee Workshops (09:00 – 18:00 hrs.)</li> <li>Young Engineers Forum (18:00 – 19:30 hrs)</li> </ul>	City Tours	Welcome Reception (20:00 – 22:00 hrs.)
<b>Tuesday</b> 7 <sup>th</sup> April 2020	<ul style="list-style-type: none"> <li>Technical Committees Meetings (09:00 – 17:00 hrs.) – 27 Break Outs</li> <li><b>Technical exhibition opening ceremony</b></li> <li><b>Workshops – 3 Nos. (09:00 – 17:00 hrs.)</b></li> <li>ICOLD Regional Clubs Meetings (17:00 – 19:00 hrs.)</li> </ul>	City Tours	Young Engineers Social evening (20:00 – 22:00 hrs) Specifics Private Receptions (20:00 – 22:00 hrs)
<b>Wednesday</b> 8 <sup>th</sup> April 2020	<ul style="list-style-type: none"> <li><b>Symposium Opening Ceremony</b> (09:30-11:00 hrs.)</li> <li>Press Conference (Political, Board, INCOLD and Journalists) 11:30 – 12:00 hrs</li> <li><b>Symposium Contd.</b> (11:30 – 18:00 hrs.)</li> <li><b>Technical exhibition</b></li> <li>Francophone Delegates Meeting (18:00 – 19:00 hrs.)</li> </ul>	City Tours	Cultural Event (19:30 – 22:00 hrs.)
<b>Thursday</b> 9 <sup>th</sup> April 2020	<ul style="list-style-type: none"> <li><b>Symposium on Sustainable Development of Dams and River Basins (09:00 – 18:00 hrs.)</b></li> <li>Technical Tours /Visit to Agra (08:00 – 19:00 hrs)</li> <li><b>Technical Exhibition</b></li> </ul>	City Tours	Specific Private Receptions (20:00 – 22:00 hrs.)
<b>Friday</b> 10 <sup>th</sup> April 2020	<ul style="list-style-type: none"> <li>88<sup>th</sup> ICOLD General Assembly (09:00 – 18:00 hrs.)</li> <li><b>Workshops – 3 Nos. (09:00 – 18:00 hrs.)</b></li> </ul>	City Tours	Farewell Dinner (19:30 – 22:30 hrs.)

## TECHNICAL PROGRAM

International delegates from around the world will share their expertise and experience in Dams, Hydropower and Water Resources and the mining industry. The technical program will include:

**ICOLD TECHNICAL COMMITTEE MEETINGS** – Special invites as observer

**ICOLD COMMITTEE WORKSHOPS** – Introducing new topics and summarizing completed Bulletins

**TECHNICAL WORKSHOPS** - Covering wide range of technical subjects in collaboration with ICOLD

## SYMPOSIUM

**Theme : Sustainable Development of Dams and River Basins**

The theme will be addressed through technical and poster presentations on the following topics :

**The sub themes are:**

1. Modern Technologies in Survey and Investigation for Sustainable Dam Development
2. Simulation Methodologies for Dam Analysis and Design
3. Advances in Dam Safety, Risk Assessment and Management
4. Advances in the Rehabilitation of Dams and Appurtenant works:
  - (a) Innovations and Adaptations in Intakes, Spillways and Gates
  - (b) Advancement in Materials for Dam Repair and Rehabilitation
  - (c) New Approaches in Energy Dissipation Arrangements in High Velocity Spillways.
  - (d) Causes of Damages and Structural Performance Evaluation of Dams.
  - (e) Rehabilitation Technologies to Enhance Dam Safety



- (f) Underwater Inspection, Robotics and Repair Methodologies for Dams.
  - (g) Modernization, Optimization and Rehabilitation of Aging Dams
  - (h) Dam Surveillance and Monitoring
5. River Basin Development and Management including Optimization of Reservoirs Operation
  6. Innovative Construction Methodology and Contracting Practices
  7. Impacts of Climate Change – Sustainable Dams and Hydropower Development including Pumped Storage
  8. Engineering Challenges and Safety of Tailing Dams.

**Authors of Technical papers and posters should submit abstracts addressing the symposium themes, using online system at E-mail : [abstracts-papers@icold2020.org](mailto:abstracts-papers@icold2020.org) Web : [www.icold2020.org](http://www.icold2020.org)**

**Abstracts due date is 31<sup>st</sup> October, 2019**

## COMMITTEE WORKSHOPS

In addition to full day meetings some technical committees will present workshop(s), which are open to all interested delegates. Workshops are required for every committee that is starting new mandate so that the work will appropriately reflect international requirements and conditions. Similarly, when a committee has completed a draft Bulletin they present their approaches and findings to obtain feedback from a broad representation of ICOLD delegates.

The workshop program will be determined early in 2020, depending on the progress of the Technical Committees.

## INCOLD TECHNICAL WORKSHOPS

Full day technical workshops will be presented in collaboration with ICOLD Technical Committee on the following topics.

### 1. Workshop on Numerical Analysis of Dams

Numerical modelling has become an indispensable and powerful tool for design and safety assessment of dams. The benchmark-workshop being organized by INCOLD under the aegis of ICOLD Technical Committee A “Computational Aspects of Analysis and Design of Dams” will provide an excellent opportunity for engineers, researchers and operators to present and exchange their experiences and the latest developments related to the design, performance and monitoring of dams.

### 2. Workshop on Roller Compacted Concrete Dams

RCC dams have the virtues of saving a great deal of concrete, building quickly, bringing project cost down, early completion of the project and so on. Hence, this technique of constructing dams has quickly spread and applied since it came out. Today, there are more than 400 RCC dams in more than 40 countries where great successful experiences have been observed. There appears a need to create awareness about RCC technology including planning, design, construction, equipment, cost aspects, O&M etc. especially highlighting the scope for utilization of bulk quantity of fly ash being produced annually in thermal power stations in the country.

### 3. Workshop on Reservoir Operation for Handling of Extreme Events

Over the years, India has frequently witnessed the floods causing numerous loss of lives and extensive damages to the infrastructure, agricultural production and other properties in different parts of the country. In recent years, severe floods were experienced in Uttarakhand, Jammu & Kashmir, Chennai and Kerala due to excessive rains have proved that operation policies of existing dams and the structural and non-structural measures are less effective due to anthropogenic activities in the river basins. Such flooding is attributed to the climate change. Thus, there is need for a paradigm shift from flood control to flood management, which has been recognized only during the past decade.

### 4. Workshop on Life Extension Technologies and Strategies for Aging Dams

This Workshop will provide participants an understanding of how dam owners evaluate decisions relating to extending the life of a dam and new technologies and techniques that are used globally. The Workshop will identify the common aging mechanisms that relate to potential failure of dams. Some of the aging processes that will be examined include concrete deterioration mechanisms, reduced drain efficiency, erosion of the downstream foundation, erosion due to high velocity, cavitation, gate reliability issues and failure of water stops. The Workshop will conclude with case studies that explore the impact of key aging mechanisms on the safety of concrete dams.

### 5. Workshop on Sediment Management in Reservoirs for Sustainable Development

Sedimentation poses a significant threat to the longevity, usefulness, and sustainable operations of both storage reservoirs and run of the river projects. Over time, sediment builds up in reservoirs and displaces usable storage volume, which in turn negatively affects hydropower generation reduces the reliability of domestic and irrigation water supply, flood management services and degrades aquatic habitat. Climate change is also expected to increase sediment loads in many rivers, amplifying the threat of reservoir sedimentation. The workshop will offer a good scope for exchange of experiences in order to understand how efficiently sediment control measures can deal with reservoir sedimentation, their impacts on sediment loads and on trapping of sediment. It would provide exposure of state of the art technology in all aspects of sediment management, especially considering participation of eminent international experts.

### 6. Workshop on Seismic Analysis for Dam Design and Safety Evaluation of Existing Dams

The workshop will provide opportunity for dissemination of the international state of the art and good practices in the seismic design of dams by the global experts, which have taken place during the last 50 years. Deliberations will included:

- From pseudo-static to dynamic seismic analysis of dams.
- From seismic coefficient to safety evaluation earthquake ground motion.
- From single ground shaking hazard to multiple seismic hazards.
- From safety factors to rational seismic performance criteria.

Authors are invited to submit abstracts on any of the above themes latest at 31st October 2019. All accepted papers will be published electronically in the Workshop Proceedings.

## SPONSOR OPPORTUNITIES

Opportunities Available	Diamond	Platinum	Golden	Silver	Bronze	Supporter	Kit Sponsor	Lunch Sponsor	Dinner Sponsor	Young Professionals Social Event	INCOLD Workshop
Opportunities Available	3	4	6	6	6	03 delegates	03 delegates	03 delegates	03 delegates	1	
Investment	USD 30000/ INR 25.00 lacs	USD 25000 / INR 20.00 lacs	USD 18,000/ INR 15.00 lacs	USD 11000/ INR 10.00 lacs	USD 7000/ INR 7.50 lacs	USD 5000/ INR 5.00 lacs	USD 5000/ INR 5.00 lacs	USD 5000/ INR 5.00 lacs	USD 5000/ INR 5.00 lacs	USD 4000/ INR 3.00 lacs	USD 3000/ INR 2.00 lacs
Benefits	4 delegates and 1 double booth or 12 delegates	2 delegates and 1 double booth or 10 delegates	2 delegate and 1 single booth or 06 delegates	1 delegate and 1 booth or 04 delegates	04 delegates	03 delegates	03 delegates	03 delegates	03 delegates		
Exclusive Event Sponsor with space for pop-up banner	Welcome Reception or Cultural Evening or Farewell Banquet										
Mobile App Sponsor		Logo on welcome screen									
Logo on home page ICOLD 2020 website	✓										
Speaking Opportunity	✓										
Event specific recognition <sup>3</sup> Logo on promo materials	✓	✓								✓	✓
Slide at Opening Plenary	Logo	Logo									
Targeted email to registered delegates	2 times	1 time	1 time	-	-	-	-	-	-		
Use of ICOLD 2020 logo on promo materials	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Sponsor recognition sign at booth	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Mobile App	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo		
Insert in Delegate Bag'	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Sponsor page of ICOLD 2020 website link to corp. website	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo
On-site signage	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo
Sponsor page of Final Bulletin	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo	Logo
Sponsor Ribbon	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

1. Double booth includes 2 exhibitor registrations
2. Includes 1 exhibitor registration
3. Does not include events with exclusive sponsors such as Young Professionals' Event, Technical Tours, etc.
4. Technical Tour Sponsors will receive one complimentary tour registration for the tour sponsored.
5. Workshop Sponsors will receive benefits specific to the workshop sponsored i.e. signage outside workshop room, verbal acknowledgement at the beginning of the workshop, one complimentary workshop registration for the workshop sponsored and the workshop sponsor can also provide a promotional item as a handout at the workshop.

## 1500 International Delegates Together in one Place

## EXHIBITION

The central hub of ICOLD 2020 will be a multi-functional Exhibition where products and services of interest to the dam community will be on display. Delegates will visit the Exhibition for refreshments, presentations, poster displays and networking.

### Your business will benefit from:

- Opportunities to showcase your products and services to a broad audience of attendees across all segments of the market
- Qualified lead generation for new business results
- Branding opportunities to optimize exposure for your company, products and services
- Cost-efficient networking platform to meet the key players, interact with existing customers and build critical new contacts to grow your business and expand your results

### The Exhibition will feature:

- All exhibitors in the same room
- All ICOLD 2020 activities in the same facility while the Exhibit Hall is open
- Plenary sessions on the same floor as the Exhibit Hall
- Complimentary food & beverage for delegates in the Exhibit Hall
- Special "Exhibitor Reception" in the Exhibit Hall with no competing events, and no additional cost to delegates or exhibitors

## BOOTH PACKAGE

Booth Package 9m<sup>2</sup> (3 m x 3 m)

If you do not wish to build your own stand, the Booth Package is an excellent choice! We will then take care of the basic needs, such as wall panels, electricity and carpeting. Booth Packages are available from 9 m<sup>2</sup> (3 m x 3 m).

For 3 x 3 m space	
Exhibitor (Space only)	USD 5600
Exhibitor (With stand)	USD 6700
*GST extra @18%	

### Included services

- White-walled panels
- One spotlight
- One electrical outlet
- A fascia with name board, including regular lettering in black, in a standard style on the open sides of the booth
- Carpet (4 choices of colours)
- Booth cleaning
- Furniture: 1 counter, 2 high chair or stools, 1 green plant, wastebasket, 1 brochure rack
- 1 congress fee incl. congress catering and all social events

### Space Only

The Space Only option offers you a unique chance to create and build your own stand.

Please note when booking this service just one 6' table and two chairs are included.

All other services can be booked separately; this information will be provided upon request. The purchase of at least one exhibitor badge is obligatory.

The number of exhibit spaces is limited – reserve your spot as soon as possible!

## GENERAL INFORMATION

### Registration and Hotel Bookings

Information on registration and hotels can be found at [www.icold2020.org](http://www.icold2020.org)

Registration will begin in November, 2019.

**A Letter of invitation** for obtaining travel Visas will be available on the ICOLD 2020 website when registration opens.

### Passport and Visa

Check with Indian High Commission, Embassy, Consulate or travel agent to find out what documents are required to enter India which may be obtained from [www.indianvisaonline.gov.in](http://www.indianvisaonline.gov.in).

### Language

Hindi and English are most spoken languages in India.

### Weather

The weather in April can range from a low of 26 degrees Celsius, to a high of 36 degrees Celsius; average rainfall is 25 mm.

### Currency

Indian Rupees (INR)

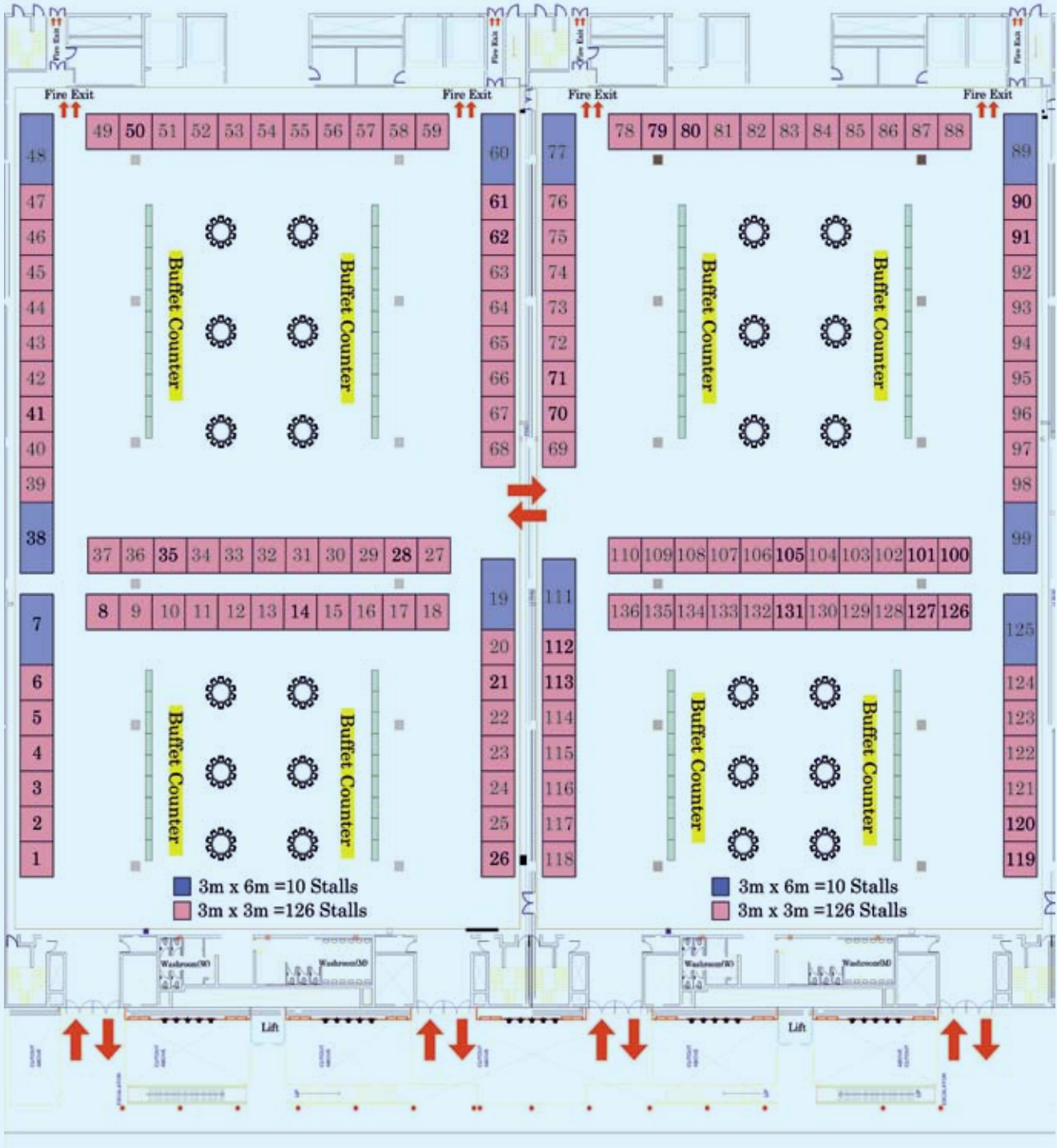
### Electricity

India's electrical supply and outlets (sockets, wall plugs) of 220 Volts and 50 Hertz (cycles per second).

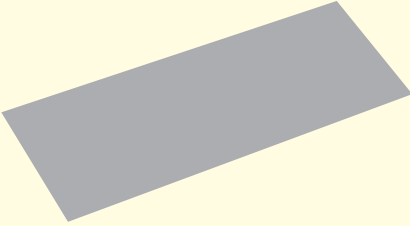
### Distance from Airport

The New Delhi International airport is 40-50 minute drive from ICOLD 2020 venue.


# EXHIBITION FLOOR PLAN



■ Tariff for bigger stall (3 m x 6 m) is 50% extra



**Exhibitor (Space only)(3 m x 3 m) USD 5600**



**Octonom Style Booth (3 m x 3 m) USD 6700**

For more details refer : **Web : [www.icold2020.org](http://www.icold2020.org)**