



88th Annual Meeting
INTERNATIONAL COMMISSION ON LARGE DAMS
&
Symposium on
SUSTAINABLE DEVELOPMENT OF DAMS AND RIVER BASINS
APRIL 4-10, 2020 - NEW DELHI, INDIA
Third Bulletin



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Department of Water Resources, River Development & Ganga Rejuvenation

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THE HOST

INCOLD is proud to host the 88th 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 3rd in terms of number of large dams in the world after USA and China. In terms of irrigation, India ranks 2nd 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 7th 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.

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Please visit our website for up-to-date information including registration, sponsorship, exhibition hall layout and Other details

www. ICOLD2020.org

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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, which appears 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 88th Annual Meeting of ICOLD. The meeting will be held from the 4th to 10th 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 88th 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 88th 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 88th 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,

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.



ABOUT ICOLD

MEMBER COUNTRIES

Afghanistan	Dominican Rep.	Lebanon	Serbia
Albania	Egypt	Lesotho	Slovakia
Algeria	Ethiopia	Libya	Slovenia
Angola	Finland	Luxemburg	South Africa
Argentina	Former Yug. Rep. of	Madagascar	Spain
Armenia	Macedonia	Malaysia	Sri Lanka
Australia	France	Mali	Sudan
Austria	Georgia	Mexico	Sweden
Belgium	Germany	Morocco	Switzerland
Bhutan	Ghana	Mozambique	Syria
Bolivia	Greece	Myanmar	Tajikistan
Bosnia-Herzegovina	Guatemala	Nepal	Thailand
Brazil	Guinea-Bissau	Netherlands	Tunisia
Bulgaria	Honduras	New Zealand	Turkey
Burkina Faso	Iceland	Niger	Uganda
Cameroon	India	Nigeria	Ukraine
Canada	Indonesia	Norway	United Kingdom
Chile	Iran	Pakistan	Uruguay
China	Iraq	Panama	USA
Colombia	Ireland	Paraguay	Uzbekistan
Congo (Dem. Rep. of)	Italy	Peru	Venezuela
Costa Rica	Ivory Coast	Philippines	Vietnam
Croatia	Japan	Poland	Zambia
Cyprus	Kenya	Portugal	Zimbabwe
Czech Republic	Korea (Rep. of)	Romania	
Denmark	Latvia	Russia	

ANNUAL MEETINGS AND CONGRESSES

(Congresses indicated in bold type)

1931 London	1954 Paris	1970 Montreal	1987 Beijing	2004 Seoul
1932 Paris	1955 Paris	1971 Dubrovnik	1988 San Francisco	2005 Tehran
1933 Stockholm	1956 Lisbon	1972 Canberra	1989 Copenhagen	2006 Barcelona
1934 London	1957 Istanbul	1973 Madrid	1990 Sydney	2007 St. Petersburg
1935 The Hague	1958 New York	1974 Athens	1991 Vienna	2008 Sofia
1936 Washington	1959 Helsinki	1975 Tehran	1992 Granada	2009 Brasilia
1937 Paris	1960 Tokyo	1976 Mexico	1993 Cairo	2010 Hanoi
1938 Vienna	1961 Rome	1977 Salzburg	1994 Durban	2011 Lucerne
1939 Zurich	1962 Moscow	1978 Cape Town	1995 Oslo	2012 Kyoto
1946 Paris	1963 Cairo	1979 New Delhi	1996 Santiago	2013 Seattle
1947 The Hague	1963 Paris	1980 Rome	1997 Florence	2014 Bali
1948 Stockholm	1964 Edinburgh	1981 Stockholm	1998 New Delhi	2015 Stavanger
1949 Brussels	1965 Lausanne	1982 Rio de Janeiro	1999 Antalya	2016 Johannesburg
1950 London	1966 Rio de Janeiro	1983 London	2000 Beijing	2017 Prague
1951 New Delhi	1967 Istanbul	1984 Tokyo	2001 Dresden	2018 Vienna
1952 Chicago	1968 Stavanger	1985 Lausanne	2002 Iguazu	2019 Ottawa
1953 Paris	1969 Warsaw	1986 Jakarta	2003 Montreal	2020 New Delhi



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 st 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. Michael F. Rogers – President - ICOLD, USA
 Mr. Michel de Vivo – Secretary General - ICOLD, France
 Mr. Ali Noorzard – Vice President - ICOLD, Iran
 Mr. G. Zenz – Vice President - ICOLD, Europe, Austria
 Mr. E. Cifres – Vice President - ICOLD, Europe, Spain
 Mr. J.P. Tournier – Vice President - ICOLD, America, Canada
 Mr. Michael Abebe – Vice President - ICOLD, Africa, Ethiopia
 Mr. Devendra Kumar Sharma – Vice President - ICOLD, India, President, INCOLD & Chairman BBMB
 Mr. A. Schleiss – Hony. President - ICOLD, Switzerland
 Mr. Luis Berga – Hony. President - ICOLD, Spain
 Mr. C.B. Viotti – Hony. President - ICOLD, Brazil
 Mr. C.V.J Varma – Hony. President - ICOLD, India
 Mr. Adama Nombre – Hony. President - ICOLD, Burkina Faso
 Mr. Jia Jinsheng – Hony. President - ICOLD, China
 Mr. Kaare Hoeg – Hony. President - ICOLD, Norway
 Mr. J. Zhou – Hony. Vice President - ICOLD, China

Dr. Hari Suprayogi – President INACOLD, Indonesia
 Eng. S. Mohanarajah – President SLNCOLD, Sri Lanka
 Mr. Ujwol Koirala – President Nepal, ICOLD National Committee
 Mr. U.P. Singh – Secretary, Ministry of Jal Shakti Department of Water Resources, River Development & Ganga Rejuvenation
 Mr. R.K. Jain – Chairman, Central Water Commission
 Mr. A.B. Pandya – Secretary General, ICID
 Mr. Junaid Ahmad – Country Director, The World Bank
 Mr. Joji Yamagawa – President JCOLD, Japan
 Mr. Ignacio Escuder-Bueno – President SPANCOLD, Spain
 Mr. Chhewang Rinzin – President Bhutan ICOLD National Committee
 Dr. Martin Wieland – Chairman, ICOLD Committee on Seismic Aspects of Dam Design, Switzerland
 Mr. S.N. Sahai – Secretary - Power
 Mr. Kenichi Yokoyama – Country Director, Asian Development Bank



ORGANIZING COMMITTEE

Chairman

Mr. D.K. Sharma, President, INCOLD & Chairman, BBMB

Co-Chairmen

Mr. Balraj Joshi, Vice President, INCOLD

Mr. D.V. Singh, CMD, THDC

Mr. N.L. Sharma, CMD, SJVNL

Organizing Secretary General

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

TECHNICAL COMMITTEE

Chairman : Mr. A.B. Pandya, Secretary General, ICID

Co-Chairmen

Mr. Balraj Joshi, Vice President, INCOLD

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

Mr. R.K. Vishnoi, Vice President, INCOLD and Director (Tech.), THDC

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

ICOLD-2020 WORKING GROUP

Chairman	: Mr. D.K. Sharma, President, INCOLD
Co-Chairmen	: 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
Members	: 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
Member Secretary	: 1. Mr. Sunil Sharma, Chief Manager – Technical, INCOLD 2. Shri M. Bhaskara Reddy, CPMU, DRIP

Conference Hotels



Crowne Plaza
Greater Noida



Radisson, Greater Noida



Le-Meridian, New Delhi



Jaypee, Greater Noida



NEW DELHI – INDIA'S CAPITAL CITY

New Delhi is the vibrant capital of modern India. The city was designed by British architects, Sir Edwin Lutyens and Sir Herbert Baker and the new capital was inaugurated on 13 February 1931, by Viceroy and Governor-General of India H.E. Lord Irwin. The National Capital Region is a much larger entity comprising the entire NCT along with adjoining districts in neighbouring states.

For the ease of delegates and companions, ICOLD 2020 activities and accommodation will be centred in New Delhi and Greater Noida lively and safe. Easy access to entertainment, shopping centres and open-air markets, recreation and culture – Old Delhi,; Humayun's Tomb & Qutub Minar; Akshardham Temple; Yoga Session (Mind, body and Soul @ Peace); Buddh International Circuit, Flavours of India – Introduction to the real essence of authentic Indian cooking; Bringing Smile: Feel the vibes of friendship and happiness flow through your soul– create once-in-a- lifetime experiences for all those participating in ICOLD 2020.





TECHNICAL PROGRAM

International delegates from around the world will share their expertise in dams and related equipment for hydropower, water resources and the mining industry.

The technical program will include:

- ICOLD Symposium – Sustainable Development of Dams and River Basins
- APG Symposium on Water and Dams
- ICOLD Technical Committee Meetings – Special invites as observer
- ICOLD Technical Committee Workshops – Introducing new topics, and summarizing completed Bulletins
- Workshops 6 Nos. – Covering wide range of technical subjects in collaboration with ICOLD experts
- Special Sessions – Innovative Financing on Dam Projects, Tailing dams and Use of Geo-synthetics in Dam Engineering
- Technical and study tours

SYMPOSIUM

Theme : Sustainable Development of Dams and River Basins

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

(1) Innovation

Modern Technologies in Survey and Investigation for Sustainable Dam Development and Simulation Methodologies for Dam Analysis and Design

(2) Sustainable Development

River Basin Development and Management including Optimization of Reservoirs Operation and Innovative Construction Methodology and Contracting Practices

(3) Extreme Conditions

Impacts of Climate Change – Sustainable Dams and Hydropower Development including Pumped Storage and Engineering Challenges and Safety of Tailing Dams.

(4) Dam Safety, Risk Assessment and Management and Rehabilitation of Dams

Advances in Dam Safety, Risk Assessment and Management; Advances in the Rehabilitation of Dams and Appurtenant works: Innovations and Adaptations in Intakes, Spillways and Gates; Advancement in Materials for Dam Repair and Rehabilitation; New Approaches in Energy Dissipation Arrangements in High Velocity Spillways; Causes of Damages and Structural Performance Evaluation of Dams; Rehabilitation Technologies to Enhance Dam Safety; Underwater Inspection, Robotics and Repair Methodologies for Dams; Modernization, Optimization and Rehabilitation of Aging Dams; and Dam Surveillance and Monitoring.

APG SYMPOSIUM ON WATER & DAMS

Theme: Sustainability: Way Forward to Identification, Evaluation and Implementation of Policies and Practices in Water Industry

The 5th Asia-Pacific Group International Symposium (APG 2019) earlier scheduled on 10-11 December 2019 at Tehran, Iran will now be held in parallel to ICOLD 2020 Symposium on 8-9 April 2020 at New Delhi. This international symposium will also provide an excellent opportunity for dam professionals to present and exchange their experiences and the latest developments related to the design, performance, rehabilitation and environmental aspects of dams. 70 technical papers received from dam professionals from different Asian countries will be presented during the symposium

ICOLD TECHNICAL COMMITTEES

Committee Workshops (Monday, 6th April, 2020)

In addition to the full day of meetings, some Technical Committees will present workshops on Monday, April 6, which are open to all interested delegates. Workshops are required for every committee that is starting a 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 is available on the ICOLD 2020 website.

Open Committee Meetings (Tuesday, 7th April, 2020)

As part of the program for the 88th Annual Meeting, all delegates are invited to attend the meetings of ICOLD Technical Committees as observers, to gain insight into the development of the ICOLD Technical Bulletins that are so influential on dam engineering and development practices around the world.



ICOLD TECHNICAL WORKSHOPS

10th April, 2020 at New Delhi

The Indian Committee on Large Dams (INCOLD) is offering the following six workshops on 10th April 2020 during the ICOLD event with the help of ICOLD international experts to update the knowledge of young professionals working with Govt. as well as private agencies who are involved with the development of dam engineering. These workshops will provide an opportunity to the participants for dissemination of the international state of the art and good practices by interacting with world renowned experts who will be sharing their experiences while delivering lectures and presenting the Case studies.

1. Numerical Analysis of Dams

Topics to be discussed:

- Numerical methods applied and interpreted for safe dam behaviour
- Current challenges for seismic numerical modeling of dams
- Advances in dynamic analysis of Gravity Dams
- Numerical modeling for health checking of existing dams

2. Roller Compacted Concrete Dams

Topics to be discussed:

- Materials and mix design
- Pitfalls and difficulties associated with RCC dam design and construction
- Construction methodologies and quality control
- Performance of modern RCC dams and monitoring
- RCC dams on non-rock foundation
- Upgrading of old dams with RCC
- Technological innovations and new trends

3. Reservoir Operation for Handling of Extreme Events

Topics to be discussed:

- Flood Evaluation, Hazard Determination and Risk Management
- Impact of climate change
- Optimal Operation of Cascade Hydropower Stations and Reservoirs
- Optimal operation technology, decision-making systems, optimal scheduling platforms, new technology applications in related fields, etc.

4. Life Extension Technologies and Strategies for Aging Dams

Topics to be discussed:

- Aging of dams: Concrete deterioration, reduction in drain efficiencies, foundation erosion, cavitation etc.
- Estimation and control of Seepage through foundation and dam body
- Health checking of concrete gravity dams and refurbishment/treatment technologies.

5. Sedimentation Management in Reservoirs for Sustainable Development

Topics to be discussed:

- Reservoir sedimentation and best practices of storage design
- Sediment flushing, Improving flushing efficiencies
- Sediment replenishment downstream, turbidity current and sediment bypass tunnels
- Climate change effects
- Sediment management in cascade reservoirs

6. Seismic Analysis of Dam Design and Safety Evaluation of Existing Dams

Topics to be discussed:

- Seismic aspects in the design of embankment and rock fill dams with special emphasis on computational aspects
- State of the art nonlinear seismic analysis
- Seismic safety evaluation of concrete dams



WORKSHOP ON TAILINGS DAM SAFETY

Monday 6th April – Wednesday 8th April, 2020

The world is focussing on tailings dam safety in a genuine attempt to improve the performance of the important structures. ICOLD is taking a leading role in this effort, with development of technical guidelines and education of practitioners to help raise the level of understanding and skills of industry.

This ICOLD workshop brings together a number of eminent engineering professionals to share state of the art knowledge on investigation, design, construction, operation and closure of tailings dams. The workshop will introduce aspects of the new ICOLD Technical Guidelines for Tailings Dam Safety with detailed demonstration on its application

This workshop highlights the collaborative nature of the world dams industry and the willingness of ICOLD members to share knowledge for the benefit of the broader industry.

This workshop will help managers, designers and mine operational personnel involved in tailings management, to understand current international best practice and help them understand how to improve tailings dam safety.

The workshop will feature technical presentations from leading practitioners in the field of tailings dam design and operation, including:

- **Overview of Current Practice** – background to existing documents leading to the development of the Global Standard – the status of the ICOLD Technical Guidelines on Tailings Dam Safety
- **Understanding of Consequence Category** – Use of Dam Break simulation and flood mapping to highlight identification of consequences and selection of Consequence Category
- Latest developments in Site Investigations including deciding the scope and extent to limit unknowns
- Assessment of the potential for liquefaction, determining residual strength and designing for liquefaction
- **Stability Analysis** – Cases – Selection of Design Parameters– understanding Factors of Safety – need for and how to do Deformation modelling
- **Water Management** – Hydrology – flood selection - spillway systems during operation and closure
- **Risk Assessment** – Qualitative and Quantitative Risk Assessment – how to do it and how to use it
- **Operations** – Governance and Organisation Structure - Preparing Operation Maintenance and Surveillance (OMS) Manuals and Emergency Response Plans (ERPs)
- **Closure** - How should closure be tied into the life cycle? - What are today's requirements?

Workshop sessions will allow attendees opportunity for discussion of vital issues affecting our industry approach to tailings dam design operation and closure.

Presenters/Panel – Eminent practitioners from ICOLD member countries including ANCOLD, CDA and USSD.

SPECIAL SESSIONS

INNOVATIVE FINANCING IN DAM PROJECTS

During the ICOLD 2020 event a Special session on “**Innovative Financing of Dam Projects**” will be organized by ICOLD to have presentations from ICOLD, World Bank, Asian Development Bank, Africa Development Bank and Power Finance Corporation followed by panel discussions about the modalities and various aspects of financing the dam projects (new dams as well as rehabilitations). The broad topics likely to be covered up during the session are key elements in dam projects financing including leverage financing from private sector, Donor agencies and contractual options for project implementation.

USE OF GEO-SYNTHETICS IN DAMS ENGINEERING

Construction of new dams and repairs of existing dams require usage of newer materials in order to ensure desired performance level to be attained. Application of geo-synthetics has a huge scope in construction and repairs of dams. Projects executed worldwide have proven the performance of geo-synthetics. Cost effectiveness and longevity points of view geo-synthetics are better with ease of application in several problems. A detailed deliberation on Application of Geo-synthetics in Dam Engineering is going to be an added feature of the ICOLD 2020 as a special session.



YOUNG PROFESSIONALS

ICOLD 2020 will offer a unique learning opportunity for individuals from around the world who are in the early stages of their careers. As well as specific events and initiatives targeted at these delegates, the ICOLD 2020 event integrates young professionals (age 35 and under) into all aspects of the program.

Young professionals are especially encouraged to attend ICOLD Technical Committee meetings and workshops, in addition to the Symposium and other events. Attendance will provide a unique opportunity to engage with technical subject matter experts from around the world and participate in the development of leading practices.

Companies and ICOLD National Committees will benefit by having young professionals attend this international event, where they can establish contacts with technical leaders and organizations at the forefront of dam engineering.



The Young Professional program will include:

- ICOLD Young Engineers Forum
- Networking event for young professionals
- Young professional paper award
- Young professional poster award
- Sponsorship categories to support young professionals

- Mentorship opportunities
- Information booth in Exhibition Hall

Co-ordinator :

Mr. Tarun Agarwal

Secretary, BBMB

Mobile No. +91 9417863728; +91 8178118104

E. mail: mahadev395@gmail.com; secy@bbmb.nic.in

HOTELS

ICOLD 2020 has reserved room blocks and negotiated special conference rates for participants in a selection of hotels that are near to India Expo Centre & Mart, Greater Noida. Information about the hotels including descriptions and amenities is available on the ICOLD 2020 website.

Please note that delegates must make hotel reservations through the ICOLD 2020 PCO, after having completed their registration for the ICOLD event. Hotel will not take reservation other than the Conference PCO.

Sr. No.	Hotel	Category	Distance from IEM	Single (INR)	Double (INR)	Taxes
1	Jaypee, Greater Noida	5 Star	2 km	11000	11000	18%
2	Crowne Plaza, Greater Noida	5 Star	8 km	8500	8500	18%
3	Radisson, Greater Noida	5 Star	5 km	8000	8000	18%
4	Crowne Plaza, Mayur Vihar	5 Star	28 km	9000	9000	18%
5	Le-Meridian, New Delhi	5 Star	40 km	8500	8500	18%
6	Shangri-la, New Delhi	5 Star	40 km	8000	8000	18%
7	Royal Plaza, New Delhi	4 Star	40 km	7500	7500	Included
8	Sandal Suites by Lemon Tree, Greater Noida	4 Star	14 km	7000	7000	18%
9	Holiday Inn, Mayur Vihar	4 Star	30 km	7000	7500	18%
10	Regenta, Noida	4 Star	22 km	6100	6600	12%

Housing / Accommodation

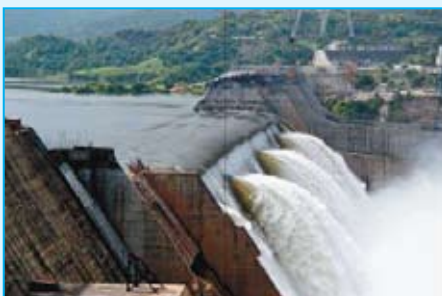
You must first register for ICOLD 2020 to access the PCO. By booking within the room block, you are supporting ICOLD 2020. A link will be followed for booking of hotel accommodation after you register.

Housing Advisory : ICE is the official PCO for ICOLD 2020, and the only organization authorized to liaise on behalf of ICOLD 2020 for hotel room reservations. Should you be contacted by a supplier by email and or telephone indicating that you must book your accommodations, DO NOT engage with them.



ICOLD 2020 ANNUAL MEETING PROGRAMME

Date	Technical Programme	Accompanying Person Programme	Social Programme
Saturday 4 th April 2020	<ul style="list-style-type: none"> ICOLD Board Meeting (09:00 – 18:00 hrs.) 		Dinner of ICOLD Board + INCOLD Reps. (19:30 – 22:00 hrs.)
Sunday 5 th April 2020	<ul style="list-style-type: none"> Registration (09:00 – 17:00 hrs.) ICOLD Board Meeting (09:00 – 12:00 hrs.) Meeting of ICOLD Board and Chairmen of Technical Committees (14:00 – 17:00 hrs.) ICOLD Board + Local Organizing Committee (17:00 – 19:00 hrs.) Congress Questions Panel meeting (17:00 – 19:00 hrs.) 	New Delhi City Tours	Dinner of Board + LOC and Tech. Comm. Chairmen (20:00 – 22:00 hrs.)
Monday 6 th April 2020	<ul style="list-style-type: none"> Registration (09:00 – 17:00 hrs.) Technical Committee Workshops (09:00 – 18:00 hrs.) 	City Tours	Welcome Reception (20:00 – 22:00 hrs.)
Tuesday 7 th April 2020	<ul style="list-style-type: none"> Technical Committees Meetings (09:00 – 17:00 hrs.) – 27 Break Outs Technical Exhibition Opening Ceremony ICOLD Regional Clubs Meetings (17:00 – 19:00 hrs.) Young Engineers Forum (18:00 – 19:30 hrs) 	City Tours	Young Engineers Social evening (20:00 – 22:00 hrs) Specific Private Receptions (20:00 – 22:00 hrs)
Wednesday 8 th April 2020	<ul style="list-style-type: none"> ICOLD and APG Symposium Opening Ceremony (0930-11:00 hrs.) Press Conference (Political, Board, INCOLD and Journalists) 11:00 – 11:30 hrs ICOLD and APG Symposium (Contd.) (11:30 – 18:00 hrs.) Technical exhibition Francophone Delegates Meeting (18:00 – 19:00 hrs.) 	City Tours	Cultural Event (19:30 – 22:00 hrs.)
Thursday 9 th April 2020	<ul style="list-style-type: none"> APG Symposium on Water and Dams Symposium on Sustainable Development of Dams and River Basins (09:00 – 18:00 hrs.) Technical Tours /Visit to Agra (08:00 – 19:00 hrs) Technical Exhibition 	City Tours	Specific Private Receptions (20:00 – 22:00 hrs.)
Friday 10 th April 2020	<ul style="list-style-type: none"> 88th ICOLD General Assembly (09:00 – 18:00 hrs.) Workshops – 6 Nos. (09:00 – 18:00 hrs.) 	City Tours	Farewell Dinner (19:30 – 22:30 hrs.)





REGISTRATION FEE

Indian Delegates		Foreign Delegates	
Registration Category	Registration Fee*	Registration Category	Registration Fee*
Delegate	₹ 35,000	ICOLD Member Countries	USD 1450
Young Delegate	₹ 17,500	ICOLD Non-Member Countries	USD 1650
ICOLD Symposium	₹ 20,000	Young Engineer and Research Student (age 35 and younger)	USD 750
INCOLD Workshops - 6 Nos.	₹ 17,500	Only Symposium	USD 750
		Only Workshops- 6 Nos.	USD 750
		Accompanying Person	USD 750
Exhibitor			
Exhibitor (Space only)		USD 5600 (3 x 3 m space)	
Exhibitor (With stand)		USD 6700 (3 x 3 m space)	

*GST extra @ 18%.

Early Bird discount @ USD 150 up to 31-01-2020 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
- 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%)

Full Delegate Registration

- Admission to committee meetings and workshops, ICOLD symposium, APG symposium and technical exhibition
- Delegate bag, name badge and conference materials
- Coffee breaks, lunches, Exhibitor Reception and social activities, Monday, April 6 to Friday, April 10, 2020
- Mobile app for IOS and Android smartphones and tablets
- Technical tours and one day excursion (Thursday, April 9, 2020 – limited number of registrants; additional fees of USD 60 shall apply)

Young Engineer and Research Student

Young Professionals are delegates aged 35 years and under, as of April 01, 2020. Proof of age will be required at on-site registration.

- All benefits of Full Delegate Registration
- Young Professional networking activity (Tuesday, April 7, 2020)

Accompanying Persons

- Coffee breaks, lunches and social activities, Saturday, April 04 to Friday, April 10, 2020

- Mobile app for IOS and Android smartphones and tablets

Exhibitor

- Coffee breaks, lunches Exhibitor Reception and social activities, Tuesday, April 7 to Thursday, April 9, 2020
- Mobile app for IOS and Android smartphones and tablets

Registration Policies

Registration fees must be paid in US dollars and paid in full by credit card (VISA, MasterCard or American Express) at time of registration.

All registration and activity fees are subject to 18% GST+ bank convenience charges

Registration Cancellation

A refund of registration fees less a USD 100.00 (+ tax) administration charge will be processed for requests submitted in by email to the ICOLD 2020 Annual Meeting/ Symposium Secretariat no later than March 15, 2020.

After March 15, 2020, registration fees are non-refundable.



NEW DELHI CITY TOUR

Delegates will begin their ICOLD 2020 experience with a city tour of New Delhi featuring a captivating past, an abundance of culture and filled with historic buildings and world-class museums, the highlights of the city tour include President House, Humanyun's Tomb, Qutub Minar, Old Delhi City Tour, Temple Tour, Yoga Sessions & Shopping Tour.

On 5th April 2020 New Delhi City Tours will be free of cost (FOC) to registered delegates for ICOLD 2020 event.

Tours	Duration	Fee
Visit to Old Delhi, Rickshaw Ride through the colourful Bazaars of Old Delhi	4 hrs	USD 37 + taxes per person
Visit to New Delhi including visit to Humanyun's Tomb & Qutub Minar	6 hrs	USD 53 + taxes per person
Akshardham Temple Tour	4 hrs	USD 53 + taxes per person
Yoga Session (Mind, body and Soul @ Peace)	1 hr	USD 23 + taxes Per person
Bringing Smile: Feel the vibes of friendship and happiness flow through your soul	4 hrs	USD 23 + taxes per person
Temple Tour of Delhi	4 hrs	USD 37 + taxes per person
Shopping Tour	4 hrs	USD 37 + taxes per person

ONE DAY EXCURSION TO AGRA - 9th APRIL 2020

Monument of Love : Taj Mahal - The greatest love story ever told - On the death of his beloved wife Mumtaz Mahal, in wild extravagance, Shah Jahan built her this memorial. This is one of the Seven Wonders of the World.

Duration: 12 hrs.

Agra Fort is a historical fort in the city of Agra in India. It was the main residence of the emperors of the Mughal Dynasty until 1638, when the capital was shifted from Agra to Delhi. Before capture by the British, the last Indian rulers to have occupied it were the Marathas. In 1983, the Agra fort was inscribed as a UNESCO World Heritage site. It is about 2.5 km northwest of its more famous sister monument, the Taj Mahal. The fort can be more accurately described as a walled city.

TOUR COST

USD 60 + Taxes Per Person

USD 150 + Taxes Per Person for 02 Pax by Taxi

Package Include

Cost mentioned above includes:

- Day Trip to Agra on Volvo Coach
- Lunch at Taj Gateway Hotel or Similar
- English Speaking Guide
- Entrance fee to Monuments i.e., Taj Mahal & Agra Fort.



Taj Mahal



Agra Fort



POST-MEETING STUDY TOURS

Participants are encouraged to extend their stay in India as part of the post-conference study tours.

Post-conference study tours will take place in Goa, Bangalore, Hyderabad, Vadodara, Varanasi and Uttarakhand. During these trips, participants will have the opportunity to visit some of India's most interesting dams, hydroelectric projects and mining sites over a period of 3 to 4 days. Tour descriptions and costs available on the ICOLD 2020 website.

Technical Tours	Duration	Fee
Glimpse of India's Royal & Cultural Heritage (Golden Triangle Tour)	2 night & 3 days	USD 311 + Taxes per person Single Room Supplement USD 71 + taxes
Delhi-Goa-Kalinadi Hydroelectric Project-Goa-Delhi	3 Night & 4 Days	USD 745 + Taxes per person Single Room Supplement USD 208 + taxes
Delhi-Bangalore-Mysore-Brindavan Garden Krishnarajasagara Dam-Delhi	2 night & 3 days	USD 206 + Taxes per person Single Room Supplement USD 71 + taxes
Delhi Varanasi-Delhi	2 night & 3 days	USD 229 + Taxes per person Single Room Supplement USD 128 + taxes
Delhi-Vadodara-Sardar Sarovar-Vadodara-Delhi	2 night & 3 days	USD 286 + Taxes per person Single Room Supplement USD 64 + taxes
Delhi- Hyderabad- Nagarjuna Sagar- Hyderabad-Delhi	2 night & 3 days	USD 501 + Taxes per person Single Room Supplement USD 233 + taxes
Delhi – Haridwar – Rishikesh- Tehri Dam – Mussoorie – Dehradun –Delhi	2 night & 3 days	USD 505 + Taxes per person Single Room Supplement USD 714 + taxes
Delhi – Ramganga Dam- Corbett- Nainital- Tanakpur-Delhi	3 Night & 4 Days	USD 827 + Taxes per person Single Room Supplement USD 245 + taxes

Package include

- Accommodation on twin sharing basis at all the hotels
- American buffet breakfast at all the hotels
- English Speaking assistance upon arrival / departure
- Transportation
- English Speaking Local Guide for the visits as per Itinerary for monument visit only

Package does not include

- Any other cost/item not mentioned in the package & Taxes
- GST Additional.
- Lunch or Dinner (Meals)



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	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
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 ³ 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.

2000 International Delegates Together in one Place



EXHIBITION & SPONSOR

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 9m² (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 m² (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 for Booth with Stand:

- 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

Included services for Booth with 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



GENERAL INFORMATION

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.



Registration and Hotel Bookings

- Information on registration and hotels can be found at www.icold2020.org
- Registration has started
- A Letter of invitation for obtaining travel Visas will be available on the ICOLD 2020 website

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.

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.

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 : admin@icold2020.org

SPONSORS AND EXHIBITION MANAGEMENT

Sunil Sharma

Chief Manager, (Technical) CBIP

Ph. 91-11-26116567/26115984,

Fax : 91-11-26116347

E-mail : sunil@cbip.org M : 91-9811299136

PCO

Bharat Soundar Rajan, Assistant Vice President

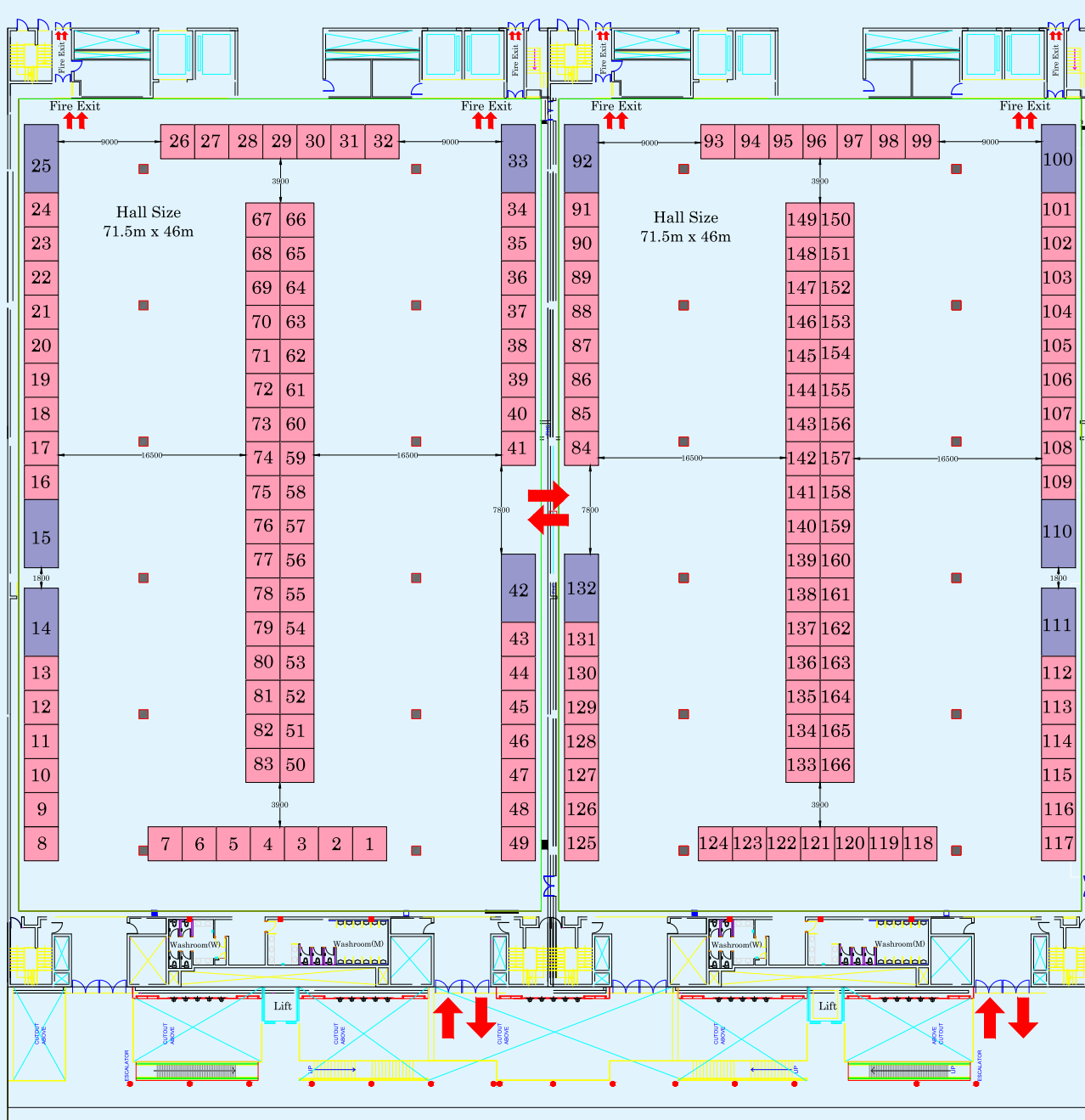
Integrated Conference & Event Management, B -128, Sector - 5,
Noida 201301, National Capital Region – Delhi (India) T : +91 120 3823803
F : +91 120 3823501 M : +91 9650017933
E : bharat@iceindia.in | W : www.iceindia.in

For booking of tours, please contact :

Ms. Priya Tiwari

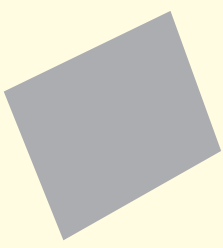
Email : tours.icold2020@iceindia.in

EXHIBITION FLOOR PLAN




- 3m x 6m = 10 Stalls
- 3m x 3m = 156 Stalls
- Total = 166 Stalls

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