

National & International Relations

ANCOLD places importance on engaging with ICOLD and other bodies by taking an active role in technical groups, engaging with similar national dam organisations and developing relationships with international technical and industry leaders.

ICOLD

The 92nd Annual Meeting of ICOLD took place in the vibrant capital city of India, New Delhi, from September 29th to October 3rd. Thirteen ANCOLD representatives on ICOLD Technical Committees were supported by ANCOLD to attend their respective technical committee meetings. ANCOLD also supported the ANCOLD National YP Convenor to attend the ICOLD Young Professionals Forum.

Notable ICOLD reports and resolutions at the Annual General Assembly meeting on the 3rd of October included:

- ICOLD (by approx. 65% vote) will form a Technical Committee chaired by the Secretary General to investigate the process for establishing an ICOLD List of Dam Experts (ILDE) to be used predominantly by the World Bank in undertaking expert reviews as needed – the proposed approach is scheduled to be put to members for a vote at the 2025 General Assembly in Chengdu
- KNCOLD was successful in their bid to host the 2027 Symposium and General Assembly
- Successful vote for SPANCOLD to host the 2028 ICOLD Symposium in Madrid (over the USSD bid)
- Extension of term for a range of Technical Committees, and endorsement of membership of same
- The nomination of Mr Frédéric Corrége to replace Mr Michel De Vivo (2006-2024) in the role of Secretary General was endorsed
- The submission of a World Declaration on the “Role of dams in the energy transition and adaptation to climate change” to partner organizations (World Bank, IHA, ICID, NGO’s and others) for joint signature at the Chengdu Congress in 2025 was approved
- Laurent Mouvet (Switzerland) was re-appointed to the post of Vice-President, Europe Zone

- Cheng Guanfu (China) was appointed to the post of Vice-President (6th Post), to take over from Joaquim Pimenta de Avila (Brazil)
 - A range of bulletins were submitted by technical committees and successfully approved by member countries
- Additionally, the technical sessions and technical workshops were well attended, including a special session of presentations on the tragic failure of the Wadi Derna Dams in Libya in September 2023.

ICOLD Technical Committee Reports

Committee A: Computational Aspects of Analysis and Design of Dams (2023-25)

While there was no annual Committee A Meeting in the period 2023-24, due to the 2024 annual ICOLD meeting taking place later this the year, the Committee has remained very active in their activities and with plenty of interaction online.

Below is a summary of the news and activities of the ICOLD “Committee A on Computational Aspects of Analysis and Design of Dams” that have taken place during this year.

Publications, documents and technical articles:

- Preparation of the ICOLD Bulletin “Non-Linear Modelling of Concrete Dams (NLMCD)”. The draft version of this bulletin was completed by a working group of the Committee A in May and circulated to the national committees for review and comments. Observations were received by 30th June and are currently being actioned. The final version will be presented to the ICOLD Executive for approval during the Annual Meeting in New Delhi in October.
- Preparation of the ICOLD Bulletin on “Capitalization of the results of past Benchmark Workshops on Numerical Analysis”. This will be presented as either two volumes of the same bulletin or as two completely separate bulletins (concrete dams and embankment dams). Two working groups of the Committee A are finalising the draft version of the bulletin(s), which are expected to be circulated to the national committees for review and comment by the end of 2024.
- Preparation of the ICOLD Bulletin “Arch Dam Design. Structural Analysis Methodologies and Criteria”. This is jointly prepared by Committees A and D. The draft version was recently circulated to the national committees for review and comment. Received comments will be actioned by the end of 2024.
- Proceedings of the “16th International Benchmark Workshop on Numerical Analysis of Dams”, organised by the Committee A at University of Ljubljana, Slovenia, in April 2022”. Just published and can be downloaded from <https://www.unesco-floods.eu/on-line-proceedings-of-16th-international-benchmark-workshop-on-numerical-analysis-of-dams-organized-at-university-of-ljubljana-faculty-of-civil-and-geodetic-engineering-5-6-april-2022/>.

Upcoming events:

- The Committee A is preparing the invitation to attend the 17th ICOLD International Benchmark Workshop on Numerical Analysis of Dams, to be held on April 9th to 12th 2025 in Sofia, Bulgaria. The task theme formulations can be downloaded from: <https://buncold.bg/en/news1.html>, including:
 - Theme A: Three-dimensional seismic analysis of Tsankov Kamak Dam (double curvature arch dam)
 - Theme B: Simulation of the transient first impoundment of Plovdivtzi embankment dam.
 - Theme C: Behaviour of a 210m high CFRD – calibration and prediction.
 - Open Theme: Papers related to numerical modelling of dams and/or appurtenant structures.

For specific information, people interested can contact directly the Bulgarian National Committee on Large Dams (BUNCOLD) at: buncold@uacg.bg (subject: 17.BW2025).

New Terms of Reference (TOR) of Committee A

The current TOR of Committee A come to an end in 2025. New TOR for the committee will be presented to the ICOLD Board in New Delhi, including the following objectives for the new TOR period:

- Identify, develop and implement advanced state-of-the art mathematical modelling methodologies for the solution of problems and identify innovative approaches to manage monitoring data with the aim to foster predictive maintenance solutions for existing dams.
- Organize Benchmark Workshops on calculation methods with the aim of examining complex problems concerning the design, analysis, construction, rehabilitation and operational behaviour of dams, powerhouses, appurtenant structures and hydro-mechanical equipment, identifying reference solutions when available.
- Organize training seminars - possibly connected to the organization of Benchmark Workshops - aimed at transferring knowledge in the field of numerical modelling and analysis techniques to the young generations of engineers and technicians.
- Establish permanent liaison with other committees (e.g., Seismic Aspects of Dam Design, Hydraulic for Dams, Concrete Dams, Embankment Dams, Operation, Maintenance and Rehabilitation of Dams, Hydromechanical Equipment.) to examine cross-sectoral issues in the field of numerical modelling and analysis techniques.
- Prepare recommendations on how computational methods can be used to estimate risks, account for uncertainties and assist in the concept of resilience inherent to dams with particular attention to the new challenges posed by the effects of climate change.

Francisco Lopez

ANCOLD Representative

ICOLD Committee B: Seismic Aspects of Dam Design (2023-26)

A sub-committee has been formed to progress the preparation of a new bulletin that will provide guidance on the "Seismic aspects of safety-critical electro-mechanical and hydro-mechanical equipment". The Bulletin is intended to cover hydro-mechanical equipment and their associated control and power systems and is being developed due to concerns regarding the lack of industry guidance on the topic.

The latest draft table of contents is as follows:

- Introduction
- Safety-critical equipment (identification and elements)
- Earthquake hazards
- Potential Failure Modes
- Case histories
- Hydrodynamic loading
- Seismic performance and safety criteria
- Design process
- Design analysis
- Seismic qualification and certification
- Operation, maintenance and surveillance requirements
- Safety reviews
- Conclusion.

Over the past 12 months steady progress has been made on the other activities of the committee but no new bulletins have reached final draft status at this stage. Current bulletins under preparation include:

- Interpretation of seismic data obtained from dams
- Nonlinear seismic analysis procedures for embankment dams

Ian Landon-Jones

ANCOLD Representative

ICOLD Committee C: Hydraulics for Dams (2021-25)

A meeting of Technical Committee C for “Hydraulics for Dams” was held as part of the ICOLD Annual Meeting and International Symposium held in New Delhi from 29th September to 3rd October 2024. In addition, two virtual meetings were held in November and February to progress the committee’s work.

Two previous bulletins prepared by the committee were expected to have been formally released but have not yet been finalised by ICOLD. The timing for the release of these bulletins is not clear. These bulletins are:

Bulletin 172 “Technical Advancements in Spillway Design - Progress and Innovations from 1985 to 2020”

Bulletin 176 “Blockage of Reservoir Outlet Structures by Floating Debris”

The committee is currently working on two further bulletins entitled “Hydraulic and Structural Design of Chute Spillways and Upgrading of Spillways – Recent Developments” and “Surveillance of Spillways”, with the latter prepared jointly with TC-Q for Dam Surveillance.

The main focus of the meeting was reviewing comments on the compiled draft of the former. As noted previously, this includes chapters on high-velocity flow and aerator design on smooth and stepped chutes, structural design for spillway chutes and stilling basins, comparison of design processes for dissipators downstream of smooth and stepped chutes, and approaches for increasing the capacity of spillways. In terms of timing to finalise this bulletin, the intent is to review a final draft of the bulletin at the next meeting in Chengdu, and following this, the final draft will be circulated to national committees for comment with the aim of the bulletin being approved at the 2026 meeting.

The “Surveillance of Spillways” bulletin aims to refocus attention on and provide systematic guidance for surveillance of spillway structures. Development and review of this bulletin is continuing with the aim of having a compiled draft to review at the Chengdu meeting.

James Willey

ANCOLD Observer

ICOLD Committee D: Concrete Dams (2021-24)

There were no meetings of Committee D in the 2023/24 year, with the 2024 Committee meeting taking place during the New Delhi meeting in September / October 2024. However, several activities were ongoing through the year.

1. Status of Bulletins prepared by Technical Committee D

TC-D currently has a number of bulletins at various stages of preparation tabulated below.

No.	Bulletin Title (Pre-print version available on ICOLD website)	Date of English Version	Country in charge of French Translation	Status of Translation	Status of publication
145	Physical properties of hardened conventional concrete in dams	2012	Morocco	Complete	With Publisher
165	Selection of Materials in Concrete Dams	2013	France	Complete	With Publisher
184	Management of expansive chemical reactions in concrete dams and hydroelectric projects	2019	Canada / Switzerland	In progress	
198	Aging of Concrete Dams	2023	Switzerland / France	In Progress	

2. Ongoing Activities

The following activities were undertaken during the year:

- Ongoing development of Bulletin 206, Arch Dam Design, Structural Analysis Methodologies and Criteria, including submitting the bulletin to ICOLD central office
- Ongoing development of Volume 1 of the Bulletin on the Sustainability of Concrete Dams, including submitting the bulletin to ICOLD central office
- Ongoing development Volume 2 of the Bulletin on the Sustainability of Concrete Dams, including a meeting of the bulletin sub-committee at Hydro 2023, in Edinburgh.

Peter Buchanan

ANCOLD Representative

ICOLD Committee E: Embankment Dams (2023-27)

Due to the late timing of ICOLD in 2024, the Embankment Dams Committee meeting for 2024 is yet to be held. Several bulletins are in various stages of preparation as summarised in Table 1

Table 1. Status of bulletins within Embankment Dams Committee

Bulletin	Status
Internal Erosion and Piping, Volume 2	Volume 2 (case studies supporting Bulletin 164) has been published and is available on the ICOLD website.
Geotextiles in Dams	In final draft.
Concrete Faced Rockfill Dams	An update to the draft bulletin will be presented at the 2024 workshop.
Cracking and Deformation in Dams	In early preparation. Aiming for draft of bulletin to committee for ICOLD 2025.
Compaction	An initial draft has been prepared and the second draft is being worked on, aiming for draft issue before ICOLD 2025.
Cofferdams	In preparation. Update to be provided at ICOLD 2024.
Cut-off Walls	In planning. Update to be provided at ICOLD 2024.

1. Bulletin on Concrete Faced Rockfill dams:

Alberto Marulanda (Columbia) is leading the update to the bulletin on Concrete Faced Rockfill dams (Bulletin 141 dated 2011) considering the developments since issue of the bulletin regarding the compression failure of vertical joints in the upstream face slab. Alberto provided a comprehensive review of CFRDs at ICOLD 2023 and this is available.

A second draft is in preparation including a section on numerical analyses that is currently in review / has been reviewed by Committee A on numerical analyses.

2. Bulletin on Geotextiles in Dams:

The bulletin on geotextiles is now in final draft and has / is about to be referred to the French Committee to be published.

3. Bulletin on Deformation and Cracking in Embankment Dams:

This bulletin is focused on transverse (or diagonal) cracking and hydraulic fracture associated with differential embankment deformation for evaluation of the potential failure mode of concentrated leak internal erosion and piping. The presentation to the committee provided an update of the case history information on transverse cracking associated with cross valley differential settlement.

Preparation of a draft is in progress with the aim of submitting the draft to the Embankment Dams Committee in 2025 for discussion. A workshop will be held at the ICOLD 2024 meeting in New Delhi.

4. *Bulletin on Compaction:*

A draft was prepared and issued to the Embankment Dams Committee for review and comment at ICOLD 2023. Information on compaction practices is being collected from member organisations to inform and further update the bulletin. The status of the bulletin will be provided at the 2024 committee meeting in New Delhi.

5. *Bulletin on Cofferdams:*

This will be a joint bulletin with Committee M (Operation, Maintenance and Rehabilitation of Dams) and is designed to be an update on Bulletin 48a (River control during dam construction published in 1986). The status of the bulletin will be provided at the 2024 committee meeting in New Delhi.

6. *Bulletin on Cut-off Walls:*

The bulletin on cut-off walls is now being led by Jennifer Williams. The status of the bulletin will be provided at the 2024 committee meeting in New Delhi.

There has been significant advancement in cut-off wall technology since the ICOLD Bulletin 51 (1985) on "Filling materials for watertight cut off walls". The scope of this bulletin is to cover the advancements in cut-off wall technologies and application. It is proposed to focus on concrete, plastic concrete, soil-cement-bentonite and cement-bentonite cut-off walls.

7. *Other Information and Presentations*

The Embankment Dams Committee has 39 members and 10 co-opted members.

At least two new members will be welcomed at the 2024 meeting, including Jennifer Williams (USA representative) and Ayhan Kocbay (Türkiye representative).

The Committee will hold one technical session at ICOLD 2024:

- Transverse cracking and hydraulic fracture in embankment dams. Presenters at the session include Gavan Hunter (Australian representative), Cameron Purs (Australia), Ke He (Australia), George Dounias (Greece representative) and Marian Minarik (from Committee A on numerical methods).

Presentations at the upcoming committee meeting will include:

- Andre Koelewijn on current research on backward erosion piping.

Gavan Hunter

ANCOLD Representative

ICOLD Committee F: Engineering Activities with the Planning Process for Water Resources Projects (2014-25)

Eric Halpin, from the USA, is now the Chair of ICOLD Committee F – Engineering Activities with the Planning Process for Water Resources Projects. Post ICOLD 2023, 4 new members have been added to the committee from India, Canada, UK and South Africa.

There has been no activity from Committee F in 2023/24, and therefore there is nothing to report. There are plans for the technical committee to meet during ICOLD 2024 in Delhi on the 30 September 2024, and again in Chengdu, China in May 2025.

Richard Herweynen

ANCOLD Representative

ICOLD Committee G: Environment (2020-25)

In 2020, the term of office of Committee G (Environment) was extended for five years (2020 - 2025). The Committee Chair is Peter Amos (New Zealand) and the two Vice Chairs are Tracey Williamson (Australia) and Blaine Dwyer (USA). The Committee has sixteen country-members and two co-opted members.

The Committee completed a Final Draft Bulletin titled “Integrating dams with the environment - Case studies involving planning, construction and operation of dams demonstrating environmental and socio-economic benefits” in August 2024, and this has been sent to ICOLD’s Central Office for circulation to National Committees. This Bulletin provides 12 case studies from 10 countries, which cover the environmental effects of construction and operation of dams, highlighting mitigation measures employed for the projects described. It does not appraise or recommend any one of the various environmental effects assessment methodologies, which are used around the world. The aim of this Bulletin is to illustrate, from different regions of the world, environmental and social practices relating to dams that yield positive benefits. The Bulletin should be published early 2025.

With completion of this Bulletin coming to an end, the Committee has commenced a new Terms of Reference. The title of the next Bulletin to be drafted is “Managing Environmental Effects and Enhancing Benefits of Reservoirs: Current and Emerging Methods and Tools”. It was agreed that the sections on “effects” and “benefits” would be a short summary and the main effort would be focused on the “methods and tools” section. The Committee will prepare a contents list and program for completion of this new Bulletin during the Committee Meetings at ICOLD 2024 in India.

An interesting development this year was ICOLD’s proposal that Committee T (Prospective and new challenges for dams and reservoirs in the 21st century) lead an initiative on “Dams and Sustainability”. This initiative is to be carried out with the contributions of the various interested committees, including Committee G (Environment). This initiative is in recognition of the requirement to raise awareness on the wider topic of sustainability within the dams industry.

The first step is a series of webinars listed below:

- Webinar#1: Defining the scope and the perimeter.
- Webinar#2: Life-Cycle-Analysis (LCA): methods, tools, lessons.
- Webinar#3: Accounting for Green House Gas (GHG) emissions within LCA framework.
- Webinar#4: Accounting for other factors.

The webinars are open to all ICOLD members and are focused on the analysis and assessment of the sustainability of dams in their full life cycle. This first webinar was presented in May 2024 and defined the content and what will be addressed in the development of future work by members of the various Technical Committees and by selected external experts. With this initiative, all ICOLD members are encouraged to promote the sustainability of dams and to contribute with their work in mitigating climate change, environmental imbalances, and economic and social inequalities.

Tracey Williamson (Committee G Vice-Chair)
ANCOLD Representative

ICOLD Committee H – Dam Safety

ICOLD Committee H continues to make significant strides in advancing dam safety management by developing new guidelines and revising existing bulletins. The Committee’s activities for the 2025–2028 term are guided by the newly adopted Terms of Reference, which focus on preparing comprehensive guidelines for dam safety management and integrating risk assessment and risk management into global practices.

One of the key projects is Bulletin 3, which addresses the Governance Level Management System. This bulletin is designed to provide a framework for governance in dam safety, targeting dam owners, auditors, and oversight authorities. It bridges the gap between existing governance protocols outlined in Bulletin B192 and the forthcoming operational guidelines.

Progress also continues on Bulletin 4, which will introduce a robust Operational Management System. This bulletin complements the governance framework by offering detailed operational guidelines to enhance the safety, monitoring, and maintenance of dams globally.

In line with the Committee’s focus on risk management, a new set of guidelines covering Risk Assessment and Risk Management is under development. This new bulletin will supplement, rather than replace, Bulletin 130 and aim to provide a more comprehensive approach to risk-based dam safety assessments. It is being prepared with input from multiple international case studies and will include chapters on risk-based assessment and management for dams, providing detailed guidance on assessing and mitigating risks.

In addition, efforts to expand and update the ICOLD database on dam failures and incidents are ongoing. The database is being enhanced to incorporate international data, including from the U.S., to ensure it remains a vital resource for tracking dam safety incidents worldwide.

Committee H’s work continues to play a pivotal role in shaping dam safety standards. Its guidelines serve as essential resources for dam safety managers, regulatory authorities, and industry professionals alike. The ongoing development of these bulletins will provide critical support to the governance and operational management of dam infrastructure, ensuring safety protocols meet the highest international standards.

Sam Banzi
ANCOLD Representative

ICOLD Committee I: Public Safety Around Dams (2022-25)

Committee membership has increased to 36 members from 29 countries with the addition of Egypt, Indonesia, Iran, Korea and Nigeria. The committee held regular meetings in the first half of 2024, dropping off over the northern summer, but set to resume in September 2024. With the ICOLD annual meeting to be held during the first week of October the committee have not met in person to welcome new members and resolve the Bulletin release plan. As previously reported, the proposed Bulletins cover the Public Safety Management cycle as described below:

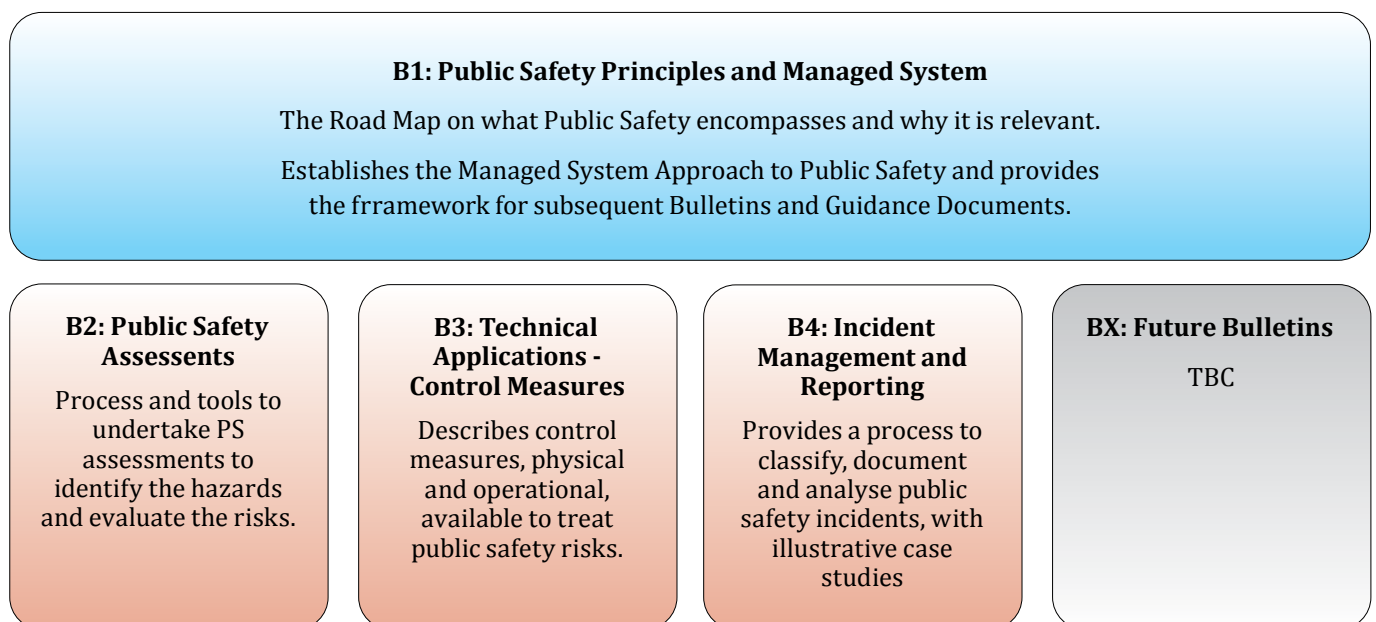


Figure: Framework for ICOLD Public Safety Bulletins

The committee had intended having the first two bulletins submitted to National Committees prior to the 2024 Delhi ICOLD meeting but that was not achieved. At its meeting on September 30 September 2024 the committee resolved to submit the suite of guidelines to ICOLD in February 2025 in order to receive feedback prior to the 2025 meeting in Chengdu in May 2025.

Emergency Management for Dam Safety

The additional committee members have supported a sub-committee who considered the responses to the survey issued in 2023 which has informed a draft state of practice report, which is due to be issued to national committees in 2025. At the ICOLD Delhi 2024 meeting a workshop was held to seek input from delegates as to the areas requiring the most guidance; a discussion around the levels of confidence ascribed to the effectiveness of plans in the event of an emergency indicated that overconfidence in planning efficacy can be a problem. Following the release of the State of Practice report the DSEP Bulletin production will commence.

Angus Swindon

ANCOLD Representative

Committee L - Tailings and Waste Lagoons, 2024

2024 has been a busy year for me on ICOLD Committee L culminating in the meeting in Delhi 27th September to 4th October. We had put together a very good program of tailings related events starting with a technical tour of Hindustan Zinc's Refinery at Zawar, near Udaipur where they had implemented filtered stacking over a 60m high existing TSF. This was very interesting as the tailings were virtually single size at 120 micron and filtered very easily and costs were apparently only \$2/t more than the previous conventional system. Maybe this is an example of how consideration of the process could simplify tailings management.

We then had a short-course on TSF Surveillance over two days and this went very well with 28 presenters from consultants, instrumentation contractors and mining companies, presenting a "state of the art" overview which was very instructive and will be used as the basis for a new ICOLD Bulletin on Surveillance aimed specifically at tailings.

Our annual meeting was well attended with 44 members and 49 observers. Country updates were delivered from Iran, USA, Norway, Finland, Sweden, Canada, Brazil, Russia, DR Congo, India, Chile, Peru and Australia. The Brazilian presentation was very interesting, describing ongoing "de-characterisation" of upstream tailings dams ongoing since new legislation. So far 20 dams have been "de-characterised" over last 5 years, leaving 53 remaining being addressed. De-characterisation can comprise:

- Partial removal (to level of starter dam)
- Complete removal of the dam
- Buttressing, or
- Building a back-up dam

Still making good progress with preparation of the ICOLD Register of Tailings Dams through the good work of Nahyan Rana. Nahyan now has 20,000 TSFs georeferenced including 689 from Australia. There are still several major country "gaps" in data including India, Russia, Philippines & Indonesia, Mainland Europe (e.g., Spain, Italy, France, Germany) and Central parts of continental Africa (e.g., Congo, Angola, Uganda). ICOLD are being supported by the Church of England investor group and UNEP in this work.

The following days included a Workshop on developing a new Bulletin on Surveillance for tailings dams, Various papers presented at the symposium, a workshop on using Bulletin 194 and a course on dam breach analysis by CDA.

Our committee is preparing videoed content from these events for publishing on our YouTube channel, so stay tuned to details so you can view.

Planning for China next year is progressing, and the committee is attempting to have items of interest to tailings practitioners on the agenda. So far the event will include a pre-conference tour of a closed TSF and a post-conference tour of an active dam.

Looking forward to ICOLD Congress in Chengdu, China, 16th to 23 May, 2025.

David Brett

ANCOLD Representative

ICOLD Committee M: Operation, Maintenance and Rehabilitation of Dams (2023-26)

Committee M met at the ICOLD 2024 Annual Meeting and Symposium to discuss progress on its various Terms of Reference. Committee M currently has five terms of reference for the preparation of Bulletins, of which two have been completed. They are:

- TOR1 – This Bulletin covers ‘Recommendations for the O&M and Rehabilitation of Dams’, and was completed in 2017 and published as Bulletin No. 168
- TOR2 – This Bulletin will explore topics related to the rehabilitation of dams using underwater techniques, and is currently being progressed by a working group of Committee M. Committee M is keen to hear from member countries with case studies of projects where innovative processes have been used to complete rehabilitation projects underwater.
- TOR3 – This Bulletin covers the ‘Operation of Hydraulic Structures for Dams’ and was completed in 2021 and published as Bulletin No. 178.
- TOR4 – This Bulletin will cover the ‘Water Management for Dam Rehabilitation Projects’ and is currently in development. This Bulletin is being prepared in collaboration with Committee E and S. This Bulletin will be specifically interesting for our members who have pending upgrade or rehabilitation projects which require management of active storages during the construction phase.
- TOR5 – This Bulletin will explore ‘Lessons from Dam Rehabilitation Projects’ and is currently in development. This Bulletin will present learnings from member countries regarding various recent rehabilitation projects. A survey of members will be undertaken in the coming months to develop an understanding of the key challenges experienced by member countries regarding rehabilitation projects of dams. The results of the survey will be incorporated into the Bulletin.

During the meeting, there was various discussion about future initiatives of the Technical Committee. In addition, Japan’s committee member, Mr Yoshimura, shared a presentation on some challenging rehabilitation projects recently undertaken in Japan. Some of these learnings are particularly relevant to the Australian Dams industry, and will be included in the relevant Bulletins as they progress.

Colleen Baker

ANCOLD Observer

ICOLD Committee O: World Register of Dams and Documentation (2021-24)

An update on this Committee was not available at the time of the presentation of this Annual Report, as no significant progress was made during the 2023/24 period. Further updates will be provided as developments occur.

Robert Wark

ANCOLD Representative

ICOLD Committee Q: Dam Surveillance (2023-24)

The terms of reference for ICOLD Committee Q on Dam Surveillance require the committee to prepare a series of Bulletins addressing the following

- Methods for the improvement of the quality and reliability of information;
- Data processing and representation techniques;
- Effective diagnostic analyses to determine behaviour patterns;
- Dedicated surveillance systems for the optimization of maintenance-, rehabilitation- and other life cycle costs; and
- Impact of surveillance (preventing dam incidents and dam failure by means of selected case histories).

A Bulletin addressing the last dot point was completed in 2022. This Bulletin brings together a range of case histories showcasing where effective surveillance was key to identifying and intervening in deteriorating situations that could have led to significant incidents or failure.

Since 2022, Committee Q has been preparing material to address the first three dot points above. Good, albeit slow, progress has been made with significant material now in draft and awaiting review and enhancement by other committee members. The initial proposal was for these dot points to form chapters of a consolidated Bulletin. However, as is becoming more common in ICOLD the Committee is now proposing to develop each as a separate, short, but targeted Bulletin with the aim of making information more readily accessible. April 2025 is being targeted to complete drafting and review.

In addition to preparing the Bulletin content, Committee Q has undertaken a number of other activities.

This included conducting a survey of National Committees examining the approach to specifying instruments, certifying or qualifying those instruments as suitable for use and in some jurisdictions regulating, the type and accuracy of instruments to be used.

The Committee is collaborating with Committee C on Hydraulics for Dams to develop material on the surveillance requirements for spillways and other hydraulic structures. This will be incorporated in the Bulletin being prepared by Committee C.

The Committee is also collaborating with Committee L on Tailings Dams to ensure contemporary practice for surveillance of tailings dams is captured. This has proven particularly helpful as developments in governance and surveillance practice by the tailings industry has been significant in recent years and can be translated to water dams quite well. Committees Q and L also collaborated to deliver a two day short course on surveillance of embankment and tailings dams at ICOLD 2024.

Andrew Reynolds

ANCOLD Representative

ICOLD Committee S: Flood Evaluation and Dam Safety (2020-24)

Following the meeting in Gothenburg held in June 2023, there were no face-to-face meetings during 2023/24. The next meeting is to be held in New Delhi in September 2024 and Australia will be represented by Peter Hill and Michel Raymond (both online).

Committee S is working on 2 new bulletins:

Flood Risk Assessment

1. Flood risk management under changing environment
2. Flood risk assessment in water conservancy project planning and design
3. Flood risk assessment in real-time operation of engineering works
4. Case studies from different countries

ANCOLD provided feedback on the draft guideline and the final bulletin is to be presented to the ICOLD Board in September 2024 (New Delhi).

Extreme Flood Estimation and Associated Uncertainties

1. Extreme flood estimation, by Alan Warren (United Kingdom)
2. Uncertainty, by Zoran Micovic (Canada)

Peter Hill and Michel Raymond are contributing to chapter 1 through outcomes of work on regionalisation of envelope curves of recorded flood maxima. The bulletin is to be presented to the ICOLD Board in May 2025 (Chengdu).

Peter Hill

ANCOLD Representative

ICOLD Committee V: Hydromechanical Equipment (2023-26)

The draft of the bulletin 'Best practices for achieving reliability of flood discharge gates' has been finalised and submitted to ICOLD Central Office. Comments from the National Committees have been sought over the past few months and these are in the process of being considered in the finalisation of the bulletin. French translation of the bulletin is progressing in parallel.

The draft bulletin will be considered for endorsement at the General Assembly in New Delhi in September 2024.

Discussions have continued regarding the title of the next planned bulletin and a shortlist of topics has been finalised but no final decision has been made as yet.

Ian Landon-Jones

ANCOLD Representative

ICOLD Committee Y: Climate Change (2021-23)

Committee Y has completed two of its three bulletins as follows:

- Climate-induced water shortage and drought risk management. Climate resilience of water resource systems
- Role of hydropower in climate change mitigation and new energy mix

These bulletins have been circulated to national committees for consideration, and expected to be ready for approval at the 2024 ICOLD annual meeting in New Delhi, India.

A third bulletin titled 'Flood risk evolution associated to climate change' is being finalised and expected to be ready in 2025.

Committee Y has been working on the preparation of a new Terms of Reference for 2024-2027. Online discussions were held during the year to develop the scope of the next set of bulletins.

Committee Y has active members from 16 countries, including Australia.

Siraj Perera

ANCOLD Representative