



Michael Rogers,
President



Michel de Vivo,
Secretary General

ICOLD celebrates its 90th anniversary

ICOLD was established by 5 countries in Paris, on 6th July 1928, after three years of gestation promoted by a variety of organizations encouraged by the French civil engineering community.

Since 1928 the number of countries that have become members of our organization has been gradually growing to reach the 100 mark, with the Kingdom of Bhutan joining ICOLD in 2017. The same growth has been observed in the number of experts who contribute to our work, which is now reaching 15 000.

ICOLD has operated with a **strong and permanent structure**, but was has been able to adapt to the way the science of dam engineering has evolved and to the technical breakthroughs that have been made. There are reasons to be proud of our contribution to the sustainable development of water and energy resources, and satisfied with the countless benefits dams and reservoirs have provided throughout all these years.

Our organization is based upon four pillars: the National Committees, the Board, the Central Office, and the Technical and Special (Ad Hoc) Committees. **The National Committees are our central pillar and our purpose**, and one of our main tasks is to support, encourage and promote the activities of these National Committees, in order to ensure that we are forever present in the different regions and countries of the world. Regional clubs have been gradually created to take into account the specificities of each region. First the European club of ICOLD, then the Americas, then Asia-Oceania and Africa. They are also helping the national Committees in their tasks.

ICOLD's Mission Statement is that: "ICOLD advances the Art, Science and Engineering techniques for the Planning, Design, Construction, Operation, and Maintenance of safe dams to ensure the sustainable development and management of the world's water resources".

This challenge is all the more important in view of the growing awareness of Climate Change, which is

bringing with it a higher variability in water flows and a greater need for reservoirs to regulate it. As ICOLD has shown during its intervention earlier this year in the 8th World Water Forum, **dams can play a crucial role** in the mitigation of climate change (low carbon production of power) and for the adaptation to climate change (reservoirs for water storage to face drought or prevent floods)

We must never forget that the achievements of ICOLD have been possible only thanks to the commitment and dedication of many civil engineers, hydrologists, hydromechanical engineers, biologists, environmentalists and many other professionals, who have been working constantly over the past 90 years. It is important to remember that all of them worked voluntarily.

This glorious past is helping us in planning for the future. Today, most of the investments in new dams are made for hydropower. This will continue for a few more years until we reach the maximum potential for hydropower generation.

We will then enter a **new situation** where most of the investments will be made for **energy storage** rather than for energy generation as such, as it is the case today. The massive new development of intermittent renewable energies like wind and solar power **will necessitate corresponding massive means to store that energy**, which is not controllable. The pumping storage capacity is now 10% of the generation capacity and it is expected that it will be 100% in 2050.

Thus, **it is a new Golden Age for dam construction** which is coming, but it will not be the same as the Golden Age from the post-war period. The future of hydropower will rest on new technologies, some of them still unknown today. And that is the reason why the role of ICOLD will continue to be essential.

The creation of our young engineers forum in 2011 and its rapid development choose that the young generations of civil engineers are ready to contribute.

It is therefore important to celebrate our 90th anniversary both to commemorate the important contributions of the past and to anticipate for the contributions of the near future.

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What is ICOLD?

ICOLD is currently comprised of 100 countries and 15,000 individual members: Engineering Companies, Consultants, Builders, Development companies, Scientists, Researchers, Engineers, University Professors, Governments, Financial Institutions, and Associations.

ICOLD is the world's leading professional organization in the field of dams, advancing the technology of dam engineering and supporting the socially and environmentally responsible development and management of water resources to meet the worldwide demand.

ICOLD is a forum for the exchange of knowledge and experience in dam engineering. With an Annual Meeting in a different country each year and a Congress every three years, it has built up nearly one century of knowledge.

This permanent quest for progress is organized through 26 Technical Committees and 500 experts on specific themes. ICOLD also promotes public awareness of the beneficial role of dams in the sustainable development and management of the World's Water Resources.

ICOLD leads the profession in setting standards and guidelines to ensure that dams are built safely and economically, and in an environmentally and socially sustainable manner.

Dams for human sustainable development

From Prehistory to History

Dams have served many civilizations over the last 5,000 years, as can be grasped from the remains of those still in working order.

Reservoirs designed to meet the demand for water, especially where farming, relied on irrigation and flood control, first emerging in the Neolithic period, and are among the earliest of Man's works. Evidence of this can be seen in the history or even the prehistory of ancient China, Mesopotamia, Persia, Egypt and India whose sacred books or epic legends explicitly mention the role of reservoirs. It is in fact the loss, with the passage of time, of the skills shown by the designers of such dams and the resulting lack of maintenance that was often a major cause of the weakening and decline of these civilizations.

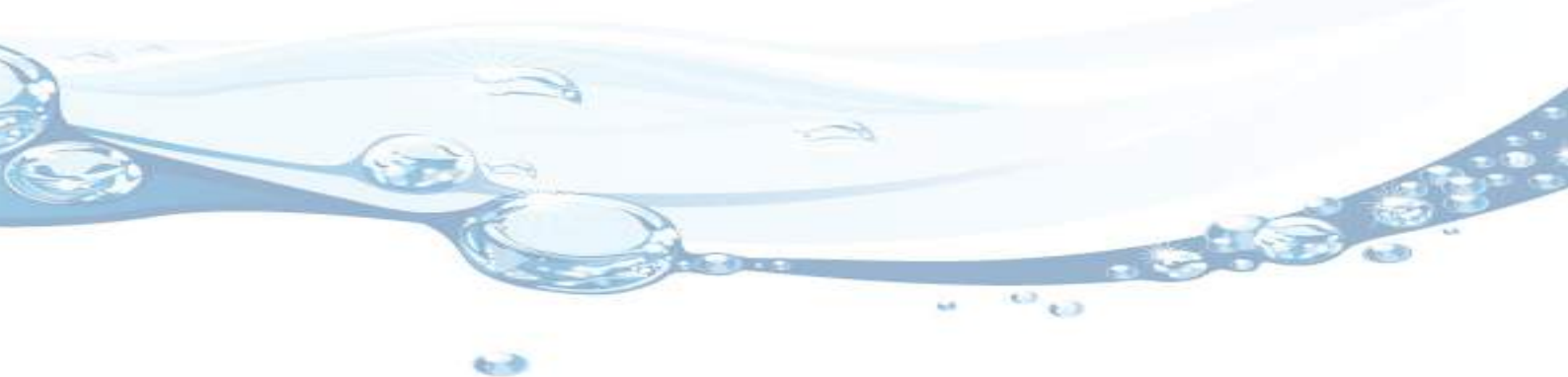
The engineer's art was intuitive and depended on individuals who were mid-way between gods and men. Their inventions were subject to the verdict of the natural forces in play and were exposed to failure. There was no reasoned scientific analysis that could be passed on. It is not impossible to imagine that their art, their savoir-faire, was like the art of warfare, and purposely kept secret.

These times were followed by activities concerning systems necessary for cities to flourish (especially in the Roman Empire and Central America), then by structures during the Middle Ages both in Europe (Spain, Czechia) and elsewhere, for the purposes of agriculture and fish farming, and ultimately, to improve trading activity, artificial inland waterways appeared all over the world.

While decisive steps for a rational approach to construction were at last being guided scientifically as early as the Renaissance, the beginning of the industrial era (expansion of mining in the United Kingdom) and most importantly, hydroelectricity (France, Italy, USA, Switzerland) led to a burst of dam construction throughout the world by the close of the 19th century and into the 20th.

World Water Resources

The renewable water resources in the world, which come from the solar heating machine that is the hydrological cycle, could be estimated at approximately 40,000 km³ per year. But the irregularity in time, and the uneven geographic location and concentration of water resources give rise to the fact that the



accessible natural resources are only some 9,000 km³/year, 22.5% of the renewable resources. This explains why it has been necessary to construct more than 59,000 large dams over the past 5,000 years, to be able to satisfy the demand for water, which is essential for life and human development. These large dams and their reservoirs regulate about 3,500 km³ per year. Therefore, the reservoirs contribute significantly to the world's available water resources, representing around 30%.

For almost 5,000 years, dams have served to ensure an adequate supply of water and other benefits to sustain the world's population. They have become an "integral part" of our societies' infrastructure and play a major role in "sustaining and enhancing the quality of life".

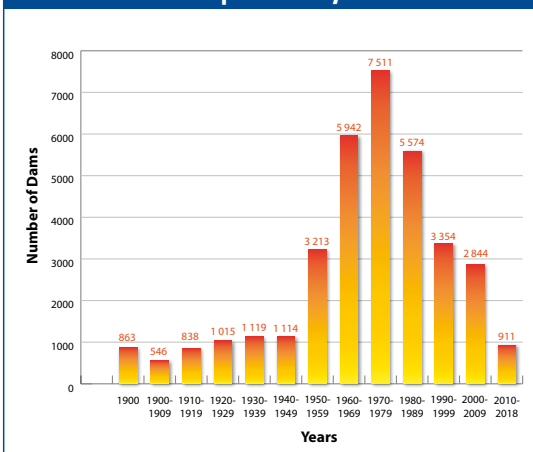
Role of Dams and Reservoirs

The water that is stored in and regulated by dams and reservoirs provides an irreplaceable water resource and benefits water supply, irrigation, hydropower, flood mitigation, river navigation, recreation, tourism, environment, etc. For example, irrigated areas account for 17% of the world's arable land but produce 40% of the total world crop yield. Reservoirs also play a significant role in drought and flood mitigation, and one of the purposes of 20% of the world's reservoirs is to reduce the major socioeconomic impact of flooding. Furthermore, hydropower, which is a clean renewable and environmentally-friendly source of energy, yields 20% of the world's generated electricity. Hydropower is one of the main purposes of dams, and there are more than 8,200 large dams (about 25% of the total number of large dams), in which hydropower is the only purpose or one of the main objectives of the reservoirs.

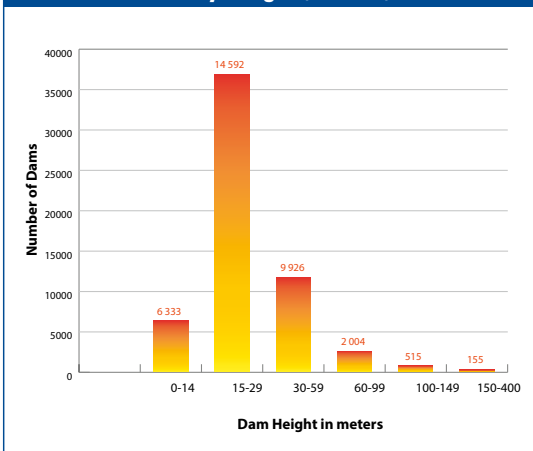
The International Commission on Large Dams (ICOLD) maintains a World Register of Dams. For a dam to be considered large and be included in the register it must have a height of 15 meters or 5-15 meters and store more than 3 million cubic meters of water in the reservoir. The dams are listed by country and include data such as the dam name, year of completion, dam height, reservoir capacity, area of catchment (drainage area), the purpose, installed electric generating capacity, mean annual electricity energy produced, irrigated area, volume of water stored for flood protection and number of people affected by resettlement. The world data as of 2018 indicates that there are about 60,000 large dams in operation. Embankment dams are the predominant type followed by gravity and rockfill embankment dams.

Graphs showing when the world's large dams went into operation, their distribution height and distribution by geographic areas are shown below:

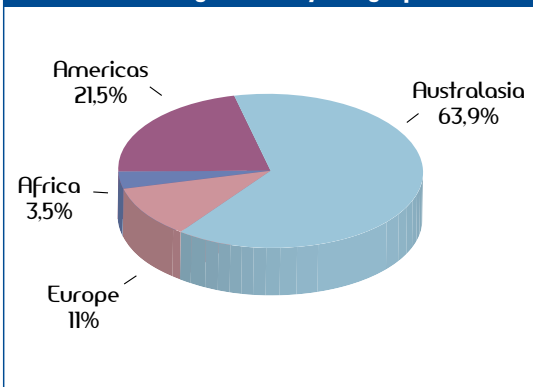
Dams Placed into Operation by Decade



Number of Dams by Height (meters)



Distribution of Large Dams by Geographical Area





There are currently about 60,000 large dams in operation. The main purposes of these reservoirs are:

- 38% irrigation
- 18% hydropower
- 14% water supply
- 14% flood mitigation
- 8% recreation
- and 8% others (including navigation, fish breeding, and others).

Today, multipurpose dams are being planned, constructed and operated with a balance between the economic and environmental benefits. This process includes stakeholder involvement. The social and environmental impacts of the dams are being addressed and mitigated. Observation of the natural habitat is part of the design of a dam project.

ICOLD Environmental Policy

ICOLD recommends that the management of the existing dams and the construction of new dams to remain within the context of Integrated Water Resources Management, taking into account their implementation within a framework of sustainable development, and adhering to the following basic criteria:

- Technical, Economic and Financial Feasibility
- Sustainable Development. Compatibility with the Environment
- Social and Political Acceptance

Attention to the social and environmental aspects of dams and reservoirs must be a dominant concern pervading all our activities, in the same way as the concern for safety. We now aim at balancing the need for the development of water resources with the conservation of the environment in a sustainable way which will not compromise future generations.

The Birth of ICOLD

It was French engineers who had the idea of creating an international forum devoted entirely to discussing topics specific to dams. The French association for the advancement of science, at its 49th session in Grenoble in 1925, declared its wish to support the creation of a permanent international technical commission specifically concerned with large dams.

The purpose was to provide an international forum for discussion devoted exclusively to large dam engineering issues.

It was thus 93 years ago that dam engineering took on an international dimension and so opened the way for the pooling of all knowledge and techniques founded on a scientific base and what could be learned from feedback.

Later, in 1926, the French delegation to a Sectional Meeting of the World Power Conference in Basel (Switzerland) tabled a proposal for setting up an International Commission on Large Dams, together with a draft Constitution of the new organization. The conference voted in favor and accepted the French Government's offer to take the necessary action. The proposal was again supported in much the same terms by the World Power Conference Executive Council at its meeting in Cernobbio in 1927. Also, in December 1926 the 14th International Navigation Congress meeting in Cairo had decided that it would be useful to set up an International Commission on Large Dams.

A French Committee on Large Dams was accordingly created near the close of 1926 under the aegis of the Société Hydrotechnique de France, with Government support. It proceeded to draw up proposals and draft a Constitution, dated 22 December 1927, for circulation through diplomatic channels to interested Governments.

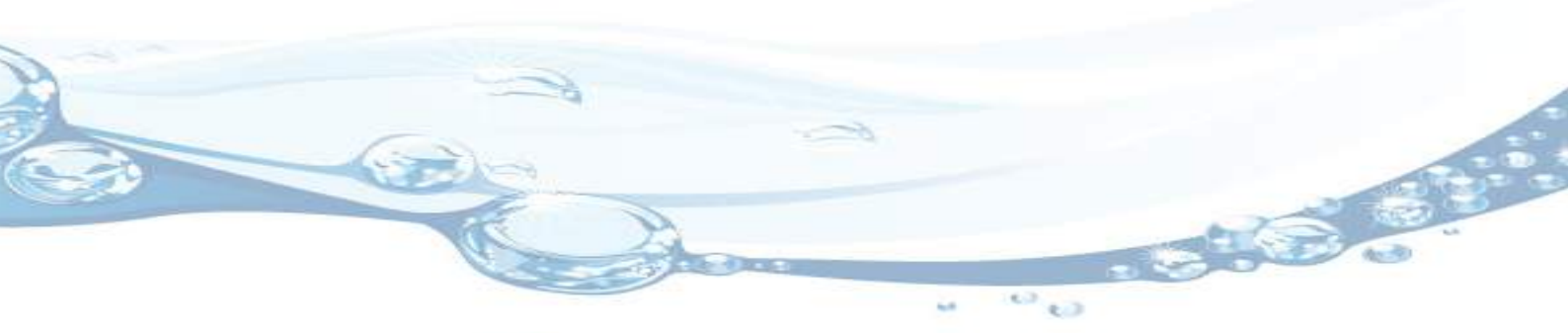
The constitutive meeting of the International Commission on Large Dams was held in Paris on 6 July 1928. The Chairman of the interim executive council at this time was G.G. Ponti from Idroelettrica Piemonte in Turin, G. Mercier was vice-chairman and A. Genthial, Secretary. Six nations were represented: USA, France, Italy, Romania, UK and Switzerland. The move was publicized and approved at the closing session of the International Congress of Electricity Producers and Distributors UNIPEDE on 10 July 1928, and the London meeting of the Executive Council of the World Power Conference in London voted unanimously to recognize the International Commission on Large Dams on 3 October 1928.

ICOLD and the World Power Conference (1928-1967)

Adoption of the Constitution and its coordination with the World Power Conference required various adaptations and the first Executive Meeting was held in London on Monday 1st June 1931.

The objectives as they appeared in the Constitution were as follows:

«to encourage improvements in the design, construction, maintenance, and operation of large



dams by bringing together information thereon and by studying questions related thereto».

The Commission accomplishes its objects:

By interchange of information - between its several National Committees

By holding periodical meetings

By organizing studies and experiments

By publications of proceedings, reports, and documents.

G. Mercier, formerly Vice-President, Chairman of the Permanent Office and Chairman of the French National Committee was elected as first President of the International Commission on Large Dams of the World Power Conference in recognition of his unceasing efforts to establish the Commission over the previous five years.

The meeting was attended by Germany, Austria, France, British India, Norway, United Kingdom, Switzerland and Czechoslovakia; five other member countries: Dutch India, Japan, Morocco, Romania and Sweden were prevented from attending. The USA and Italy were present as observers. By June 1931, therefore ICOLD of the World Power Conference boasted thirteen members.

An Executive Meeting was held every year thereafter except during the war years from 1940 to 1944. Two meetings were held in 1933, 1936 and 1963. Executive meetings are now called General Assembly.

As for the Congresses, the first was in Stockholm in 1933, together with a Sectional Meeting of World Power Conference.

Since that time, there has been a Congress every three years, except in 1939, 1942 and 1945. The first two Stockholm in 1933 and Washington in 1936 were opportunities for a brilliant concrete application of the declared objectives. Profs W. Fellenius (Wolmar Fellenius: Untersuchungsmethoden zur Feststellung ob sich ein gegebenes Material für den Bau eines Erddammes eignet 1933 (with S. Johannson), Calculation of the stability of earth dams -1936), and K. Terzaghi (Karl Terzaghi: Verfahren zur Messung der Bewegungen betonierter Talsperren 1933, Die Prüfung von Baumaterialien für gewalzte Erddämme 1933, Investigation of the characteristics of soils in respect to their suitability for the construction of earth dams General Report 1933, Auftrieb und Kapillardruck an betonierten Talsperren - 1933) presented masterly papers which are remembered as historic events in the

progress of knowledge and were printed in the Congress Proceedings.

During the years 1964-67 a constituent period developed, in which the organization acquired its own identity with the name of "THE INTERNATIONAL COMMISSION ON LARGE DAMS" (ICOLD-CIGB, CIGB meaning Commission Internationale des Grands Barrages). The basic principles of the later Constitution and By-Laws were adopted by the 31st Executive Meeting in Paris in 1963, which had been specially convened by President Claudio Marcello (Italy) to discuss the new wording.

ICOLD from 1967 to Present

At the 35th Executive Meeting in Istanbul in 1967, under the Presidency of J. Guthrie Brown, just before the 9th Congress, it was decided that the Commission had grown to the point where it should become an independent association.

J. Guthrie Brown had formed a special Committee on Relations between the World Power Conference and ICOLD, under the chairmanship of G. Drouhin (France) in 1965, and this decision was based on the report from that Committee, with full and friendly support from World Power Conference.

The organization is based on the National Committees, the Executive Committee, the Officers, the Central Office, and the Technical, Administrative and special (Ad Hoc) Committees. The Officers are: the President, the six Vice-Presidents, the Secretary General and Treasurer, elected by the Executive Committee for a three-year period, and not eligible for re-election, except for the Secretary General. The Congresses take place every three years, and are based on four questions.

The Constitution of 1967 is similar to the current one, while frequent changes have been made to the Constitution and By-Laws since that time although they have involved only slight modifications.

ICOLD's title, particularly the word "Commission" has been open to debate because for some, it recalls the earlier dependence on the World Power Conference. At the 39th Executive Meeting in 1971, President José Toran formed an ad hoc Committee, under J. Cabanius, to report to the 40th Executive Meeting in Canberra in 1972, which they did, in these terms: "... ICOLD should conserve its present denomination of "International



Commission on Large Dams" considering that the word "Commission" refers to the mandate received from National Committees to fulfil the mission defined in Section 2 of the Constitution. Such an announcement does not involve any modification of the Constitution". This move was unanimously welcomed and the attempt to change the name to "International Conference on Large Dams" was side-stepped.

ICOLD from its beginning has steadily increased the number of its member countries. In 1928 there were five countries in the constitutive meeting of the

International Commission on Large Dams. In the first Executive Meeting held in 1931, ICOLD of the World Power Conference had thirteen members. Before 1940, 26 countries; in 1967, 56 countries; in 1980, 66 countries; in 1990, 72 countries; in 2000, 81 countries; in 2008, 88 countries and in 2018 ICOLD has reached the 100 country members mark. This means that in the last decades about eight or nine countries have joined ICOLD per decade, mainly countries beginning to increase their stock of dams due to their needs for water and hydropower development.

ICOLD member countries in 2018

1	AFGHANISTAN	1932-64*
2	ALBANIA	1964
3	ALGERIA	1932-64*
4	ANGOLA	2016
5	ARGENTINA	1960
6	ARMENIA	2011
7	AUSTRALIA	1937
8	AUSTRIA	1931-48*
9	BELGIUM	1933
10	BHUTAN	2017
11	BOLIVIA	1982
12	BOSNIA-HERZEGOVINA	1996
13	BRAZIL	1957
14	BULGARIA	1938-58*
15	BURKINA FASO	1998
16	CAMEROON	1993
17	CANADA	1953
18	CHILE	1966
19	CHINA	1974
20	COLOMBIA	1958
21	CONGO	1995
22	COSTA RICA	1966
23	CROATIA	1992
24	CYPRUS	1969
25	CZECH REP.	1993
26	DENMARK	1949
27	DOMINICAN REP.	1975
28	EGYPT	1932
29	ETHIOPIA	2007
30	FINLAND	1947

31	FOR. YUG. REP. MACEDONIA	1994
32	FRANCE	1928
33	GEORGIA	2011
34	GERMANY	1931-52*
35	GHANA	1964
36	GREECE	1966
37	GUATEMALA	1975
38	GUINEA-BISSAU	2013
39	HONDURAS	1985
40	ICELAND	1953
41	INDIA	1930
42	INDONESIA	1930-50*
43	IRAN (ISLAM. REP. OF)	1970
44	IRAQ	1970-2000*
45	IRELAND	1965
46	ITALY	1936-50*
47	IVORY COAST	1967
48	JAPAN	1931-53*
49	KENYA	2009
50	KOREA (REP. OF)	1972
51	LATVIA	2005
52	LEBANON	1962
53	LESOTHO	1989
54	LIBYA	1987
55	LUXEMBURG	1961
56	MADAGASCAR	1982
57	MALAYSIA	1959
58	MALI	2007
59	MEXICO	1948
60	MOROCCO	1931-47*

61	MOZAMBIQUE	2010
62	MYANMAR	2014
63	NEPAL	1985
64	NETHERLANDS	1969
65	NEW ZEALAND	1935
66	NIGER	2009
67	NIGERIA	1973
68	NORWAY	1930
69	PAKISTAN	1952
70	PANAMA	2006
71	PARAGUAY	1975
72	PERU	1965-81-92*
73	PHILIPPINES	1958-2007*
74	POLAND	1932
75	PORTUGAL	1938-47*
76	ROMANIA	1931-57-90*
77	RUSSIA	1932
78	SERBIA	1950
79	SLOVAKIA	1993
80	SLOVENIA	1993

81	SOUTH AFRICA	1965
82	SPAIN	1933-55*
83	SRI LANKA	1953
84	SUDAN	1952-2000*
85	SWEDEN	1931
86	SWITZERLAND	1930
87	SYRIA	1963
88	TAJIKISTAN	2006
89	THAILAND	1955
90	TUNISIA	1932
91	TURKEY	1950
92	UKRAINE	1930
93	UNITED KINGDOM	1928
94	UNITED STATES	1932
95	URUGUAY	1957
96	UZBEKISTAN	2011
97	VENEZUELA	1966
98	VIETNAM	2005
99	ZAMBIA	1966
100	ZIMBABWE	1961

**If there are multiple dates indicated for a country, that means that the country left the Commission, but joined again later.*

As of 2018, 86 General Assemblies and 26 International Congresses have taken place, in all the continents and major countries in terms of construction and management of large dams.

The publication of best practice guidelines: the Bulletins aim to improve dam safety (including during construction). In this regard, progress has been spectacular; it also aims to increase durability, while optimizing costs. The subjects covered by the technical committees have spread to the point where they address all Earth sciences and everything in any way concerned with the biological and societal environment of dams and reservoirs, using the most modern techniques.

Modern dam design aids and performance monitoring techniques, now commonplace throughout the world, are publicized through ICOLD publications. Publications from the 26 international Congresses run into several tens of thousands of pages all now available in digital form. ICOLD keeps a database of large dams throughout the world and regularly updates its World Register of Dams. It also publishes a multilingual Dictionary of the scientific and technical terms used in the planning, design and construction of dams and appurtenant structures.

The high technical standards of its Congresses and its Publications, the efficiency of its operation due to its outstanding Constitution and By-Laws, the

vitality of its National Committees and the skill and experience of their members have all contributed to making ICOLD a leader in the community of international technical associations.

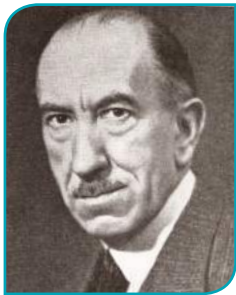
In addition to its engineering importance, ICOLD has come to be a medium for international entente. Membership is seen as offering a place among equals in the international community, and individuals, by talking and working together on shared problems, develop a better understanding and greater tolerance of each other.

ICOLD has undergone profound changes in the recent period, with the creation of the **Young Engineers Forum**, as mentioned in the editorial, but also with the introduction of the **Innovation Awards**. The dissemination of ICOLD Publications has been increased thanks to the free access given to all members. And most importantly, ICOLD has launched several operations of **Capacity Building** for young engineers from developing countries, thus playing its role of accompanying the nations in the development of their water resources.

Since its foundation ICOLD has had 25 Presidents, 140 Vice-Presidents, and 10 Secretaries General. All honorable engineers and experts of international standing who have contributed to the growth of ICOLD and bringing its activities to the attention of all the countries of the world.



Presidents since its foundation up to 2018



G. Mercier
France
1931-1937



M. Giandotti
Italy
1937-1940



A. Coyne
France
1946-1952



G.A. Hathaway
USA
1952-1958



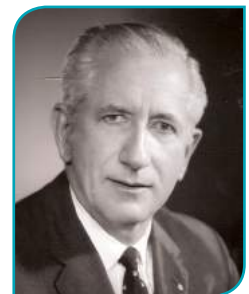
J.F. Rebelo Pinto
Portugal
1958-1961



C. Marcello
Italy
1961-1964



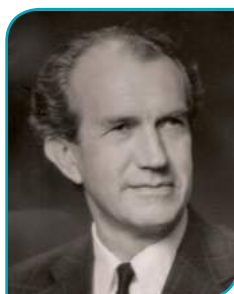
J. Guthrie
UK
1964-1967



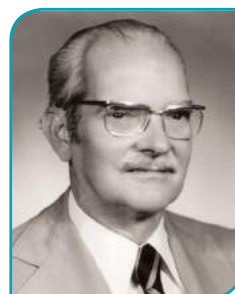
G.T. McCarthy
USA
1967-1970



J. Toran
Spain
1970-1973



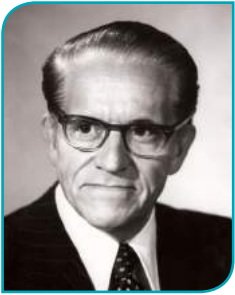
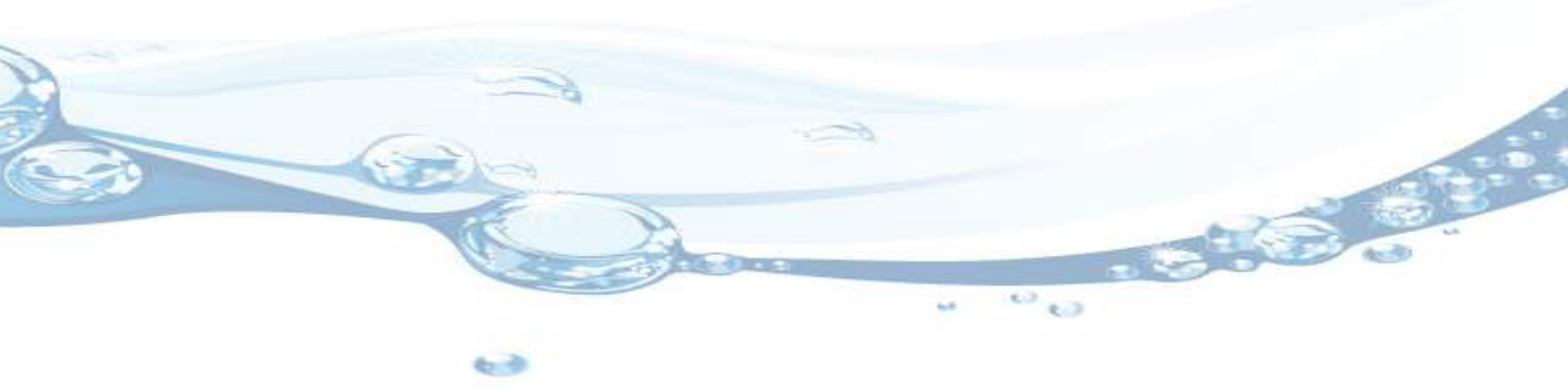
C.F. Gröner
Norway
1973-1976



F.H. Lyra
Brazil
1976-1979



P. Londe
France
1979-1982



C.A. Dagenais
Canada
1982-1985



G. Lombardi
Switzerland
1985-1988



J. Veltrop
USA
1988-1991



W. Pircher
Austria
1991-1994



T.P.C. van Robbroeck
South Africa
1994-1997



K. Höeg
Norway
1997-2000



C.V.J. Varma
India
2000-2003



C.B. Viotti
Brazil
2003-2006



L. Berga
Spain
2006-2009



J. Jia
China
2009-2012



A. Nombre
Burkina Faso
2012-2015



A. Schleiss
Switzerland
2015-2018



M. Rogers
USA
2018



The organization of ICOLD



A typical scene of a Board meeting, with ICOLD officers discussing the future actions of ICOLD. Here a Board meeting in Kyoto.

The organization is based on the national committees, the General Assembly, the Board of Officers, the Central Office, and the technical, administrative and special (ad hoc) committees. Any independent country can become a "Member Country" and constitute a National Committee consisting of persons competent in the matters relating to dam's.

The Commission is directed by:

The General Assembly, consisting of representatives from all the Member Countries and of the Officers of the Commission. The General Assembly is held during the Annual Meeting. It is in charge of resolving all questions concerning organization and direction of studies, investigations and experiments, administration of all funds and

properties, operation of the Central Office and any other relevant business of the Commission; it approves the budget of receipts and expenditure, appoints and organizes all Committees, and elects new Member Countries.

The Board of Officers of the Commission consists of the President, the six Vice Presidents, the Secretary-General and Treasurer. Officers are elected by the Commission on a three years mandate non-renewable except for Secretary-General and Treasurer.

The Central Office established in Paris deals with the business of the Commission. The Central Office is under the general direction of the President assisted by the Secretary General and Treasurer and the staff necessary for the efficient working of the Office.

The Technical Committees and Administrative and Special Committees appointed by the Commission.

ICOLD MAIN ACTIVITIES

ICOLD accomplishes its objectives and works:

Through the activities of ICOLD's national committees and ICOLD annual meetings, with the exchange of information, and experiences between its national committees.

Holding executive and technical meetings; these meetings are organized by voluntary National Committees. They are followed or preceded by study tours where problems of design and construction of dams are discussed.

Organizing and coordinating studies and research
Publication of proceedings, reports and technical documents.

Through the work of its 26 Technical Committees, which gather more than 500 international experts, which leads to the publication of 3 to 5 bulletins each year.

A	COMPUTATIONAL ASPECTS OF ANALYSIS AND DESIGN OF DAMS (2017-20)
B	SEISMIC ASPECTS OF DAM DESIGN (2017-20)
C	HYDRAULICS FOR DAMS (2019-22)
D	CONCRETE DAMS (2018-21)
E	EMBANKMENT DAMS (2017-20)
F	ENGINEERING ACTIVITIES WITH THE PLANNING PROCESS FOR WATER RESOURCES PROJECTS (2014-17)
G	ENVIRONMENT (2017-20)
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K	INTEGRATED OPERATION OF HYDROPOWER STATIONS AND RESERVOIRS (2015-19)
L	TAILINGS DAMS & WASTE LAGOONS (2017-20)
LE	LEVEES (2018-2021)
M	OPERATION, MAINTENANCE AND REHABILITATION OF DAMS (2017-20)
N	PUBLIC AWARENESS AND EDUCATION (2018-21)
O	WORLD REGISTER OF DAMS AND DOCUMENTATION (2017-20)
P	CEMENTED MATERIAL DAMS (2017-20)
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S	FLOOD EVALUATION AND DAM SAFETY (2015-20)
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U	DAMS AND RIVER BASIN MANAGEMENT (2018-21)
V	HYDROMECHANICAL EQUIPMENT (2016-19)
W	SELECTION OF DAM TYPE (2015-2018) (AD HOC Committee)
X	FINANCIAL AND ADVISORY (AD HOC Committee)
Y	CLIMATE CHANGE (2017-21)
Z	CAPACITY BUILDING AND DAMS (2017-21) (AD HOC Committee)

The list of ICOLD Technical Committees is always evolving. Some Committees are permanent, like the Committees on Environment or on Dam Safety, but others are recently born and will disappear after finishing their work



Report on ICOLD 26th Congress in Vienna

During the first week of July 2018, ICOLD was hosted by the Austrian National Committee on Large Dams for its 26th Congress and its 86th Annual Meeting. 1526 delegates from 78 countries participated in this event.

The General Assembly of ICOLD saw the election of Michael Rogers (USA) as the new ICOLD President (2018-2021) to replace Pr-Dr Anton Schleiss (Switzerland). 2 new vice-Presidents were also elected, Mr Michael Abebe (Ethiopia) and Mr Ali Noorzad (Iran) for three years term.



Michael Rogers,
Newly elected ICOLD President

A new President

On July 3rd, after a long day of discussions during the parallel sessions of the Symposium on Hydro Engineering and the General Assembly of ICOLD, delegates were invited by the Mayor of Vienna to visit the magnificent Town Hall, where the Welcome Reception Ceremony took place.



Ribbon Cutting during Opening Ceremony of ATCOLD Hydro Engineering Symposium, on July 2nd

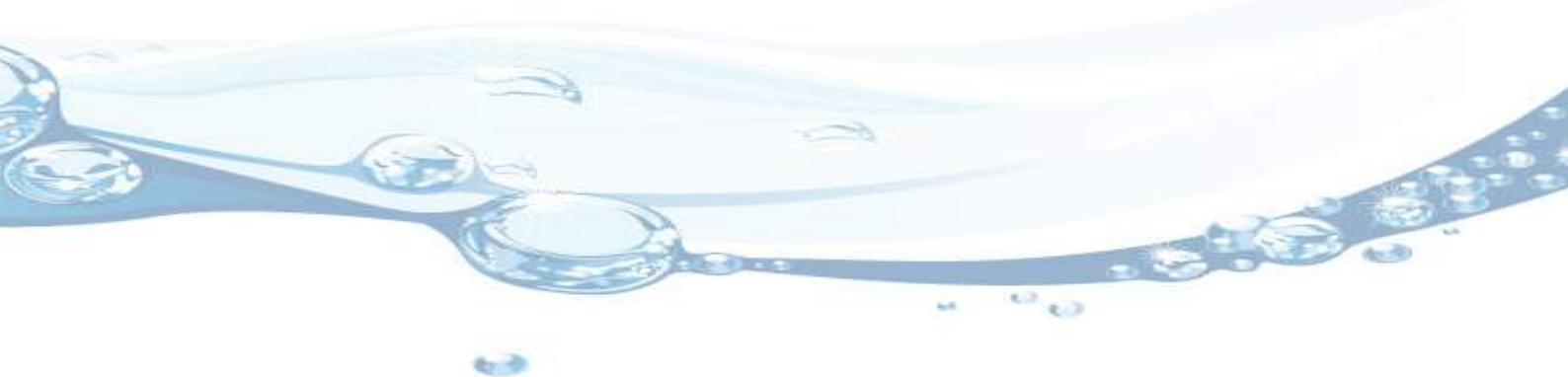


Amazing Vienna City Hall

During this ceremony, the Young Engineers Prices were awarded to Daniel Kerres (Bjoernsen Consulting Engineers) - "Design of deep soil mixing walls and their advantages over conventional sealing for embankment dams", Luca Macchi (Enel Green Power) - "Modeling turbulence phenomena and wave propagation in Ayanunga HEPP forebay and adduction system, through IBER-2D and ANSYS-3D", and in first place Benjamin Hohermuth (ETH-Zurich) with his contribution about "Air demand of bottom outlets: insights from scale model tests and prototype measurements".



Young Engineers Forum President, Amanda Sutter (center) delivers the price to the three recipients, while ICOLD Vice-President Gerald Zenz (right) comments



On July 4th, the 26th ICOLD World Congress was opened by His Excellency U.P. Singh, Secretary of the Government of India and Ministry of Water Resources and River Development. In his speech, he drew attention to specific needs of developing countries for sustainable water and energy supply. Mr Satoru Ueda, lead water resources specialist at World Bank and Josef Plank, representative of the Austrian Ministry of Sustainability highlighted the valuable contribution of hydropower to sustainable energy supply.

The Science of better dams for a better world

The Scientific Congress then gave the opportunity to present and discuss Dam Engineering Questions in a worldwide perspective about the following topics:

Question 100 - Reservoir Sedimentation and Sustainable Development -- Question 101 - Safety and Risk Analysis -- Question 102 - Geology and Dams -- Question 103 - Small Dams and Levees.

Those questions had been voted 2 years before, during ICOLD 84th General Assembly in Johannesburg, as requested by the long democratic tradition of ICOLD.

Each Question started in front of the entire community with an introduction made by the Question Officers and the General Reporter summarizing and highlighting on the contributions. Each general report was accompanied by four sessions of two hours on subtopics and related further aspects. Enough time was allocated and intensively used for discussions and exchange of knowledge and experience.



ICOLD President Anton Schleiss addresses the Congress Opening Ceremony



ICOLD Secretary General Michel de Vivo (left) and ICOLD President Anton Schleiss (right) congratulate François Lempérière (center)

Innovation Awards

The ICOLD Innovation Award was handed for the first time. This award is granted by a committee under the lead of former ICOLD Vice President Leif Lia (Norway) in the field of dams and reservoirs, with special focus on their role in sustainable water resources management under consideration of environmental constraints. In total 29 applications from 10 countries were received (4 from America, 17 from Europe, 7 from Asia, 1 from Africa) and evaluated. The following winners were awarded and gave a short presentation about their contribution and findings:

- F.G. Piki** - Pumped storage hydropower in combination with thermal energy storage
- Q. Shaw** - Stress-relaxation creep as an important material property in RCC dam design
- J. Jia (et.al.)** - Innovations on key technologies for high CFRD's –
- N. Nerinx (et.al.)** - Overflow resistant lime treated soils for levees and earthfill dams.

Finally, François Lempérière (France) was given the ICOLD Lifetime Achievement Award for his valuable, continuous and outstanding contributions to the ICOLD Community. The Next ICOLD Annual Meeting will take place in Ottawa, June 9-14. (see page 16)

By Emmanuel Grenier, based on a report by **Gerald Zenz**, ICOLD Vice-President, and President of the Austrian National Committee on Large Dams.



ICOLD's intervention in the 8th World Water Forum

The forum took place in two distinct places: the Convention Center Ulysses Guimar and the Manné Garrincha Stadium (here)



After the 7th World Water Forum in Korea, (2015), ICOLD became one among the 16 champions of the Daegu-Gyeongbuk Implementation Commitment. During the three years separating the two World Fora, ICOLD worked to ensure that the Commitments taken in Korea were seriously considered and implemented by the stakeholders. That work has been recognized by the Korean Minister for water, which sent ICOLD a letter saluting the accomplishments over the last three years and its “deepest appreciation for your dedicated participation on the Implementation Roadmap”.

Thanks to this continued work, ICOLD was able to ensure that the subject of dams and reservoirs could be correctly dealt in Brasília, where the 8th Forum was taking place. It was especially important since Brazil is a country where the debate around dams is very hot.

172 countries were represented at the Forum, including by 12 Heads of State or Governments, 56 Ministers and 112 Official Delegations. According to the World Water Council, co-host of the Forum, “the 8th World Water Forum marked the largest edition in history of the event, bringing water to the top of both the political and societal agendas. It served to

stimulate thought-provoking discussions at different levels on a broad range of subjects, resulting in the concretization of collective efforts through the establishment of several joint commitments and other positive outcomes.”



ICOLD Public Relations Officer Emmanuel Grenier addresses the special session on Daegu-Gyeongbuk Implementation Commitment, making the link between the Korean and the Brazilian Forum, centering on Water Infrastructures

The 8th Forum In Numbers

- Over 10,000 participants
- Over 100,000 visitors to the Citizen's Village, including over 50,000 children and 3,585 teachers

- 172 countries represented
- 12 Heads of State
- 56 Government Ministers and over 100 delegations
- 134 Parliamentarians
- 180 Local Authorities
- 83 judges and prosecutors
- Nearly 2000 press professionals
- Over 350 events

Topic 1	Topic 2	Topic 3
Economics and financing for innovative investments	Financing implementation of water-related SDGs and adaptation to climate change	Finance for sustainable development – supporting water-friendly business
Session 6A1 Financing the ecosystems services dynamics	Session 6B1 Financing Water Governance	Session 6C1 Financing innovation and water technology and business
Session 6A2 Access to financial resources in periurban low-income areas & small scale water services	Session 6B2 Optimizing existing financial resources to enhance Water Services Sustainability	Session 6C2 Financing multi-purpose infrastructure for sustainable growth
Session 6A3 Sustainable market-based mechanisms and national-regional economics and financing	Session 6B3 Exploring synergies between water-related SDGs and the UNFCCC Adaptation Agenda	Session 6C3 Financial cases for water security investments

Examples of sessions with ICOLD intervention. ICOLD was convening the Session 6B3 and people from the Brazilian Committee intervened into Session 6C2.

Since there was no Science and Technology Process, ICOLD was included in the Thematic Process, in charge of the Theme Finance. ICOLD participated in many preparatory meetings (Brasilia, Cancun, Stockholm) to define the sub-themes and the sessions of the Forum. ICOLD was asked to have a session relating the climate goals of IPCC and the targets of the 6th Sustainable Development goal.

The session was conceived to answer the question: “How do we make investments for climate protection also profitable for water?” Since Climate goals and Water goals can be competitors in a world dominated by credit scarcity, the session discussed how to reconcile those goals and gave examples of investments who benefit both.

The session organized by ICOLD was titled “How to make Climate Protection Goals and Sustainable Development Goals converge? : Exploring synergies between water-related SDGs and the UNFCC Adaptation Agenda”

ICOLD Secretary General delivered the keynote speech explaining the crucial role played by dams and reservoirs in the context of climate change. For Climate Change mitigation, with Clean hydropower energy replacing fossil fuels and being an incomparable grid regulation tool, specially important with the increase of intermittent renewable energies. But also for adaptation to Climate Change, the reservoirs

helping to reduce water stress and to regulate the impact of devastating floods.

Among the people also intervening were Eric Tardieu, from the Global Alliance for Water and Climate, who gave the general introduction, Niouga Ambroise Ouédraogo, Minister for Water and Sanitation, from Burkina Faso, who gave “An African perspective on SDGs and Climate », Edouard Bounet Ranou, from AFD (French Development Agency), who presented a case-study from Morocco on how private finance allowed adaptation to climate change in the water sector”, Carlos Gardell, from SPANCOLD; who spoke on North-South cooperation and gave the example of the agreement between the Spanish (SPANCOLD) and Bolivian Committees on Large Dams.

ICOLD Honorary President Cassio Viotti concluded the session by stating: “We have seen that Dams and Reservoirs, which have always been essential for human societies will be more essential today with the ongoing climate change, because they will play a key role for Climate Adaptation. I think many countries should be wise enough to include such crucial infrastructures in their adaptation plans.”

At the Forum closing ceremony, Senegal received the flag of the World Water Council as the host country of the 9th Forum. The Dakar Forum will center on “Water security for peace and development”. Before, in December 1997, ICOLD had already received in his Paris office Mr Abdoulaye Wade, who heads the Organizing Committee for the Dakar Forum and has expressed its full support for the Senegalese Organizing Committee, with a true convergence of views emerging from the discussions.

ICOLD will participate in the preparations for the Dakar Forum, including with the regional event co-organized with Aqua Media International, Africa 2019 in Namibia.

By Emmanuel Grenier





ICOLD activities

**AFRICA
2019**

**Water Storage and Hydropower
Development for Africa**

International Conference and Exhibition
will take place at the
Safari Court Congress Centre, Windhoek, Namibia
2 to 4 April 2019

Organizers: THE INTERNATIONAL JOURNAL ON
**HYDROPOWER
& DAMS** in partnership with:

INITIAL BULLETIN

87th Annual Meeting
**INTERNATIONAL
COMMISSION ON
LARGE DAMS**

JUNE 9-14, 2019 — OTTAWA, CANADA

www.icold-cigb2019.ca

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