CIGB ICOLD

The Dams Newsletter

July 2013 #-13

ICOLD ahead for the progress of dams and reservoirs engineering to address the world's challenges

During the last six months, ICOLD Board, Central Office, Regional clubs and many National Committees have developed many activities and initiatives for the progress of our profession and for contributing to address the world challenges regarding water, energy, food, protection against natural hazards like floods and droughts. Among these activities one can emphasize the following:

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The regional club, INCA (ICOLD national committees of the americas), has had a meeting during the Canadian Dam Association Conference and Workshop held from 22 to 27 September 2012 in Saskatoon on Dams issues and projects in the Region. It was also the opportunity to strengthen the Club and national committee and promote the progress in the area.

- The Symposium on RCC dams organized jointly by SPANCOLD and CHINCOLD in the beautiful city of Zaragoza in Spain from 23 to 25 October 2012. This symposium was attended by around 300 high level experts of RCC Dams and related aspects. During this conference new developments in the RCC dams and cementitious materials for dams have been presented and discussed in the line to improve continuously this technology with the aim to contribute to the construction of cheap reliable and durable dams and reservoirs to address the increasing needs for water, Energy, Food, protection against floods and droughts effects etc. ICOLD President attended this event and has had the honor to take part of the new agreement between SPANCOLD and CHINCOLD for further development in this area. The next symposium is scheduled for 2015 in China.

- The HYDRO 2012 conference held in Bilbao from 27 to 30 October offered to ICOLD the possibility to promote and disseminate our knowledge base, regional and World declaration and also to share the knowledge of high level experts attending this conference which gather thousands of attendees. ICOLD President participated in capacity building sessions and the need to bridge with new generation of the profession in the framework of a special session. During the exhibition ICOLD organized a booth for promoting bulletins and Publications;
- The 6th General Assembly of the WWC (World Water Council) held in Marseille from 17th to 19th of November 2012. This worldwide network and Forum has contributed with the join effort of international stakeholders to develop the dialogue on Water issues and promote the right to Water worldwide. ICOLD within this forum is contributing with efficient and reliable solutions to address the water, food and energy issues. ICOLD has

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Board meeting in Addis, from left to right : Vice-President Anton Schleiss, President Adama Nombre and Secretary General Michel de Vivo.

Editorial

been chosen as member of the International Steering Committee for the 2015 WWF scheduled in Korea and will continue to work with WWF for the achievement of our common goals. This newsletter includes a report on the kickoff meeting for the 7th WWF One of the important development during this event was the promotion of a " Pact for Water security" with the following content :

the right to water ;
water and energy ;
food and health ;
climate and water related disasters ;
water, demography and urban developments.

ICOLD President and General Secretary attended those events on behalf of ICOLD and have seized the opportunity of those meeting to promote our regional and World declaration on Dams, Reservoirs and Hydropower for sustainable development. We have also contributed in the framework of internally joint effort with others stakeholders to shift the right to water, water and food nexus, water and energy nexus at the international level.

Some progresses have been achieved by Central Office with the translation in French of our Web site and a better diffusion and dissemination of information regarding ICOLD publication and news.

ICOLD Technical committees have been working hard and efvficiently to produce bulletins and guidelines for the profession worldwide addressing the state of art in various aspects of Dam and Reservoirs Engineering, River basin development and management, climate change, seismic aspects etc…

The 9th European Dam Symposium has been held in Venice from April 10 to 12, 2013 which will focus on the harmonization of Dam governance in Europe and topics like the water resources management, the preservation and development of hydraulic infrastructure systems, the new challenges for hydropower, and the social and environmental impacts vs. benefits balance.

The Africa 2013 conference has been co-organised by Aqua Media International, ICOLD and EEPCO and has provided an important forum to back the development and progress of Dams and Reservoir for Hydropower and multipurpose uses. The Conference has taken place from April 16 to 18, 2013 in Addis Ababa. Aside of the conference ICOLD Africa Club and ICOLD Board holded meetings.

Our next central activity will the General Assembly of Seattle under preparation and scheduled for August 2013 in the city of Seattle.

I invite all National Committees' members and dams experts to attend this event. As stated in our World Declaration signed during the Kyoto Congress on June 2012, the needs for reservoirs will increase dramatically in the coming decades due to increase demand for water: irrigation, hydropower and energy storage, clean water supply, sanitation and environment, droughts and floods mitigation, all those needs require reservoirs !

As dam engineers we should provide the societies with the best solutions to address those issues and I am confident that our continuous works and the events to come will ensure progress in this way.

Adama Nombre, *President*

The European meeting took place in the legendary city of Venice.

Africa 2013
a resounding success !

by Emmanuel Grenier

President Nombre is congratulated by EEPCo CEO Ato Miheret Debebe.

Delegations from Burkina Faso (including Pr Mamounata Belem Ouedraogo, Minister of Water Resources, Hydraulic Infrastructure and Sanitation of Burkina Faso, lady with red bag) and from Nigeria are posing in front of the entrance of African Union Conference Center.

The International Conference jointly organized by Aqua Media International (Hydropower & Dams), ICOLD (International Commission on Large Dams and EEPCo (Ethiopian Electrical Power Company) was a resounding success.

More than 600 participants from 67 countries gathered in the African Union Congress Centre in Addis Ababa, Ethiopia, from 16 to 18 April. They celebrated the fact that hydropower and water resources development has reached a major turning point across the African continent; Ethiopia was clearly the ideal hosting country for the conference, since it leads the way in dams development. The country which, 2 decades ago was among the poorest in Africa, torn with war and misery, is now a booming economy with many construction projects going on. The country which had the lowest water storage capacity per capita in the 90s has now built tools for development.

But Ethiopia is not an isolated case: the Conference presented many dams projects in the Centre, West and South of the African Continent.

The 44 000 MW Inga project planned in the Democratic Republic of Congo was of course at the centre of discussions. But projects of all size were presented and discussed during the parallel sessions.

The conference was opened by two Deputy prime ministers from Ethiopia, H.E. Demeke Mekonnen and H.E. Dr Debretsion Gebremichael, H.E. Prof Mamounata Belem Ouedraogo, Min of Water Resources, Hydraulic Infrastructure and Sanitation of Burkina Faso, ICOLD President Adama Nombre and Ato Miheret Debebe, CEO of EEPCo

After the official declarations, three days of presentations ensued, during which African experts in finance, economics, planning, environment, climate regional development, were able to exchange their experience with their colleagues from the four other continents on a diversity of questions relevant to future or ongoing water storage development projects.

ICOLD Vice-Presidents all chaired one of the parallel sessions and ICOLD Secretary General Michel de Vivo chaired the first plenary session of the conference. ICOLD was able to show its clear support for PIDA (Program for Infrastructure Development of Africa) in front of an international audience which included many delegates from banks, financing institutions and African Union.

It should be noted that during the three days of the conference, an international exhibition gathered 70 exhibitors which were able to present innovative technologies for dams construction.

Around 70 delegates participated to the post-conference Study Tour to Gibe II and III dams, organized by EEPCo.

During the closing plenary session, Alison Bartle, editor of Hydropower & Dams announced : “The enthusiasm and feedback from this conference has been so great that we plan that this conference will be the start of a new biennial series of regional events in Africa.” ICOLD Secretary General Michel de Vivo and ICOLD President Adama Nombre heartily welcomed that announcement and declared that ICOLD will continue to partner with Aqua Media to organize these regional events.

A more detailed report appears on Hydropower & Dams website and a full overview of the conference will appear in Hydropower & Dams.

9th Symposium of the ICOLD European Club, Venice (Italy)

by Giovanni Ruggeri

The 9th Symposium of the ICOLD European Club has been held in Venice (Italy), on April 10-12th.

The European Club has organized international Symposia since 1993. The previous eight were held in: France (1993), Switzerland (1995), Sweden (1996), Spain (1998), Norway (2001), United Kingdom (2004), Germany (2007) and Austria (2010).

The Symposium in Venice, titled "Sharing Experience for Safe and Sustainable Water Storage", discussed the main challenges the technical community has to face in the new millennium. The rehabilitation, refurbishment, modernization and maintenance of the existing plants, as well as preservation of know-how and transfer between generations, fall within the challenging aspects to be faced. The preservation of the European hydraulic infrastructure system emerges for its present-day importance, considering the ageing of the dams built during the industrialization phase of the past century.

Moreover, the climate change effects on water resources management require a new perspective in the use of reservoirs. The interaction between renewable energy plants, storage, and electricity grid needs an integrated multiple use of reservoirs operating in an environmentally sustainable context.

Therefore, the following topics have been selected for the Symposium:

Water resources management in Europe: multiple use of water resources; analysis of water demand; long-range hydraulic interconnections; integrated water management; sustainable management and cost recovery; dam-break analyses; emergency planning; climate change effects on water resource management.

Delegates enjoyed the beautiful site of the Laguna Palace, where the welcome dinner and the farewell toast took place

Preservation and development of hydraulic infrastructure system: maintenance, rehabilitation, surveillance, monitoring; management of siltation; new materials; refurbishment, modernization and maintenance of existing plants; upsizing existing schemes; new plants; preservation of historical dams; decommissioning; know-how transfer between generations.

An outlook to the future of dams and hydropower: interaction between renewable energy plants, storage, and electric grid; pumped storage hydropower plants; climate change effects on energy production; smart grids; innovative partnership to manage the complex components of the "system response".

Social/environmental impacts vs. benefits of reservoirs: sustainability; public awareness, management of conflicts and needs to improve communication; minimum ecological flow, upstream and downstream continuity facilities,

President Nombre was determined to address the European meeting despite his heavy schedule, returning from Brazil and before departing to Addis Ababa for Africa 2013.

hydro-peaking mitigation, sediment transport; multipurpose reservoirs; role of storage in flood mitigation.

Towards improving and harmonizing dams governance in Europe: tolerability and acceptance of risk; critical infrastructures; regulations and guidelines for dam safety & security; bridging the gap from "science" to "practical needs"; application of European Directives; new trends for renewal of hydroelectric license policy.

The Symposium was attended by more than 380 participants, from more than 30 countries.

The registration of the young was favored by a reduced fee, and this successfully produced a large attendance of young engineers.

A total of 140 papers were submitted. During the Symposium they were presented and discussed by Oral Presentations and by Poster Presentation.

The oral presentations were given in six sessions, chaired by D. Stematiu, M. Wieland, A. Masera, B. Touileb, G. Zenz and I.B. Escuder. In addition, 6 “Special Notes” were presented to illustrate: the progress of European Working Groups (“Internal Erosion in Embankment Dams”, by R. Bridle; “Dam Safety of Existing Dams”, by

Seminar on risk management

After the Symposium, the Polytechnic University of Valencia (Spain) in collaboration with the company RSE SpA (Italy) organized a seminar on "Fundamentals, tools and management applications based dam safety at risk". The sessions were moderated by Escuder Ignacio (Polytechnic University of Valencia) and Luis Altarejos (Spinoff eDams UPV). The seminar included the presentation of case studies from Italy, Spain and the United States as well as the presentation of tools to support operators and managers of dams for the calculation and risk management, in order to prioritize mitigation measures risk.

During the seminar the new Technical Guide Security Persians, No. 8 Vol 1 entitled "Risk Analysis to Safety Management of Dams" was presented. It was published by the Spanish National Committee on Large Dams (SPANCOLD) in December , 2012.

The seminar was attended by 35 participants from 13 countries (Austria, Egypt, France, Finland, Germany, Italy, Norway, Slovenia, Spain, Sudan, Sweden, Turkey and the United States).

J.A. Rocha, "Risk Assessment in Dam Safety Management", by M. Meghella and I.B. Escuder); the Chinese experience, (by Wang Hai), the huge project under construction to protect Venice form the "high water" condition (by G. Cecconi), the special book "Dams in Europe" (by P. Manni)

An effective presentation of the papers in the Poster Sessions was favored assigning an "ad hoc" dedicated time to the Poster Session.

The "Dams in Europe" is a special book published on the occasion of the Symposium, prepared with the fruitful cooperating of the National Committees of the European Club. In the book a synthetic of the main data about the huge European dam patrimony is given, together with a synthetic guide for a fast imaginary travel through the old Greek, Roman, Middle & Contemporary Age to meet selected known and appreciated artefacts. The book contains a detailed profile of twelve large dams chosen from different areas of Europe : Kárahnjúkar dam (Iceland), Afsluitdijk dam (Netherlands), Leibis/Lichte dam (Germany), Roselend dam (France), Contra dam (Switzerland), Edling and Lavamünd weirs (Austria), Ancipa dam (Italy), Almendra dam (Spain), Kuibyshev dam (Russia), Thissavros dam (Greece), Deriner dam (Turkey).

The final presentations were given by the ICOLD President during the Symposium a selected Exhibition was also organized.

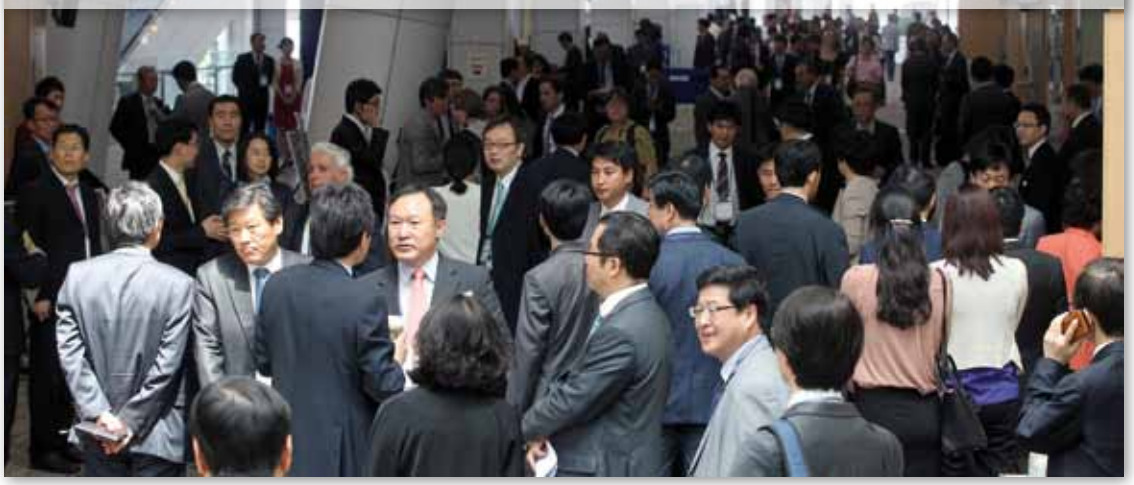
On April 9th, the day before the Symposium, at the same venue, the Workshop on "Fundamentals, Practical tools and Applications of Risk Informed Dam Safety Management" has been conducted. The Workshop was organized by the Polytechnic University of Valencia (Spain) in collaboration with RSE (Italy). Key questions regarding risk informed dam safety management, and related significant experiences and case histories, were successfully discussed during the Workshop.

Two technical visits were carried out after the conclusion of the Symposium, on April 13th.

The first visited the sites at the border between the lagoon of Venice and the Adriatic sea, where the Mose System is under construction to safeguard Venice from high water condition representing a major problem both for the normal life in the city and for the conservation of the architectural heritage. The Mose is a system of mobile barriers, consisting of rows of gates. The gates rest in housing structures on the seabed during normal tidal conditions, completely invisible and without modifying the exchanges between sea and lagoon. They are raised only when necessary to block the incoming tide and avoid flooding the lagoon and built up areas.

The other technical visit was to Vajont dam. During the visit a complete illustration of the history of the dam was given, from the first design in 1926 to the tragedy in 1963, when a huge landslide of about 200 million m^3 fell into the lake producing a wave which completely destroyed the city of Longarone and several villages, causing more than 2000 fatalities. The technical visit included also the Nove power plant.

ICOLD president attended the kick off meeting of the 7th World Water Forum



From May 9 to May 16, 2013, ICOLD President Adama Nombre attended the 3rd International Steering Committee of the 7th World Water Forum Schedule for 2015 in the City of Deagu and region of Gyeongbuk in Korea organized at Seoul from May 10 to May 11 and the Kick off meeting of the Forum From May 13 to May 15 2013, in the City of Deagu, EXCO conference center.

The Kick off meeting was very successful based on the efficient organization of the Korea National Committee for the 7th WWF, the nice and comfortable venue of EXCO, the very warm welcome of the host country through its authorities and people and the contents of the discussions during the kick off meeting. Our friends of Korea through Cultural activities have created also the opportunity to discover some aspects of the riche culture of the people of Korea.

The kick off meeting was attended by around 500 participants from 41 countries representing the spectrum of the international water community who brought their contributions and perspectives for the definition and the shaping of the 7th WWF. The kick off meeting was an important milestone in the process for the preparation of the 7th WWF as it was the official and public starting point of the preparation process.

The Youth were also part of the process in the kick off meeting and also the citizen's forum with an important participation of NGO. This is to say that all stakeholders have been involved in the process of preparation of the next Forum which will ensure good conditions through a true dialogue for success and ownership of the outcomes.

The discussions and exchanges during the meeting providing input for the all processes of the Forum including thematic, political regional science and technology regarding the orientations and expected out comes. The discussions of the thematic process were supported by the result of a survey through the international Water community to identify the key priorities to be addressed during the next forum.

The issue of Water storage and Global change, integrated water resources management, cities and urbanization, disasters, green growth, etc.

were highlighted by the result of the survey indicating an important change of the perception on the need for storage if one need to address the challenges related to climate change and also the increasing water demand, the needs to protect human being against the effect of natural disasters like floods and drought etc.

Regarding the regional process, the discussions focused on the need to improve this process taking into consideration the lessons learnt from the previous Forum mainly the 6th WWF of Marseille. Efforts will be developed to ensure the consistency and efficacy of the regions cluster to ensure that common view based on common issues and projects can be developed through these processes to improve the cause of water in each region.

The science and technology process is one of the innovations for the 7th World water forum. The importance of science and technology in the process of implementation of measures and engagements to improve the water security is very important and critical in this 21st Century.

The political process importance has been confirmed as decision making is of vital importance if one needs to ensure the implementation. All the processes will feed the political process to strengthen the political will at the international regional and local level to ensure that propositions will be implemented.

The main issue to be addressed during the next Forum is related to how to move forward for the implementation of the solutions defined and highlighted during the 6th Forum of Marseille on 2012

The road map to the Forum has been discussed and adopted to ensure a good preparation of the next Forum and all the ideas and proposals gathered during the kick off meeting will be sorted and prepared for the definition of all the process by commissions and will be examined by the ISC on October 2013 in Budapest and submitted to a consultation meeting in Korea on 2014.

ICOLD as a founding member of the WWC and part of the process since the beginning has brought its contribution during the 3rd ISC meeting and the Kick off meeting. ICOLD based in its knowledge base accumulated during around one century is prepared to provide valuable input as far as solutions and implementation aspects are gaining critical importance. We are also glad to see the increasing of awareness at the international level on the importance of Water storage to address existing challenges related to water, energy, foods, protection against floods and droughts and emerging issue due to the climate change and global change at a broad level.

I would like to thanks the Bureau, ISC Co-chair and the Korean National committee for the 7th WWF for the success of the Kick off meeting.

Aside of these Activities the travel in Korea was also an opportunity to visit the Korea Water Corporation and KNCOLD with Honorary President Jia Jincheng . I would like to thank our friends of KNCOLD for the warm welcome and for their contribution to the development of ICOLD. Through KNCOLD support Honorary President Jia and I had the opportunity to discover some achievements of the Koera Dam engineering and Water resources management and the ongoing innovations in Korea.

I would like to thank the president and all the team of KNCOLD for their support during.

Adama NOMBRE
ICOLD President

African Water Facility Supports the Construction of Multi-Purpose Dams in Zambia to Build Resilience to Climate Change, Increase Food Security

by Emmanuel Grenier

The dams are expected to directly improve the lives and livelihoods of an estimated 90,000 people, and indirectly benefit about a million people

The African Development Bank approved an African Water Facility (AWF) grant of € 950,000 to support a project to help the Government of Zambia develop, test and adopt updated guidelines, which will be used as framework for programming as well as designing the financing, construction and operations of multi-purpose small dams. In the words of the Bank officials , "the dams are expected to directly improve the lives and livelihoods of an estimated 90,000 people, and indirectly benefit about a million people living in rural areas, thus enhancing water security in more vulnerable parts of the country."

Specifically, the AWF funding will be used to modernize and update the guidelines that govern and promote investments in multi-purpose small dams, with the aim to give greater relevance to the selection of potential dams using criteria based on community interest and environmental protection, as well as to build confidence of potential development partners. This project should ultimately result in attracting the massive investments required to proceed.

The urgent need for building additional small-purpose dams in the country comes as increasing hydro-climatic variability due to climate change has intensified water stress, particularly in the drought-prone areas of the Eastern, Central and Southern provinces.

The small dams would help sustain the lives and livelihoods of local communities through multiple uses, by securing access to water. The dams will also be beneficial instruments for climate change adaptation by attenuating the impact of flooding.

"The AWF is fully committed to supporting projects such as this one that propose water solutions poised to build resilience to climate change, increase food security and support socio-economic development," said Dr. Akissa Bahri, Coordinator of the African Water Facility. "Heavily hit by climate change, Zambia will greatly benefit from improving its water storage capacity as a way to adapt to increasingly unpredictable rainfalls – one of the main sources of water for people living in the regions targeted by this project."

In addition to the delivery and testing of the guidelines, another important attribute of the project is its contribution to design planning and mobilisation of funds to serve as a springboard to scale up water development program, such as the national Integrated Water Resources Management and Water Efficiency Implementation Plan (2007-30). The Zambia Ministry of Lands, Energy and Water Development and the Department of Water Affairs will be the Executing Agency.

It is interesting to note that the words of African Water Facility of the African Development Bank are very close to those used in the World Declaration on Hydropower and Dams for Africa, initiated by ICOLD in 2008. The basic argument about multipurpose dams developed in the Declaration has now pervaded to most of African elites.

Worldwatch Institute
recognizes hydropower's interest

By Emmanuel Grenier

In a recent report, Worldwatch Institute, a renowned environmental organization has described a continuous but slow growth of Hydropower and geothermal power. According to the report global installed capacity of hydropower reached 970 gigawatts (GW), only a 1.6 percent increase from the previous year, "Despite the recent slowdown in growth, the overall market for hydropower and geothermal power is increasing in part because these two sources are not subject to the variability in generation that plagues other renewable energy sources such as wind and solar," said Musolino, a research associate with the Worldwatch's Climate and Energy Program. "The greater reliability of hydro and geothermal can thus be harnessed to provide reliable baseload power."

Hydroelectricity accounted for almost 6 percent of primary energy consumption among members of the Organisation for Economic Co-operation and Development (OECD). It played a more important role in other countries – at a little over 7 percent of usage – and these non – OECD nations accounted for 60 percent of worldwide hydroelectricity consumption. On a regional basis, South America and Central America are most dependent on hydroelectricity relative to total energy use.

Although hydropower plays the least important role in the Middle East, the region experienced the greatest growth in hydroelectricity consumption in 2011, at almost 22 percent. North America was next, with an increase slightly under 14 percent. In contrast, usage fell by almost 9 percent in Europe and Eurasia and by 0.6 percent in the Asia Pacific region.

Although some 150 countries produce hydropower, half of the global capacity was concentrated in just five nations at the end of 2011. China remains the leader, with 212 GW installed, followed by Brazil (82.2 GW), the United States (79 GW), Canada (76.4 GW), and Russia (46 GW).

A total of 25 GW of new hydropower capacity was added in 2011, less than in previous years, with China, Vietnam, Brazil, India, and Canada responsible for 75 percent of the added capacity.

The Worldwatch report underlines that "hydropower continues to be one of the most cost-effective renewable energy generation sources. Typical costs are in the range of 2-13 U.S. cents per kilowatt-hour for existing grid-connected hydropower plants and 5-10 cents per kilowatt-hour for new plants."

Hydropower as a Share of Total Primary Energy Use, by Region, 2011

Region	Hydropower Share (%)
South America and Central America	26,2
Africa	6.1
Europe and Eurasia	6.1
North America	6
Asia Pacific	5.2
Middle East	0.67
World	**6.4**

Source : Calculated from BP.

Come and join us at Seattle!

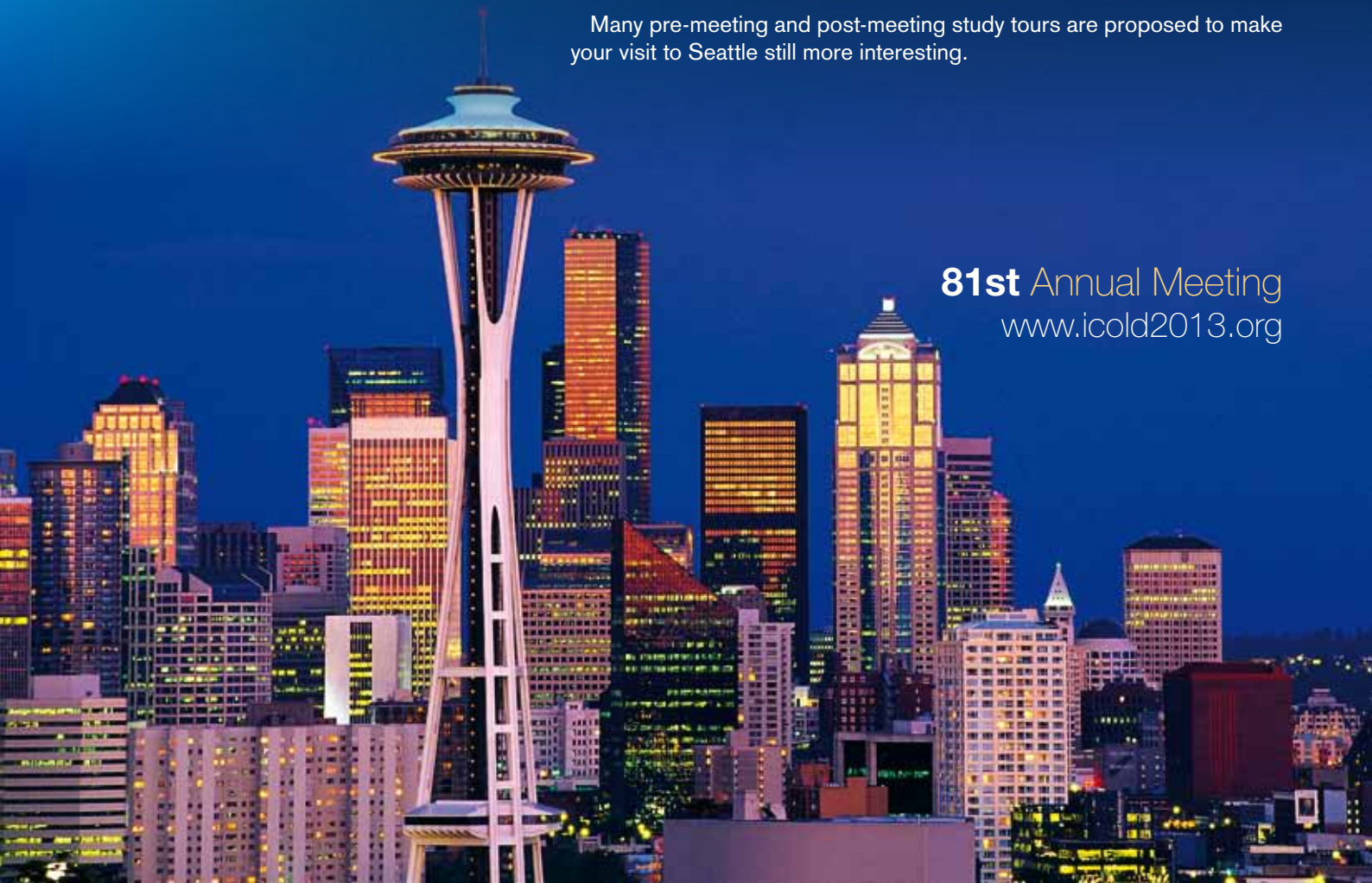
International Commission on Large Dams

12-16 August 2013
Seattle, Washington, USA

The 81st Annual Meeting of ICOLD will be held in scenic downtown Seattle, Washington, 12-16 August 2013. It will be, as usual in ICOLD, the occasion to meet the best dam experts of the world and to discuss with them solutions to your problems.

The US Society on Dams, which is welcoming the meeting, has prepared a Symposium which will be held on August 14 on the theme : "Changing Times : Infrastructure Development to Infrastructure Management". The general subject will be also discussed more in-depth during workshops : "Life-extension technologies and strategies for aging dams", "Risk-Informed Dam Safety Management", "Aging of Concrete Dams", "Closure of Tailing Dams", etc.

Many pre-meeting and post-meeting study tours are proposed to make your visit to Seattle still more interesting.



81st Annual Meeting
www.icold2013.org

Water-Energy nexus enters new phase

By Emmanuel Grenier

ICOLD has stressed for a long time that Energy and Water were closely intertwined. The so-called "water-energy-nexus" is nothing new for dam experts, who work to get power from water. But recent energy development make it now a fact known to non-specialists.

Water is critical for most operations related to the production of energy. Conversely, energy is needed to enhance access to water as well as for sanitation purposes, water pumping and treatment activities, and desalination processes.

This two-way water-energy nexus raises several key issues that impact water quality and water quantity aspects, particularly:

- making water available to secure energy supply in a water scarcity context;
- making energy available for the supply of water and sanitation while optimizing energy efficiency and the use of renewable energies.

While the question of water stewardship, and more generally water and sanitation have been discussed in many forums, including UNCSD, Stockholm Water Week and the World Water Forums, the importance of water for energy production has not always been fully recognized.

Shale oil and shale gas are new competitors for water

During recent years, there was an energy revolution in USA: new drilling techniques that use powerful streams of water, sand and chemicals to crack the ground and release stores of oil and gas. United States, which was becoming net importer of gas in the last decade, became again a net exporter thanks to shale gas massive expansion. Gas prices strongly decreased and gas turbines-generated power became financially more interesting than power from coal plants.

As a result, the gas and oil industries are directly in competition with other water users, especially in the Western part of the country. Given their financial returns, they can spend much more than the farmers for buying water in the water auctions. And they need a lot: a single well can require up to 15 million liters of water. One example from Colorado : farmers there usually pay about $30 for an acre foot of water (about 1.2 million liters). This can rise to $100 when water is scarce. But in 2012, oil and gas companies were paying as much as $1,000 to $2,000 for an equal amount of treated water from city pipes.

Of course, the amount of water used by the oil and gas industries is still very small compared to the volume needed for irrigation and agriculture, but it is growing fast.

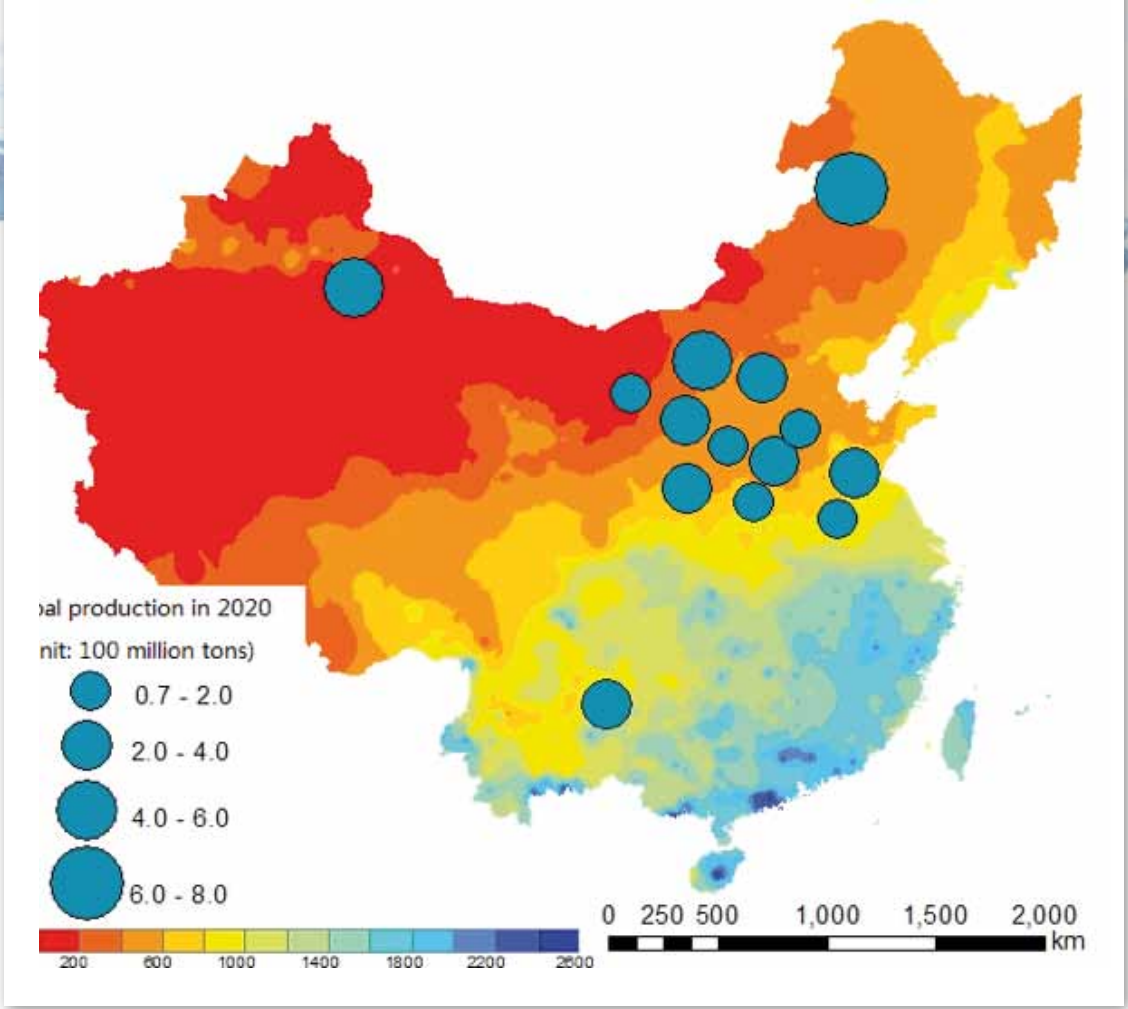
Water should not be considered granted!

It is critical not to take the availability of water for granted. Even where water is not considered to be scarce, climate variability and potential climate change impacts are likely to reduce water availability in some areas and at certain times. The 2012 droughts in European countries or in the United States have led to energy disruption highlighting the vulnerability of the energy-production industry to water shortage.

Power plants are a hidden casualty of droughts because they are completely dependent on water for cooling. That makes them vulnerable in a heat wave. In addition, if the cooling water discharged from a plant raises already-hot river temperatures above certain thresholds, environmental regulations require the plant to shut down.

Utility-scale power isn't the only energy source being hurt by the drought, however. Biofuel production, the biggest water consuming energy source, is also suffering.

All those examples show that water management for energy purposes must be organized within the framework of a basin. As water issues are local, it is fundamental to look for solutions at the local level. At the same time,



water resources rarely respect national borders and are often shared across borders, making regional and international cooperation essential.

Given this reality, appropriate management strategies should be developed watershed by watershed rather than country by country, as illustrated in ICOLD Bulletin 149 (Role of dams on the development and management of rivers basins). It is also the appropriate place to consider opportunities of water reuse, given the level of quality required by each type of users. Use of water for energy must comply with this approach.

In the European Union, integrated river basin management, (in which resource issues, water pollution and biodiversity are managed together, river basin by river basin) is now a mandatory requirement.

Thirsty coal in China

Finally, while coal remains the main source of energy for power production, it is now confronted to the same problem of water resource. Coal mining is an extremely water-intensive industry, as are coal-fired power plants and coal chemical industries. It has been estimated that water demand created by the new coal-fired power plants planned in China's energy strategy will reach at least 9.975 billion m^3 in 2015 – equivalent to one sixth of the annual total water volume of the Yellow River during a normal year. The same study also estimates that in 2015, the water demand of coal power bases in Inner Mongolia, Shaanxi, Shanxi and Ningxia will either severely challenge or exceed the respective areas' total industrial water supply capacity. Thus, the development of coal-related industries in these areas will take up a significant amount of water currently allocated to non-industrial uses.

Those estimates come from a report where Greenpeace and the Institute of Geographical Sciences and Natural Resources, under the Chinese Academy of Sciences, worked together to present the estimated water consumption of the coal power bases. By comparing water demand of these coal bases and the water supply in their respective locations, this study has put a big question mark over the feasibility of China's ambitious coal expansion strategy in relation to the availability of water resources.

In front of all these developments, it should be reminded that hydropower does not consume power, it only transforms its potential energy in real electricity. Hydropower uses the force of the falling water but the biggest part of the water which goes through the turbines returns to the river unaffected. In the reservoir, a percentage of the stored water can be lost through evaporation. That percentage grows when the temperature is high. The larger the reservoir, the smaller the percentage. As an average, it has been estimated at 15% for the large reservoirs from India. The figures are much smaller for large hydro countries like Canada, Norway or Russia.

But taking everything into account, hydropower remains the energy which best satisfies the requirements of the Water-Energy nexus.

Actually, ICOLD is a Magnificent Organization

Dr. W. Flögl
Vice-President of ICOLD

30 years within the ICOLD family, thirty years of voluntary work for various technical committees, of it ten years as a chairman or vice-chairman, three years as Vice-President of ICOLD have given me a fairly good impression of the more recent development of our dam organization. Has it been a positive development, what must be improved ?

Let me spin some strings of thoughts as follows:

The Idea of ICOLD is Brilliant

The idea of pooling experts from all over the world in an organization to voluntarily :

– support and promote the sustainable development of reservoirs for drinking-, irrigation-and processwater and the therefore necessary dams and - as a result -
– to create world-wide quality- and safety standards in design, construction and operation on a multidisciplinary high level and offer it to the world public,

is magnificent and has to be extended due to the increasing importance of water reservoirs for mankind under quickly changing circumstances, e.g. population growth, structural changes, climate change, scarcity of resources etc.

The extension should refer to core exercises (like dam design) as well as to water management and the resulting multifunctional beneficial effects of reservoirs and dams on mankind, sustainably securing the basic needs of the world population like food, drinking water, energy, etc.

At this stage not the dam itself, but the benefits of the storable or stored medium water should be in the focus. The recent "World Declaration on Water Storage" signed in Kyoto during the 24th Congress 2012 takes this approach into account.

The Technical Advice Given by ICOLD is Outstanding

The work ICOLD technical committees are doing can not be praised enough. Outstanding work is done, although more often in small groups within the committees. Surely the committee work is also a kind of know-how-transfer, but it would be desirable to bundle the expertise of as many committee members in the best way.

The percentage of National Committees cooperating in the technical committees should also be improved. Presently just around 45 % of NCs send delgates to technical committees, 55 % of NCs do not take the chance of know-how-improvement for their national development resulting from cooperation in TCs.

It seems to be necessary to remove threshold fears by proper information about committee work, good organization, compact terms of reference, limitation of terms of office,etc., to win over as many NCs for cooperation and know-how-exchange. Some evaluations – and suggestions derived thereof – are being elaborated to present the results in the next Annual Meeting in Seattle 2013.

For sure the speed of publications of approved bulletins has to be improved. It is highly unsatisfactory – in times of very short cycles of know-how-renewal – to be forced waiting for publications of approved bulletins for years because the translations into one of the two ICOLD languages can not be prepared in time. Efforts have already been set to improve this unpleasant situation (pre-print-possibility, professional translators, translation by special committee members, etc.), now transposition has to happen.

ICOLD has been Existing for 85 Years

ICOLD is a very honorable association with long tradition. Originally established elitistly and dominated presidentially, it is not so easy for ICOLD – following the dictate of the modern information society – to get a widespread visibility in public and to focus public on the qualified concerns of ICOLD to give them the proper attention and importance.

Actually remarkable improvements could be gained during the past years by :

- renewing the ICOLD constitution and therewith the organizational structures, although in a not very in depth way,
- recognition of the importance of the Regional Clubs of ICOLD and proper support,
- forcing the young engineers within ICOLD, by proper support, who shall not only bring fresh air into our organization, but also counteract the lingering problem of overaging within ICOLD.
- various spectacular actions, such as the common signing of the "World Declaration Reservoirs" by 4 international water associations under the guidance of ICOLD in Kyoto 2012 or similar actions which for sure have produced some echo in the public.

Many further steps have to be set to bring the global importance of water storage and by that the dams into the brains of people, especially also into those of the decision makers. A proper concept for future PR-work seems to be a need of the hour.

All of Us are ICOLD

We should keep in mind that ICOLD is built by its National Committees, driven by their needs and necessities and highly dependent on their good will to continue the unique cooperation of world wide experts on the dams and reservoirs field. The President, the Board members and Secretary General are just mandated by ICOLD (= National Committees) to run ICOLD in a proper (the best) way.

To enable ICOLD doing so, a sound financial base of ICOLD is crucial. Safeguarding ICOLD's financial base has to be of top priority for National Committees as well as the Board and Secretary General to ensure the high quality level of ICOLD's activities and its further development as a vivid, highly visible and very well respected world organization.

Another task to strengthen the ICOLD family will be the promotion and good integration of the members of Young Engineers Forum (YEF). The author can remember very well, how friendly he has been welcomed by the ICOLDers in early 1980.

So far some impressions about ICOLD. It has been a great time staying with this excellent organization and it will make fun to serve this ICOLD family for some more years. A lot has been done and a lot still will be done to keep ICOLD a magnificent organization!

New bulletins published by ICOLD

Bulletin 142 (Safe passage of extreme floods) has been published

Extreme floods are regularly making news headlines. As the main professional organization on dams, ICOLD is of course very concerned about the implications of floods for dams security. The last technical bulletin published by ICOLD is precisely dealing with the safe passage of extreme floods.

The following subjects are addressed in this Bulletin:

- Confidence Level Assessment of Design Flood Estimates
- Strategy for planning spillway arrangements with emphasis of floods exceeding design flood
- Project facilities means to deal with floods in excess of design flood
- Operational procedures and flood warning system
- Cases studies: some experiences on safe passage of extreme flood in China, Canada and Brazil

The adequate management of floods is of fundamental importance either for dam safety and for the security these dams should provide. According to statistical overviews (ICOLD, 1995 and 2003), in recent times flood events have been the main natural hazard responsible for human and economic losses and one of the main reasons for dam failures. This is particularly true for small dams with heights 30 meters or less.

Bulletin 142 is available at a price of 60 Euros per copy (plus VAT at 5.5 per cent for France and EEC purchasers who have not given their VAT identification number).

192 pages, bilingual English/French, in 9 chapters. Illustrated cover.

Other bulletins are in the print shop, soon to be issued :

- Bulletins **143** (Historical review on ancient Dams)
- Bulletin **153**: Sustainable design and post-closure performance of tailings dams
- Bulletin 1**55**: Guidelines for use of numerical models in dam engineering

Vlady France Conseil

ICOLD activities

British Dam Society is collaborating with British authorities on risks from small raised reservoirs

The UK is witnessing a time of change for reservoir regulation with an in consistent approach to the regulation of reservoirs across the 4 countries.

The current Reservoirs Act 1975 applies to Great Britain only, this excludes Northern Ireland.

In Scotland a completely new Act is being introduced and similar legislation is planned for the first time in Northern Ireland.

Following a government enquiry which appraised the effects of the devastating floods of 2007, the Flood and Water Management Act 2010 has been passed which amends the existing Act in England and Wales. It proposes a risk based approach with a reduction for the threshold for reservoir capacity to change from 25,000m^3 to 10,000m^3 – these are known as 'small raised reservoirs' (SRRs) as opposed to "large raised reservoirs" (LRRs) that are currently regulated.

In Wales the devolved government has embraced the change and plans are being developed to regulate the SRRs that pose a risk to life.

For England the government have taken an unusual step in stalling the introduction of previously planned changes by asking the BDS to assemble evidence of incidents, accidents and the risks posed by these 'small raised reservoirs'. In response BDS has collated information about such incidents following consultation with its members. Information items included : name, location, height, length, capacity, date of incident and consequence of failure (description of what would be affected should the dam fail) with housing and schools immediately downstream.

The Chair of BDS, Ian Hope, stated that he was concerned by the government's delay in introducing the planned changes to the Act in England and hoped that the further evidence they have submitted provided the persuasive argument ministers were looking for.

SANCOLD Young Engineers Forum

After the Lucerne ICOLD meeting, which saw the birth of the Young Engineers forum, the SANCOLD decided to launch is own South African A Young Engineers Forum with SANCOLD Vice-Chairperson Ivor Sengers taking the lead in the matter. A new page has been added to the SANCOLD website (Activities>SA Young Engineers Forum)

www.sancold.org.za

SANCOLD is busily preparing its next conference on November 5-7, 2013 :

ADVANCES IN DAM TECHNOLOGY FOR WATER AND ENERGY IN SOUTHERN AFRICA

Finally, it should be noted that SANCOLD is a Candidate Country for Hosting the ICOLD Annual Meeting 2016.

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