



By Michel de Vivo, Secretary General

# Climate Change: Benefits of Dams & Reservoirs

*The problem of climate change has taken an increasing importance in the world of dams. It is therefore lawful that ICOLD intervenes more and more in the international fora dealing with Climate Change. During the COP22, which took place last November in Marrakech, we were able to intervene in the Green Zone, on the invitation of the Moroccan Government, with whom we organized a preparatory seminar in Rabat in July 2016. "Dams, Reservoirs and Climate Change" was co-organized by the Moroccan National Committee, the Technical Committee on Climate Change and I want to commend this exemplary initiative.*

This resulted in the invitation delivered by the Moroccan Government to a Conference taking place in the Green Zone, during the Water Day. For the first time in the history of the Conferences of Parties to the Framework Convention on Climate Change, the Water was a leading subject.

I was thus able to disseminate ICOLD's message on the subject. We know that climate change will deeply impact the variability of water resources, which means much more scarce water resources during dry season leading and much more frequent and severe droughts.

Another consequence of the Climate Change challenges is the need to develop clean energies to meet growing needs for power. Fortunately, solar and wind energies are becoming competitive and will be largely developed. But these clean energies are Intermittent and need to be massively stored. The only really clean solution now available for storing these intermittent energies are

the Reservoirs associated with Pumped Power Stations. There is no massive development of intermittent energies possible without dams !

To meet water needs, we will have to largely increase the water supply, by developing new reservoirs and by upgrading existing reservoirs whose capacities are decreasing due to sedimentation.

To face the disasters caused by Water Variability, mainly floods and droughts, dams and reservoirs are also essential.

As we see, the water storage infrastructures are generally necessary, but the Climate Change challenge makes them ever more urgent. The science of dam engineering is a crucial part of the solution to face the consequences of climate change and to make sure that those infrastructures be built safely, economically and in an environment-friendly way. I am confident that ICOLD will help the dam profession to organize itself to face this new challenge.

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# Highlights: ICOLD INCA Symposium on Dam Safety

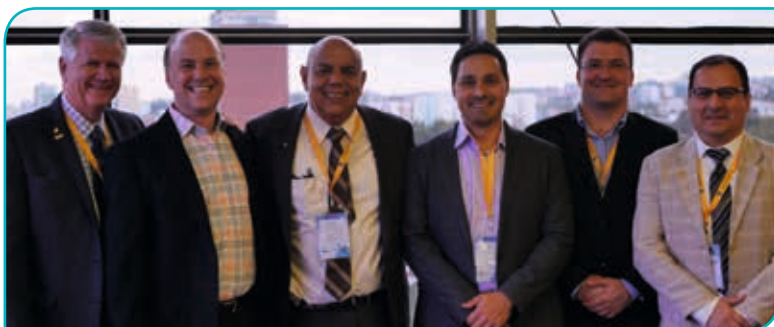
by Victor Vasquez

The United States Society on Dams (USSD) and ICOLD National Committees of the Americas (INCA) co-sponsored the 1<sup>st</sup> Symposium on Dam Safety for the Americas, October 26-28, 2016, in Mexico City, Mexico. The organizing committee for the symposium included John Wolfhope (USSD President), Humberto Marengo (INCA President), Federico Mas (INCA Member), and Victor Vasquez (USSD Committee Vice-Chair). This event was held in the Engineering Institute of the National Autonomous University of Mexico (Universidad Autonoma de Mexico or UNAM). The symposium brought together international experts across the Americas to share knowledge with regards to dam safety and best practices. In total, there were more than 85 attendees (students, professors, researchers, engineers, vendors, dam regulators, and dam owners) from more than 15 countries.

The symposium was the culmination of conversations among INCA members that began in the 2013 ICOLD Annual Meeting in Seattle. Following the 2016 Annual ICOLD Meeting in South Africa, the organizing committee worked in earnest between June and October with various countries to develop a technical program that covered the following topics in 6 technical sessions:

- Dam Safety Governance
- Risk-informed Dam Safety
- Hydraulic and Hydrologic Design Criteria
- Seismic Design Criteria
- Overtopping Case Studies
- Earth and Rockfill Dam Safety and Practice

The symposium lasted three days and included 38 presentations by international panelists. The technical sessions concluded with a question and answer period with discussions among participants about their experiences in their country. Each day concluded with a group dinner and cultural events. A meeting of INCA representatives was also held on Thursday to gather feedback on this year's event and start discussions for a future event in 2018.



Thursday INCA Meeting: Erick Campos (Costa Rica), Luis Vellacich (Paraguay), Victor Vasquez (US), Humberto Marengo (Mexico), John Wolfhope (US), and Mike Rogers (US).



“International Symposium on Safety of Dams”





View of the UNAM from the Engineering Building Top Floor



Thursday Night Dinner: Brian Becker (USA) and Federico Mas (Mexico)



Hydraulics and Hydrology Design Criteria Session: Blake Tullis (US), Laurence Baba (Brazil), Alvaro Aldama (Mexico), Brasil Machado (Brazil)



Exhibitor Hall: Camilo Marulanda (Colombia), Mike Rogers (US), Clare Raska (Canada), and John Wolfhope (US)



Question and Answer Period: Humberto Marengo (Mexico) and Brasil Machado (Brazil)



## Outline of 4<sup>th</sup> APG (Asia Pacific Group of ICOLD) Symposium in 2016

by Kyung-Taek Yum

The 4<sup>th</sup> APG Symposium and the 9<sup>th</sup> EADC with the theme of "Innovative Technologies for Dams and Reservoirs Toward the Future Generation" was successfully held in Sapporo, Japan from September 26 to 30, 2016. In the welcoming speech, on behalf of the Asia and Australasia Zone of ICOLD, the Chairman of ICOLD-APG, Yum, Kyungtaek expressed gratitude for the opportunity to co-host the 9<sup>th</sup> EADC (East-Asian Area Dam Conference) and the 4<sup>th</sup> Asia-Pacific Group (APG) Symposium. For reference, the 4<sup>th</sup> APG Symposium is the follow-up of the 3<sup>rd</sup> Symposium held on June 26, 2007 in St. Petersburg, Russia.

Since its establishment in 2002, the APG has experienced many growth and development in various aspects of strengthening membership, network and technical exchange through symposia and seminars, and so on. As of 2016, the APG has had its own meeting during each ICOLD Annual Meeting every year and held 4 symposia related to issues on dams and reservoirs. Moreover the APG's fruitful activity has extended to partial amendments of the constitution for the purpose of strengthening its role, of which was done at the Bali APG Board Meeting held on June 3<sup>rd</sup>, 2014. As one of our quick action responses that followed the decision made at the APG Board meeting in Stavanger, Norway on June 13<sup>th</sup>, 2015, it was suggested

and approved that a joint symposium be held together with the 4<sup>th</sup> Asia-Pacific Group (APG) Symposium and 9<sup>th</sup> East Asian Area Dam conference which was held in Sapporo, Japan from Sep. 26 to 30, 2016.

The main purpose of the symposium was to foster and strengthen neighboring friendship between Asia-Pacific countries since the region has a significant number of dams, almost half of dams in the world. In the years to come, many more dams will have to be built to meet the many challenges that lie ahead.

### ICOLD-APG Roundtable Meeting

ICOLD-APG Roundtable Meeting was held at Crystal Room B, 2<sup>nd</sup> Floor, Royton Sapporo Hotel, on September 28 (Wed) 13:10~15:10. The ICOLD-APG Roundtable Meeting (hereafter 'the Meeting') began with opening declaration by Dr. Dong-Hoon Shin, working Secretariat of ICOLD-APG from Korea, and was followed by welcome remarks by Dr. Kyungtaek Yum, chairman of ICOLD-APG and Vice President of ICOLD. The Meeting was attended by 26 delegates from APG member countries and non-member nations (Cambodia and Laos).







Thursday INCA Meeting: Erick Campos (Costa Rica), Luis Vellacich (Paraguay), Victor Vasquez (US), Humberto Marengo (Mexico), John Wolfhope (US), and Mike Rogers (US).

Prof. K.S. Jung as Secretariat of APG chaired the progress reporting and led a comprehensive discussion on the previously announced APG Technical Report. Dr. Shin reported the official activities of APG and the degree of progress for APG Technical Report by using a PPT file which includes some fruitful results of the APG board meetings, proposal on by-law change of non-consecutive year of meeting in same region submitted to the Board of ICOLD by the Chairman of APG and the President of KNCOLD, and preparation status of the 4<sup>th</sup> APG Symposium and 9<sup>th</sup> EADC in Sapporo in 2016, etc.

Based on the APG Constitution, Dr. Shin also explained the background of the APG Technical Report, its possible contents, and editor candidates recommended by each National Committee, and requested all participants to play key roles in preparation of the Report.

Regarding the possible contents and structures, some delegates explained and suggested their opinions, and there was an agreement on necessity of modification or merge of some contents. For the opinions and suggestions, it was decided that the secretariat office of APG will prepare an amended version of it and circulate within the member countries and inform them as soon as possible.

#### **APG Technical Report Preparation**

ICOLD-APG had a consensus to make a Report on "Floods and Dams in Asia-Pacific Area" during the meeting. Based on the efforts and achievements that we have made so far, board members felt the necessity of another step forward to the better achievements and contribution in the Global Water and Dam Society. Each nation of Asia-Pacific zone has its own characteristics and histories of water resources and management

including the stories and records of flood events and dam constructions over time. However, while the Asia-Pacific area has both of similarity and difference in aspects of geography and climate, it seems not so often to consider and share the common issues on development and management of water resources.

In this context, the participants decided to write a report about Water Resources in Asia-Pacific Area, Statistics of Floods, Droughts and Dams in Asia-Pacific Countries, Extreme Floods, Droughts in Asia-Pacific Area, Landmarks of Dams in Asia-Pacific Area, Role of Dams and Reservoirs in Flood Mitigation, and Future Trends: Floods, Droughts and Climate Change in Asia-Pacific Area. The experts for Working Group were recruited by recommendation of each APG member country. It is working on now. Publish ceremony is scheduled on the ICOLD APG Board Meeting in July, 2017 in Prague, Czech Republic.

#### **Closing**

The working secretariat of APG explained that the next APG Symposium will be held in 2018. According to the APG constitution, a National Committee wishing to host APG Symposia shall send their relevant proposal to members at least 60 days prior to a meeting of the Board. Such a proposal should include topics, venue and timing. Therefore, based on the constitution, it was proposed to request for proposal for the next APG symposium in 2018.

At the closing ceremony, CHINCOLD announced the next EADC to be held in China. With the closing remarks containing the delegates' promise to promote all kinds of necessary APG activities, the Meeting was successfully completed in time. A group photo of all delegates was taken as below.



# 10<sup>th</sup> European Club Symposium Antalya - Turkey

by **Michel Lino**,  
Vice-President of ICOLD

The 10<sup>th</sup> European Clubs Symposium was held in the historic city of Antalya from 25 to 30 October 2016. The Symposium, organized by the TRCOLD with the support of the ICOLD European Club, was attended by about 650 participants representing 25 countries. In connection with the tense security situation in the Turkey and in the surrounding countries, the ranks of participants from Western Europe were relatively sparse. This was compensated by a strong Turkish participation and by the very warm welcome we received.

The Symposium has been held under the sponsorship of The Ministry of Forestry and Water Affairs, and in co-operation with the The State and Water Affairs General Directorate (DSI), and The Turkish National Committee (TRCOLD).

### Opening ceremony (October 26<sup>th</sup>)



The ceremony was opened by H.E. Prof. Dr. Veysel EROGLU, Minister of Forestry and Water, Affairs and Honorary President of TRCOLD. He underlined his country's long history of dam engineering and noted that Turkey was one of the top ranking countries in the world as regards the number of dams and hydropower plants under construction or in operation. Prof. Dr. EROGLU commented that the hydraulics works which has been implemented in Turkey during almost 4000 years, mostly in Anatolia, cradle of many civilizations, had made the country one of the richest and most interesting open air museum in the world, in term of historical water infrastructures.

Opening speeches were also given by Michel Lino, Vice President of ICOLD for Europe, Murat Acu, President of TRCOLD and Director of DSI and Guido Mazzà, President of the European Club.



Michel Lino recalled the eminent position of Turkey in the world of dams: the second country after China for construction of dams on its territory and abroad and a major country for dam design and construc-

tion in Europe. He stated that ICOLD and EURCOLD have a lot to learn from the Turkish achievements and this symposium was the place to share this outstanding experience. Turkey has a paramount position for dam safety issues. Indeed Turkey is one of the most seismic areas in Europe and in the world and has had the privilege to build dams on very large rivers among them the mythic Tigre and Euphrates, like the huge Ataturk dam.



In the afternoon, Prof Luis Berga of Spain, Hon President of ICOLD, gave a special lecture on "Storage and Sustainable Development". He underlined the importance of dams to meet a wide range of human needs.

A Panel on "Financing of dams and hydro projects" was chaired by Prof Dogan Altinbilek. The importance of project financing and the successes with BOT/PPP models was discussed in details, with specific examples of challenges faced and successes achieved.



### Meeting of the Board of the European club (October 26<sup>th</sup>)

The meeting of the ICOLD European Club Executive Board took place on 26<sup>th</sup> October 2016 in the afternoon and was chaired by President Mazzà. President Mazza recalled his actions during his three years mandate:

- Cooperation with other Organizations and Associations to increase the possibility of being effective at the European level,
- Proposals for training and dissemination of information at European level to fill the generation gap,
- Promotion of the activities of task forces and working groups,
- Preparation of a "manifesto" setting out the position of the European ICOLD Club on the present and future role of dams and hydropower in Europe.

He commented on the state-of-the-art of the European ICOLD Club and presents the final version of the Manifesto and the Action Plan to disseminate it.

He introduced his successor Jean-Jacques Fry, from France that has been elected in Johannesburg in June 2016.



### Symposium

The symposium has been held on 27<sup>th</sup> and 28<sup>th</sup> of October. The following themes have been selected by TRCOLD :

- Mega projects in Europe (Ermenedek HEPP, Deriner Dam, Limmern pumpstorage, Yusufeli Dam)
- Dam Safety, Rehabilitation and Surveillance
- Managing Risk in Dams and

#### HEPP Projects

- Type of dams : RCC, CFRD, ECRD, ACRD, Tailing, Hardfill, Concrete Arch
- Auxiliary Structures : Spillways, Diversion and energy tunnel, Bottom outlets, Hydro mechanical and Electrical Equipment.



Symposium attendance

The sessions were chaired by Mumtaz Turfan, Prof. Dr. Louis Berga, Akif OZkaldi, Quentin Henry Shaw, Enrique Cifres, Ali Riza Diniz, Prof. Dr. Ilter Turan and Mine Orhon. The audience

was numerous and the discussions lively and exciting.

43 papers were presented and a large number of posters were displayed around the International Exhibition hall.

The full papers are available on the following link: [http://trcold.com/page/en/80/FULL\\_PAPER](http://trcold.com/page/en/80/FULL_PAPER)

### Working Groups

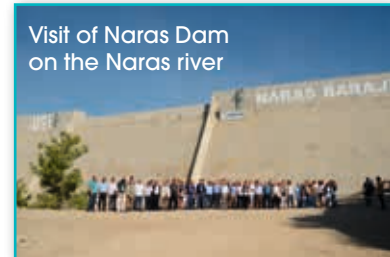
Michel Lino underlined the importance of the Regional Clubs activities in promoting science and research as strongly confirmed by the ICOLD President Anton Schleiss. President Mazzà presented the document sent by Rémy Tourment about the activities in progress of the WG "Levees and Flood Defenses". Then, a brief synthesis of the Saint-Malo Symposium relevant to the WG "Dams and Earthquakes" was presented. The event was the occasion to outline the fruitful collaboration with the JCOLD. Michel Lino added that the WG made various studies and research works on the seismic signals provided by JCOLD that will allow calibration seismic numerical methods. President Mazzà informed that the next Symposium of the WG will be held in Rome on 6<sup>th</sup> and 7<sup>th</sup> of February 2017.

George Dounias, President of the GreekCOLD, made a presentation relevant to the proposal to host the 11<sup>th</sup> European CLUB Symposium in Crete, showing a video about dams and hydro works in the famous Greek island.

### Technical Tour

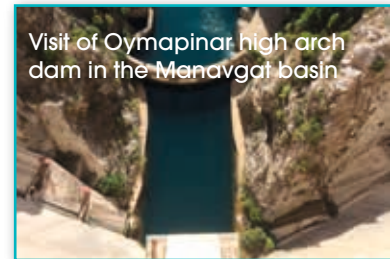
A very interesting Technical Tour was proposed to the participants on 28<sup>th</sup> October.

Two dams were visited. Naras Dam was constructed in the 20 km North of the Manavgat District of Antalya Province on the Naras River for flood protection purpose and irrigation storage. Naras Dam is 78 m high gravity RCC dam and has been commissioned in 2010.



Visit of Naras Dam on the Naras river

Oymapinar Dam is an arch dam built in 1984 on the Naras river dam to generate hydroelectric power. It is located upstream the Naras Dam. It is a wonderful arch structure, 185 m high, built in a very complex karstic context. The dam has four underground turbines with a total capacity of 540 megawatts.



Visit of Oymapinar high arch dam in the Manavgat basin

A touristic part was included with the visit of the Manavgat Waterfall, a very scenic natural landscape and the antic city of Side.



Side antic city



An attractive performance of Whirling Dervishes completed the cultural program.





Dr - Prof Anton Schleiss,  
ICOLD President

## Energy strategy and dams in Switzerland

**This article, a review of Swiss Energy Policy, was written by ICOLD President, but we remind that the newsletter is open to the contributions from all ICOLD members. Vice-Presidents have a priority, but there is room enough for everybody. If you want to share your thoughts on the energy or the water situation in your country, please do!**

According to Swiss Energy Strategy 2050, which takes into account the phase out of the existing nuclear power plants, the mean annual hydropower production has to be increased under present framework conditions by 1.5 TWh/a and by 3.2 TWh/a under optimized conditions. In view of environmental and socio-economical constraints, this foreseen increase is extremely challenging and can be reached only by innovative and sustainable solutions for new hydropower plants (HPP) and by the extension and optimization of existing schemes including reservoirs. The expected increase of power production from small hydropower plants (SHPP) requires the development of criteria for a careful site selection as well as strategies to optimize power production within a river network while at the same time minimizing the negative impacts on stream ecology. There is a consensus rather to favor the extension of the existing large hydropower schemes and reservoirs than to exploit the last natural rivers with a large number of small hydropower plants. The effect of climate change will not only change the availability of water resources in time but also change the behavior of the catchment areas by an increased sediment yield into reservoirs and more frequent natural hazards, and thus considerably endangering waterpower production in the near future. The critical period of electricity supply

in Switzerland is still the winter half year. For 10 years, Switzerland had to regularly import on average 4 TWh in the winter half year. In order to guarantee a safe energy supply also during critical periods, Switzerland has to increase its storage capacity by new reservoirs where possible and mainly to increase the volumes of existing ones.

Already today, Switzerland plays, thanks to its storage power plants, an important role in supplying peak energy in the European grid and thus contributes significantly to its frequency control. In the future, this position has to be reinforced with the goal to become one of the main batteries in Europe able to furnish peak energy at any time. The forced and subsidized European production of mainly solar but also wind energy will further increase the need for regulation and peak energy. After reduction of European subsidies and actual market price distortions, and after economic recovery in Europe, the attractiveness of new pumped-storage power plants, the increased reservoir volume by dam heightening as well as the increased installed capacity of existing power plants by adding new parallel waterway systems and powerhouses will be highly attractive again. To make Switzerland's hydropower production more flexible in the future with the purpose to concentrate it at times of high peak demand is a must for guaranteeing a leading position of Switzerland in a highly competitive electricity market in Europe. Such hydropower production focused on peak energy will also have more severe effects on river flow regimes, so-called hydropeaking, which have to be assessed and mitigated by innovative measures.



Vieux Emosson Arch Dam under construction (Schleiss 2013)

### Swiss Competence Center in Energy Research

In order to address the future challenges of hydropower and reservoirs development and to contribute to the Swiss energy strategy, the following key research directions are developed in the framework of the Swiss



Competence Center for Energy Research under the ongoing program Supply of Energy (SCCER-SoE):

**a)** the change of production potential due to effects of future climate forcing, which are expected to impact water availability (glacier retreat, snow accumulation and melt, streamflow regimes, and sediment production and transport) as well as the operation safety of structures in view of new natural hazards (floods, slope instabilities, etc.);

**b)** the efficiency improvement of existing HPPs and reservoirs, which can be achieved by their expansion to allow a more flexible operation to accommodate new and highly fluctuating demands;

**c)** the contribution of new technological solutions to adapt existing infrastructures in view of increasing their efficiency of production and achieving higher operation flexibility during seasonal and daily peak demands, while maintaining the same level of (infra) structural safety and supply security;

**d)** the assessment of the effects of HPPs new and harsher operation regimes and increased numbers of SHPs on aquatic ecosystems and the development of strategies to reduce these impacts (e.g. by developing innovative strategies of environmental flow releases);

**e)** the definition of future boundary conditions for the operation of HPPs and reservoirs based on the development of electricity demand and market dynamics under uncertain social, economic and political forcing's;

**f)** the assessment of multi-objective operation strategies of HPP systems, which maximize power production, reliability and flexibility of supply, profitability of operation and ecosystem conservation, under the constraints of a more fluctuating demand – due to higher fraction of renewable production – and an uncertain market.

### **Increase of reservoir capacity**

There are only a few sites left in Switzerland for the construction of new large dams and reservoirs. Nevertheless by moderate heightening of the existing dams, which means by less than 10% of initial height, an additional reservoir volume of 700 Mio. m<sup>3</sup> could be created by about 20 feasible projects. This would allow increasing electricity production in winter by 2 TWh, which corresponds to 10% of the actual winter generation. Considering that some dams could be heightened even more, electricity production in winter could be even enhanced by about 15%. This is not only important for a safe and independent electricity supply in Switzerland but also significant for grid stability in Central Europe.

Swiss engineers have acquired high competences in heightening and retrofitting of existing dams.



Photomontage of the future 180 m high Trift dam, which uses the already freed valley by glacier retreat.

Several large dams have been already heightened as Mauvoisin arch dam by 13.5 m to 250 m between 1989 and 1991 as well as Luzzzone arch dam by 17 m to 225 m between 1995 and 1999. Recently the Muttsee reservoir has been enlarged by the construction of a 35 m high and 1.2 km long gravity dam. In 2014 heightening of Vieux Emosson Arch Gravity Dam by 21.5 m was successfully achieved (see picture above). Further projects are foreseen.

In high-mountain regions glacier retreat due to global warming will become an opportunity to adapt existing hydropower schemes and future projects to this new reality. In the Alps, the melting of glaciers first produces over the near future an increase of the average annual discharge depending on glacier and catchment characteristics, especially during the summer season. Nevertheless after a certain time, significant decrease of runoff related to glacier melting in summer on one hand and significant increase of snowmelt runoff in spring on the other hand must be considered for reservoir operation. Moreover the good message is that the melted glaciers will free new alpine valley areas, which have a potential for the construction of new dams and reservoirs.

For example the retreat of Trift Glacier in the central Swiss Alps has already created a new lake and a project for a 180 m high arch dam is under preparation for concession approval.

It may be concluded that there will be still significant investments in hydropower and dams in Switzerland in future in order to overcome the challenges of safe and renewable electricity supply in a highly volatile and competitive market.

Anton J. Schleiss, ICOLD President 2015-2018, Director of the Laboratory of Hydraulic Constructions (LCH) of the École Polytechnique Fédérale de Lausanne (EPFL) and Responsible Coordinator of hydropower infrastructures in the ongoing program Supply of Energy (SCCER-SoE) of the Swiss Competence Center for Energy Research.



## How to finance infrastructure to climate change

by Emmanuel Grenier

Over the past years, we have witnessed a growing recognition of the key role water security plays for building resilience and securing sustainable growth. With the climate change problem, this understanding has progressed. Water Security is multidimensional and a key-driver for achieving the Sustainable Development Goals (SDGs). Long term investments to guarantee water security face uncertainties due to climate change.

The Nationally Determined Contributions (NDCs) presented by countries to the COP21 of Paris to show how they intend to act to face the climate change often involve infrastructures. While most countries of Europe and North America chose to focus mainly on mitigation, all countries from Africa, Central and South America, have their NDCs referring to adaptation. Overall, 134 NDCs involve a part on adaptation, which relies very often on new infrastructure: reservoirs, wells, pipes, delivery channels...

Beside the climate change problem, there is generally a huge need for infrastructures. According to Standard & Poors estimation, there is a \$500 billion gap between the needs and the public funds available globally.

It is often said that infrastructures are to a country what the skeleton, the nervous system and the blood and lymph vessels are to the human body. They make possible the transit of people, goods, water and energy, as well as data transmission. Like in the famous egg-and-chicken problem, economic development is necessary for financing infrastruc-

tures but infrastructures are absolutely essential for economic development.

The problem with infrastructures is not how to build them: we know at ICOLD that there are plenty of good companies able to build large water storage infrastructures, with very able and gifted engineers. The problem is how to finance them, how to estimate of the cost and of the planned return on investment. The infrastructure gap has been estimated by McKinsey and the World Economic Forum as between \$12 and \$22 quadrillion for the period 2016-2030. Many experts think that this figure is still underestimated, not fully taking into account the SDGs.

The G20 has recognized the need and decided to create the Global Infrastructure Hub in 2014. The Sustainable Infrastructure Foundation has been launched to maintain the IISS (see box).

A new concept for financing infrastructures has been created on the recognition that the governments, even assisted with Development Agencies, do not feed enough "Ready to build" projects into the pipeline. The "Blended Finance" approach aims at combining the philanthropic funds with the money coming from Development banks. The project cycle remains the same, but the way the different project actors intervene is different. They should work more jointly than successively, from the design and development phase until the operation of the project. By including the companies in the very early phases of the process, the blended finance approach accelerates the process.

### ICOLD intervenes on the theme Finance in WWF8

ICOLD Secretary General Michel De Vivo has been nominated Coordinator of the theme "Finance" for the next World Water Forum, which will take place in Brazilia 2018. The preparation of the Forum is a very open process and dam engineers and experts can intervene, especially during the *online consultation process*\* which opened in February.

\* <http://www.worldwaterforum8.org/your-voice>



It is an open platform to join people from around the world in collaborating and influencing the Forum's discussions. This is a unique opportunity to express your interest and point of view about the main water problems, share your experience and possible solutions and collaborate for enriching the debates on the future of the management of water on the earth.

The online consultation is open since February 2017 until the 8<sup>th</sup> World Water Forum, with 6 discussion rooms focusing on:

- Climate – water security and climate change
- People – water, sanitation and health
- Development – water for sustainable development
- Urban – integrated urban water and waste management
- Ecosystems – water quality, ecosystem livelihoods and biodiversity
- Financing – financing for water security



## What is IISS

The International Infrastructure Support System ("IISS") is a public project management tool enabling public sector agencies to improve their project preparation activities.

IISS was pioneered by the Asian Development Bank and now is led by a Development Bank appointed executing agency (SIF).

IISS involves the African Development Bank, the Asian Development Bank, O Banco Nacional de Desenvolvimento Econômico e Social, the Development Bank of Southern Africa, the European Bank for Reconstruction and Development, the Inter-American Development Bank and the World Bank Group.

The public sector in general does not invest extensively in infrastructure project preparation, and too often, inconsistently. The private sector is regularly asked to be involved in infrastructure project preparation. There is a real need for more projects to be better prepared in a more efficient and consistent way.

IISS' goal is to raise the quality, consistency and transparency of the public sector's infrastructure project preparation. IISS aims to improve the interface with financiers and funders to maximize funding options for the public sector (public, PPP and private).

## ICOLD activities



**D**ear friends of ICOLD, we are happy to invite you to this year's 85<sup>th</sup> ICOLD Annual Meeting held in Prague in a pleasant, calm and intimate atmosphere of the historic city situated on the picturesque Vltava River.

The Symposium will be devoted to "Knowledge Based Dam Engineering". It has attracted over 450 abstracts from 47 countries. We believe that the new knowledge presented in the form of oral presentations, papers or posters will provide most useful information and inspiration for your work.

This is the first time in its more than eighty-year history, that ICOLD holds its Annual Meeting in the Czech Republic, a country which has a long history of construction and operation of dams and reservoirs. Czechoslovakia was among the founding members who created ICOLD in 1928. The historical roots of the design and construction of purpose-built water reservoirs go back to as early as the Middle Ages, the 13<sup>th</sup> century, when the building of major ponds started, and extensive systems of pond reservoirs were successively completed to be in operation till the present day.

We are looking forward to meeting you in Prague, to share unforgettable experiences and stimuli and inspiration for our future work.

### TheDamsNewsletter

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