



THE DAMS NEWSLETTER

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No. 3 - October 2004

KNOWLEDGE SHARING



VICE PRESIDENT
GÉRARD VERZÉNI

The world of dam's technology is living through a fast evolution period, very similar to the 50's. Very ambitious projects, by their dimensions or by the geological conditions, are being built, that we could not have thought of before. This is true especially for the roller-compacted concrete dams or the concrete-faced rock-filled dams. The rate of dam building in countries such as China, Turkey, Brazil or Iran brings forward a wealth of new knowledge. This knowledge is shared through ICOLD. The symposium on the subject of roller-compacted dams, jointly organized last year in Madrid by the Spanish and the Chinese Committees, is an example of what should be done in a more systematic way.

I am sure we will be able to organize the sharing of this new knowledge, as for the construction techniques, because ICOLD is very well organized for that. I wish to focus your attention on a point often forgotten : the knowledge of the long term behaviour of these new projects. That is a subject dear to my heart because I was personally involved in the problems of the core in the dams built on the Bay James during the 90s. Those were very ambitious projects, by their size, the speed of construction and their geographical situation (not far from the permafrost). We observed an atypical behaviour of those dams, 5 years after their completion and it took us much time and money spent on studies to explain it and to calm down the anguishes of the dam's owners.

In this process, I felt alone because of the specificity of our situation but also because the knowledge-sharing process at that time was not so good : it is of course much more glorifying for an engineer to share knowledge about a new ambitious technique, than to explain the painful work of solving real problems on the field. But I believe that the second is no less necessary than the first. ICOLD is the natural place where we can organize this sharing-process, with the feed-back from our members all over the world.

A handwritten signature in black ink, appearing to read 'Gérard Verzéni'.

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Dams are softer to people than nature

These are news you probably won't hear from the WWF or from other antidam movements who are regularly pouring tears over the fate of the displaced people. According to the China daily (July 15, 2004), "Natural calamities in China have already claimed 555 lives and caused 28.5 billion yuan (US\$3.4 billion) in damages this year. Floods, drought, earthquakes, snow, landslides and mudslides have toppled 269,000 houses and 630,000 people have been forced to evacuate. The disasters have also affected 14.6 million hectares of crops: 1 million hectares will have no harvest. Floods alone have affected 1.9 million hectares of crops, including 235,300 hectares that were wiped out completely. They have killed 296 people and forced 412,000 to relocate." The semi-official China News Service said on July 22 that 381 people had been killed so far by flooding, 98 were missing, and nearly 200,000 houses had been destroyed throughout the country. Direct economic losses have reached 14.85 billion yuan, it said.

These figures help us to put in perspective the number of people displaced by the Three Gorges Dam construction (estimations vary from 840 000 to 1.4 million people). And there is a big difference : in the case of TGD, the relocation takes place in an orderly way and people generally find better homes and living conditions in the thirteen new towns that have been built for them. It is true that limited incidents related to disappearance of the money allocated to relocation, due to corrupted officials, have been reported; but the process of relocation took

place. But this process of relocation takes place only once, when the displacement due to natural calamities are coming back regularly in China for centuries...

Moreover, the figures given above were only temporary. China was preparing at that time for a major flood threat. The China Meteorological Administration warned on July 14 that flood control on north China's rivers will become critical and new floods are likely to occur «at any moment as of today.» And the TGD is ready to play its main role for reducing the disastrous effects of flooding: according to the China Daily, "The water level at the Three Gorges reservoir was reportedly lowered four meters at Yichang, the dam site of the project in Hubei Province. Experts believe that the reservoir

can hold 2 billion cubic meters of floodwater and reduce downstream flooding on the Yangtze."

The warnings were correct : floods unleashed by torrential rains have killed at least 161 people in southwestern China. The situation was so unusual that an alert was ordered in the Three Gorges Dam region : navigation was halted as torrents of murky water passed through the sluice gates.

"Hundreds of thousands of people are seriously affected. Seven thousand people in Chongqing, for example, are still surrounded by water and cut off", declared John Sparrow, regional information director for the Red Cross, on CNN, September 8. It was reported that Chinese TV showed survivors in the city of Dazhou, where 46 deaths occurred, picking through rubbish-filled downtown streets.



People affected by Mother Nature seem not to interest the anti-dams NGO's.

transport and manage water, and the creation of a highway system to transport and distribute the food when it is grown.

The plan that he is promoting for Africa, he said, is a full package, not just a gimmick for people who are starving to get food, but a plan to build the infrastructure and develop water resources so they can grow their own food and build their countries. He stressed that doing this requires political will. According to Borlaug, "Africa has been left behind" in benefiting from the green revolution because of burdensome government bureaucracies and poor infrastructures.

In 1970, Borlaug was awarded the Nobel Peace Prize for his efforts to end world hunger. In his acceptance speech, he hailed agricultural science's potential to provide, by the century's end, food for all, which he called "a moral right."

FAO Jacques Diouf: Africa is failing to exploit the water resources

In a Nobel anniversary speech in 2000, Borlaug lamented that population growth and unalleviated poverty had "eaten up" many of the Green Revolution's gains. He argued forcefully that the world could still feed 10 billion people, provided farmers are permitted to use new technology.

Food and Agricultural Organization (FAO) Director General Jacques Diouf had the same message during the speech he delivered to the Extraordinary Summit of the African Union on Agriculture and Water in Syrte, Libya, on February 27 2004:

"One further factor plays a major part in determining the poor performance of African agriculture: water. Africa is failing to exploit the water resources, whether surface water, groundwater or storm water. It only uses 4 percent of the available water reserves for irrigation (1.6 percent in Sub-Saharan Africa), compared with Asia's 17 percent (14 percent in South and East Asia). Taking account of domestic and industrial usage, Africa uses 5 percent of its total resources compared to 20 percent in Asia. Only 7 percent of all arable land is irrigated in Africa, compared with around 40 percent in Asia.

Excluding the five countries in which irrigation is the most highly developed - Morocco, Egypt, Sudan, Madagascar and South Africa - only 3 percent of arable land is irrigated in for the other 48 countries.

Output from irrigated agriculture is three times that of rain-fed farming. Yet agriculture on 93 percent of Africa's arable lands is dependent upon the highly unreliable rainfall, with a serious risk of drought.

Moreover, 80 percent of all the food crises have to do with water, and above all water shortages: "Those who are fighting against dams, are they realizing they are fighting against solutions to water shortages, thus against solutions to food crises ?

When we refuse to learn lessons from history (see box), the wake-up may be difficult. Recently, California farms' dependence on delta water has been highlighted by levee failure. The levee that broke on June 10 in the heart of the state's complex irrigation system put 1 million acres (404 000 hectares) of irrigated Central Valley farmland on alert for possible water cutbacks, just as peak irrigation season was beginning.

Lessons from History

The dramatic impact of the lack of water infrastructure has been recently illustrated by the work of an international team of archaeologists working on the Greater Angkor Project, which is trying to show that Angkorians created an elaborated system of reservoirs and canals – for irrigation trade and travel – that began to silt up as the population grew, and perhaps saw failures that caused flooding and water shortages.



Associated Press in a June 8 dispatch, explains that the city's economy was based on rice, and rice paddies spread along dozens of canals, some times up to 20 km long. "A network of reservoirs, canals and bridges was created to move people and goods and to ensure there was enough water to grow rice" says Roland Fletcher, from Australia's University of Sidney, which collaborates with Ecole Française d'Extrême Orient and the Cambodian government on the project. "Angkor engineers even changed the direction that some rivers flowed in what essentially was "a human built landscape for growing rice"

Problems began with the population growth, which strained the water system, up to the point that Angkor people were not able to answer adequately. "The more modifications they made, the more problems they ran into, and the harder and harder it became to implement solutions to the problems" said Damial Evans, another scientist from the project. The growing population also provoked more sediments by colonising the nearby hills.

Or to put it in a more general perspective, population growth impose a change of technology. However refined and perfected Angkor technological system of canals could have been – and it enabled several Hindu kings to rule over large swaths of Southeast Asia, between the 9th and the 14th centuries – it appeared insufficient

"If you think of the freeway and the railway system failing in a modern city – it's like that," Fletcher said. "It's an infrastructure problem. Everything else might be working fine, but if the infrastructure goes, this thing can't function." And the 40 people working on the project are now persuaded that "water woes, not wars, ended Angkor's empire".

The nation's most productive farmbelt, California's Central Valley is watered by irrigation districts as large as Rhode Island. Six thousand miles of levees contain and channel snowmelt as it runs down the Sierra Nevada and runs through the San Joaquin-Sacramento River Delta to the Pacific.

And yet one broken levee — one burst capillary in the heart of the intricate system — can hurt users more than 100 miles away.

Rebuilding the levee and pumping out the floodwater from Lower Jones Tract will take at least two months and up to \$15 million. It's unclear how long it will take farmers to produce again once the water is gone. ●

Confirmed by 154 nations : large hydropower IS renewable energy !



Internationale Konferenz
für Erneuerbare Energien, Bonn
International Conference
for Renewable Energies, Bonn

Ministers and Government Representatives from 154 countries gathered from June 1st to 4th (2004) in Bonn (Germany) for the International Conference for Renewable Energies. The Political Declaration signed in Bonn, identifies hydropower as one of the renewable technologies “to be substantially increased with a sense of urgency”. It recognized that hydropower, together with solar, wind, biomass/fuel and geothermal energy, “can significantly contribute to sustainable development, to providing access to energy, especially to the poor, to mitigating greenhouse gas emissions, reducing harmful air pollutants, thereby creating new economic opportunities, and enhancing energy security through cooperation and collaboration.” The issue of hydropower caused a great fight during the conference, some delegates trying to exclude big hydro from that definition.

In fact, hydropower is mentioned only once in the declaration, in a footnote defining what is understood by “renewable energies”. *The Dams Newsletter* asked if “this classification was bearing on all hydropower, of any size, or if it was following the more restrictive definition of European Union”, which considers only small hydro power (under 30 MW) to be “renewable”. Mike Eskat, from the Conference Secretariat, answered: “Hydropower as defined in the footnote of the Declaration relates to all forms of this energy source. This is an outcome of the conference discussions following related demands especially from a number of African countries as well as some Asian and Latin American emerging market countries with large hydro potential”.

Thus, anti-hydro lobbyists suffered a serious setback in Bonn despite their large mobilization. At the opening of the conference, so-called “citizen’s groups” organized by the International Rivers Network countries had called for large hydro to be excluded from renewables initiatives and targets. But the developing countries diplomats successfully defended their sovereign right to develop, to the great anger of Patrick McCully, campaigns director for IRN, who singled out Brazil and Uganda as the main responsables for his defeat. With foam at the mouth, he claimed that “the big hydro lobby is hijacking concern over poverty and climate change to promote their destructive technology.” On the contrary, large developing countries were very happy with the final result of the Bonn conference.

Government representatives also reaffirmed their commitment to achieving the United Nations’ Millennium Development Goals, in particular the goals to halve the proportion of people living in extreme poverty and to achieve environmental sustainability by 2015. “Reaching these goals will require significantly expanded access to energy in developing countries. It is estimated that up to 1 billion people can be given access to energy services from renewable sources, provided that market development and financing arrangements can be enhanced as intended through the Conference’s ‘International Action Programme’”

Accompanying the Political Declaration, that International Action Programme contains more than 200 concrete actions for developing renewable energy, taken by governments, international organizations and stakeholders, including civil society and the private sector, committed to implement renewable energy projects at the local, national, regional and global levels. It is interesting to note that this International Action Programme comprises almost as much initiatives promoting large hydro (16) than initiatives limiting themselves to the promotion of small-scale hydropower projects (18). Since large hydro represent the essential part of worldwide hydroelectricity, and thus of renewable electricity, excluding it would be tantamount to refuse energy access to those who need it. ●

UNEP-DDP Workshops: Report from ICOLD Officers

The DDP process is continuing through a series of workshops. We present here reports of ICOLD Officers having participated in three of these workshops.

Report on the Workshop on Financing Dams and Sustainable Development (London, April 21-22, 2004). Organised by UNEP-DDP and supported by the British Dams Society and WWF International

André Bergeret participated in the London workshop as an observer representing ICOLD.

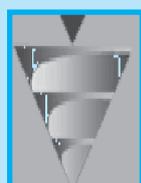
There were 3 keynote addresses during the first day of the workshop. The very selection of the 3 speakers reflects how unbalanced is the DDP process : 2 representatives of the anti-dam lobby (WWF and HSBC :Hong Kong and Shanghai Banking Corporation) against one representative of the developing sector.

First, Daudi Migereko, Minister of State for Energy of Uganda, spoke. He highlighted some of the challenges facing developing countries in accessing financial support for hydropower projects and the growing frustration of governments at delays and difficulties. He pointed to the right of a nation to develop its natural resources. In identifying ways to overcome the challenges, he pointed to the need for widely accepted sustainability criteria. He welcomed the World Bank's new water resources sector strategy for its focus on infrastructure development and management. Among the challenges for financing he identified were: the endless consultation processes that are not user-friendly or fruitful; the role of the anti-dam lobby in blocking much needed development; the increasing complexity of planning procedures and barriers in the form of stringent requirements like the WCD guidelines which require lengthy procedures and he considers are not investor-friendly; the importance of improving the quality of planning and management of new dam projects; the need to lower the cost of financing through guarantees against risk together with credit enhancement mechanisms

Then Amanda Combes spoke, from HSBC. She explained that HSBC is currently working with WWF to develop ecological aspects of a freshwater policy that will influence future investments in this sector in addition to consultations with IFC and the World Bank in various forums. She noted that in HSBC, it was important for the WCD recommendations to be considered in any funding proposal for large dams.

Dr. Chris Hails, from WWF international, tried to explain that WWF was not anti-dam, but "seeks to change decision-making in the manner proposed by the WCD to help ensure that only 'good' dams are built and financed in the future."

Afterwards, there were three sessions comprising a series of presentations and discussion of key points related to building confidence in processes that supported financing decisions. The sessions corresponded to phases in the planning and project cycle, namely: upstream planning and selection of projects (Session 1); where a dam was selected, the design stage (Session 2); and development and management issues (Session 3). I present here the main points from session 1 and 2.



The London Workshop was co-sponsored by UNEP-DDP, The British Dams Society and WWF International.

Session 1

Andrew Scanlon, from the International Hydropower Association, presented IHAs Sustainability Guidelines and Compliance Protocol. Ute Collier, from WWF, commanded the Equator Principles. Mary Boomgard, from the Overseas Private Investment Corporation, OPIC, a development arm of the US Government, quoted from OPIC's response to the WCD report. "OPIC believes it is important to show leadership in adopting and implementing those elements of the WCD guidelines that inform good development policy and that are within OPIC's capacity to implement.

José Frade, from the European Investment Bank, explained that "Governments must provide a legal and technical framework and processes that can instil confidence and trust in dam-related investments when they are considered."

Chris Head, Independent Consultant, UK, noted that "private sector financing model is not working well for large dams"

Session 2

Myriam Truchon, (Hydro Quebec) draw from the experience of her company, to show that benefit sharing was a key factor in gaining community acceptance. Stakeholder involvement has resulted in a project of better quality, construction is on time and budget authorisations are on target.

Patrick McCully (International Rivers Network) also supported the Equator Principles and condemned the World Bank. Alessandro Palmieri (World Bank) said that "recent projects like Xiaolangdi in China have demonstrated that resettlement issues can be handled successfully". He reminded the World Bank position : "The World Bank supports the core values and strategic priorities of the WCD, but recognises the criticism of some of the more detailed recommendations." A position very similar to ICOLD's.

During the discussion, it appeared that the majority of bank representatives were completely in agreement with the position of the World Bank.

Report from UNEP-DDP workshops : Nairobi, June 2004 Addressing Existing Dams and Ensuring Compliance

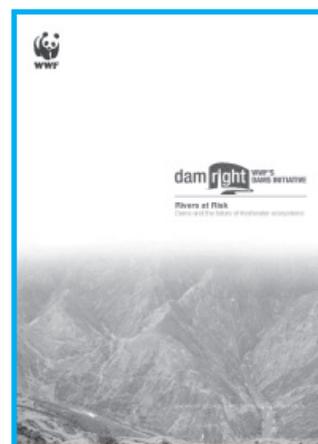
Paul Roberts, ICOLD Vice-President, was requested to attend these two workshops on behalf of ICOLD. Just over 40 participants representing a wide range of stakeholders groups involved in the dams and development debate attended the meeting. Some 28 countries were represented. The debate on the issues was lively, yet he reports a willingness to listen to opposite viewpoints and encouraging signs that the debate is now on a more mature level.

The workshop on Addressing Existing Dams dealt with the topics of :

- Assessment and implementation of dam safety programmes;
- Addressing outstanding environmental issues;
- Methods to overcome barriers to regular performance assessment (technical, environmental and social)
- Optimizing performance (structural and non-structural measures)

It is a matter of historical irony that HSBC financed the WWF report against dams (Rivers at Risk, Dams and the future of freshwater ecosystems, June 2004), through the Investing in Nature program. In February 2002, HSBC made a US\$50 million commitment and created this five-year partnership, called Investing in Nature, with three charities : Botanic Gardens Conservation International (BGCI), Earthwatch and WWF.

In the WWF report, the Chinese policy of dam development is severely criticized; the WWF finds intolerable that "the Yangtze River Basin in China has by far the highest number of new large dams planned or under construction (46 new dams)". It's a critic that reminds the Opium war, when China's right to development was denied by British imperial institutions, such as the Hong Kong and Shanghai Banking Corporation. That bank, established in 1865 to finance the growing trade between Europe, India and China, amassed huge wealth through its control of the opium traffic revenue, (opium, grown in India under the authority of the British government, was the main part of the triangular trade). That bank later became... HSBC, Europe's largest bank and the world's third largest lender. An institution which can hardly be defined as representing the interests of the developing world...



Emmanuel Grenier

Here are some of the key observations of Paul Roberts, seen from an ICOLD perspective, made after the workshop :

"ICOLD can and should play an important role in the whole issue of dam safety, risk assessment and disaster preparedness as it has already developed much expertise in these fields. Several issues related to ICOLD are mentioned specifically in the report. This also includes topics such as the potential impact of climate change on water resources availability and flooding regimes."

"ICOLD should pay further attention to the topic of smaller dams and this process was initiated in Seoul 2004."

Paul Roberts also raised the question whether multi-disciplinary capacity exists within the dam industry to evaluate existing dams when their human resources are dedicated to planning new projects. He suggested that evaluations should initially focus on new dams, with participation and appropriate indicators and work backwards to identify key demonstration projects. A further obstacle to assessments identified was the lack of baseline studies. Without understanding the pre-dam conditions, it is not possible to measure changes attributable to the dam.

The output of the two-day workshop on Ensuring compliance is a set of recommendations and issues to be dealt with that reflect the principles, criteria and strategies concerning the improvement of implementation of compliance mechanisms at the national level. These recommendations can be considered at the national level when strengthening or integrating ensuring compliance issues into regulating frameworks to improve decision-making, planning and management of dams and their alternatives.

The recommendations from the two workshops were made to the Dam Development Forum which followed immediately after these two events. The full reports on the workshops and forum meeting will appear in due course on the UNEP-DDP website :
<http://www.unep-dams.org/> ●

72nd annual meeting in Seoul



Elected Vice President Andy Hughes (United Kingdom)



Elected Vice President Yong-Nam Yoon (Korea)

Two new Vice-Presidents were elected : Andy Hughes (United Kingdom), replacing Raymond Lafitte (Switzerland), and Yong-Nam Yoon (Korea), replacing Kyohey Baba (Japan).

The executive meeting adopted the questions which will be studied during the next ICOLD Congress, in Barcelona (19-23 June 2006). The final wording of the questions is as follows :

**QUESTION 84
TECHNICAL SOLUTIONS TO REDUCE
TIME AND COSTS IN DAM
DESIGN AND CONSTRUCTION.**

1. Time and cost reduction by innovative solutions and design criteria for river diversion.
2. Innovative foundation design and treatment thus reducing uncertainty and contingencies.
3. Unconventional cross sections and use of materials in dams.
4. Savings in designing new spillways or upgrading existing ones.
5. Innovative approaches towards dam layout, implementation program and other provisions

**QUESTION 85
MANAGEMENT OF THE DOWNS-
TREAM IMPACTS OF DAM
OPERATION**

- 1) Water releases and safety procedures for downstream areas.
- 2) Warning systems.
- 3) Releases and environmental impacts downstream of dams.
- 4) Observed impacts on the environment and ecological systems.

**QUESTION 86
SAFETY OF EARTH- AND ROCKFILL
DAMS**

- 1) Dam safety classifications for levels of safety and regulations.
- 2) Risk assessment and criteria for acceptance.
- 3) Prevention, remedies, safety measures against overtopping by extreme floods, jammed gates, landslides, etc.
- 4) Breach formation, initiation and progression.
- 5) Prevention, detection, corrective measures related to seepage

**QUESTION 87
FLOOD AND DROUGHT EVALUATION
AND MANAGEMENT**

- 1) Evaluation and re-evaluation of floods and droughts for large or small catchment areas. Influence of climatic changes. Review of criteria for design or upgrading of dams and spillways.
- 2) Flood and drought forecasting and contingency plans.
- 3) Flood and drought management by existing or new dams.
- 4) Various solutions for improving the hydrological and hydraulic safety of dams.

Details for the next Annual meeting are now available. It will take place from May 1st to May 6 in Teheran. A workshop on seismic aspects of dams will be organized on May 3rd. A symposium on "Uncertainty Assessment in Dam Engineering" will be organized on May 5. Executive meeting will take place on May 6.

Further details can be found on the meeting's website: <http://www.ircold.ir>.

French National Committee initiatives

In a remarkable initiative, the French Ministry of Ecology and Sustainable Development (MEDD) and the French National Committee (CFGB) organize jointly a technical conference on dykes (both flood embankments and dykes associated with big hydroelectric installations). The conference will take place on November 25 and 26 in Orleans. Four sessions will be devoted to 1) state of dykes in France, with a special part dedicated to hydroelectricity, canals and river embankments, with their specific pathologies; 2) Methods of survey, including recent developments in geophysics; 3) maintenance and reinforcement of dykes, with the presentation of techniques used to better security or to solve the problem observed; and 4) visit of works, which are numerous in the region of Orleans, including on the Loire river.

This is a conference of national interest but we mention it in the Dams Newsletter because this is the second instance where the CFGB took the initiative to organize a common event with the MEDD. The two events are co-chaired by Noël Godard (MEDD) and Bernard Tardieu (CFGB). Although, this Ministry is the correspondent of the UNEP and DDP in France, it involves pro-dams engineers who know that dams can also be helpful to nature, including by the preservation of biodiversity in the rivers during summers without precipitations.

Flood risk underestimated

The first symposium was organized on November 18, 2003, on the theme "Large dams and sustainable development". It included many communications on risks associated with dams, but also on the evaluation of socio-economic, environmental and cultural impacts of the dams' building, and on the possible interaction of dams with future climate evolution.

Among the results produced during the symposium, there was a report on the events associated with the last flooding of the Rhone Valley. This brought a new analysis of the 1000 year flood risk, which was underestimated. This will lead to a re-evaluation of dams' security.

A whole discussion on the greenhouse effect took place, based on the research conducted on the Petit Saut dam, exploited in the tropical climate of French Guyana. Some participants estimated that the environmental impact was much too high compared to the energy benefit of the project. The measurements made in Petit Saut revealed that most of the greenhouse gases emissions were situated in a weir built downstream to aerate the water. The conclusion was that, despite those emissions, hydroelectricity is much less polluting than power from fossil fuels which would have been otherwise necessary to supply electricity to the region. The carbon emitted by the reservoirs has been trapped a few years before through the growth of vegetals. Anyway, there is no desequstration of fossil carbon.

There was also an in-depth discussion on the modification of the hydrological regime of the water ways brought by climate change. Although it is very difficult to detect a man-made change in the long series of data on flows, with a high natural variability associated with engineering actions, it seems necessary to develop tools to detect the first signs of a climate change which would worsen the floods or extremely dry periods. No such variation has been detected until now, at least with sufficient scientific certainty.

The MEDD has presented climate models coupled with evapo-transpiration and flow-estimation models, applied on the Rhône and Seine rivers. Those models confirm the risk of extreme phenomenon's extensip, like floods or low flows. ●

AGENDA

■ **October 13-15, 2004** ■
Weimar, Germany

International Dam Symposium 2004
www.talsperrenkomitee.de

E-mail: Roelof.kruize@dwr.nl
Website: <http://www.nva.net>

■ **October 18-20, 2004** ■
Porto, Portugal

HYDRO 2004: A New Era for
Hydropower
Contact: Mrs Alison Bartle or Margaret
Bourke
E-mail: conf@hydropower-dams.com

■ **October 21-22, 2004** ■
Ohrid, Macedonia

First National Congress on Dams
macold2004@esmak.com.mk

■ **24-26 November 2004** ■
Vienna, Austria

Hydropower - a renewable and
sustainable resource
13th International Seminar on Hydro
Power Plants
The objective of the Seminar is to
provide a forum for exchanging
information and ideas and presenting
new developments in various fields of
Hydropower

Contact Dr Eduard Doujak, Institute
for Waterpower and Pumps, Vienna
University of Technology, eduard.doujak@tuwien.ac.at
www.tuwie.ac.at
[http://info.tuwien.ac.at/wup/
tagung2004](http://info.tuwien.ac.at/wup/tagung2004)

■ **December 9, 2004** ■
London, United Kingdom

International Symposium -
Hydropower 2004

This symposium will provide a forum
for review of hydropower activities,
recently and currently being carried

out by UK companies for both home
and overseas projects.

www.imeche.org.uk

■ **December 14-17, 2005** ■
Udine, Italy

Structural Safety Assessment of
Dams
Internet: www.cism.it

The course, organized under the
auspices of the thematic network
NW-IALAD (Integrity Assessment of
Large Concrete Dams), funded by
the EU Fifth Research Framework
Programme, will provide attendants
with a comprehensive view to
establishing or enhancing an effective
dam safety program.

An additional dams related event
will be hosted the same week of
the course, namely a Nw-IALAD
workshop on "Performance of Real
Dams and Scale Models" (Dec. 17),
aiming at presenting a data-base
on experimental investigations
(according to Nw-IALAD workplan) and
to discuss, through qualified invited
lectures, existing gaps and future
needs on experimental investigations
and diagnostic techniques in dam
safety assessment.

■ **10 January 2005** ■
28 January 2005
Concepcion, Chile

Workshop on Balancing Hydropower
Development and Biodiversity

«This NSF-PASI sponsored workshop
will explore the relationship between
biodiversity conservation and water
resource development, with specific
emphasis on hydropower projects
and dam operations. An adaptive
management-based scientific
framework will be developed to
consider the observed ecological
consequences of hydropower projects,
to improve criteria for designing
future projects, and to identify river
systems that should be protected

from development. This workshop
will also be used as a springboard
for developing future collaborative
research focus in the Americas.

<http://pasi.engboi.uidaho.edu/>

■ **May 25-27 2005** ■
Nijmegen, Netherlands

Third International Symposium on
Flood Defence
'Floods, from defence to
management'

A new approach towards flood risk
reduction is needed. The World Water
Forum (Kyoto, 2003) recognized
that, among other things, flood
management is necessary in order
to alleviate poverty in developing
countries.

The shift from pure engineering (ISFD
in Kassel, 1999 and in Beijing, 2002)
towards a more integrated flood
management approach, is reflected
in the ISFD3 motto "Floods, from
defence to management".

info@routine-nijmegen.nl
<http://www.isfd3.nl>

■ **May 1-6, 2005** ■
Tehran, Iran

ICOLD 73rd Annual Meeting
www.ircold.ir

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