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DEAR IWRA FRIENDS

The current global financial crisis differs from other crises of the past mainly because it originated in the financial systems of developed countries and has impacted very severely in most, if not all, middle and low-income countries, threatening years of progress in poverty alleviation. One area that has suffered because of the present global financial crisis has been the development of water infrastructure in spite of its importance in both developed and developing countries to provide populations with better services at all levels on a long-term basis.

Because of the importance of large water infrastructure such as dams to achieve development goals, and because of the lack of reliable information on their actual positive and negative impacts, the Third World Centre for Water Management, the IWRA and the International Hydropower Association embarked on a project to assess the actual impacts of several large dams from all over the world based on observed facts and authoritative and objective analyzes. The project includes studies of greenhouse gas emissions from reservoirs and direct and indirect economic and social impacts of large dams, including resettlement practices. In terms of case studies, the impacts of the following large dams have been assessed: Aswan High Dam, Egypt; Sobradinho Dam, Brazil; Shahid Rajee (Tajan) Dam, Iran; Bhakra Nangal Project and Koyna, Sardar Sarovar (Narmada) and Kangsabati dams from India; Ataturk, Altinkaya, Gezende and Hasan Ugurlu dams from Turkey; King River Power Development in Australia; and the two large dams that provide water to Beijing.



Experiences from direct and indirect benefits and costs from dams in Switzerland and overall resettlement practices in Argentina, China and India have also been analyzed. These authoritative assessments clearly indicate the benefits of large dams to meet the water, energy and food needs of an increasing population as well as their potential to improve the life style of *all* population, both urban and rural, *if* they are properly planned, constructed and managed. Publication with the results of this study will be available at the end of 2009. We expect that this book will add to a constructive dialogue on development of large water infrastructure which is much needed all over the developing world. We have the necessary knowledge on how large dams should be properly planned, constructed and managed: what is needed now is to put this knowledge into practice.

In this issue of IWRA Update, you will find contributions from some of our distinguished members, such as Prof. Christopher Scott, Dr. José Albiac, Dr. Bruce Mitchell, Dr. Edward Ongley and Dr. James Nickum. I would like to thank all of them for accepting my invitation to write for our Newsletter. In the case of Prof. Nickum, he has very kindly authorized us to reproduce a paper he wrote for *China Economic Quarterly*.

We are already working for the next IWRA Congress to be organized in Recife in 2011. The Chair of the Scientific Committee is Prof. Christopher Scott of the University of Arizona, and the topic for our next Congress will be on adaptive water management: looking to the future. You will find a note on this regard in this issue. Under the able Chairmanship of Prof. Scott, we are confident the Recife Congress will be a great success.

I am very pleased to report that the two most active geographical committees of IWRA, from China and Japan, will be organizing this year international experts meetings. The China Geographical Committee is organizing an Experts Meeting on Water Demand Management in Beijing on 17 and 18 October. Should you be interested to participate, please contact Dr. Jia Shaofeng, Secretary General of this meeting (e-mails jiasf@igsnr.ac.cn and shaofengj@hotmail.com). The Experts meeting organized by the Japan Geographical Committee will be on Integrated River Basin Management in Asian Monsoon Region, in Tokyo on 14 and 15 December. My thanks to the leadership of these two committees for their continued support to IWRA.

I would like to take this opportunity to express special appreciation to Dr. Toshikatsu Omachi for his dedicated work as Chair of the Japan Geographical Committee of IWRA. After years of strong support to our Association, we bid farewell to Dr. Omachi for completing his term very successfully and leaving behind a thriving Committee. I would also like to welcome Mr. Motoo Fujiyoshi as the new Chair. With more than 30 years of knowledge and experience on rivers, disasters and environmental management, I have no doubt that the Japan Geographical Committee will continue making significant contributions to the future of IWRA under his leadership.

IWRA will be co-sponsoring the Third International Forum on Water Resources and Sustainable Development at Wuhan University during 22-24 September. Later on, in November, we shall be co-sponsoring with the International Centre on Water and Environment (CIAMA) and Third World Centre for Water Management, the III Experts Meeting on Water Quality Management in Zaragoza, Spain, during 9-11

November. With the support of Prof. Benedito P. B. Braga, former president of IWRA, and in collaboration with the Third World Centre for Water Management and Instituto Pro-Ambiente, Brazil, the IWRA will also be co-sponsoring an Experts Group Meeting on Management of Transboundary Rivers and Lakes in Campo Grande, next November. Some of the worlds leading experts of transboundary water management in the Americas have been specially invited to participate in this expert meeting. Should you be interested on any of these meetings, as well as any other IWRA is co-sponsoring this year, please visit our webpage where you will find more information.

On housekeeping issues, I would like to remind you to cast your votes for the election of the next Executive Board, 2010-2012. The list of Nominees has been published in the June issue of *Water International* and we have also posted it in our webpage (www.iwrahome.org). Please remember that your vote will count only if you are a paid member. Do join the Association and be part of the process to select Board members who will continue representing you.

The IWRA webpage provides you with the information and the means to pay your membership fees to join the Association either through our webpage, through bank transfers, or directly with the Executive Office (Ms. Manoko Selolo, e-mail iwra-office@wisa.org.za). Most of our members have decided to use the webpage as this has proved to be more efficient and less costly compared to international bank transfers. Irrespective of the method of payment you choose, do not forget to register in the webpage so that you can have access to the electronic version of our Journal.

As you know, the IWRA has launched a programme to sponsor first-time members of the Association. Please share this information with all those who may be interested in this opportunity.

Finally, I would like to remind you once again that your views and contributions are very important for the Association. The Executive and Editorial offices, and I as President, continue to welcome your comments and suggestions

Cecilia Tortajada
President

NOTE FROM THE EDITOR

The editing and publication of *Water International* is now in the final stages of the transition period from the trauma of a couple of years ago, when we faced delays in publication compounded by an enormous inventory of accepted and pending papers. We now appear on time, and the queue of papers at all stages between submission and publication is now down to about 60 from over twice that in September 2007. This number is still a bit high, about twice what we can publish at present in a year, but reasonable given that not all will see final print. Furthermore, manuscript submissions continue to come in at a rate of roughly 90 per year, allowing us the luxury of

maintaining an acceptance rate at or below one out of three. More importantly, there are indications that what we publish is beginning to get noticed and respected again after many had given us up for dead.

Next year will see some major changes as we move from crisis management and transition modes to becoming more of a “normal” journal once again. In particular, at the suggestion of Routledge (Taylor & Francis), and with the approval of the Executive Board, we are going to increase the number of issues from four to six per year. This will give us more exposure, and allow us the freedom to publish a wider variety of offerings, including special issues, more information on recent books and meetings, and opinions and conversations on critical issues in the area of water policy and management. All of this will require some reform of our editorial structure as well, away from the relatively small core that has worked both to get the journal up and running normally, and to complete the transition to a commercial publisher. Now we can expand the number and responsibilities of senior editors, covering different fields, much as most other professional journals do. This is still a work in process, and even more than ever, I welcome your comments and suggestions about how we move ahead, and how we can serve the IWRA members in particular as our journal continues to evolve, and enters its 35th year of publication.

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XIV WORLD WATER CONGRESS IN 2011 ON ADAPTIVE WATER MANAGEMENT

IWRA’s triennial World Water Congress will be held in November 2011 in Recife, Brazil, hosted by the Brazilian Water Resources Association (Associação Brasileira de Recursos Hídricos). In recognition of the need to address rapidly changing water resources conditions around the globe, the Congress theme has been selected to be “Adaptive Water Management: Looking to the Future.”

The Congress aims to highlight emerging pressures on water resources, including climate change, urban growth, water quality degradation, and ecosystem water requirements. Each of these will alter the way water is managed; together, they will require fundamentally new priorities for technology and infrastructure, management and policy, allocation and pricing, and above all a new future outlook for water resources professionals.

Managing water has always entailed assessment of changing availability, supply, demand, and water quality. What, then, is “adaptive management”? As we enter an era of drastically heightened pressure on water resources, managers and decision makers (from users to agencies, to global water initiatives) must reconfigure

conventional approaches that have assumed bounded variability in hydrologic, water demand, and institutional terms. This new conception of water management seeks to better integrate scientific, engineering, social, and institutional perspectives. It requires new understanding of multiple factors that influence how water is managed – we must to innovate. For example, what are the tradeoffs of new treatment systems for water supply or wastewater that are increasingly energy-intensive when climate change mitigation will require reduced energy inputs? How do decision processes at local to national to global scales incorporate new perspectives? Are agencies, professionals, and the public able to change their thinking (“learn”) quickly enough to keep pace with growing uncertainty in conditions? These and other questions will challenge Congress participants.

At this stage in the preparations for the Congress, the International Scientific Committee is being formed and logistical arrangements are being worked on. This brief overview article is an invitation to IWRA members to think “out of the box” by beginning to prepare proposals for sessions and presentations. A specific call for sessions will be circulated later this year with details of the process. Responding to the need to address important changes in water resources from an adaptive management perspective, we expect the topics outlined below will be featured at the Congress. However, it is up to you as IWRA members to decide the precise way these will be addressed and to identify many other topics.

Water and climate change – increasingly, water resources availability and quality are linked to global climatic processes (variability and change). What are the management and infrastructure implications of climate change? How do short- and medium-term strategies to face climate variability influence our longer-term interest to mitigate climate impacts?

Water for energy and energy for water – these two resources are often managed in isolation, yet we are increasingly aware of their inter-connections. How do we supply increasing volumes of acceptable quality water when energy use is now more than just a financial cost? What is the outlook for desalination, particularly from the perspective of energy consumption?

Water competition: agriculture, cities, and ecosystems – managers, policy-makers, and researchers alike are confronted by rapidly changing demands for water. What are the tradeoffs (who are the winners and losers)? What are the investment and infrastructure requirements? How will irrigation adapt to increasing water demand for cities and ecosystems?

Urban water and wastewater – are booming cities and the need to supply water to expanding urban populations increasingly going to set the priorities for water management? What are the options for wastewater and how will the health and environmental risks be managed?

We will update you periodically through the newsletter, but please let us have your input and feedback to make the World Water Congress in 2011 a success.

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THE CONGRESS ON CLIMATE CHANGE LAST MARCH IN COPENHAGEN

The international conference “Climate Change: Global Risks, Challenges and Decisions” took place last March in Copenhagen, with a large assistance above two thousand experts. The purpose of the conference was to gather the scientific consensus on the main issues of climate change, in order to hand over these results to the decision makers attending the UN Conference on Climate Change in Copenhagen next December (Conference of the Parties 15).

The conference was organized by the IARU¹ around six themes: understanding climate change, equity issues, mitigation, adaptation, managing the planet, and stakeholder mobilization. There were two sessions on water resources adaptation, with several papers on Africa, water research needs, and comparisons of adaptive strategies among countries.

Results from large models analyzing water resources were presented. Because the models hardly include basin details and stakeholders institutions, the long-term forecasts and scenarios seem too crude while the social feedback to climate impacts is rather missing. Institutions are the key question for sustainable management, since water is a common pool resource. The reason is that stakeholder cooperation can only take place through institutions in order to achieve the required collective action in adaptation.

Well known experts were invited to the plenary sessions, such as Rajendra Pachauri, William Nordhaus and Nicholas Stern. The speech by Nicholas Stern was quite remarkable. He warned that the risk of non-marginal events in the forthcoming climate change, calls for resolute action by policy makers. He explained this with the results found by Nordhaus on the damage caused by temperature: the model by Nordhaus finds a loss of 50 percent of GDP once temperatures rise by 19 °C, when in fact total destruction will follow from such temperature rise. Stern appealed to an insurance argument for spending 1-2 percent GDP in order to reduce the risk of catastrophic outcomes. Another important point made by Stern is that countries such China and India should take the lead in the effort on climate change, while rich countries have to support unconditionally their efforts.

The conference issued six key messages from the scientific community to the world leaders and policy makers. The first one is that emissions and climate are changing at the upper boundary of IPCC projections. The second, that societies and ecosystems are very sensible even to small climate changes. The third, that rapid, sustained and effective mitigation is required. The fourth one underlines the equity dimensions of climate change. The fifth message is that instruments are available to face the challenge, and must be used, and the sixth message states that to meet the challenge significant constraints must be overcome and critical opportunities must be seized.

¹ The International Alliance of Research Universities: Australia National University, ETH-Zurich, National University of Singapore, Peking University, University of California at Berkeley, University of Cambridge and University of Oxford (UK), University of Copenhagen, University of Tokyo and Yale University. Additional information on the conference can be found at <http://climatecongress.ku.dk/>

To my surprise, the papers presented were not available in the website of the event since, as indicated by the congress organizers, a book will be published next year by Cambridge University Press. This seems a good example of a public good management problem, and a useful lesson on cooperation failure for people working on climate change.

A more worrying failure, though, is the possibility of countries not achieving an agreement next December in Copenhagen to achieve a significant reduction of greenhouse gases. The United Nations negotiations in Bonn last June already failed to reach an agreement not to exceed an increase of two degrees Celsius, which has been considered by the scientists as a critical threshold.

The rich countries belonging to the group of eight are now trying to reach an agreement so that global warming will not surpass this two degrees Celsius limit. However, United States, Japan, Russia and Canada oppose this limit. United States prefers a commitment on gas emissions and not on temperature ranges, and it is also asking China and India for commitments as a precondition.

The cooperation among countries does not seem to be an easy task, and therefore achieving the needed collective action remains to be seen.

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IMPLEMENTATION GAP

“Implementation failure is like original sin; it is everywhere and it seems ineradicable” (Weale, 1992: 43). In planning and management, there is widespread and longstanding recognition of what is often referred to as the ‘implementation gap’, reflecting the difficulty in moving from visions, strategies and plans to action.

Water management is particularly prone to such a gap because of the complexities created by the inter-connections among water, land and other resources, surface and groundwater, and upstream and downstream areas of basins, as well as the role of water related to poverty alleviation, economic development and ecological integrity. By explicitly addressing such inter-connections, it is logical to conclude that it should be possible to reduce or remove the ‘silos’ and ‘stovepipes’ that characterize many approaches to water management, and thereby to be effective, efficient and equitable through coordination and collaboration.

At the same time, however, many also realize that aiming to manage interconnected systems can create significant challenges because of *complexity* due to the many variables, relationships and stakeholders; *conflict* due to different values, interests, needs and wants; *uncertainty* due to much being unknown; and *change* due to natural or human-induced evolution of systems. There is a danger that too much will be included, leading to nontrivial problems in delivering practical solutions. Nevertheless, while

the difficulties are real, the alternative of addressing problems on a sector-by-sector or piecemeal basis generates other major disadvantages. Thus, we need to systematically identify variables and conditions which create implementation gaps, and determine how to resolve them. Will this be easy? No. Will there be perfect answers and approaches? No. But we should strive to identify best practices related to achieving implementation, and enhance them on an ongoing basis.

Implementation Literature

Much research related to achieving effective 'implementation' has been completed. Examples include land use planning (Booth, Poxon and Stephenson, 2001; Mitchell, 2005), environmental impact assessment (Cashmore, et al., 2004; Rossouw and Wiseman, 2004; Gachechiladze, Noble and Bitter, 2009), resource management (Joseph, Gunton and Day, 2006), marine systems (Wescott, 1993; Keynan, 1999), water management (Somach, 1993; Montgomery, Grant and Sullivan, 1996; Johnson, Shrubsole and Merrin, 1996; Lubell, 2004; Biswas, 2008a; 2008b; Grigg, 2008; Varis, Rahaman and Stucki, 2008; Abdallaev, et al, 2009), and planning in general (Pressman and Wildavsky, 1973; Sabatier and Mazmanian, 1983; Mazmanian and Sabatier, 1989; Goggin et al, 1990; Morah, 1996; Gilg and Kelly, 1997; Margerum, 1999; Hill and Hupe, 2002).

One of the earliest studies was by Pressman and Wildavsky (1973). They concluded that disconnects between plan objectives and outcomes are usually due to difficulty in coordinating the many stakeholders involved in management issues, especially because of divergent interests. Another early study was by Sabatier and Mazmanian (1983) who reviewed experience of the California Coastal Commission. They suggested that the commission was generally successful regarding implementation. Its success was attributed to: (1) clear and consistent objectives, (2) accurate linkages between objectives and actions, (3) presence of a sympathetic agency having sufficient resources as well as appropriate authority, (4) skilled and committed managers, (5) stakeholder support, and (6) a supportive policy environment.

Considerations to Resolve the Implementation Gap

A distillation of the research literature and experience highlights considerations which need attention if implementation is to be effective (Mitchell, 1997; 1998; 2006). These include at least:

(1) Appreciation of the importance of *context* or local conditions. Such recognition should lead to custom-designed solutions to reflect local circumstances, and avoidance of a standardized, 'one size fits all' approach. As Blanco (2008: 91) has stated, implementation involves no simple solution and '... depends on the particular framework and institutions related to the water resources in a country.'

(2) Necessity of a *long-term perspective*. Many resource and environmental problems have developed and evolved over decades. As a result, it is unlikely that most will be resolved in the period between the usual 3 or 4 year election cycles. Decades often are required to slow down, stop and reverse degradation or to resolve scarcity problems. Consequently, *perseverance* and *patience* are essential.

(3) Recognition of the need for a *vision* outlining the future desired condition. Developing a vision is rarely easy. Different values, needs and interests are often

major obstacles. But, without a clear direction, vision or end in sight, it is problematic to know which road to follow, or means to apply. Once a vision is established, measurable *goals* and *objectives* are needed.

(4) Creating *legitimacy* or *credibility* for the proposed direction and means to realize it. This is best achieved through a combination of *ongoing commitment* from elected leaders, *statutory foundation* based on laws and regulations, endorsement through *policies, structures and processes* associated with governance arrangements, and *sufficient resources* (financial and human) to facilitate necessary work. When all of these are present, legitimacy is high. When none or only one exists, the road to be travelled is steep, twisting and rough.

(5) Ensuring one or more *leaders* or *champions* is in place. There will be inevitable obstacles, setbacks, frustrations and disappointments. During such challenging times, absence of a strong leader may result in attention and commitment withering away. Indeed, research indicates that presence of a committed and talented leader is often *the* key variable for successful implementation. If that is so, then it is also critical to ensure future leaders are nurtured and cultivated, so that a next generation of leaders will always be ready to step up.

(6) Willingness to *share* or *redistribute* power and authority to facilitate desired and positive change. This can be difficult to achieve when a public agency has statutory responsibility for specified functions or issues. In such situations, time is needed to redistribute responsibilities and authority.

(7) Use of a *multi-stakeholder approach* so that various values, interests and needs can be heard and incorporated.

(8) From the outset, acknowledgement that turbulence, uncertainty and surprises will be encountered. Such conditions are normal, and reinforce the need for legitimacy (point 4) and a strong leader (point 5) to maintain momentum, as well as capacity for *flexibility, resilience* and *adaptability*.

(9) Up-front commitment to *monitor and assess results* of implementation, accompanied by willingness to learn from experience, including acknowledging mistakes and making adjustments.

(10) High quality *communication* is essential. Communication should be in 'plain language' so to be understandable to all participants.

(11) Use of *demonstration projects* wherever possible to provide tangible evidence of action and progress in the short term, and to make those more comfortable with a 'hands-on' approach feel engaged.

(12) Noting and celebrating *accomplishments*, with credit openly acknowledged. Such occasions help people to carry on during the difficult times when they can become discouraged. Without tangible, positive outcomes that can be celebrated, it is easy to understand why some may decide to disengage, which will increase the likelihood that implementation will not be successful.

Attention to the above 12 considerations does not guarantee smooth or successful implementation. And, others may add further considerations to the list, and challenge

some presented above. Such contributions and debates are healthy and should occur because there definitely is no recipe, formula or 'silver bullet' to overcome the implementation gap for every situation. Nevertheless, experience and research suggests that attention to these 12 considerations leads to greater success in implementation, especially in situations characterized by rapid change, complexity, uncertainty and conflict – all elements frequently characterizing water management.

This statement began with the quote that 'Implementation failure is like original sin; it is everywhere and it seems ineradicable.' Hopefully, this statement triggered your interest. Regarding implementation, however, it is an overstatement. Implementation failure is not everywhere. Examples exist of successful implementation, even in the face of difficult circumstances. Furthermore, implementation failure is eradicable. A key is to document systematically the strategies and practices that facilitate effective implementation, and to share them so that 'best practice' can be enhanced. Perhaps a future issue of *Water International* could focus on both the challenges and successes related to closing the 'implementation gap' for a range of water management situations.

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PERSPECTIVES ON WATER POLLUTION IN CHINA

Having worked in China for twenty years and having participated in programs with a variety of Chinese ministries, the National People's Congress, and with provincial and local governments, I have had the opportunity of observing the development of environmental awareness in China – from almost zero to the current frenetic attempts to remediate an almost catastrophic environmental situation throughout, especially, central, eastern and northern China. It often takes an outsider to fully appreciate the dire situation of water and environment as the current status is what most Chinese are accustomed to. I am reminded of the days when I was teaching at Queen's University and taking students to Lake Ontario where, at that time, there were piles of algae on the beaches which they, not knowing what Lake Ontario was like in earlier times, assumed was normal. Chinese know it is not "normal" but are not much aware of how "un-normal" it really is, nor of the linkages between water quality and water scarcity, nor of the institutional arrangements that continually frustrate integrated water and environment management in China.

Despite statements of environmental concern for well over a decade, the current push to rectify environmental issues in general and water quality in particular began only in earnest in 2007 and was precipitated by a series of water pollution crises that culminated in three major spills in 2005 – one of which, a massive (100 tonnes) benzene spill in the Songhua River of northern China, caused the shut-off of water supply to the city of Harbin, the capital of Heilongjiang Province, for a week, and

soured relations between China and Russia over the ensuing pollution in the receiving waters of the Amur River. Since then, massive algae blooms in China's third largest lake, Lake Tai (Taihu) in 2007 shut down water intakes for the city of Wuxi for a week (not the first time) and costing hundreds of millions of RMB in lost economic activity and huge public outrage over alleged local corruption that has allowed polluting factories to continue dumping into adjacent streams.

In 2007 the State Council decreed that water pollution would be taken seriously. One action was to elevate the State Environmental Protection Administration (SEPA) to ministerial status (now the Ministry of Environmental Protection [MEP]) in the restructuring of some ministries in 2008 – but notably without additional resources or personnel. Another was to include environmental performance as an indicator in officials' annual appraisal. Last year I was speaking with the mayor of the very affluent city of Suzhou (on Lake Tai) who bluntly told me that if they could not improve the water quality of the lake it could cost him his job. We also now read reports of factory officials being fined, even being imprisoned, for spills that affect local water supplies, and of local environmental officials being penalized and/or fired for not doing their job. Certainly, this was unheard of prior to 2007. Indeed, in one of my projects, I now see Environmental Protection Bureaus (represent MEP at provincial and lower levels) pursuing actions that would have been unthinkable five years ago. The water quality situation in China is an enormously complex problem which has its roots in institutional issues, science issues, management practices, corruption, and compliance failure.

Although Chinese law calls for “harmonized” or “unified” management of river systems (effectively IWRM), IWRM has been an abject failure throughout China. In large measure this is an institutional problem insofar as the Chinese system of sectoral management is, culturally, centrally concerned with “power”. Chinese law gives “power” to ministers and ministries, and for thousands of years sectoral management in China has served to consolidate “power” in the hands of ministers. Historically, Chinese law has been described as “rule by power” or “rule by punishment” until the present constitution of 1982 that laid the framework for “rule of law”. While we in the west have no tradition of this, we can identify with the “command and control” structure which we had not so many years ago and which is the current system in China. Collaborative (horizontal) management requires sharing of power which is contrary to traditional institutional culture (and has nothing to do with the present form of government).

Part of the institutional problem arises from Chinese law which is not prescriptive or detailed as it is in, say, North America, so that laws affecting natural resources are often in conflict at worst, or overlapping at best. There has been little effort to harmonize these laws which are mainly drafted by ministries. So, for example, MEP and the Ministry of Water Resources (MWR) argue over the interpretation of “water resources” which MWR claims means water quantity and quality, whereas MEP argues that it alone has sole authority for water/environmental quality. This leads to serious institutional problems such as enormous duplication in monitoring and, with no sharing of data, duplication of river management plans. Each of MWR and MEP have their own system of river coding as a basis for water management. Calls to integrate or harmonize these fall on deaf ears as it is not in the interest of either ministry to do so. The Basin Commissions in China are organs of MWR with, usually, little or no representation by their stakeholders (e.g. provinces of the basin), therefore their mandate is limited and they cannot exercise IWRM (although they claim to do

so). This has become a very serious issue in China that is recognized by the government, but thus far we see no initiatives to remedy the situation, especially as the Chinese institutional system does not allow “independent” authorities such as the International Joint Commission in US and Canada, or the National Water Commission in Australia. This means that there is no external audit of the performance of water and pollution managers either singly or as a complete management system. This in itself is a problem in that official pollution load data can vary widely, depending on the source. In 2005 the MWR reported national pollution loads that were 36.8% above those reported by MEP (Wang, 2008). Indeed, it is often difficult to reconcile monitoring data from the same site by both ministries.

The application of science to environmental management in China is problematic. Institutional “stove piping” in ministries is mirrored in academic science. Each ministry has its own, large, captive research institutes which rarely interact with each other let alone with those of other ministries or with universities, or with the institutes of the Chinese Academy of Sciences. University scientists generally do not interact with other academic institutions. Indeed, it was recently explained to me that this is built into the funding system insofar as grant applications that contain more than one institution are frowned upon as it implies lack of competence in the principal institution. Compare this with funding, especially in Canada, Australia, and the US where large grants often require consortia of specialist institutions. In China, the consequence is that research is highly fragmented. This is especially evident in the most recent government initiative to restore Lake Tai where there has been much research and massive investment over more than a decade yet the lake continues to deteriorate. Yet one still cannot find a reliable estimate of total nutrient load as no-one, it seems, has been able to get all the data from all the agencies to make a full nutrient balance assessment nor to determine what data are reliable and what are not. Information on internal loading is fragmented and estimates of non-point source loads from agriculture range from 30% to over 90%. A further problem is that, characteristically, government efforts to “fix” an environmental problem tends to be a bureaucratic response focused on a wide range of investments, but is not science-based. This amounts to throwing money at a problem without any real ability to predict the outcome. Contrast this with the Great Lakes “crisis” of the 1960’s in which the US and Canadian governments committed to ten years of research (1971-1981) that led to the policy and implementation actions that were successfully applied to these lakes. When travelling with Chinese study tours my Chinese colleagues are continually amazed by the focus on science as a basis for policy decisions in western countries.

Environmental management reflects the sector approach to institutions. Local water bureaus make water plans; local environmental bureaus make pollution plans; local forestry bureaus make wetlands plans; and local fisheries bureaus make fisheries plans. According to law, these many plans are supposed to be integrated, however Chinese scholars note that they are neither integrated as plans, nor does the implementation of these plans usually take into account other sector interests or concerns. So, for example, fisheries bureaus issue fishing permits irrespective of the fact it violates a wetland plan. Various organizations drill groundwater wells irrespective of local ordinances of the water bureau banning new wells. Electricity bureaus subsidize electricity costs for farmers in some groundwater irrigation schemes which encourages water consumption irrespective of the water bureau’s requirements to stabilize the groundwater table.

Compliance to the law is a major issue in Chinese water pollution as it is in most areas of Chinese governance. Recent research indicates that in parts of the North China Plan, full compliance to existing water pollution regulations would reduce the total load of COD by up to 80 +%. This contrasts with the current Five Year Plan that calls for load reductions of less than 10% (depending on the province). In my own work I find that Chinese scholars tend to focus on technical solutions such as industrial restructuring to reduce total COD (and NH₃) loads rather than first focusing on compliance. It also means that local EPBs can make considerable progress simply by enforcing the law and now, with annual appraisals hanging in the balance, they are beginning to take serious action. Compliance is, however, a trade-off between environmental protection and local employment and the local economy, and which puts the local environmental protection bureau often between a rock and hard place. It is also well known that corruption plays a factor due to the often close relationship between entrepreneurs and local officials. Senior Chinese lawyers tell me that is often impossible to get convictions, even in egregious cases of pollution, when local interests are concerned.

Finally, an issue that is sensitive to the Chinese is the lack of capacity and lack of experience. While China has made great strides since “reform and opening up” after 1978, foreign experts working in China are always aware of the lack of capacity and/or lack of understanding of important issues and concepts. This is understandable insofar as facility in English is still not common amongst Chinese researchers so that the full scientific literature is not available to them. An example was a 2007 announcement by a water bureau that they intended to artificially induce rainfall over Lake Tai to “dilute” the nutrient chemistry as a way of controlling algae – a not atypical nonsensical response we often see from local agencies in matters of science-based management. Another example is the current rush to import the TMDL (Total Maximum Daily Load) method of the US-EPA for pollution load control, but without much understanding of the problems this has had in the US, without the data to use TMDL appropriately, and without the ability to assess and manage at the watershed scale. Another example is the wildly incorrect estimates of the impact of agricultural non-point source pollution to total water pollution which in some “experts” opinion can reach more than 85% – and this in the water scarce areas of the northeast where there has been no runoff for many years in agricultural areas and where municipal and industrial wastewater remains uncontrolled at a level of some 50%. These errors arise from lack of experience and a generally limited understanding of western science, and from importation of western models (such as SWAT, etc.) without (a) a good understanding of the profound differences between the Chinese agricultural landscape and that of North America on which the knowledge base of crop types and related management are based in these models, (b) limited or no reliable data on which to calibrate the water quality component, and (c) without the experience gained in earth and environmental science by thousands of researchers over more than 50 years in western countries (Ongley & Yu, 2009). Sadly, these “experts” are influencing government opinion which now is thinking about the need for some kind of regulatory system for non-point sources – and this without fully understanding that we do not regulate agricultural NPS in North America due to its enormous complexity.

There is no doubt that the Chinese government is making great progress in some areas such as energy efficiency, encouragement of “green” cities, etc.. However, water pollution may be the Achilles’ heel of Chinese governance as it interlaces with increasing water scarcity, climate change, food security, economic progress and social stability. Anyone interested in the potential for fixing China’s water and pollution

crisis should read Wang's 2009 paper that paints a bleak picture of the immense problems facing the Chinese government. The good news is that once the government decides to take action, money is no object and I, personally, have seen serious progress in the past two years that is immensely heartening.

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Wang, Y. 2009. China's Water Issues: Transition, Governance and Innovation. In: Albiac, J. & A. Dinar (Eds). The Management of Water Quality and Irrigation Technologies. International Workshop of the World Bank and the Spanish Government. Earthscan Publications, U.K. 117-134.

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Water management

It's the economics, stupid

by James E. Nickum

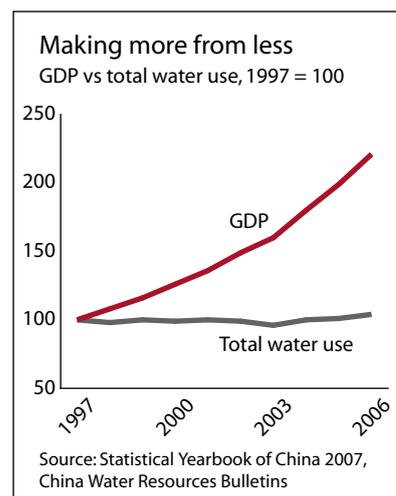
Is China's water glass half empty or half full? Half empty gets a lot of press, usually in declaration of a crisis – yet there are many hopeful signs as well. Despite projections indicating growing water scarcity, overall demand for water has proved remarkably elastic. China's economy barreled along over the past decade while total water use remained the same. Increases in domestic and industrial uses were more than compensated for by a decline in water going to agriculture, where over half of China's water flow is still appropriated, primarily by farmers scrambling to produce low-value grain on a tight margin. Yet grain output has held up, and water shortages have yet to take a severe macroeconomic toll. Despite gloomy prophecies that China will run dry, solutions have always been found.

In practice, water scarcity rarely slows down an economy, much less brings it to a halt. In fact, too much water – especially in the form of floods – is more economically damaging. Because it is usually provided at below opportunity cost, water tends to be overused, meaning that water shortages are more about the institutions than about the water. Moreover, although two-thirds of China's 660 cities are regularly reported to be “water short,” in most cases the real issue is not a lack of water but inadequate infrastructure to provide the world's fastest growing urban population with year-round provision. There are at least five main ways to deal with an increasingly limited freshwater supply: find or make more, use it more efficiently, move it to higher-value uses, change the structure of production towards less thirsty crops and industries, and import “virtual water” – water-intensive products such as rice, beef and chemicals – from wetter places.

Confoundingly complex

The problem for China's water masters is not scarcity *per se*, but that the potential solutions to the country's so-called “water crisis” are becoming increasingly complex. Declines in the quality of water – or even maintaining it at the current, often abysmal level – require costly water treatment and sewerage. Regulating watersheds can mean forcing local inhabitants, who tend to be poorer than urban beneficiaries downstream, to surrender income to reforestation schemes or factory closures. Engineering works such as dams, inter-basin diversions and wastewater treatment plants are expensive to build, and even more costly to operate and maintain. And “demand management” alternatives such as increased recycling, adopting water-saving technologies and habits, leakage control, and instituting volumetric pricing are difficult to implement.

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China's real water problem is not scarcity but how to implement the solutions

Nature played a cruel joke on China. The south is wet but mountainous; the north has broad plains but little water. Linking the water- and grain-rich south to the parched north with cross-basin arteries of water is not a new solution: the Grand Canal, completed during the Sui Dynasty (581-618), was built to transport “virtual water” in the form of grain from the Yangtze delta to the capital, then in Luoyang. Large-scale transfers of water itself across basins are more recent, dating back to the Great Leap Forward (1958-61). One of the reasons the Yellow River frequently did not make it all the way to the sea in the 1990s was the large number of diversions into the North China Plain and the Shandong Peninsula. After being cut off from the use of Beijing’s Miyun Reservoir, Tianjin has frequently relied on transfers from the Yellow River.

Environmental and cost concerns are already delaying the South-North Water Diversion Project

But these previous attempts to divert water from south to north pale in comparison to the still grander schemes collectively known as *nanshui beidiao* – the South-North Water Diversion Project – that entail transferring water northward from the Yangtze River system. Construction of the 1,150 km-long “eastern route” began in 2002. This will take water from Yangzhou in northern Jiangsu province, pump it up 40 meters, and send it along the Grand Canal, under the bed of the Yellow River and finally across the Hai River plain to Tianjin. The slightly longer “middle route,” ultimately supplying Beijing as well as Tianjin, was launched in late 2003. Both were originally planned for completion by 2008, but have been delayed into the middle of the next decade because of cost and environmental concerns. Proponents of the diversions see them as providing environmental benefits, in particular through relief to depleted aquifers. But opponents see them as the greatest cost solution, both economically and environmentally.

Persuading the recipients of water transfers to pay has proved difficult

Indeed, cost recovery may be the real Achilles’ heel of the diversion schemes. Although some of the diverted water is projected to go to agriculture along the way, over 90% of the calculated economic benefits should accrue to industrial and urban users, who are expected to pay for the bulk of the capital and operating costs of the diversion. But experience of other water transfer schemes shows it can be tough to persuade the intended recipients to cough up the cash. A diversion from the Yellow River to Qingdao built in the late 1980s ended up unable to provide water at a lower cost than local alternatives, including water saving and diluted seawater (for industrial use). In the end, the Shandong government forced Qingdao to purchase diversion water, but not nearly enough for the diversion to operate even at half capacity. When the central government instituted a rule that local governments share the costs of the principal diversion works on the middle route of *nanshui beidiao*, Beijing and Tianjin both cut their projected water demands from the project.

Scrubbing up

Wastewater treatment is universally given a lower priority by users than water supply, largely because they are more concerned with the quality of the water coming out of their taps than that leaving their toilet. Centralized urban sewerage in countries such as the United States and

Japan came late and with heavy government subsidies. In light of this, China's commitment to wastewater treatment at a relatively early stage of economic development is impressive. Municipal treatment plants have the capacity to clean about 60% of urban China's wastewater discharge. By comparison, only 68% of Japan's urban population was connected to a municipal sewerage system in 2004. In particular, industry has made dramatic improvements, both in the quantity of wastewater discharged and in the percentage of wastewater treated, now above 90%. But treatment capacity is not necessarily the same as actual treatment, and there remains significant room for improvement, especially in smaller cities. The average municipal wastewater plant utilization rate in 2005 was only 65% thanks to inadequate provision of collection networks and shortages of operating funds, in large part because wastewater charges remain too low, even after recent increases.

China's leaders have long recognized that charging water users for the full costs of water supply and treatment would stop a significant drain on the state budget and, if volumetric, could promote more efficient water use, especially by agricultural and industrial users. The problem is that doing so has significant political and practical costs. Certainly farmers would try to get more crop per drop if they were charged more and volumetrically, but economically correct pricing for agricultural water is rare anywhere in the world, even where the farm sector is dominated by huge agribusinesses. Raising prices for household use in cities is easier to achieve, once meters are installed. But efforts in the early part of the decade to increase tap water prices in stages in Beijing stalled well below the level needed to recover costs, especially for the city's share of *nanshui beidiao*.



Watering Beijing

In 1949, Beijing could rely on its abundant groundwater supply for most of its needs. Little of the surrounding countryside was irrigated, while the capital was fed in the time-honored way – by virtual water in the form of grain imported from the south. The Guanting Reservoir was built to the northwest in the early 1950s, primarily for flood control and power generation.

The 1950s and 1960s were wet years. But since the 1970s, a series of dry summers has beset the loess-dusted capital. The once abundant groundwater in the foothills dropped, hitting bedrock in one place by 1980. At the same time, farmers in the watershed of the Guanting River began to use the water for local agriculture and to build often polluting industries. The reservoir's inflow fell dramatically, as did the quality of the water. A 1985 water resource protection agreement between Beijing, Hebei and Shanxi was stymied by arguments over who should pay.

The city turned for rescue to the Miyun Reservoir, which had previously only served Tianjin. Water from Miyun was

transferred westwards to the capital; the tap to Tianjin was turned off. As surface supplies proved increasingly inadequate, Beijing turned to massive development of groundwater fields. But with local supplies of water drying up, the city has recently been forced to cut financial deals with Hebei and Shanxi to supply water from their reservoirs and wait for an infusion of water from the Yangtze, now expected in 2014.

Ostensibly, then, Beijing is always in search of water. Yet despite facing an "imminent water crisis" for 30 years, the capital has always found ways to address it. Since 2000, even more than in the rest of China, total water use fell – even as the economy sped along and the Olympics came and went. Both agricultural and industrial water use declined, while only municipal use (including residential tap water, about 7% of total water use) increased.

Of course, Beijing is a special case because it supplies the central government. But its experience is far from unique.

Where citizens have a voice, they will often turn down proposals to raise water tariffs, especially if they see no improvement in water supply and quality, and it is not clear where the money goes. Despite decades-long declarations from the top that “water must pay for water” (*yi shui yang shui*), water fees charged to farmers were usually lumped together with tax procurements and disappeared into the general budgets of various levels of government. Both farmers and officials tend to see water charges as just another tax. Greater transparency for the use of the funds would help justify water charge increases. Another concern is that water price increases will hurt lower income users, both in the city and in the countryside. But this could be addressed by providing a certain subsistence amount to all at well below cost, with escalating charges for the more profligate, better-off users.

China could import more “virtual water” in the form of grain or beef from overseas

Virtually does it

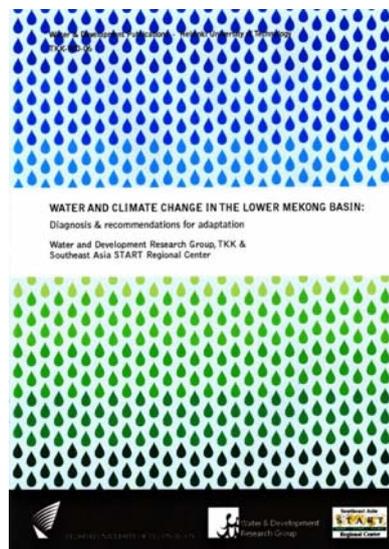
Another economic solution to China’s water scarcity gaining currency among China’s decision makers is the idea of importing “virtual water” from abroad or from wetter parts of the country. Importing goods such as grain and beef that require heavy amounts of water is already common in many arid countries of the Middle East, although even there subsidized irrigation is often the greatest user of limited water. And as the Grand Canal attests, north China has long relied on virtual water in this form from the south. China’s direct purchase or lease of large tracts of farmland around the world over the past two years is a half-step between food security and relying on virtual water. If the world trade system weathers the current economic crisis, we can expect this indirect solution to water shortage to play an increasing role.

Over the past ten years, China pulled off the amazing feat of multiplying its economy with a more or less fixed total supply of water. This was done by reducing the share going to agriculture, which has the lowest use-value. More challenges lie ahead as demand for water rises while global warming threatens to decrease its availability. Further efficiency gains can undoubtedly be made, both within economic sectors and in transfers between them. China’s farmers are already more efficient users of water than their counterparts in many other countries – but there is still much more room for improvement, especially in the often aging large state-operated irrigation districts. The question is who will pay for those improvements, and how.

PUBLICATIONS

Water and Climate Change in the Lower Mekong Basin: Diagnosis & recommendations for adaptation. Authors: Marko Keskinen, Suppakorn Chinverno, Matti Kummu, Paula Nuorteva, Anond Snidvongs, Olli Varis & Kaisa Västilä. 71 p. Water and Development Research Group of Helsinki University of Technology and Southeast Asia START Regional Center, Chulalongkorn University, Thailand.

This book summarizes the main findings from an 11-month, multidisciplinary research project that looked at climate change impacts and adaptation in the Mekong River Basin in Southeast Asia. The book illustrates the estimated impacts caused by climate change in the Tonle Sap area and the Mekong Delta, and discusses the possibilities to adapt to them through analysis of local adaptation strategies and national policies.



The research findings highlight the central role that hydrological cycle has in mediating the impacts of climate change to both ecosystems and societies. The findings also clearly point out that climate change must not be studied in isolation, as there are several other factors that are likely to induce changes in hydrological cycle, and consequently on environment and livelihoods.

The electronic version of the complete book (in English) is available free of charge in the following page: http://www.water.tkk.fi/English/wr/research/global/publications_mekong_cc.html. A limited number of printed versions are available on request, free of cost, for academic and research institutions working with Southeast Asian issues. Contact: olli.varis@hut.fi

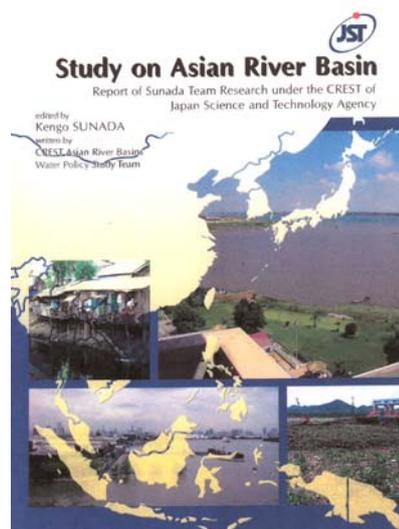
Study on Asian River Basin

This is a report of the Sunada Team Research led by Professor Kengo SUNADA of Yamanashi University, with the financial support from the Core Research for Evolutional Science and Technology (CREST) program of Japan Science and Technology Agency.

The objective of this study is to develop sustainable water management policy scenarios as well as synthesize knowledge on water management at the river basin level in the diverse Asian region.

Eight major river basins in Asia were carefully selected: the Changjiang in China; the Mekong, the Chao Phraya in Thailand; the Brantas in Indonesia; the Syr Darya in Central Asia; the Euphrates-Tigris and the Jordan in the Middle East; the Ganga in India; and the Saigon-Dong Nai in Vietnam. The Study team worked jointly with authorities and researchers on each one of the river basins. With these studies, the authors expect to contribute to the solution of water-related problems in the above basins.

The electronic version of the publication is available in the following web site:
<http://civil.cec.yamanashi.ac.jp/~tetsu/AsianRiverBasin.pdf>



Technical Criteria for River Works: Practical Guide for Planning

“Technical Criteria for River Works: Practical Guide for Planning” complements the River Law in technical aspects of planning, design and management of both rivers and infrastructure.

The Criteria was revised and published in 2005. It was translated into English and published by the National Institute for Land and Infrastructure Management (NILIM) of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) in cooperation with the Public Works Research Institute of Japan (PWRI). The first edition of the Criteria published in 1958 was comprehensively revised to reflect the major amendments to the River Law in 1997 and the changes of technical, social and economic environments.



The contents of the Technical Criteria for River Works: Practical Guide for Planning Criteria are as follows:

Volume I: Basic Planning

Chapter 1. Basic Policy

Chapter 2. River Planning

Chapter 3. Erosion and Sediment Control Planning

Chapter 4. Seacoast Preservation Planning

Chapter 5. Information Sharing and Cooperation with River Basin

Chapter 6. Monitoring

Volume II: Planning for Facility arrangement
Chapter 1. Improvement and Conservation of the River Environment, and
Comprehensive Sediment Management
Chapter 2. Planning for River Facilities
Chapter 3. Planning for Erosion and Sediment Control Facilities
Chapter 4. Planning for Seacoast Preservation Facilities
Chapter 5. Planning for Information Facilities

The English version of the Criteria is now available at the following web sites:

To download the entire publication (PWRI site):

<http://www.nilim.go.jp/lab/bcg/siryou/tnn/tnn0519pdf/ks0519.pdf> (1.56MB)

<http://www.db.pwri.go.jp/kenkyu/pdfD.asp?NO=6081> 2.54MB

To download some sections of the publication (NILIM site):

<http://www.nilim.go.jp/lab/bcg/siryou/tnn/tnn0519.htm>

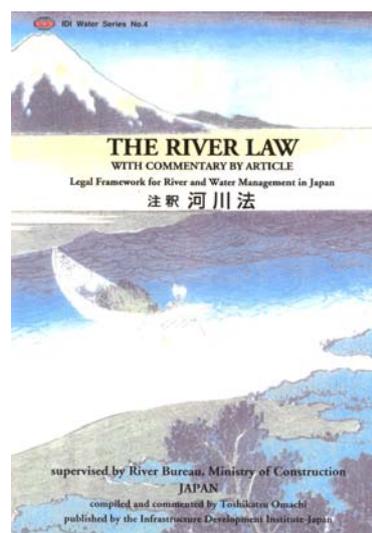
To request a hard copy, please contact Mr. Sachio SHINTAKU, River Research Laboratory, NILIM, e-mail: shintaku-c92ta@nilim.go.jp

The English version of “**The River Law with commentaries by article**” compiled and commented by Toshikatsu Omuchi is a translation of the River Law as of July 1997 with commentaries by article. The River Law is the legal foundation of river management in Japan, including flood control and water resources development. We hope it will be useful for international cooperation in the area of river and water resources administration.

This publication is available at the following web site:

<http://www.idi.or.jp/library/pdf/RIVERE.PDF>

To request a hard copy, please contact Mr. Yasuyuki TAKAHASHI, Planning Division, Infrastructure Development Institute in Japan, e-mail: idi16@idi.or.jp. The cost is JPY 14,000 plus shipping expenses.

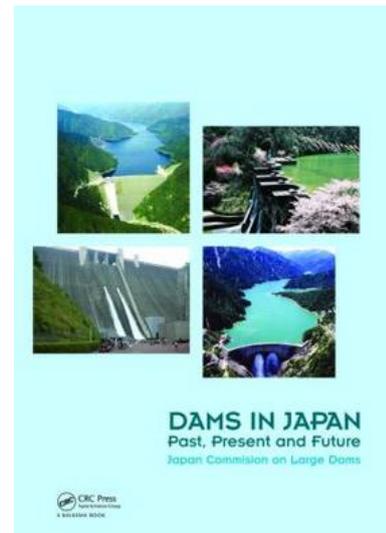


Dams in Japan - Past, Present and Future

Dams in Japan - Past, Present and Future was published recently by the Japan Commission on Large Dams.

This volume covers Japan's long water history, starting from the 7th century, when irrigation ponds were first constructed for paddy cropping, and until the beginning of the 21st century. It elaborates on the various roles of large dams including water supply, power generation and flood control.

In recent years, opinions and media reports have been critical of large dams. These concerns relate to issues like cost of dams far exceeding their benefits, significant impacts on social and natural environments, and pressure on finances of national and local governments. This book analyzes objectively the overall impacts of dams on the natural environment and local societies, and explains the extensive efforts made to minimize the negative impacts.



Dams will become increasingly important in the future in order to manage frequent floods and droughts. At this turning point for the Japanese society and its economy, the Japan Commission on Large Dams (JCOLD) has attempted to summarize the important roles of dams in Japan.

The volume consists of the following chapters:

1. Introduction
2. Roles played by dams as seen in the history of Japan
3. Environmental and social impacts of dams and responses to these impacts
4. Role of dams: The future
5. Conclusions

The publication is available from Taylor & Francis as follows:

Taylor & Francis Customer Services, c/o Book Point Limited
130 Milton Park, Abingdon, Oxon OX14 4SB, United Kingdom
Email: tandf@bookpoint.co.uk – www.taylorandfrancis.com

For USA, Canada, Central & South America:

Taylor & Francis Group / CRC press
Broken Sound Parkway, NW, (Suite 300), Boca Raton, FL 33487, USA
Email: orders@taylorandfrancis.com – www.crcpress.com

FORTHCOMING EVENTS

The 11th Cannes Water Symposium, Cannes, France.
2009/06/30-2009/07/03

Since its creation in 1999, the Cannes Water Symposium has been an international platform of meeting and exchange between political decision-makers, professionals and

academics, all of them being specialized in the field of water, environment and sustainable development.

The Cannes Water Symposium deals about several different activities such as scientific workshops, vocational training seminars, conferences, business meetings, visit of facilities, general public animations and evening of official reception for professionals.

More information: <http://www.cannes-water-symposium.com/>

1ST WORLD CONGRESS OF ENVIRONMENTAL HISTORY (WCEH 2009)

Copenhagen, 2009-08-04 to 2009-08-08

The first World Congress for Environmental History (WCEH) will bring together scholars from all over the globe, giving them a unique opportunity to learn from each other and together create an overarching picture of the historic relationship of people and the environment through time. Interactions are found on many scales, from the local to the global. Resource issues cross national borders and cross ecosystem boundaries.

Organizers: The International Consortium of Environmental History Organizations (ICEHO) in association with Roskilde University and Malmoe University

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URL: <http://wceh2009.org/>

33RD IAHR BIENNIAL CONGRESS “WATER ENGINEERING FOR A SUSTAINABLE ENVIRONMENT”

Vancouver, 2009-08-10 to 2009-08-14

The Congress focuses on the central roles of hydraulic engineering and hydroinformatics in water engineering for a sustainable environment, and how these roles link to broader aspects of environment sustainability in watershed and coastal settings.

Organizers: International Association of Hydraulic Engineering and Research (IAHR)

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E-mail: stacey.gardiner@tggroup.com

URL: <http://www.iahr2009.org>

2009 WORLD WATER WEEK IN STOCKHOLM, AUGUST 16-22, 2009, RESPONDING TO GLOBAL CHANGE: ACCESSING WATER FOR THE COMMON GOOD WITH SPECIAL FOCUS ON TRANSBOUNDARY WATERS

The Stockholm International Water Institute (SIWI) hosts the World Water Week, the leading annual global meeting place for the planet's water issues.

Hosted and organised by the Stockholm International Water Institute (SIWI), the World Water Week in Stockholm has been the annual focal point for the planet's

water issues since 1991. The Week provides a unique forum for the exchange of views and experiences between the scientific, business, policy and civic communities. It focuses on new thinking and positive action toward water-related challenges and their impact on the world's environment, health, economic and poverty reduction agendas. It does so by:

- Exploring the interconnected problems of water, society, the environment and economic vitality, building capacity and charting action toward practical solutions.
- Fostering pro-active partnerships and alliances between individuals and organisations from different fields of expertise.
- Highlighting ground-breaking research, best practices and innovative policy work by stakeholders and experts around the world and from multiple disciplines.
- Reviewing the implementation of actions, commitments and decisions in international processes and by different stakeholders in response to the challenges.

By harnessing and linking best practices, scientific understanding and policy and decision-making, the World Water Week in Stockholm moves beyond rhetoric to provide real answers to the world's water, environment and development problems. The perspective is global, but the context is attuned to differences and similarities between regions of the world, phases of development, political systems and climatic conditions. For more information, visit <http://www.worldwaterweek.org/>

1ST IEEE GRSS WORKSHOP ON HYPERSPECTRAL IMAGE & SIGNAL PROCESSING: EVOLUTION IN REMOTE SENSING (WHISPERS'09),

Grenoble, 2009/08/26-2009/08/28

The aim of this conference is to identify areas where the planning system has a role, and where planners need support on water issues in order to focus clear guidance to ensure that water issues are embedded in regional and local plan making, and in decisions on individual planning applications by local planning authorities, as contributors towards furthering sustainable development.

More information: <http://www.coastms.co.uk/Conferences/WP09.html>

SAFETY EVALUATION AND VISUAL INSPECTION OF EXISTING DAMS INTERNATIONAL TECHNICAL SEMINAR AND STUDY TOUR, AUGUST 17-27, 2009. DENVER, COLORADO, USA, WITH SITE VISIT TO CALIFORNIA

In most countries throughout the world, interest in the safety of dams has risen significantly in recent years. Aging dams, new hydrologic information, and population growth in floodplain areas downstream from dams has resulted in an increased emphasis on dam safety evaluation as well as operation and maintenance related to the safety of dams. The registration fee is U.S. \$3200 per person. Various printed materials, lodging for 12 nights (August 16-27), and transportation during the study tour is included. It is strongly recommended that individuals apply as soon as possible for visas and seek sponsorship, if necessary. **Funding is not available from the seminar organizers.** For additional information, contact International Affairs - Denver, Bureau of Reclamation, P.O. Box 25007, Denver, Colorado 80225, telephone 1-303-445-2127, fax 1-303-445-6322, e-mail inquires to Lprincipe@do.usbr.gov (Leanna Principe) or visit www.usbr.gov/international

WORLD CLIMATE CONFERENCE-3 (WCC-3): CLIMATE PREDICTION AND INFORMATION FOR DECISION-MAKING

Geneva, 2009-08-31 to 2009-09-04

The theme of WCC-3 is "Climate prediction and information for decision-making: focusing on scientific advances in seasonal to inter-annual time-scales, taking into account multi-decadal prediction". It includes the application of climate prediction and information to societal problems enabling adaptation to climate variability and change in various sectors such as agriculture and food security, forestry, energy, water, health, urban and rural settlements, infrastructure, tourism, wildlife, trade and transport that contribute to sustainable socio-economic development.

Organizers: World Meteorological Organization (WMO)

Contact Name: Dr Buruhani Nyenzi

E-mail: wcc3@wmo.int

URL: http://www.wmo.int/pages/world_climate_conference/index_en.html

INTERNATIONAL TRAINING PROGRAMME: INTEGRATED WATER RESOURCES MANAGEMENT, STOCKHOLM, SWEDEN. AUGUST 10–SEPTEMBER 1, 2009, LAO PDR (PHASE 4), FROM NOVEMBER 30 – DECEMBER 11, 2009.

The programme will engage each participant in mentor and peer reviews on work plans and projects, discussions, expert panels and group work, role plays as well as field visits and in-depth case studies. Participants represent a broad group of water resources-related stakeholders, such as governments, NGOs, media, private sector and academia. The programme consists of 5.5 week scheduled training distributed in two different phases, 3.5 week training in Stockholm, Sweden, from August 10–September 1, 2009, and 2 weeks training in Lao PDR, from November 30 – December 11, 2009. In addition to the scheduled training, participants will undertake an Individual Project, on a part time basis in their home organisations, starting 6 weeks before the training in Sweden and to be completed within 8 weeks after the regional training. (See the course brochure for complete information). The Application should be submitted to the appropriate Swedish Embassy/ Consulate at the latest on **March 13, 2009**.

More information including the above documents are also available on our website at <http://www.siwi.org/sa/node.asp?node=41>.

For more information please contact: Mr. Peter Qvist-Hoffman, Ramboll: peter.qvist-hoffman@ramboll.se and Mr. Anton Earle, SIWI: anton.earle@siwi.org

The Swedish International Development Cooperation Agency (Sida) will cover both the participation fee and accommodation costs. The international travel cost to and from Sweden is not covered by Sida. The participants shall find funding themselves and make arrangements for their return travel between their home country and Stockholm Arlanda airport. Sida pays for international travel costs in connection to the regional training (Phase 4) in Lao PDR and Ramboll Natura will arrange for the participants' travel. Visa fees, domestic travels in their home country and local airport taxes are not covered by Sida. Personal expenses are not included.

Eligible Countries: Albania Angola Bangladesh Bolivia Botswana Cambodia China Colombia Croatia Georgia Honduras India Indonesia Iraq Jordan Kenya Kosovo Laos Madagascar Malawi Montenegro Mozambique Myanmar Namibia North Korea Peru The Philippines Serbia South Africa Sri Lanka Tanzania Thailand Uganda Vietnam West Bank and Gaza Zambia Zimbabwe (people from public authority are not eligible).

8TH INTERNATIONAL CONFERENCE ON URBAN DRAINAGE MODELLING (8UDM)

Tokyo, 2009-09-07 to 2009-09-11

The scientific and engineering content deals with topics related to modelling the urban drainage system and the interactions with other urban water systems and urban environment. The conference is designed to bring together specialists – researchers, and practitioners – to exchange experiences, to demonstrate present potentials and to identify needs of urban drainage modelling. Both theoretical and practical developments and applications will be presented. Especially in this 8UDM, participants from Asian countries are encouraged and invited to present papers on Rainwater and Urban Drainage Management issues.

Organizers: International Water Association (IWA), International Association of Hydraulic Engineering and Research (IAHR) and the University of Tokyo

Contact Name: Prof. Hiroaki Furumai

E-mail: 8UDM@env.t.u-tokyo.ac.jp

URL: <http://www.envrisk.t.u-tokyo.ac.jp/udm/framepage.html>

2ND INTERNATIONAL CONFERENCE ON RAINWATER HARVESTING AND MANAGEMENT (RWHM2009)

Tokyo, 2009-09-07 to 2009-09-11

The proposed themes of the conference include:

- RWHM for climate change adaptation and energy saving
- Water quality aspects in rainwater management system
- Advanced and innovative technologies for RWHM
- RWH as a tool to achieve MDG and disaster relief
- RWHM as food production
- Socio-economic aspect of RWHM
- Promotion and education of RWHM
- Case studies of RWHM at rural areas, dry areas, islands

This conference is organized jointly with the 8th International Conference on Urban Drainage Modelling (8UDM).

Organizers: International Water Association (IWA)

Contact Name: Mooyoung Han

E-mail: rwhm2009@gmail.com

URL: <http://www.rwhm2009.org/>

3RD INTERNATIONAL CONFERENCE ON ESTUARIES & COASTS (ICEC2009)

Tohoku University, Sendai, 2009-09-14 to 2009-09-16

ICEC2009 will be co-organized by the Department of Civil Engineering, Tohoku University and the International Research and Training Center on Erosion and Sedimentation (IRTCES), a category 2 centre under the auspices of UNESCO. Conference themes include:

- Estuarine and Coastal Processes
- Estuarine and Coastal Management
- Estuarine Eco-Environment and its Protection
- Maintenance and Management of Waterways in Estuaries and Harbors
- Research Technologies for Estuarine Engineering
- Coastal Hazard

Organizers: Department of Civil Engineering, Tohoku University (Sendai, Japan) and the International Research and Training Center on Erosion and Sedimentation - IRTCES (Beijing, China)

Contact Name: Professor Hitoshi Tanaka
E-mail: icec2009@kasen1.civil.tohoku.ac.jp
URL: <http://donko.civil.tohoku.ac.jp/icec2009/>

INTERNATIONAL WORKSHOP ON WATER DEMAND MANAGEMENT, Beijing, 18–19 September 2009

The International Water Resources Association, the Center for Water Resources Research, and the Institute of Geographical Sciences and Natural Resources Research of the Chinese Academy of Sciences, are organizing an International Workshop on Water Pricing, in Beijing, 18-19 September 2009.

The workshop will focus on social, economic, political, legal and institutional aspects of water pricing in both urban areas and in agriculture. Presentation topics may include, inter alia, water pricing for irrigation and wastewater collection and treatment, water rights, water transfers, and public-private partnerships.

Workshop chairs

LIU Changming (IGSNRR, CAS)
Cecilia Tortajada (IWRA President)

International Program Committee

XIA Jun (IGSNRR.CAS), Co-chair
James Nickum (Japan), Co-chair
José Albiac, Agrifood Research and Technology Centre, Spain
Asit K. Biswas, Third World Centre for Water Management, Mexico
Anand Chiplunkar, Asian Development Bank, Philippines
JIANG Wenlai (Agricultural Academy of China)
David Johnstone, University of Oxford, Oxford
Celine Kauffmann, OECD, Paris
WANG Jinxia (IGSNRR, CAS)
WANG Zhongjing (Tsinghua University)

Secretariat

JIA Shaofeng ((IGSNRR.CAS), Secretary General (jasf@igsnr.ac.cn,
shaofengj@hotmail.com)

ZHAN Chesheng (zhancs2006@gmail.com)

LIU Wenhua (liuw@igsnr.ac.cn)

CHEN Qingmei (chenqm@igsnr.ac.cn)

**MODEL CARE 2009 - 7TH INTERNATIONAL CONFERENCE ON
CALIBRATION AND RELIABILITY IN GROUNDWATER MODELING.
“MANAGING GROUNDWATER AND THE ENVIRONMENT”**

Wuhan, 2009-09-20 to 2009-09-23

The ModelCARE2009 conference provides an international forum on state-of-the-art methodologies and techniques for model calibration and reliability assessment. The conference will address the applicability of various approaches to real-world problems through advanced case studies and identify future needs and paths toward progress for research and development.

The conference theme is “Managing Groundwater and the Environment.” Within the context of model calibration and reliability, issues of groundwater quantity and quality will be addressed. Exploring and protecting groundwater resources in developing countries is of special interest. The conference will bring together researchers, industry, regulators, consultants, planners and water supply agencies to discuss the utility of models to managing groundwater and related environmental systems.

Organizers: International Commission on Groundwater of IAHS, China University of Geosciences, China Geological Survey, and the National Natural Science Foundation of China

Contact Name: Yiqun Gan

E-mail: modelcare2009@gmail.com

URL: <http://www.modelcare2009.org/>

WETPOL 2009

Barcelona, 20-09-2009 / 24-09-2009

Website: <http://gestion.pacifico-meetings.com/www/wet-pol2009/>

The WETPOL 2009 Symposium to be held in Barcelona is organized by the Department of Hydraulics, Maritime and Environmental Engineering at the Technical University of Catalonia (UPC) and the Institute of Environmental Assessment and Water Research (IDAEA-CSIC) in Barcelona.

Advances in scientific aspects related to pollutant removal processes and fate in natural wetlands and wetlands constructed for pollution control are the main objectives of this Symposium.

2ND INTERNATIONAL CONFERENCE BIOHYDROLOGY 2009: A CHANGING CLIMATE FOR BIOLOGY AND SOIL HYDROLOGY INTERACTIONS

Bratislava, 2009-09-21 to 2009-09-24

Biohydrology 2009 is the second international conference to discuss exclusively the interactions between hydrological and biological processes in soil under conditions of changing climate. It will provide an ideal opportunity for hydrologists, biologists and soil scientists to discuss recent research developments. Key-note lectures from internationally renowned scientists, combined with volunteered papers and posters, will examine the wide range of processes that drive soil biology/hydrology interactions from the micro- to regional-scale.

Organizers: Institute of Hydrology, Slovak Academy of Sciences, Bratislava, Slovakia; Institute of Hydrodynamics, Academy of Sciences of the Czech Republic, Prague, Czech Republic; University of Valencia, Spain; Swansea University, Swansea, UK; University Koblenz-Landau, Koblenz, Germany; ALTERRA Green World Research, Wageningen, The Netherlands; Scottish Crop Research Institute, Invergowrie, Dundee, UK; Max-Planck-Institut for Biogeochemistry, Jena, Germany; Research Institute for Soil Science and Agricultural Chemistry, Hungarian Academy of Sciences, Budapest, Hungary.

Contact Name: Dr. Lubomir Lichner

E-mail: lichner@uh.savba.sk

URL: <http://www.ih.savba.sk/biohydrology2009/>

12TH INTERNATIONAL RIVERSYMPIOSIUM

Brisbane, 2009-09-21 to 2009-09-24

The 12th International River Symposium will be full of vibrant discussions and fora on factors influencing different areas of the catchments. The focus will be on the interactions between these catchments and the activities that take place within them. Themes will examine strategies for coping with changing conditions, uses and policies for catchments and their management now and in the future. The overall theme for 2009 is "Rivers from Source to Sea".

Organizers: International Riverfoundation

Contact Name: Carla Mathisen

E-mail: carla@majorbrisbanefestivals.com.au

URL: <http://www.riversymposium.com/>

INTERNATIONAL FORUM ON WATER RESOURCES AND SUSTAINABLE DEVELOPMENT

Wuhan, 22-24 September 2009

The Academicians' Water Resources Forum is an academic activity organized every two years by the Division of Civil, Hydraulic and Architecture Engineering of the Chinese Academy of Engineering (CAE). All academicians and top-level scholars in the area of water resources in China are invited to participate in this biannual forum.

The 3rd International Forum on Water Resources and Sustainable Development, which will be held at Wuhan University during 22-24 September 2009. This time overseas delegates will be invited to participate alongside the Chinese academicians and domestic delegates. The forum will be jointly sponsored by Chinese Academy of Engineering and Ministry of Water Resources of Peoples Republic of China. Almost all top-level academic institutes with water resources programs will participate in the forum. More than 30 academicians of the CAE and many other top Chinese scholars, including Mr. Xu Kuangdi, the president of CAE, and Mrs Qian Zhengying, the former Vice Chairman of the Chinese People's Political Consultative Conference, will be invited to participate. In addition, several international research institutes and organizations will engage in the preparation and organization of the forum, such as the International Association of Hydraulic Engineering and Research (IAHR), the International Commission on Irrigation and Drainage (ICID), and the International Water Resources Association (IWRA).

Venue: Hongyi Hotel (4-star, Wuhan University International Academic Exchange Center) 136 Donghu Road, Wuchang, Wuhan 430071, P. R. China.

Sponsors: Chinese Academy of Engineering (CAE) and Ministry of Water Resources, Peoples Republic of China. Organizers: Division of Civil, Hydraulic and Architecture Engineering, CAE; Wuhan University (WHU); Chinese Hydraulic Engineering Society (CHES); and Changjiang Water Resources Commission (CWRC). Co-Organizers: International Association of Hydraulic Engineering and Research (IAHR); International Commission on Irrigation and Drainage (ICID); International Water Resources Association (IWRA); International Water Management Institute (IWMI) Ohio State University (OSU); and China Society for Hydropower Engineering (CSHE)

Key Dates:

March 15, 2009 Deadline for Submission of Abstracts

June 30, 2009 Deadline for Submission of full papers

September 22, 2009 Registration

September 23, 2009 Opening ceremony, keynotes

September 24, 2009 Panel presentations

September 25-28, 2009 Excursion (TBC)

For more information, visit <http://2009.waterlab.cn/en/index-en.html>

3RD EUROPEAN WATER AND WASTEWATER MANAGEMENT CONFERENCE

Birmingham, 22-09-2009-23-09-2009

Website: <http://www.aqua-enviro.net/>

The conference programme will include invited Keynote speakers, workshops, master classes and technical sessions. Consequently we are seeking presentations from water and wastewater practitioners. We are looking for interesting and novel case studies, operating experiences and problems, outcomes of successful research projects, insights into application of legislation and future legislative changes.

8TH INTERNATIONAL CONFERENCE ON URBAN HEALTH (ICUH)

Nairobi, Kenya, 18-23 October 2009

The Theme of the 2009 ICUH is “Meeting Urban Health Needs through Innovative Research, Policies and Interventions”.

<http://www.icuh2009.org/about.htm>

THE 4TH INTERNATIONAL YELLOW RIVER FORUM (IYRF)

20 Oct 2009 - 23 Oct 2009, Zhengzhou, China

The International Yellow River Forum is one of the most recognized river events in the world, which is hosted by Yellow River Conservancy Commission of China. The river thematic conference will be organized every two years to address water challenges for river basin management.

More information: <http://www.yrcc.gov.cn/trsweb/gjlt3e/>

HYDRO 2009 INTERNATIONAL CONFERENCE AND EXHIBITION: PROGRESS, POTENTIAL AND PLANS

Lyon, 2009-10-26 to 2009-10-28

Hydro 2009 will bring together planners, developers, owners and operators, environmental specialists, financiers, researchers, manufacturers and equipment suppliers for an exchange of expertise which will be constructive in furthering well planned hydropower development worldwide. Much emphasis will be placed on meeting the needs of the less developed countries; this will be reflected strongly throughout the programme.

Organizers: The International Journal on Hydropower & Dams; Network Events Ltd

Contact Name: Gaël Bozec

E-mail: sales@hydropower-dams.com

URL: http://www.hydropower-dams.com/hd_72_0.htm

IWEH09 - INTERNATIONAL WORKSHOP ON ENVIRONMENTAL HYDRAULICS

Valencia, 2009-10-29 to 2009-10-30

The general objective of the workshop is to provide an international forum for researchers, engineers, professors, educational scientists and technologists in the areas of Environmental Hydraulics: theoretical, experimental and computational aspects. The workshop will be an opportunity to present, demonstrate and discuss research, development, applications, and the latest innovations and results in this important field.

Organizers: International Association of Hydraulic Engineering and Research (IAHR);
Universidad Politécnica de Valencia

Contact person: P. Amparo López Jiménez

E-mail: iweh09@upv.es

URL: <http://www.upv.es/entidades/IWEH09/>

WATER & ENERGY 2009. Mitigation in the water sector & potential synergies with the energy sector
Copenhagen, 29-31 October 2009.

The IWA Water and Energy 2009 Conference puts focus on measures for mitigation in the water sector and potential synergies with the energy sector.

The conference will be a forum for knowledge sharing among a multitude of stakeholders and disciplines including managers, policy makers and regulators, technical scientists, technology providers. Keynotes, platform and poster presentations on state-of-the art and ongoing pioneering efforts will set the scene for intense and constructive discussions.

Messages from the conference will be condensed and refined into statements forwarded to the UN Climate Change conference (COP15) December 2009. We invite you to be a part of this by joining in as a delegate to the IWA Water and Energy 2009 Conference in Copenhagen.

Registration: <http://www.iwawaterandenergy2009.org/?id=11>

III INTERNATIONAL EXPERT'S MEETING ON WATER QUALITY MANAGEMENT,

Zaragoza, 9-11 November 2009

During the past decade, considerable global attention has been given on potential physical scarcities of water to meet various global needs in the coming years. Many have argued that by 2030, much of the world's people will be living in regions having serious water stress. Research conducted at the Third World Centre for Water Management indicated that this scenario is incorrect. The world has adequate water, if this resource can be properly managed. If the world faces a water crisis in the future, this will most likely occur not because of physical scarcities of water, but due to continued neglect of water quality. According to the work carried out by the Centre, only about 10% of the point sources of pollution in Latin America are at present adequately treated and then disposed of in an environmentally safe way. The situation is likely to be similar in developing Asian countries, and probably somewhat worse in Africa. The non-point sources of pollution in the developing world are now basically neglected. Consequently, water bodies in developing countries in and around urban centres are heavily contaminated. Appearance of dead zones in estuaries of major rivers, even in developed countries, like the Mississippi in the United States, has already become a most serious issue because of non-point sources of pollution. Despite considerable rhetoric during the past decades, water quality management is still not receiving adequate attention. The Workshop will consider different aspects of water quality management from different parts of the world, from different perspectives, including emerging issues like endocrine disruptors. It will consider social, economic, environmental, legal and institutional aspects of water quality management, both of the present and the future. The governance aspects of water quality will receive special attention. The Workshop is being sponsored by the International Centre for Water and Environment (CIAMA), Zaragoza, Spain, the Third World Centre for Water Management and the International Water Resources Association.

WATERTECH ASIA 2009 (NOVEMBER 11 TO 13, 2009)

It will be jointly convened by Shanghai Society of Hydraulic Engineering and Global Leaders Institute.

What You Will Learn in WaterTech Asia 2009. Whether you are taking steps to entering the huge water market in China or deepening your business in Asia market, this informative event will offer you the expert advices necessary in achieving your business needs:

Insights of Updated Policies and Regulations in China Water Market

What's the Hotspots of Future Investment in China Water sector

Success Case Studies of WATERSHED MANAGEMENT and URBAN WATER TREATMENT from World Famous Water Pioneers

How to achieve Higher Financing & Operational Efficiency for Water Groups

Cutting-Edge Ideas and Solutions for Implementing Water Saving, Improving Water Quality, and Upgrading Wastewater Treatment

Don't hesitate to join us to build a Sustainable Future in Asia by promoting the Efficient, High ROI, Conservation and Sustainable Smart Water Management!

Have you got interest to SPEAK, to ATTEND or to SUGGEST.

Conference website: www.watertechsummit.com.

INTERNATIONAL WORKSHOP ON GOVERNANCE OF TRANSBOUNDARY WATER BODIES OF LATIN AMERICA (RIVERS, LAKES AND AQUIFERS)

Campo Grande, November 18–19, 2009

It has been fashionable in recent years in certain circles to speak of water wars and political and social conflicts over water. The hypothesis of this project will be that through proper inter-institutional coordinating mechanisms, the countries sharing the same water bodies can benefit significantly more through cooperation rather than through conflicts. Even though management of transboundary rivers, lakes and aquifers are considered important at present, a comparative and objective study of the efficacy of the institutions to manage such basins efficiently is still conspicuous by its absence. It is thus necessary to conduct a systematic and comprehensive objective analysis of the existing transboundary river and lake basins organisations and transboundary aquifers management institutions to determine their relative successes and failures, and the reasons thereof. Through this process, a community of good practices for sustainable water resources management can be reliably identified, and their potential replicability could be considered for case-specific situations of transboundary water management in Latin America.

During the workshop, 8–10 major transboundary freshwater bodies will be analysed from the appropriate Latin American countries. While considerable efforts have been made in the past to analyse the transboundary water bodies of Asia, Africa, Europe and the Middle East (for example, Ganges, Indus, Mekong, Salween, Nile, Zambezi, Rhine, Danube and Jordan), commensurate emphasis has not been placed on the study of the Latin American transboundary water bodies. To the extent these have been studied in Latin America, the primary focuses have been on the major rivers like the Amazon or the Plata: smaller transboundary rivers, lakes and groundwater bodies have been mostly neglected.

Leading experts, who have first hand knowledge and experience of the specific cases, are being specially invited to prepare the case studies. Once the case studies are completed, the authors and some selected experts and policy-makers will be invited to a workshop to discuss and critically review all the case studies, and draw some conclusions. This may help to develop a road map for managing transboundary water bodies more successfully in the future. The case studies will then be revised by the respective authors, in the light of the discussions at the workshop. A synthesis of all the case studies will be prepared, especially in terms of identifying the best practices and how these can be replicated and promoted successfully in the region in the future. A prestigious international publisher, with an extensive global distribution network, will be selected to publish and distribute the resulting book. In addition, summaries of the case studies will be published in major international journals for wider dissemination.

The Workshop is being sponsored by the Third World Centre for Water Management, National Water Agency of Brazil and International Water Resources Association.

WATER AND INDUSTRY 2009

Palterston North, 2009-11-30 to 2009-12-02

This event is part of the International Water Association (IWA) Chemical Industries Specialist Group conference series. It will address issues related to water management in all industries.

Industries are major consumers of water and energy and major producers of wastewater. Efficient industrial water management is therefore of paramount importance to achieve environmental sustainability and improve business profitability. This requires innovative, cost effective and advanced management technologies.

This conference aims to make a major contribution to improve industrial water management and provide a platform to engage in reflection and networking. Researchers, managers, regulators, consultants, students and technology providers from around the world are invited to attend Water & Industry 2009.

Organizers: International Water Association (IWA) and the School of Engineering and Advanced Technology, Massey University (New Zealand)

Contact Name: Christine Bond

E-mail: water09@massey.ac.nz

URL: <http://water09.massey.ac.nz/>

3RD INTERNATIONAL WASH PRACTITIONER'S MARKETPLACE AND FAIR

East London, South Africa, 30 November - 02 December 2009

Main theme: "Keep Sharing for Effective WASH Knowledge Management"

<http://www.irc.nl/page/49024>

2ND INTERNATIONAL CONFERENCE FOR EAU-AFRIQUE: WATER AND SUSTAINABLE DEVELOPMENT IN AFRICA

Libreville, 14-16 December 2009

The main objective of the conference is to create awareness among all organizations working in the Water Sector on the importance of developing and implementing new approaches of intervention and collaboration, focusing on sustainable development in rural, semi-urban and urban areas.

<http://www.irc.nl/page/48093>

CITIES OF THE FUTURE 2010

Boston, 2010-03-07 to 2010-03-10

Population growth, social inequity, economic turmoil, climate change, water shortages and environmental degradation are placing unprecedented stress on infrastructure and ecosystems while at the same time technological advances, volunteerism and citizens of sustainability offer promise for the future. 'Cities of the Future' will connect energy-efficient engineered infrastructure with green, water-centric landscapes to protect and conserve water resources, reduce energy intensity and associated carbon footprints, and improve economic vitality and quality of life. This paradigm shift, for newly created eco-cities and existing urban communities alike, necessitates innovative ways of conceptualizing urban infrastructure that move away from traditional practices of centralized, linear, once-through water and energy flow towards decentralized facilities and closed water and energy systems.

Organizers: Water Environment Federation and the International Water Association in cooperation with the New England Water Environment Association and the Water Environment Research Foundation

Contact Name: WEF COTF2010 Secretariat

E-mail: COTF2010@wef.org

URL:

<http://www.wef.org/ConferencesTraining/ConferencesEvents/CitiesoftheFuture/>

INTERNATIONAL AFRICAN WATER AND SANITATION CONGRESS AND EXHIBITION

Kampala, Uganda, 15-18 March 2010

The main theme is: "Water and sanitation: what perspectives facing energy challenges and climate change".

<http://www.aae-event.com/>

WSTA 9TH GULF WATER CONFERENCE

Muscat, 2010-03-22 to 2010-03-25

The main objective of the conference is to discuss the complex issue of sustainable water management of both the resources and the various water-related sectors to achieve a common understanding of what is needed to have an optimal management of the limited water resources in the region.

Organizers: Water Science and Technology Association (WSTA)
Contact Name: Waleed K Al-Zubari
E-mail: wsta@batelco.com.bh
URL: <http://www.wstagcc.org/UserFiles/File/9thgulf%20water%20conference-booklet.pdf>

ASIAWATER 2010 - 6TH ASIAWATER EXPO & FORUM

Kuala Lumpur, 6 - 8 April, 2010
Kuala Lumpur Convention Centre
In cooperation with AMB Exhibitions Sdn Bhd
The Malaysian Water Association (conference)
MEREBO Messe Marketing (European and North American Pavilion)

Scope of Exhibits
Water Resource Management
Municipality Water Management
Sewerage
Irrigation
Wastewater Treatment & Management
Industrial Water Treatment
Ultra Pure Water
Bottled Water Production

5TH INTERNATIONAL CONFERENCE ON FOG, FOG COLLECTION AND DEW

Münster, 25–30 July 2010
The scope of this conference is to bring together people who are interested in any aspect of fog and dew, including both advanced scientific findings and practical applications of fog and dew collection.
<http://www.fogconference.org/information/index.html>

7TH INTERNATIONAL CONFERENCE ON SUSTAINABLE TECHNIQUES AND STRATEGIES FOR URBAN WATER MANAGEMENT (NOVATECH 2010)

Lyon, 2010-06-28 to 2010-07-01

The 7th Novatech conference will deal with three complementary dimensions of urban water management under storm weather conditions:

- Integrated approaches for urban planning and operation;
- Innovative technologies; and
- Integrated approaches for the protection and enhancement of receiving water bodies.

Organizers: GRAIE - Novatech
Contact Name: GRAIE – Novatech Secretariat
E-mail: novatech@graie.org
URL: http://www.novatech.graie.org/a_index.htm

XIX INTERNATIONAL CONFERENCE ON HYDROSCIENCE AND ENGINEERING (ICHE 2010)

Chennai, 2010-08-02 to 2010-08-05

Conference topics include:

- Water Resources and Waster Water Management
- Surface and Ground Water Resources
- Conveyance and Water Distribution Systems
- Environmental Science,Engineering and Management
- Risk Analysis and Management of Water infrastructure
- Soft engineering tools for forecasting
- Sedimentation and Morphodynamic Processes
- Computational Fluid Dynamics Marine Hydrodynamics
- Maritime,Coastal and Inland Hydraulics
- Risk analysis and management

Organizers: International Association of Hydraulic Research and Engineering (IAHR)

Contact Name: Prof. V. Sundar

E-mail: vsundar@iitm.ac.in

URL: <http://www.oec.iitm.ac.in/ICHE2010/>

SIXTH WORLD FRIEND CONFERENCE

Fez, 2010-10-25 to 2010-10-29

The objective of the conference is to present the results of the UNESCO FRIEND (Flow Regimes from International Experimental and Network Data) research programme that have stimulated cooperation to meet local and regional needs. A focus of the conference will be to discuss how advances in analytical techniques and process hydrology are improving our assessment of water resource variability and the impacts of environmental change. The conference will give high priority to establishing links with related international programmes and with related disciplines of groundwater hydrology, ecohydrology and climatology.

Organizers: UNESCO/IHP, German IHP/HWRP Hydrological Committee, IRD, IAHS, MED FRIEND, Faculté des Sciences et Techniques de Fez (FSTP), HydroSciences Montpellier

Contact Name: Dr Eric Servet

E-mail: contactUsFez2010@msem.univ-montp2.fr

URL: <http://www.hydrosciences.fr/fez2010/index.asp?lang=en>

8TH INTERNATIONAL WORKSHOP ON PRECIPITATION IN URBAN AREAS

St Moritz, 2009-12-10 to 2009-12-13

Following the tradition of previous workshops, the main objective of this event is to provide a focussed forum for exchanging ideas and information in order to bridge the gap between scientific achievements and critical issues that need to be addressed in practice. Accordingly, contributions meeting the workshop themes are welcome on both application oriented basic research and operational urban hydrology. The format

of the workshop is informal with presentations, posters and adequate time for discussion.

Organizers: Swiss Federal Institute of Technology Zurich (ETH)

Contact Name: Manuela G. Haas

E-mail: stmoritz@ifu.baug.ethz.ch

URL: <http://www.ifu.ethz.ch/stmoritz>

NEW PROGRAMME TO SPONSOR FIRT-TIME MEMBERS OF IWRA

Do you know someone who might be interested in becoming an IWRA member?

IWRA has a programme to sponsor first-time members from developing countries for one year to show them the benefits of joining the Association. The sponsorship includes membership fee and access to our Journal, *Water International*, for one year.

If you know someone who is interested, please send a formal request to the Chair of the Membership Committee, Dr. Gunilla Björklund through the Executive Office (e-mail: iwra-office@wisa.org.za). The request should indicate the name of the person, their affiliation and title, and a brief description of their work on water. CVs are appreciated, but not necessary. Both professionals and students from developing countries are eligible for this programme. The Membership Committee will evaluate the requests.

We are looking forward to welcoming more members to the IWRA family!

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