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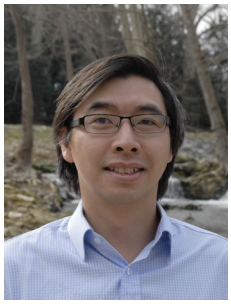
WATER AND SUSTAINABLE DEVELOPMENT

IWRA

IWRA Update

Newsletter of the International Water Resources Association

MESSAGE FROM THE EXECUTIVE DIRECTOR



Dear IWRA Members, Colleagues and Friends of Water,

This month we celebrate World Water Day, its theme of "Water for Sustainable Development" marks an important year for the global water agenda. As the period of the Millennium Development Goals draws to a conclusion, we shall see the emergence of the Sustainable Development Goals and with it a shift from a focus on access to "safe" water and sanitation towards a more global perspective on water that places an emphasis on water as a global development vector across multiple sectors. Within this context, IWRA continues to bridge good science and policy, whilst using its platforms to bring major themes to the forefront of the global water discourse. In the coming months, IWRA will be participating in the 7th World Water Forum in the Republic of Korea as the coordinator of the Design Group on "Ensuring Water Quality from Ridge to Reef". Within this theme IWRA is coordinating a thematic session titled "Water Quality: Smarter use for water security". We are also looking forward to our very own event, the XVth World Water Congress this May in Edinburgh, Scotland. This shall bring water professionals from different backgrounds together under the same roof to discuss "Global Water, a resource for development" and all the associated opportunities and challenges. Perspectives on this discourse are previewed in this newsletter through our special series on the Congress themes (see p.5). IWRA has maintained a wide range of activities: President Dogan Altinbilek represented IWRA at India's Water Week earlier this year; and IWRA shall also be playing a role in the upcoming high level conference on "Water for Life" to be held in Dushanbe, Tajikistan.

I am also pleased to announce our newest publications and the publications of our members and partners. *Water International* has had a busy time with the publication of two issues. Volume 40 Issue 1 is a special issue titled, 'The China Water Papers'- Transboundary Water Cooperation and aims to unpack the current climate and possible solutions to transboundary water debates. In addition to a continuation of 'The China Water Papers', Volume 40 Issue 2 showcases articles on water governance, security and allocation. The issue concludes with a book review critiquing key concepts in water resource management.
At the end of December 2014, IWRA also published a policy brief entitled, "Land and Water Governance in Urban Regions" which urges for adaptive practices and increased cooperation between governmental institutions in order to overcome obstacles in land and water use.

IWRA has a global vision and includes national and regional committees from around the world. It is with immense pleasure then, that I announce the intention to create an IWRA Oceania Committee, a project spearheaded by Prof. Gary Jones (see pg.3). I do encourage all members within that region to get in touch and share your ideas with him.

In regards to other administrative matters, IWRA announces a change in the membership structure and fees (see p.2). As an international organisation promoting sustainable water practices it is important to inspire growth from today's youth; and the new fees reflect our efforts to inspire the emerging generations of future water professionals by making membership affordable for students and young professionals.

With best wishes,

Tom Soo
Executive Director

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NEWS news news news news

MEXICO PROPOSES AN INTERGOVERNMENTAL PANEL ON WATER: EGYPT AND PERU JOIN

President of the United Mexican States, Enrique Peña Nieto presented a proposal to create an Intergovernmental Panel on Water. The importance of water and the impact that water issues have on diverse productive areas globally were discussed. The overall aim of this panel is to empower the technical and scientific community and give them a political voice to discuss activities on water and climate change around the world. The Director General of the National Water Commission, David Korenfeld, met with Ambassador Khaaled Fahmy, Minister of Environment, Egypt, with the goal of prioritizing Water & Climate in terms of water resources as the most affected by the nature of this relationship. This initiative coincides with the preparation of the Post-2015 Development Agenda (SDGs), which has designated an entire goal (Goal 6) towards the water sector.

For more information on the Intergovernmental Panel on Water view the CONAGUA January Newsletter:
www.conagua.gob.mx/CONAGUA07/Noticias/BOLETÍN%20AGENDA%2001%20ENERO%202015%20ingles.pdf

PREPARATION FOR STOCKHOLM WORLD WATER WEEK 2015

Professor Altinbilek participated in meetings in Stockholm, Sweden regarding the preparation of this year's Stockholm World Water Week, which shall be held from August 23 to 28 with the theme: "Water and Development"

DR. YUTAKA TAKAHASI RECEIVES THE 2015 JAPAN PRIZE

Dr. Yutaka Takahasi, Professor Emeritus of the University of Tokyo and IWRA member, is a 2015 Japan Prize laureate for his "contribution to development of innovative concept on river basin management and reduction of water-related disasters". The Japan Prize is awarded annually to scientists and engineers internationally who have made significant contributions to science and technology, thus promoting peace and prosperity of mankind.

More information can be found at The Japan Prize Website:
www.japanprize.jp/en

NOTICE: CHANGE IN IWRA MEMBERSHIP STRUCTURE

At the December 2014 meeting, the Executive Board of the IWRA unanimously approved revisions to the membership structure. In particular, an "Individual: Young Professional" category was created for members who are 35 years old or younger on the date of enrollment. In addition, members qualifying for the Student category are now exempted from membership fees but do not have voting rights. The tariff rates for all memberships were also updated.

For details, please see: www.iwra.org/index.php?page=202

HONG KONG UNIVERSITY PUBLIC POLICY WATER GOVERNANCE RESEARCH PROGRAMME

Executive Director Tom Soo is delivering a public seminar on April 21 at the Hong Kong University for the Public Policy Water Governance Research Programme seminar series.

For more information about the seminar series and speakers visit: www.socsc.hku.hk/pp/

IWRA EXECUTIVE BOARD MEETING

The current IWRA Executive Board shall hold its 7th meeting in Edinburgh on May 24 before the XVth World Water Congress.

NEW INTERN AT THE IWRA EXECUTIVE OFFICE

IWRA is pleased to welcome Anais Azoulay for the next six months! Anais has a Bachelor of Arts in International Relations from the University of Delaware and a Masters of Science in International Development from the University of Edinburgh. She is working on projects related to the XVth World Water Congress as well as supporting efforts at the Executive Office.

To contact Anais: azoulay@iwra.org

MEMBER UPDATE

IWRA would like to extend congratulations to member Renee Martin-Nagle who in March will be affiliated with the University of Strathclyde in Glasgow, Scotland, as a PhD Researcher in transboundary aquifers.

NEWS news news news news

NEW CHAPTER: IWRA OCEANIA

We are pleased to announce the new IWRA Oceania Chapter, supporting and fostering IWRA's membership base, knowledge exchange and networking opportunities in Australia, New Zealand and the Pacific Islands. The Chapter aims to add value to existing membership benefits by fostering collaboration, professional development and information exchange, both across the Oceania region and internationally. We will be calling for expressions of interest from new and existing members, including water professionals, corporate members, students and retired professionals in the region to indicate interest and support in the coming months. In the meantime, please contact Gary Jones (**gary.jones@ewater.com.au**) or Ellia Guy (**ellia.guy@uqconnect.edu.au**) with questions, comments or suggestions.

For more information and updates visit:
www.iwra.org/index.php?mainpage=184&page=274&subpage=

SPECIALLY INVITED OPINIONS AND RESEARCH REPORT OF THE INTERNATIONAL WATER LAW PROJECT: GLOBAL PERSPECTIVES ON THE ENTRY INTO FORCE OF THE UN WATERCOURSES CONVENTION 2014

During the summer of 2014, the International Water Law Project Blog (http://www.internationalwaterlaw.org/blog/), which is directed by IWRA Treasurer, Professor Gabriel Eckstein, published a series of essays on the recent coming into force of the 1997 UN Watercourses Convention. Those essays have now been republished in volumes 16(6) and 17(1) of the journal Water Policy under the title of Specially Invited Opinions and Research Report of the International Water Law Project: Global Perspectives on the Entry into Force of the UN Watercourses Convention 2014.

These compilations can be found at:
http://dx.doi.org/10.2166/wp.2014.008
and http://dx.doi.org/10.2166/wp.2014.009

A Russian translation of the essays by the Scientific Information Center of the Interstate Coordination Water Commission for Central Asia is now available.
http://internationalwaterlaw.org/bibliography/articles/general/papers_1997UNConvention-Russian.pdf

IWRA International Water Resources Association

The Scottish Government
Riaghaltas na h-Alba

XVth World Water Congress

XVth World Water Congress is approaching in the next few months. New information about select speakers and their biographies have been posted on the website. To view the announced speakers visit: worldwatercongress.com/speakers-and-their-biographies/

In addition, IWRA is happy to announce the Congress related social program that all guests can enjoy:

Monday, May 25th
Welcome complimentary drinks reception on the opening evening of the Congress at the host venue- the Edinburgh International Conference Centre (EICC). Meet exhibitors, members, speakers, and other participants.

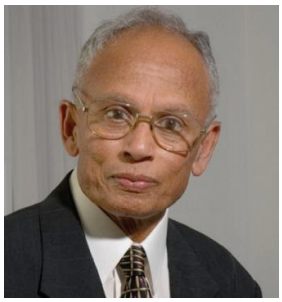
Tuesday, May 26th
Exclusive access to the iconic Edinburgh Castle for a memorable drinks reception. Enjoy the historical beauty of the city and traditional Scottish entertainment.

Thursday, May 28th
The gala dinner at the National Museum of Scotland will feature open exhibits, a three-course dinner, and wonderful entertainment. In addition the IWRA Congress Awards Ceremony will take place this night at the gala dinner.

For Information on these events and other social events with partner programs visit: worldwatercongress.com/social-programme-and-accompanying-guests-information/

Please remember that registrations for the Congress are still open!

PERSPECTIVE from IWRA Past Presidents and Fellow Members

The top global risk – water

PUBLISHED ON JAN 31, 2015 6:43 PM / *For The Straits Times*

Cecilia Tortajada, Past President and Fellow Member, IWRA and Senior Research Fellow at the Lee Kuan Yew School of Public Policy, Singapore.
Asit K. Biswas, Past President and Fellow Member, IWRA. Both are co-founders of the Third World Centre for Water Management, Mexico.

The World Economic Forum (WEF) has just published its 2015 Global Risk Report. This is the 10th year of this global perception survey. A global risk is one that, if it occurs, would cause significant negative impact over the next 10 years for several countries or industries. Twenty-eight global risks were identified and grouped into economic, environmental, geopolitical, societal and technological risks.

In nine earlier reports, the top risks identified by the WEF were all related to financial issues. Asset price collapse, fiscal crises and major systemic financial crises were the top items between 2007 and 2014. This year, the No. 1 spot is occupied for the first time by a non-financial issue: water crises. Fiscal crises ranked No. 8.

There are signs of water problems all over the globe. Water is scarce, polluted, over-exploited, mismanaged and misallocated. Water, both in terms of quantity and quality, is essential to sustain political, economic, social and environmental systems. In an increasingly globalised and interconnected world, water scarcity and pollution, as well as floods and droughts, represent a significant risk to which no country is immune.

Business interest in water is not surprising. Without water, no product can be manufactured and thus there would be no business. Water is becoming scarcer and scarcer in nearly all countries, developed or developing, primarily because of continuing poor management practices. These include not pricing water in a way that is consistent with its scarcity.

Accordingly, companies are realising that water could disrupt their business operations seriously in the future. At the very least, business costs will increase because of lack of water available in quantity or quality, due to higher water prices and increasing compliance requirements for managing wastewater.
Scarcity has also resulted in conflicts between local communities and businesses that are heavy water consumers. In 2013, Barrick Gold suspended its Pascua Lama mine, straddling the Chile-Argentina border, following a court injunction filed by the indigenous communities of Chile because of potential groundwater contamination. This stoppage came after an investment of US$5 billion (S$6.8 billion).

Similarly Rio Tinto pulled out of its Pebble Mine copper and gold project in Alaska, which meant a US$300 million write-off because of potential adverse impacts to salmon fisheries. The company then had to give away its 19.1 per cent stake in the mine to two Alaskan charities.

As for BHP Billiton, it had to invest nearly US$2 billion in a desalination plant for its Escondida copper mine in Chile.

Not surprisingly, water availability is now considered to be the most important consideration for the sustainability of mining companies. Already, nearly 100 per cent of mining, pharmaceutical, electronics and computers, oil and gas and food and beverage companies that belong to the world's largest 250 companies report their water risks in their annual corporate reports.

Several major companies like Nestle have taken water issues very seriously, and have made significant improvements in their management practices. Over the past 10 years, the company has reduced its water requirements per dollar of sale by over 65 per cent. In addition, by using the latest management and technological practices, it will for the first time have two factories in India and Mexico this year which will actually add water to the environment instead of taking from it. Such advances would have been unexpected even a decade ago.

Regarding water security, few countries have placed greater importance on water availability, accessibility and affordability than Singapore, which has put the issue at the highest level in the political agenda since its independence in 1965. Many other countries have been laggards to use water efficiently. Sadly, a vast majority of the urban centres of the world, including in the United States and Canada, use water profligately.

Water is a renewable resource. That means unlike oil or minerals, water can be used, treated properly and reused. This cycle can continue numerous times with good management but mostly, with good governance. Properly managed and governed, the world has enough water not only for now but also by 2050, when the global population is estimated to be around 9.2 billion, and for all their requirements.

While the corporate sector is now aware of the problems posed by water scarcity, sadly governments appear to be unwilling or incapable of taking hard political decisions to improve water and related resource management practices which are essential if we are to avoid a looming water crisis. As Shakespeare said: "The fault, dear Brutus, is not in our stars, but in ourselves, that we are underlings."

SPECIAL SERIES
ON THE THEMES OF THE XVth WORLD WATER CONGRESS

This month's issue of IWRA Update continues a special series of essays exploring the themes of the XVth Water Congress that will be held from May 25 to 29 in Edinburgh, Scotland. Prof. Akpabio unpacks the different elements of valuing water; Prof. Thapa, Prof. Scott, Prof. Varady, and Prof. Grenade discuss methods to strengthen water security; and Prof. Lilian del Castillo-Laborde explores the role of law in water governance.

VALUING WATER: A SYNTHESIS OF SOCIAL, ECONOMIC, ECOLOGICAL AND CULTURAL CONSIDERATIONS

EMMANUEL M. AKPABIO
Executive Board Director, IWRA and Member, International Scientific Committee of the World Water Congress

Water represents the most essential natural resource highly indispensable for biological survival and for productive purposes. From a pure natural substance whose single molecule is bonded together by 2 atoms of hydrogen and one atom of oxygen (H2 O), water has undergone some forms of human discourses, production, representations and transformations suitable for a wide range of uses and purposes: social, economic, cultural, existential, religious, ecological and several other uses. Albert Szent-Gyorgyi's (1972) notes on water seem to summarize all that water stands for as follows:
Water, the hub of life. Water is its mater and matrix, mother and medium. Water is the most extraordinary substance! Practically all its properties are anomalous, which enabled life to use it as building material for its machinery. Life is water dancing to the tune of solids.

The relationship between water and society is complex and multifaceted, as it crosscuts every aspects of the societal fabric, shaping and defining diverse sets of interests and stakeholders. Barlow and Clark (2002) once wrote:
'*…the earth's water belongs to the earth and all spaces, and therefore must not be treated as a private commodity to be bought, sold and traded for profit…the global fresh water supply is shared legacy, a public trust, and a fundamental human rights, and therefore a collective responsibility (http://freshwater.org/wp-content/uploads/joomla/PDFs/critical-water/valueofwater.pdf)*

Given this level of knowledge, how should water be valued? Put in a simple way, how should our personal (objective/subjective) or cultural standards for assigning worth (intrinsic or extrinsic) to water influence the way we relate with it? Globally, there exist complex sets of diverse values characterizing water which, at times, make practical reconciliation difficult (Priscoli et.al 2004). Different positions and perspectives on valuing water do reflect the fundamental constitutive elements of our societal fabric, especially as canvassed by different disciplines (see Eckstein 2006). The anthropologists, for instance, see water as integral component of human life and existence, and which should not be subjected to the calculus of the cost-benefits and market pricing mechanism- which are the central and dominant arguments espoused by the economists. The economists focus more on commoditizing water and promoting allocation and use efficiencies.

While the economic arguments for valuing water draw on its inherent finite characteristics and potential to be scarce, stressed and consequently lead to some conflicts, counterarguments, however, blame poor management and a lack of effective governance mechanisms to address all perceived lapses raised by the economists. The ecological perspective grounds its arguments of incalculable values of water on the premise of its being the core foundation of the ecosystem, which human life and livelihoods ultimately depend for survival. Much concern here centres on how the various functions of water to the ecosystem could be valued. Methodologically, several

studies have concluded this would prove difficult to achieve (see Brookshire et al 1986).

The cultural perspective, on the other hand, looks at the various human beliefs and religious values imbricated in water as well as the diverse roles of water in religious and traditional rituals and practices that have characterized human-society relations. To most communities and societies around the world, 'water is a gift from God/nature' (which reinforces the values of equal rights and universal access), and as homes to spirit deities (which emphasizes some existential links with bodies of water). These beliefs are structured on a reciprocal relationship with nature, mediated by some religious norms and spiritual values. Several studies have demonstrated how diverse beliefs and cultural values of water have been mobilized against the neoliberal and economic norms of privatization, commercialization, commoditization, cost-recovery and the likes (see Akpabio, 2012, Akpabio and Takara 2014, Donahue and Barbara 1998). Vandana Shiva (2002) has rightly argued that the way water is conceptualized and represented is instrumental in determining who gains access and on what terms. Tension and conflicts over contestations of meanings and values are inevitable, given that the social power equations are often weighted significantly towards the advantages and privileges of a select group bent on foisting certain attitudes and orientations on others with different sets of values and orientations.

International agreements and consensus ranging from the Dublin principles, Agenda 21, the UN MDG, etc. have, one way or the other, recognized and highlighted the diverse dimensions of water. However, eventual positions and recommendations hardly and comprehensively address the question of how water should be valued to satisfy all the competing interests. The statement that emphasizes water as an economic good in the Dublin principle (principle 4 of the Dublin Declaration) generated much debate, prompting the UNESCO's declaration in 2002 that water is 'a human right, a social and cultural good, not merely an economic good (UN doc. E/C.12/2002/11). Similarly, market-based norms have been criticized for failing to account for ecological consideration. According to Groeneldt and Schmidt (2013), 'values are central to ordering water for the purpose of governance…and without values, governance has no referent for adjudicating competing demands or for accessing different institutional paths…' Over the years, some concerns of climate change, high water demands, scarcity and stress as well as high potential for socio-economic impacts and conflicts have prompted some discourses on news ways of managing water without marginalizing the various sets of values associated with it. Languages, frameworks and concepts such as trade-offs and compromises, equality and equity, public versus private goods, governance and integrated water management, etc., have constantly found relevance in discourses related to how water should be valued. Fundamentally, the whole essence of concerns and debates could be translated into the following sets of questions: how valuable is water right? Must water and water services only be translated into dollar values? If so, how do we quantify other dimensions of values-religious, spiritual, aesthetics etc? How greater is the value of water for agriculture, for instance, over the value of sustaining the ecosystem? How much compensation should be paid when specific development outcomes lead to poor water quality for people? How do we value the synergistic outcomes produced over the interdependence between water and other sectors sustaining the human society (e.g., agriculture, industry, ecosystem protection etc)? etc. These questions reflect several issues bordering on ethics and human rights, ecological dilemma, cultural challenges and methodological questions.

The XV[th] World Water Congress at Edinburg has developed a specific theme and some sub-themes, including some special sessions, to address these issues. The theme on 'valuing water: monetary and non-monetary dimensions', is expected to touch on a wide range of issues including but not limited to:

- economic and regulatory instruments,
- payment for ecosystem services,
- using water technology in the modern low carbon economy as an engine for green growth,
- human rights to water: progress made, including climate change justice, ethical, cultural and religious values,
- education, information and participation,
- capacity building.

The world certainly has to discuss these issues and find some common grounds. Given the number and quality of submissions on these sub-themes, there is high hopes and great expectations of quality debates on theories, methodologies and empirical reports that will serve to stimulate some useful agenda and direction for future research and scholarship. Come, learn and share your experiences with researchers, scholars, policy makers and practitioners!

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STRENGTHENING WATER SECURITY THROUGH RESEARCH AND SCIENCE-POLICY DIALOGUES

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Water security is an inclusive concept that aims at securing adequate quality and quantity of water for societal and ecosystem needs while minimizing vulnerability to water-related risks in a manner that aids adaptation to global change. It reconciles diverse water-related challenges that society faces, including access to water and sanitation, competing water demands, water governance, water quality, water and health, water contamination, and water-induced disasters.

These and related challenges will form the subject of two special sessions on "Water Security: Networked Science and Policy," at the IWRA World Water Congress—Edinburgh, May 25-29, 2015. The sessions are co-convened by the International Water Security Network (Chad Staddon, University of the West of England and Christopher Scott, University of Arizona) and University of East Anglia's Water Security Research Centre (Bruce Lankford and Jessica Budds).

In the context of uncertain global change, the multi-faceted aspects of water security heighten the necessity for integrative solutions – solutions that lower academic barriers and engage all related stakeholders. For example, the Udall Center for Studies in Public Policy at the University of Arizona, together with the Centro de Cambio Global of the Pontificia Universidad Católica of Chile, initiated an interactive network – AQUASEC (aquasec.org) – in the arid Americas (Southwest U.S., Mexico, Chile, Argentina, Northeast Brazil, and Peru) that includes scientists, agency personnel, civil society, and decision makers. Subsequently, this was linked with the International Water Security Network (watersecurity.org), coordinated by the University of the West of England. Scientists in these networks have facilitated community-of-practice groups to conduct science-policy dialogues and build social and institutional capacity to cope with current challenges and address uncertainty to change. These discussions have brought together numerous stakeholders—mainly farmers, businesses, policy makers, and scientists—in order to foster participatory mechanisms of identifying and addressing water-security challenges.

Policy research has found that at least four conditions are necessary for effective science-policy engagement: inclusivity, involvement, interaction, and influence. An inclusive process has incorporated diverse stakeholders, including local, state, regional, and national agencies; bi-national and international organizations; NGOs and other civil society organizations; as well as researchers. Open dialogues through presentation and moderated discussion are a means to foster trust that is essential for effective involvement. They can be highly influential processes particularly when operational staff is provided access to cutting-edge science. Such fora are a platform to facilitate information dissemination

to decision makers, and they also helped train graduate students, junior water-resources scientists, and practitioners about pragmatic approaches to addressing water security.

These activities are strengthened through analogous efforts in other regions as part of the International Water Security Network (IWSN). Funded by Lloyd's Register Foundation, a charitable foundation helping to protect life and property by supporting engineering-related education, public engagement and the application of research, IWSN was formulated as a global network comprising three partner universities—University of the West of England, Monash South Africa, and the University of Arizona. The five-year IWSN program supports academic exchange, scientific research and post-graduate training among water security centers of excellence located at these universities. The goal of this effort is to build world-class science based on issues related to water security including transboundary water governance, public participation, water sensitive urban design, water quality management, and institutional and legal innovations. The members of the IWSN team conduct state-of-the-art research on these diverse areas through regional centers of excellence in various aspects of water governance. Current research explores issues of urban water security through international comparisons, transboundary water security and adaptive management in Americas, and water quality security in Africa. IWSN also trains approximately 20 new post-graduates with specializations in key areas of water security.

The complex set of issues incorporated in the concept of water security makes any attempt to assess this notion complicated. Research at University of Arizona has reviewed different methods of water security assessment. We have found that assessment tools have mostly centered on the development of quantitative indices. Of the many indices that have been developed to date, the Asian Development Bank's National Water Security Index (NWSI) is one of the most comprehensive. Using more than 40 indicators, the NWSI measures water security in five dimensions: household, economic, urban, and environmental securities, and resilience from natural disasters. We assessed the usefulness of the indicator based on several key criteria—viz., representativeness, simplicity, appropriate scale and context, stakeholder engagement, data availability, and stakeholder engagement. The NWSI is a noteworthy first step toward a systematic approach that quantifies national-, basin-, and city-level water securities by bringing together a wide array of datasets. Nonetheless, we noted some limitations that need further consideration. We found that a homogenized national-level index very likely ignores the geographic, socioeconomic, and cultural variations influencing water security. The indicators mostly measure social and environmental outcome variables, such as access to sanitation, agricultural productivity, and landuse type. We believe that the NWSI can be further improved by incorporating process-based indicators of water governance, which is central to achieving water security.

Overall, the research and science-policy dialogues on water security challenges across the globe have offered case-based insight into understanding the nuances of water security. Water security and adaptive capacity must be better framed through understanding of local contexts that give due consideration to resource-use dynamics and the inter-connectedness of sectors. Innovative methods of science-policy dialogues and assessment tools can foster proactive, integrated responses to sustainable resource governance under global change. Transboundary water governance can be strengthened through robust institutions that account for the complexity of trans-jurisdictional and cross-border conditions.

WHAT ROLE FOR LAW IN WATER GOVERNANCE?

LILIAN DEL CASTILLO-LABORDE
Vice-President, IWRA
University of Buenos Aires School of Law

Governance is a multilayer concept encompassing new dimensions for water management, focusing not only on watercourses, basins and groundwater but also on the hydrosphere and the hydrological cycle as the larger element to be considered. Governance also incorporates the dimension of time with the projection of sustainability which embraces sound management for the present and, decisively, for the future. Governance is a conjunction of policy, science, technique and behavior, shifting from what should be done to what ought to be done. Then, a strong normative component is embedded in the concept of water governance encompassing social, political and monitoring components. Guidelines, patterns and regulations should be put in place in order to secure water availability for the years to come. Law is the only available tool to guide the behavior of individuals and communities, whether they are cities, regions, states or countries, in sum, national and international stakeholders.

However, we must be aware that "law" is a concept of both scientific and legal content. In fact, in 1687 Sir Isaac Newton published the Principia Mathematica, where he described the law of universal gravitation and the three laws of motion. Those laws are natural laws, as are the physical laws of water hydraulics. Ancient scholars in Greece, Rome and the Italian Renaissance were multifacetic and studied and wrote on philosophy, chemistry, astronomy, among other sciences, and also on legal rights and their application. A clear example are the works of Sextus Julius Frontinus, who in 97 A.D. was appointed Rome´s water commissioner, an important position reserved for persons of the highest rank. During his tenure he wrote De Acquis Urbis Romae, where he described not only the different water sources and aqueducts of a city inhabited by one million people but also the rights and duties established for their construction and use together with the penalties for breaching those regulations. The tradition of multifacetic scholars continued in a successive chain of accumulated knowledge contributed by, e.g., Leonardo da Vinci (1452 - 1642), who studied hydrodynamics and designed complex hydraulic works, and Benedetto Castelli (1578 - 1643), Galileo Galilei's disciple (1564 - 1642) who wrote on the motion of fluids in Mensuration of Running Water and Geometrical Demonstrations of the Measure of Running Waters. For their part, the Codices of Ulpiano, Iustiniano and Teodosio defined the juridical nature of aqueducts as public property because of the public nature of the water that flows along them, the water being the decisive element qualifying both the nature of water and of the conveying system. And, in the 19[th] Century, a scientist and jurist conciliated in his Treaty on the legal rights regarding the transport, distribution and allotment of waters with his hydraulic knowledge for its calculation, reaffirming the notion that addressing water management involved both the legal and the scientific elements. This prominent scholar, Gian Domenico Romagnosi (1761-1835) who in his treaty addressed water quantity and water quality, stated that the legal regime for water uses and users, its creation, administration, responsibility and extinction, were closely driven by hydraulics.

The connection between law and science for water management has not disappeared but there are very few scholars who can deal with both aspects of water at the same time, since this knowledge is too specialized, complex and difficult to grasp jointly. However, science and law need each other and their separate ap-

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- Ibidem, paragraph 1741, 923.
- CAPONERA, Dante, National and International Water Law and Administration, Kluwer Law International, 2003.

proach brings about much frustration among experts because without the legal requirements, important solutions might not be carried out. It also brings about frustration among planners since ideal projects could fail without the correct scientific advice. In water management, the growing demands have tilted the balance on technical expertise, and although Romagnosi's treaty dealt with water legal regimes at large and had only two appendixes on hydraulics, at present water law is a new branch of law applied as a complement of water uses and water works.

Water law, whether national or international, is the branch of law dealing with all aspects of water uses and administration, necessary not only for individual users but for countries as well. Even if water use is a local issue, the aggregate of all users is a matter of national concern for a country, as well as the aggregate of all countries is a matter of concern for the international community. For that reason, water law deals with local uses, national uses and international uses of water, which results in a particular case of a branch of law made up of national and international rules. The object to be regulated, water, is so complex that it steps in almost every activity, and this is a great challenge for those approaching water management, and its social and policy aspects in a comprehensive governance attitude.

For this reason, the World Water Congress that IWRA is organizing in Edinburgh on 25-29 May 2015 will encompass the scientific, economic, policy, environmental, planning and legal issues of water governance. The IWRA is an association of experts approaching a rich variety of topics, which will be reflected in the approaching World Water Conference. The Conference will address the elusive issue of valuing water, the many challenges of transboundary waters, both in surface and underground waters, the hidden water exports and imports of virtual water and the water footprint, the climate change adaptation and mitigation, the use of waste water as a resource, among many others topics, in panels, plenaries and special sessions. But from the standpoint of water law, the WWC will have a remarkable number of panels, organized jointly with the International Association of Water Law (AIDA), which will analyze:

1/ International Law for Transboundary Water Resources
2/ Law and Governance for Managing Water Resources Under Conditions of Climate Change, Drought and Scarcity
3/ Law and governance for Managing Groundwater Resources on Domestic and Transboundary Levels
4/ The Economics of Water Law
5/ Legal and Regulatory Approaches to Water Resources Management on the National Level
6/ Water Law in a Regional Context: Europe and the Mediterranean
7/ Dams, Hydropower, and Law

Special Sessions and Plenary Sessions will deal with other law-related themes and, in each case will certainly give rise to an enriching exchange of views with the audience. As a consequence, the 2015 Edinburgh World Water Congress will generate the virtuous circle of policy, science, technique and law that shall contribute to promoting water governance.

LATEST ACTIVITIES

India Water Week

NEW DELHI, INDIA, 15 JANUARY

IWRA President Dogan Altinbilek with V.K Kanjlia, Secretary, CBIP & Director of Board, IWRA; Sunil Sharma, Senior Manager, CBIP; A.C. Gupta, Treasurer, CBIP - © Ashish Kumar

© Ashish Kumar

For the opening of the 3rd India Water Week IWRA President and World Water Council Vice-President Dogan Altinbilek gave a speech highlighting the need for increased cooperation between the government and private sector. Throughout the week various meetings with government officials and water stakeholders took place in addition to visits to current water projects in rural areas. In addition, President Altinbilek met with IWRA's India Geographic Committee Chair, Mr. V.K. Kanjlia.

For more about India Water Week visit:
www.indiawaterweek.in

7th World Water Forum Preparation

PARIS, FRANCE, 24-26 FEBRUARY

President Dogan Altinbilek, Executive Director Tom Soo and Project Officer Pierre Balzergue were in Paris to participate in workshops organized by the 7th World Water Forum.

UPCOMING EVENTS

World Water Day 2015

22 MARCH

International World Water Day takes place every year on March 22nd with the goal of bringing attention to the importance of clean and safe water and for supporting sustainable management of freshwater resources. The theme this year is "Water and Sustainable Development". **For more information and updates visit:**
www.unwater.org/worldwaterday/home/

Illinois Water Day

CHAMPAIGN, ILLINOIS, USA, 10 APRIL

University of Illinois IWRA Student Chapter established Illinois Water Day (IWD) in 2014, inspired by the United Nations' World Water Day. IWD promotes the themes and values of World Water Day by raising public awareness of water resources issues, and aims to provide a thought-provoking environment to foster discussions and collaboration regarding local water issues. IWD 2015 will be held on April 10th as a "Let's Talk about Water" event (supported by CUAHSI1), focused on the theme of "Water and Sustainable Development": screening of the documentary "Cowspiracy" will be followed by panel discussion and poster session. **Website:** **waterday.illinois.edu/**
Facebook Page: **www.facebook.com/IllinoisWaterDay**

World Water Council Board of Governors Meeting

GYEONGBUK, REP. OF KOREA, 11 APRIL

IWRA shall be participating at the World Water Council Board of Governors meeting before the start of the 7th World Water Forum.

Follow IWRA on TWITTER & on FACEBOOK!

UPCOMING EVENTS

7th World Water Forum

DAEGU & GYEONGBUK, REP. OF KOREA, 12-17 APRIL

The 7th World Water Forum, under the theme "Water for Our Future", is approaching next month and IWRA is playing a key role as a Theme Coordinator for 3.3 «Ensuring Water Quality form Ridge to Reef»,

There are 5 sub-themes for Theme 3.3:

3.3.1 Water Quality: Smarter Use for Water Security
3.3.2 Monitoring and Reporting of Water Quality
3.3.3 Strengthening Frameworks for Governing and Managing Water Quality
3.3.4 Sustainable Wastewater Management and Reuse
3.3.5 Green Investment for Blue Economy: Managing sources for coastal and marine water quality improvements

High-Level International Conference on the Implementation of the International Decade for Action "Water for Life", 2005-2015

DUSHANBE, REP. OF TAJIKISTAN, 9-11 JUNE

The Government of the Republic of Tajikistan is hosting the High-Level International Conference on the Implementation of the International Decade for Action "Water for Life", 2005-2015 to further efforts to achieve sustainable development of water resources. The main objective of the Conference is to summarize and critique the progress of reaching the decade goals and to develop recommendations in order to reach these goals.

To read more about the Conference, visit:
http://waterforlifeconf2015.org/eng/

International Association for Hydro-Environment Engineering and Research World Congress 2015

THE HAGUE, NETHERLANDS, 28 JUNE- 3 JULY

The 36th IAHR World Congress will be held on June 28- July 3 at The Hague in the Netherlands. The themes of the Congress are: managing deltas, hydro-environment, sediment management and morphodynamics, water engineering, flood risk management and adaptation, water resources and hydroinformatics, and extreme events, natural variability and climate change.

For more information, visit: http://www.iahr2015.info

Stockholm World Water Week 2015

STOCKHOLM, SWEDEN, 23-28 AUGUST

This year is the silver jubilee year for World Water Week and the Stockholm Water Prize and the theme is "Water for Development". The Stockholm Water Prize will be announced in March 2015. Registration to attend the event begins April 15.

For more information, visit:
http://www.worldwaterweek.org

World Water Congress 2015 Registrations Still Open

Registrations are still open! As an IWRA member, you can benefit from reduced registration fees. The theme of the XVth World Water Congress is: Global Water, a Resource for Development: Opportunities, Challenges and Constraints.

Visit the www.worldwatercongress.com for more information and read the Congress Box on this newsletter on page 3.

ICID 2015

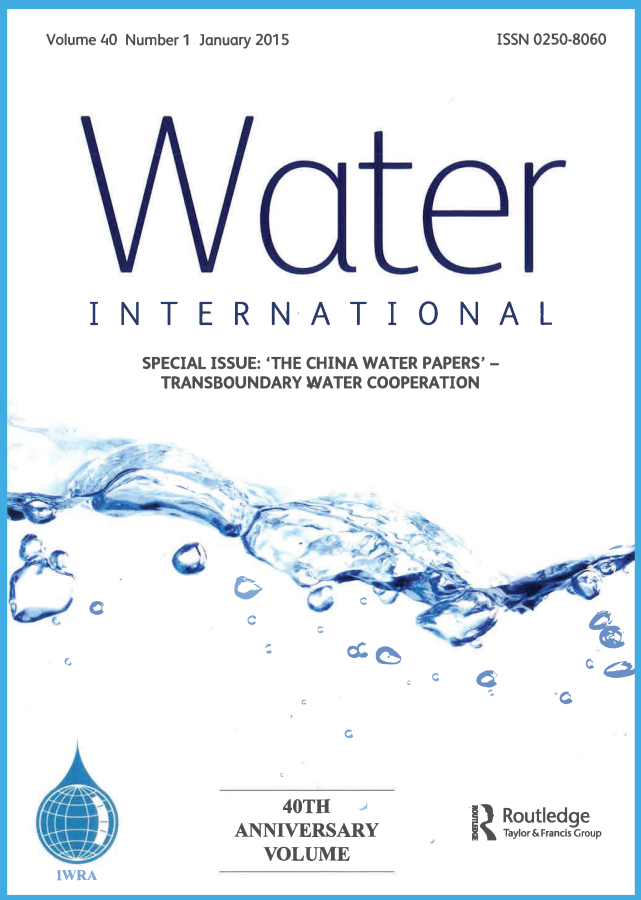
MONTPELLIER, FRANCE, 11-17 OCTOBER

Executive Director Tom Soo has joined the Scientific Committee and the Local Organizing Committee for the "Innovate to improve irrigation performance" Conference, which will be held in Montpellier by AFEID. The three main themes are:

- **Drip irrigation for water saving: the winning formula?**
- **What potential for wastewater use in agriculture?**
- **What governance for groundwater use in agriculture?**

For more information visit:
icid2015.sciencesconf.org/?lang=en

ANNIVERSARY



This year, *Water International* celebrates its 40th anniversary with the first issue published in 1975.
This first issue contained an editorial by IWRA's first President, Professor Ven Te Chow titled, "A Modest Beginning" where he explained the tremendous task ahead of publishing a journal with a completely new concept that caters to the field of water resources. Professor Chow reflects on the importance of the interdisciplinary aspect of the publications chosen for Water International and predicts the promising future of IWRA that we are working towards today. The newest issue is the first issue published for the 40th anniversary and its contents are outlined on the next page.

Professor Ven Te Chow
IWRA's first President

To read more articles from the 1975 issue of *Water International*, visit: www.tandfonline.com/toc/rwin20/1/1#.VOcOPEK5fzI

Water International *Editors*

2007 – Present
James Nickum (Editor-in-Chief);
Philippus Wester (Deputy Editor-in-Chief since 2012)

2006 – 2007
Raja Sengupta (Editor-in-Chief)

2002 –2006
Bruce P. Hooper (Executive Editor);
Evan Vlachos (Science Editor)

1998 – 2002
Benedykt Dziegielewski (Executive Editor); Slobodan Simonovic (Science Editor)

1994 – 1998
Nani G. Browmick (Editor-in-Chief); Misganaw Demissie (Editor-in-Chief)

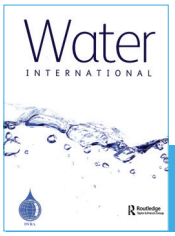
1986 – 1994
W. H. C. Maxwell (Editor-in-Chief)

1982 – 1986
Glenn E. Stout (Editor-in-Chief);
W. H. C. Maxwell (Technical Editor)

1980 – 1982
Leo R. Beard (Editor-in-Chief);
Wyndham J. Roberts (Managing Editor);
W. H. C. Maxwell (Technical Editor)

1975 – 1980
Ven Te Chow (Editor-in-Chief);
Wyndham J. Roberts (Managing editor);
W. H. C. Maxwell (Technical Editor)

1972 – 1975
Wyndham J. Roberts (Managing Editor)



PUBLICATIONS

WATER INTERNATIONAL
VOLUME 40, ISSUE 1
SPECIAL ISSUE: 'The China Water Papers'
Transboundary Water Cooperation

Introduction

- Editors' Introduction.
Patricia Wouters & Huiping Chen - PAGES 1-20

Articles

- One step at a time: international law and the duty to cooperate in the management of shared water resources. *Christina Leb* - PAGES 21-32

- The governance of wetland ecosystems and the promotion of transboundary water cooperation – opportunities presented by the Ramsar Convention. *Jing Lee* - PAGES 33-47

- Benefit-sharing and upstream/downstream cooperation for ecological protection of transboundary waters: opportunities for China as an upstream state. *Owen McIntyre* - PAGES 48-70

- Approaches to investment in Chinese transboundary waters. *Xiuli Han* - PAGES 71-86

- A new perspective on water governance in China: Captain of the River. *Liping Dai* - PAGES 87-99

- Mapping Asia's trans-boundary waters, with a focus on China (article in free access). *Vivian Louis Forbes* - PAGES 100-112

- China's southbound transboundary river basins: a case of asymmetry. *Mirja Kattelus, Matti Kummu, Marko Keskinen, Aura Salmivaara & Olli Varis* - PAGES 113-138

- Benefit sharing in the Mekong River basin. *Seungho Lee* PAGES 139-152

- An analysis of Turkey's water diplomacy and its evolving position vis-à-vis international water law. *Aysegül Kibaroglu* PAGES 153-167

- The UNECE Water Convention and the development of transboundary cooperation in the Chu-Talas, Kura, Drin and Dniester River basins. *Bo Libert* - PAGES 168-182

- Transboundary water management: lessons learnt from North America. *Velma I. Grover & Gail Krantzberg* PAGES 183-198

- Do good fences make good neighbours? Canada–United States transboundary water governance, the Boundary Waters Treaty, and twenty-first-century challenges. *Emma S. Norman & Karen Bakker* - PAGES 199-213

To read articles from this issue visit:
www.tandfonline.com/toc/rwin20/40/1#.VPcZHkJNvww

WATER INTERNATIONAL
VOLUME 40, ISSUE 2

List of articles

- The UN Peacebuilding Commission and the potential of water in post-conflict development, governance and reconciliation. *Andrea Beck* - PAGES 215-230

- Against the current: transboundary water management in small states on two continents.
Harlan Koff & Carmen Maganda - PAGES 231-250

- A perfect storm: the causes and consequences of severe water scarcity, institutional breakdown and conflict in Yemen. *Matthew I. Weiss* - PAGES 251-272

- Water allocation reform: what makes it so difficult?
Petra Hellegers & Xavier Leflaive - PAGES 273-285

The China Water Papers – transboundary water cooperation in Asia with a focus on China (III)

- Editors' introduction to The China Water Papers – transboundary water cooperation in Asia with a focus on China (III). *Patricia Wouters & Huiping Chen*
PAGES 286-296

- The human right to water and foreign investment: friends or foes? *Huiping Chen* - PAGES 297-311

- China's practice on the non-navigational uses of transboundary waters: transforming diplomacy through rules of international law. *Yanmei He* - PAGES 312-327

- Identifying China's transboundary water risks and vulnerabilities – a multidisciplinary analysis using hydrological data and legal/institutional settings
Yan Feng, Daming He & Wenling Wang - PAGES 328-341

- Water security in Himalayan Asia: first stirrings of regional cooperation? *Bjørn-Oliver Magsig* - PAGES 342-353

- Transboundary water cooperation on the Yarlung Zangbo/Brahmaputra – a legal analysis of riparian state practice.
Yang Liu - PAGES 354-374

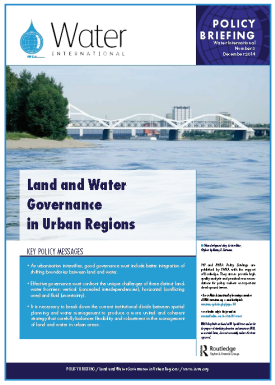
Book review:

- Key concepts in water resource management: a review and critical evaluation, edited **by Jonathan Lautze, Routledge** (Earthscan), Abingdon, UK and New York, USA, 2014, 131 pp., $49.95 (paperback), ISBN 978-0-415-71172-9
James E. Nickum - PAGES 375-376

To read more articles from this issue visit:
www.tandfonline.com/toc/rwin20/current#.VPcakUJNvww

PUBLICATIONS

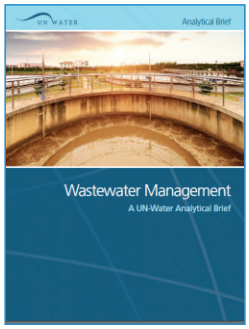
Policy Briefing and Webinar is Now Online



Policy Briefing No. 3: Land and Water Governance in Urban Regions and webinar presentations are now available online.

To read the policy brief, visit: www.iwra.org/doc/IWRA_Policy_Brief_December_2014.pdf
To download to corresponding presentations, visit: www.iwra.org/index.php?mainpage=223&page=264&subpage=

Wastewater Management A UN-Water Analytical Brief

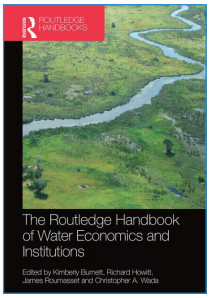


The timeline for the Millennium Development Goals (MDGs) is almost complete and the international community is beginning to focus on the Post-2015 Development Agenda. This has caused the realization of the importance of wastewater to the drinking water and sanitation agenda. As a result paying more attention to wastewater could change the current state of water quality issues globally.

With more information and research it has become clear that issues relating to wastewater management and water quality impact other sectors of development such as energy and food supply. Following this discovery, improved water quality as a means towards water security is taking center stage when developing the dedicated water goal for the Post-2015 Development Agenda.

To read more visit: www.unwater.org/publications/publications-detail/en/c/275896/

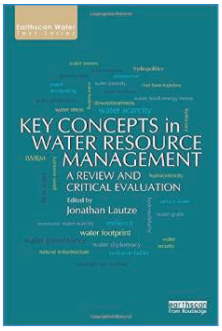
Routledge Handbook of Water Economics and Institutions



The continuing scarcity of freshwater worldwide highlights the need for improved water resource modeling and policy analysis. While existing research explores solutions so specific problems, there is still a lack of a complete framework that combines those various methods and principles.

In real world situations, socially efficient water does not generally occur with private decisions. This handbook outlines examples of mechanisms designed to promote efficient behavior and are taken from agricultural water use, municipal water regulation, and externalities linked water resources. Since gathering information is often expensive or inaccurate, the handbook presents standard optimization frameworks to allow coordination of costs, games and cooperation, and risk analysis. Case studies from the United States, Australia, Europe, and Canada are used to show the successes and challenges of establishing efficient water markets.

To read more visit:
www.routledge.com/books/details/9780415728560/



Key Concepts in Water Resource Management: A Review and Critical Evaluation

Terms related to water resource management such as water security, water productivity, virtual water, and water governance are often ambiguous and confusing. The book critiques the previously mentioned terms and other new and widely used terms in order to clarify their meanings and improve how we identify and overcome current water challenges. Specifically, this book explains what these terms mean, reviews their various interpretations, evaluates how they are measured, and discusses their value to the water sector.

To read more about this book or to purchase a copy visit: www.amazon.com/Key-Concepts-Water-Resource-Management/dp/041571172X

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