NEWSLETTER

Friday Jun 2nd

XVI World Water Congress
International Water Resources Association (IWRA)
Cancun, Quintana Roo, Mexico. May 29 - June 3 , 2017

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Water-Energy -Food Nexus

The aim of this High Level Panel was to demonstrate the extent of the interconnections between the water, energy, and food goal and highlight the lessons learned across various thematic and regional case studies and experiences. It was also centered around exploring possible tradeoffs for implementing the SDGs, and identifying holistic assessment criteria for multiple implementation plans at different scales. The panel further focused on discussing ways in which policy coherence and policy-science communication can be improved across sectors, and across scales.

The HLP brought together experts from diverse backgrounds and organizations including Global Environment Facility, The World Bank Group, Circle of Blue, Water Foundry, International Commission on Irrigation & Drainage, SEI International, Universidad Nacional de Cuyo, Universidad de Zaragoza, and Texas A&M University.
The session began with remarks by

Prof Rabi Mohtar from Texas A&M University on the value of the Water-Energy-Food Nexus as a holistic, interdisciplinary, cross-sectoral platform that builds upon strong pillars of IWRM, water productivity, and energy efficiency. He also emphasized the role of the platform as one with equal distance from the water, energy, and food communities, and ways it could catalyze an inclusive dialogue informed by analytics, developed within the scientific community, and communicated among different stakeholders.

The first panel covered Global and Regional Challenges with SDGs implementation in reflection of the above issues. Panelists highlighted the need to reframe the language of nexus stresses into a more positive one which focuses on the opportunity for business and for driving economic development, social wellbeing, and innovation. This would allow us to bring to the table stakeholders who are not part of the discussion today. There was also a focus on the objectives of ensuring water and food for all. The existing international instruments, such as SDGs and Human Rights goals, overlap with WEF nexus objectives and facilitate effective resource management.

The second panel further focused on national and local cases and was moderated by Carl J. Ganter from Circle of Blue, who focused on the human face of water and the need for effectively communicating its story. The panelists discussed major challenges for implementing the nexus solutions including poor quality data, lack of proper governance and institutional capacity. There was also a focus on the diversity of the players involved and their different priorities and value systems. Panelists emphasized the need to establish regulatory frameworks and generate incentives to improve the efficiencies across sectors, which will promote more synergies and co-investment.

YOUTH

This HLP panel was unique in dedicating time to a statement representing Youth Organizations with regards to their involvement with the future of Water-Energy-Food Nexus research and implementation. A statement by Amrita Guatam asked for the youth to be included in decisions regarding pushing the nexus discussion and implementation forward. "Achieving WEF is a long-term goal and youth have a role to play".

PROGRAM

Friday Jun 2nd

Hours	Salon Gran Cancun	Cozumel 1	Cozumel 2	Cozumel 3	Cozumel 4	Cozumel 5	Xcaret	Salón Mujeres	Coba
9:00 - 10:30			SS-23(A): Enhancing irrigation productivity and profitability in small scale irrigation schemes lessons from three continents	RS-11. Water Security in a Changing World: Managing Risks	SS-11: Understanding the Forest-Water Nexus: a new global monitoring framework and tool	SS-5: Regulation and Transparency for Water and Sanitation Services in countries with lack of them	SS-62: Towards SDG implementation – ensuring water quality from source to sea	RS-38. Stakeholder Participation	SS-42(A): The scientific underpinnings of global water law instruments: the UN Watercourses Convention, the UNECE Water Convention, and ILC Draft Articles on Transboundary Aquifers
10:50 - 12:20		RS-40. Water and Sustainable Growth: Water-Food-Energy Nexus	SS-23(B): Enhancing irrigation productivity and profitability in small scale irrigation schemes lessons from three continents	RS-42. Water and Sustainable Growth	RS-36. Water Sanitation and Health	SS-67: A "ts' ono' ot" cosmovision: Interdisciplinary science and policy in the Yucatan Peninsula's sinkholes	SS-44: Sustainable Watersheds: Emerging Economic Instruments for Eater Security	SS-78: Introducing the World Water Data Initiative: How water data can help achieve the Sustainable Development Goals	SS-42(B): The scientific underpinnings of global water law instruments: the UN Watercourses Convention, the UNECE Water Convention, and ILC Draft Articles on Transboundary Aquifers
12:40 - 14:10	Closing Ceremony								
Lunch*									
15:30 - 17:00	IWRA General Assembly								

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International Water Resources Association (IWRA)
Cancun, Quintana Roo. Mexico. May 29th -June 3rd 2017.

Awards

Crystal Drop Award
Salman M. A. Salman

Crystal Drop Award
Hilda Cecilia Tortajada Quiroz

2017 Ven Te Chow Memorial Award
Vijay P. Singh R. Rabi Mohtar accepting on his behalf.

Distinguished Honorary Members
Dogan Altınbilek. Elcin Kentel accepting on his behalf

Distinguished Honorary Members
Lilian del Castillo Laborde

2016 Water International Best Paper Award and 2016 Water International Honourable Mention
Kevin Wheeler, Mohammed Basheer, Zelalem Mekonnen, Sami O. Eltoum, Azeb Mersha, Gamal M. Abdo, Edith Zagona, Jim Hall, and Simon Dadson
For their paper entitled
"Cooperative filling approaches for the Grand Ethiopian Renaissance Dam

2016 Water International Best Paper Award and 2016 Water International Honourable Mention
Margaret O. Wilder, Ismael Aguilar-Barajas, Nicolás Pineda-Pablos, Robert G. Varady, Sharon B. Megdal, Jamie McEvoy, Robert Merideth, Adriana A. Zúñiga-Terán & Christopher A. Scott
For their paper entitled
"Desalination and water security in the US-Mexico border region: assessing the social, environmental and political impacts"

2015 Water International Best Paper Award
Mirja Kattelus, Matti Kummu, Marko Keskinen, Aura Salmivaara & Olli Varis. Torgny Holgrem accepting on their belalf
for their paper entitled
"China's southbound
transboundary river basins: A case of asymmetry"

2015 Water International Honourable Mention
S. E. Galaitsi, Annette Huber-Lee, Richard M. Vogel & Elena N. Naumova
for their paper entitled
"Using water insecurity to predict domestic water demand in the Palestinian West Bank"

2014 Water International Best Paper Award
Marian J. Neal (Patrick)
for her paper entitled
"The cycles and spirals of justice in water-allocation decision making"

2014 Water International Honourable Mention to
Katie M. Meehan & Anna W. Moore
for their paper entitled
"Downspout politics, upstream conflict: formalizing rainwater harvesting in the United States"

Water Quality: Managing Contamination

A fascinating session on wastewater treatment highlighted innovative physical methods for treatment as well as important regulatory considerations surrounding managing water quality and chemicals in wastewater. Two separate methods for filtering wastewater were presented by Kristopher Still and Margarita Loredo and Stephanie Wieck presented on limitations of regulatory risk assessments for chemicals.

With the development of enzymes in wastewater treatment sciences, research focused on understanding the complex wastewater environmental impacts from enzyme activity. His findings identified enzymes that are effective in reducing pollutants in wastewater and found that Inherent enzymes' activities vary both spatially and temporally. It was also stressed how important absorption is in effective wastewater treatment and the synthesis and characteristics of a new

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The research that Stefanie presented inventoried chemical products in residential areas of Germany, in order to characterize effluent to treatment plants and determine to what degree biocidal active substances are entering the wastewater treatment system while not falling under EU regulations. Results found that personal care products and washing products outnumbered biocidal products. These findings suggest that regulations in the EU are not addressing the right products, and that there is an underestimation of risks considered by regulatory agencies. It was thought that it is too complex to manage all of these waste products in current risk assessment concepts, and so a proposed solution was the development and use of more sustainable biocides.

While the presentation of scientific solutions was reputable, discussion of the session led to a conclusion that public education is a must in communities in order to better eliminate products coming into the wastewater treatment plant in the first place.

Water Ecosystems and Physical Regimes

Water quality and quantity are two determinative factors in predicting the resilience capacity of regional ecosystems. An increase in ecosystem resiliency decreases the risk of loss in commodities that any given regional ecosystem provides for human consumption. Inversely, a decrease in ecosystem resiliency increases the risk of loss in commodities. Therefore, it is crucial to understand the effects of water quality and quantity on regional ecosystem resiliencies.

The entirety of the water cycle affects ecology in many ways. Being able to predict rainfall is helpful in developing plans for future water works and the quantity of future water availability. Part of that prediction is a water return period. Localities can utilize annual rainfall data to predict the return periods in tailored increments. Gauss's law is used to find a standard deviation after averaging the rainfall data. From this created normal bell curve, a confidence interval can be established for future water availability timelines.

Further, changes in the quality of the water can diminish or enhance an ecosystem's resiliency capacity. Surface water and aquifers alike are drastically different in water quality. Although aquifers tend to have some capacity to filter contaminants, some aquifers are less capable of doing so and these aquifers are more susceptible to contamination. This diminished water quality will have a negative effect on the regional ecology's resiliency capacity. Generally, a decrease in water quality leads to a decrease in resiliency capacity.

Resilience of Coastal Watersheds in Latin America and the Caribbean

This session stressed the importance of cooperation between stakeholders and researchers in regards to coastal watershed management in Latin America. It also focused on the need for accurate data for evidence-based solutions and policy making.

An introduction was given by Dr. Leonardo Piccinetti, who stressed the importance of collaborative work in Waterclima LAC projects. Resilience Assessment has proven to be attractive partly because it provides another way of addressing longstanding and important challenges, such as sustainable development, climate change adaptation, and addressing vulnerability. Reliance Assessment also offers a way to bring different disciplines and perspectives under a single conceptual umbrella.

The second speaker, Dr. Aldo Ramirez, shared his experiences assessing the vulnerabilities regarding water resources in Baja California Sur, Mexico. He stated that water vulnerability should be addressed, and that researchers should investigate how water vulnerability will be enhanced by climate change. He concluded that the scientific consensus on climate change should induce urgent action across the world. However, various uncertainties regarding climate change predictions make water management difficult.

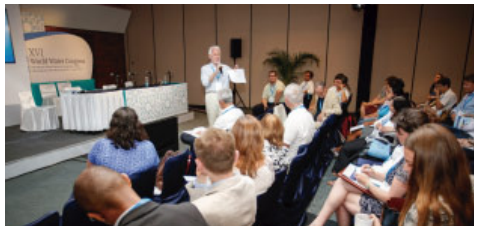
Claudia Galleguillos, from Fundación Chile, presented several case studies of ecosystem services under threat in coastal Latin America. She also presented the perspective of Fundación Chile regarding the valuation of environmental services. Private sector participation should compensate the ecosystem services that are affected by the agricultural sector. Fundación Chile aims to construct a conceptual model of the ecosystem by identifying functions and processes, local problems, and existing management tools.

Dr. Laura Benegas from CATIE (Centro Agronómico Tropical de Investigación y Enseñanza) presented on operational resilience and medium-term planning in Haiti. Good water management and climate change prediction were some of the topics that were addressed. In Haiti, local stakeholders agreed on perceptions and predictions of the effects of climate change. Dr. Benegas also presented CATIE's ongoing work on a Coastal Management Plan (CMP) that will contribute to better social, environmental and economic resource management from local stakeholders.

The session concluded with an emphasis on the importance of cooperative work based on evidence that seeks to strengthen local communities. It is expected that current work will inspire similar projects in the future.

Training In Hydro-diplomacy: Legal And Institutional Aspects Of Water Resources Governance-From The International To The Domestic Perspective

According to UN Water, 148 countries have territory that fall within a transboundary river basin. Negotiating across river basins, with upstream, downstream, or co-riparian water users can be complex and often times includes both conflict and cooperation. Therefore, leaders must be able to conduct adequate hydro-diplomacy to manage water for the present and future. In this session, a training series created in partnership with the UNESCO International Hydrological Programme, known as the Hydrodiplomacy, Legal and Institutional Aspects of Water Resources Governance: From the International to the Domestic Perspective, was provided to participants to guide discussions on negotiations and international water law theory and provide practical group exercises. The new training manual is available for negotiators, national leaders, and decision-makers to be able to interpret equitable and reasonable transboundary water treaties. Another goal of the training is to educate water law practitioners on how to translate international transboundary water laws through the domestic legal framework. International water laws are considered customary whereas domestic water laws are codified and enforceable; a key development for proper transboundary water management. The session ended with a stimulating discussion on the interpretation of transboundary water laws from Zambia, Namibia, and Vietnam. Water lawyers, scientists, and policy-makers with an interest in transboundary water negotiations can follow the Programme for more information or any upcoming training opportunities.



Hydropower Development and Reservoir Operation

Maximizing the potential benefits of water resources in a sustainable way is a major challenge. Currently, hydropower generation constitutes a significant portion of these benefits, especially for developing countries. Hydropower is a domestic and renewable energy source with less environmental impacts compared to most thermal sources.

There are a variety of common environmental constraints to hydropower, such as minimum flows and maximum ramping rates. Transmission system operators, river basin authorities, and hydropower producers need to reach multilateral agreements regarding the implementation of environmental constraints in order to avoid potential social and legal conflicts.

During the session, an analysis of pumped-storage in a multi-reservoir hydropower plant system in the Coruh Basin of Turkey was discussed. Hydropower is the largest renewable energy source to the energy budget of Turkey, which is very important because Turkey is highly dependent on foreign energy sources. Therefore, Turkey will benefit from sustainable and effective operation of pumped hydropower systems.

Although hydropower is highly consumptive due to evaporation, it should not be disqualified as a valuable energy source. After all, dams ensure a consistent water supply between wet and dry seasons. The potential benefits of hybrid systems, such as floating solar panels in the hydropower reservoirs, were discussed. Advantages, such as minimized water loss due to evaporation, and disadvantages, such as deteriorating water quality in the reservoir, were discussed with the audience.

Water Futures and Solutions (WFaS) - A Regional Initiative for the Americas

Where are we going to be in 2050 in terms of water demand and supply? Driven by this question, the International Institute for Applied Systems Analysis (IIASA) initiated a cross-sector collaborative global project called 'Water Futures and Solutions' (WFaS) in 2013. A regional initiative for the Americas, the project aims to progressively reduce the risk of water stress in the future. Since 2013, it has conducted integrated research and modeling towards a water knowledge hub of regional and global frameworks. These will guide policies and practices to ensure water security, through coalitions between scientists and other stakeholders. Frameworks are designed specifically considering how water demand and supply change over time in different geographical locations. The projections from the project estimate up to 2 billion additional people living in the world in 2050 and great increases in water demands in multiple sectors. The successful first phase of the project produced frameworks which help visualize the water scarcity scenario for multiple countries.

In the discussions of this special session, the participants introduced regional cases as pathways for generating solutions with the WFaS project. These focused on Latin America and community-level initiatives that enhanced water communication, education and empowerment. Key considerations for the project include how to finance solutions, maintenance of sustainable water infrastructure, the key role of partnerships among multiple stakeholders, as well as the importance of thinking strategically about the role of women and youth in water management.

Charges Versus Buyback: Who pays for water ecosystems restoration?

Even though water systems may be separated geographically and economically, there are underlying similarities that many water scarce regions share. The caveat to this is there is no single policy or economic solution to solve every water scarcity problem. This panel was focused on economic incentives to help in solving water scarcity issues.

To start, it is important to understand the legal framework in the locality experiencing the water scarcity issues. Some regions do not charge for the environmental and natural resource costs associated with using the water, and only charge for the actual costs of acquiring the water and transporting the water, through infrastructure development and maintenance, to the user. This leaves a gap in the cost of water as a commodity and what the end user is actually paying for the use of the water. Removing that gap would be one step in moving to a price of water that represents the actual economic value of the resource.

Two other regulatory methods are a buyback program and investments in efficiency, which can be used in conjuncture with one another or as singular programs. The buyback program enables the purchase of water from consumptive users to give it back to another user, usually the environment for base flows of surface waters. Investments into efficiency include modernizing irrigation methods to increase the ratio of yield to units of water used, leaving more water for other uses while not affecting the original users' needs. Both methods have their issues. Buyback programs have a problem with measuring the actual environmental benefits received. Additionally, efficiency investments tend to reward poor performing farmers while penalizing users who have already invested in efficiency equipment.

Mark Person

Professor & Hydrology Program Head at New Mexico Institute of Mining & Technology

Has an offshore aquifer been developed?

There has not been an offshore aquifer developed as of now, but it is inevitable with population growth. This is not a new idea. The Phoenicians discovered offshore freshwater around 3,000 years ago.

Will offshore aquifers relieve the "water crisis"?

They represent a back up system for coastal systems in times of drought. While there are huge volumes of offshore freshwater, the production of them will not be sustainable because they are not rechargeable. Additionally, development is very costly.

What are the greatest challenges to offshore aquifer drilling?

The economics and legal aspects. Developing offshore freshwater is very costly. We are working on a drilling permit right now for three exploratory wells and it will cost $9 million. Then you have to run a pipeline to the shore and you may have to build a desalination plant.

Once offshore aquifers are developed and the water is pumped to land, the federal government will want to regulate it. There is also the issue of who owns the freshwater. If the oil industry begins developing freshwater aquifers, there may be a tension with the coastal cities who will likely want the water.

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Quianbao Qin

Vice Dean of Chinese Society of Environmental Law at Wuhan University

What makes the case of water insecurity China a unique case?

China is the country with the largest population in the world; because of this large stressor, water amongst the population is very imbalanced. Qin comments that their bodies of water that are polluted make water even more scarce. "China is experiencing a very intense time of social-economic development," this development is requiring a considerable amount of water, also contributing to water stress.

Are there immediate laws or policies to be implemented in order to relieve water insecurity, especially in drought stricken areas of China?

We are currently revising the environmental pollution control law. "We are revising this law to become more stringent, to increase fines for pollution, and to ensure punishment for violations." Qin affirms that this law will help maintain water quality, providing a better quality source of water for the population.

How is the public in China engaging in environmental litigation in order to improve its water security?

Environmental litigation is "fired by the general public" on behalf of the general public and NGO's. One indirect way the public is involved is when lawsuits are brought to pollutants through NGOs. A direct way that the public is involved is by bringing complaints and discussions before environmental protection agencies.