



## WATER AND THE SUSTAINABLE DEVELOPMENT GOALS (SDGs)

This panel set the stage for the entirety of the World Water Congress with their discussion about the six Sustainable Development Goals (SDGs) as they relate to water. SDGs are a list of priorities for the United Nations and various countries to focus on while constructing policies in the future. A recurring belief among the panelists is the need to approach the 6 SDGs horizontally and connecting, rather than vertically in separate silos. The panel focused specifically on how SDG 6 affects all SDGs. SDG 6 is written as: "Ensure availability and sustainable management of water and sanitation for all." Three pillars interact within SDG 6: Society, Economy, and Environment. Every action taken to benefit one SDG will have a domino effect, both positive and negative, on other SDGs. Preferably, policy addressing one SDG should work in synergy with other SDGs, rather in conflict.

A great example of this interaction is found in Latin America with the construction of the third largest wastewater treatment plant in the world. This treatment plant ensures cleaner water within streams. However, regional farmers view non-treated waters as being more beneficial for crop production than treated water. Although there are more economically benefits for the farmers, and more ecological beneficial to the environment, it created a social problem within the farming communities. This is an example of the interaction, not only with the multiple SDGs, but the interaction of society, economy, and environment.

To be more successful in reaching goals, SDGs must focus not only on the governments, but on the private sector as well. Doing so, SDGs must work in and out private businesses.

Inside companies, bottom line is affected by increasing the efficiency of supply chains. Outside a company, entire water basins are affected by working across institutions, public and private, where efficiency is gained. Businesses may know and understand their water risks, but it is important to help businesses to implement changes.

Further, there are vertical challenges to address in addition to these horizontal challenges. The SDG's scale is global, yet the SDG's impacts are individual. Likewise, water is global issue but it is a local resource. The same interactions of the social, economic, and environmental pillars work on both, local and global scales.

Ultimately, a successful implementation of all six SDGs, will require scientists and policymakers to work together. Nations will be more successful in achieving the SDGs by 2030 if there is cooperation between the scientific and policy spheres and if they approach the SDGs as



# PROGRAM

## Tuesday May 30rd

Hours	Salon Gran Cancun	Cozumel 1	Cozumel 2	Cozumel 3	Cozumel 4	Cozumel 5	Xcaret	Salon Isla Mujeres	Coba
9:00 - 10:30		RS-4 Building Capacity	SS-55(A): Shared Waters of North America: Scientific water resources assessment	RS-7. Water Security in a Changing World: Climate Change	SS-75. Peace for Water: The Global High Level Panel on Water and Peace's Vision	SS-71. Making investments on multi-purpouse water infrastructure fit to finance	SS-60: Capacity building in the water sector: Creating and developing training centers for waters professionals	R2-23. Water Ecosystems and Physical Regimes: Groundwater Resources	SS-10: Smart Water Management (SWM): Bridge to WGG & SDGs - the technological innovation needed for "Water for all"
10:50 - 12:20	HLP: Water and Climate								
12:40 - 14:10	HLP: Water and Business								
Lunch*									
15:30 - 17:10		RS-37. Water Sanitation and Health	SS-55(B): Shared Waters of North America: Policies and Issues on Transboundary Water Resources	RS-9. Water Security in a Changing World: Conflict and Cooperation	SS-41(A): Water Security in the Americas	SS-61: The Legacy of COP22: Implementing the Global Climate Action Agenda in the water sector	SS-27: Case Studies in the Challenges of Water Sharing Between "Upstreamers" and "Downstreamers"	RS-19. Water Policy and Governance: Transboundary Aquifers Law and Policy	
17:20 - 18:50		RS-12. Water, Sanitation, and Health: Ensuring Drinking Water	SS-55(C): Shared Waters of North America: Integration of Science and Policy Cooperation	RS-13. Water Policy and Governance: Economics of Water Governance	SS-41(B): Water security in the Americas	SS-46: Building a Green Infrastructure Agenda for the Latin American Water Sector	RS-17. Water Policy and Governance	SS-73. The First Asia International Water Week: Asia Solution for Water	





## The XVI World Water Congress seeks to assure global water availability through sustainable management

Roberto Ramírez de la Parra, General Director of CONAGUA, acknowledges Mexico's commitment to the international community by serving as the venue for this high-level meeting on water development in collaboration with the International Water Resources Association (IWRA) and the National Association of Water and Sanitation Companies (ANEAS)- the premier meeting on the link between science and policies.

He highlights that this meeting congregates the world's leading specialists on water resources of all sectors from 70 countries. The meeting will contribute to the global objectives and strategies related to the sustainable development goals in relation to the United National 2030 Water Agenda, which remarks the need to assure water availability and sanitation through sustainable management.

After opening the congress remarks, the secretary Rafael Pacchiano Aleman highlighted the importance of governments taking decisions based on the best available scientific knowledge. This approach ensures that environmental challenges will be faced in a proper direction, especially climate change, which particularly affects availability of water resources. Patrick Lavarde, IWRA president, says that one of the main purposes of the congress is to compile experiences, promote discussion and present ideas about water policy and science in hopes of governmental adoption and implementation.

The IWRA president delivered the XVI special award to ANEAS president, Ramon Aguirre Diaz and Roberto Ramirez de la Parra, General Director of National Water Commission of Mexico - CONAGUA.



Quintana Roo Governor, Carlos Joaquin Gonzalez, indicated the importance of strong relationship between scientists and politicians to assure a more stable future in water resources management.

Other attendee at the congress was Municipal President of Benito Juarez, Remberto Estrada Barba.

## Towards a special issue of water international on the OECD principles on Water Governance

This Special Session highlighted the need to share the responsibility of water governance and to look across scales and across sectors. The Organization of Economic Co-Operation and Development (OECD) began the session with a discussion on an upcoming special issue article in the Journal of Water International on the OECD Principles on Water Governance. The OECD Principles on Water Governance is a multi-stakeholder driven process backed by the Ministries at the OECD Ministerial Council Meeting, and endorsed by 42 countries and 140+ major stakeholder groups. These principles aim to bridge science and policy through working with governments and ministries, with the goal of achieving good governance. The special session highlighted the benefit and need for water practitioners to publish their lessons learned from using the OECD principles. This necessary practice takes policy lessons to the academic platform to provide a necessary dialogue for water governance.

The special issue article on the OECD Principles on Water Governance is a two-part edition that gives stakeholders the opportunity to share their anecdotes on water governance in the framework of these principles.



### The articles In this issue aim to

- (I) foster the science-policy interface in practice
- (II) provide a tangible output for closer cooperation between IWRA and the Water Governance Initiatives (WGI) and
- (III) provide a scientific-base to the principles.

The first section allows authors to discuss the stakeholder engagement in science-policy processes. Articles cover the implementation gap in water services, economic incentives for water governance, and water governance as social learning. The second section gives lessons from the practice of OECD principles on flood protection, existing frameworks in Europe, Asia Pacific, Africa, and the Americas, and water governance in France. As an example, during the session an article was presented by Pierre-Alain Roche. He evaluated water governance in France and milestones to IWRM from 1964-2016, in which he believed that "France failed by progressing a lot". Water governance in France was driven by the decentralization of water and changing periods of concerns.

Discussions following the session considered IWRA as an appropriate concept that considered not only governance but management, especially when considering the process of engaging the public. Other topics included the need to be flexible with the means to good governance and the idea that often the top down approach does not work within water governance.

...of international water resources, responsible institutions, knowledge and relevant stakeholders.



## Innovative Water Resources Management and Green Development in China

There has been a change of development mode in China, aiming for integrated development through the adoption of eco-friendly and science-based policies. The central government is prioritizing water conservation by improving control over water consumption and by adopting frameworks such as environmental flows, ecological regulation through water demand management and the joint operation of reservoirs, and ecological compensation with protector-beneficiary compensations, for instance. The orientations for the development of new policies are: Ecological Health, Economic Development, and Water Resources Sustainability. The focus on regulation has led to the enforcement of water permits management, establishment of water drawing quotas, renovation of pipelines and water serving tools for water use efficiency. There has been an increase in non-traditional water sources such as reuse, recycled and desalinated water, and the change in the development mode is mirrored in numbers and policies such as:



The Speakers highlighted the policies adopted by the Central Government of China to ensure control of water management in the country and promote the country's transition to a sustainable development mode. To justify the change, Speakers discussed how China accounts for 20% of water availability in the world, but faces several challenges related to:

- ◆ **Water shortages due to uneven spatial distribution of water resources;**
- ◆ **Water pollution as a result of increased load in the natural resources due to human activities;**
- ◆ **Ecological damage with climate change and increasing water supply**
- ◆ **Flood and drought**
- ◆ **Rivers dry up**



## 52% increase in water reuse in Beijing;

- ◆ **8 million hectares of farmland with water efficient irrigation developed,**
- ◆ **Progressive water pricing for industrial use;**
- ◆ **Rewarding system for water saving actions;**
- ◆ **Establishment of River Chiefs System for river management and engaging provincial, municipal, county, and township governments with the promotion of information sharing and work supervision. The system aims for "One policy for one river and One policy for one lake" practices.**

## Water Policy and Governance management

During the Presentation of the Online Training Course on the Greening of Water Law : Implementing Environment-friendly Principles in Contemporary Water Treaties and Laws, three of five modules were explored. This online training was organized as a result of The First International Environment Forum for Basin Organizations which was created in 2014 by UN Environment (formerly UNEP) in Nairobi 2014. Modules A, C, and E were explored during the sessions. Module A covers the Greening of Water law, including the trends and risks involved. This includes competition and conflicts over shared freshwater resources and international water law regarding the non-navigation uses of international watercourses. Module E answers the question: What is groundwater, and how does it function? Module C explores the obligation to prevent, reduce, and control pollution in international law. The group exercises of the training course are based on the basin agreements. The exercises involve drafting recommendations to solve the disputes, after learning about the water law in the region. It brings to light the sources of problems, which include a lack of communication with the local communities and lack of respect for the national laws.

## Water Ecosystems and Physical Regimes

During the panel on National Water Reserves Program in Mexico: Allocation of Water for the Environment and Accomplishment of Multiple SDGs, the key message was that ecological flow needs to be a part of public policy consideration in basin management. This need is expected to be filled and justified in other parts of the world through Mexico's National Water Reserves Program, where they consider ecological flow in basin management through developing water reserves. In 2005, the Alliance between WWF—Fundación Gonzalo Rio Arronte was created to propose new water management models in Mexico. In developing a new model, the Alliance aimed to address the following question: how will we strengthen Integrated Water Resources Management in order to avoid water scarcity and conflicts in Mexico? The approach aims to develop water reserves in order to provide water for future generations. A water reserve is a volume of the total water availability that can be allocated in a basin restricted for a specific purpose. The National Water Reserves Program is Mexico's effort to develop sustainable water resources for future generations. Recognizing that public policy does not typically consider ecological flow, an objective of developing the new model was to acknowledge environmental science when considering protecting water for the future.



## Water Security in a Changing World: Alternative Sources of Water

Alternative sources of water that were discussed in this panel were desalination and waste water treatment. Speaker Ziolkowska, who presented on "Desalination Technology in the US: Potentials for Economic Growth and Sustainable Water Supply" talked about the development of a geospatial system in desalination. The main challenges of desalination are the cost is not economically feasible for agriculture, it produces CO2 and salt run-off in environmental perspective, and issues with getting permits for desalination plants in institutional perspective. Speaker Jessica Rodrigues Pires da Silva who presented on, "Boosting direct potable reuse: measures to be taken to help shorten the knowledge gaps and uncertainties surrounding this technology" mentioned that using wastewater as an alternative source of useable water. Most vulnerable communities have only a single source of water, which are climate dependent; waste water treatment plants, a steady source, is not climate dependent and relatively cheap (using the above process).

The ways of improving success of waste water projects are: altering language to market the idea to the public better; evaluating economic feasibility; and choosing the best technology for your specific situation.



## Water Security in a Changing World: Conflict and Cooperation

In this panel, the key theme was transboundary water conflicts must be solved by cooperation between countries. Without cooperation, nations cannot reach mutually beneficial solutions.

The panelists discussed several examples of conflicts between nations.

Bolivia and Chile have had a transboundary dispute over the water flowing from the Silal, as it is known in Bolivia, or the Siloli, as it is known in Chile. Neither country wishes to obtain the science behind the transboundary water course in which they fight, because the science may determine ownership over the water in a way one country would refuse to accept.

The United States and Mexico have shown great examples on conflict and cooperation with transboundary water issues in the Rio Grande and Colorado Rivers. However, drought has been a source of tension around the Rio Grande.

The Nile River supports Egypt's economy, yet 80% of the Nile's head waters come from Ethiopia, which has not owned its own water for decades. Until the recent political unrest in Egypt, the country had veto power over any dam built on the entire Nile River. This produces problems for Ethiopia, a country with a growing population that has a need for building dams. Ethiopia has continued building the dam, resulting in a power shift in that may knock Egypt from the top.



# Torgny Holmgren Executive Director, Stockholm International Water Institute (SIWI)



**What areas of sustainable development, as it relates to water, need the most attention in order to help achieve international peace?**

I think it is about how countries cooperate jointly, I think that is the most important part. Water can connect countries that might enter into a conflict.

From a water angle, I think across the board the SDGs are important. As I mentioned in the forum, it is very important that we link the different SDGs together. Otherwise we will end up in silos.

**What positive impacts have you seen since the inception of the UN's Sustainable Development Goals?**

I have seen, from my own country, a tremendous interest from business, at least the big businesses that have the capacity. They have actually appointed different members of their senior management teams to be advocates, or at least a spokesperson for different SDGs. At least some of the businesses are

focused and giving priority to the SDGs and system development. City mayors, business leaders, and we need to also get the small businesses and medium sized enterprises. I think citizens of society are more or less there. But at the same time, governments or institutions like ours need to reach across the SDGs.

**What is one way to bridge the gap between science and policy?**

We arrange the world water week every year. We bridge, we bring in scientists, 500 of them, and policy makers. I think it is also to reach out to these different communities. Scientists can be very smart and on top of knowledge, but if they cannot explain it to policy makers, if they cannot interact, I think they miss an opportunity. At the same time, I think, policy makers need also to be more aware and interested to get access to science and what is coming out of science. There is a divide between science and policy making, and we need to bridge that gap, through events like this.

# Gina S. Warren on "Modeling for Small Hydropower: Policy and Technology"

**What is the Barefoot Project?**

It is a project in India; an example where local government brings in Women, grandmothers (only for women) and trains them to install and maintain solar power. There is another project in Pakistan called the technical education and vocational training authority, which is a program that trains local workers to install and maintain small hydrological power. The project increases jobs in the area, increases access to energy, and the costs/benefits are completely local.

**How would you suggest bridging science and policy?**

We need think-tanks and NGOs that have economists, lawyers, policy makers and scientists all in one place. There is a huge gap in wanting to implement hydro power and the science behind the feasibility of implementing a hydrological system on a small river.

**How does the water-energy nexus play into the way society sees water?**

For rural electrification, the main use for water has been for agriculture. This means there has historically been a conflict of using water so as not to infringe on agricultural use. Small hydro is a non-consumptive use of water so it can peacefully co-exist with agriculture while providing power to an area.

**Is lack of data more widespread than people know?**

YES, lack of knowledge and data are two main areas where we need improvement. This plays into communities who may be against providing access to power. The benefits for electrification are that women have free time to learn and are not spending all their time gathering wood for cooking and water for drinking.

