

# **WATER AND SOCIETY**

8<sup>th</sup> World Water Forum  
Results and Discussions  
**Volume 3**

## 2022 Regulatory Agency for Water, Energy and Sanitation of the Federal District - Adasa



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The information contained in this publication is the result of quantitative and qualitative analyses of the documents generated during the sessions held at the 8th World Water Forum and was generated through means of sampling all available material using a method developed to systematize the research under the theme “*Water and Society*”.

The authors of this volume hereby declare that the content presented solely and exclusively reflects the analyses and opinions developed with support from the teams involved, the literature cited, and an analysis of the material available and therefore they do not represent any view or position taken by Adasa with regards to the themes addressed.

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## List of Acronyms and Institutions

- ADASA – Regulatory Agency for Water, Energy and Sanitation of the Federal District (Brazil)
- ADB – Asian Development Bank
- ADE – Algérienne des Eaux (Algerian Water Company)
- ANA – National Water and Sanitation Agency (Brazil)
- AQUASTAT – Global Information System on Water Resources and Agricultural Water Management
- ASCE – American Society of Civil Engineers
- CAASD – Corporación del Acueducto y Alcantarillado de Santo Domingo (Santo Domingo Aqueduct and Sewer Corporation)

**CICOS** – Commission Internationale du Bassin Congo-Oubangui-Sangha  
(International Commission for the Congo-Oubangui-Sangha Basin)

**COVID-19** – Corona Virus Disease 19

**CRED** – Center for Research on the Epidemiology of Disasters

**ECOSOC** – United Nations Economic and Social Council

**ENA** – Estudio Nacional del Agua (National Water Study) – Colombia

**FAO** – United Nations Food and Agriculture Organization

**FIOCRUZ** – Oswaldo Cruz Foundation (Brazil)

**FWII** – Four Worlds International Institute

**GETRACO** – Gestion Transfrontalière de l’Eau dans le Bassin du Congo  
(Transboundary Water Management in the Congo Basin)

**IWRM** – Integrated Water Resources Management

**GIZ** – Deutsche Gesellschaft für Internationale Zusammenarbeit (the  
German Corporation for International Cooperation)

**GWA** – Gender and Water Alliance

**GWP** – Global Water Partnership

**HLPE** – High-level Panel of Experts on Food Security

**HLPF** – High-level Political Forum on Sustainable Development

**IA** – Aridity Index

**IACAL** – Water quality potential change index

**IAEG-SDG** – Inter-Agency and Expert Group on SDG Indicators

**IARC** – Water not returned to basin index

**ICA** – Water quality index

**ICAS** – Interstate Council on the Problems of the Aral Sea Basin

**IDEAM** – Instituto de Hidrología, Meteorología y Estudios Ambientales (Institute  
for Hydrology, Meteorology, and Environmental Studies) – Colombia

**IDMC** – International Displacement Monitoring Center

**IEN** – Indigenous Environmental Network

**IEUA** – Water use efficiency index

**IFAD** – International Fund for Agricultural Development

**IFAS** – International Fund for the Aral Sea

**IHES** – International Hydrologic Environmental Society

**INCRA** – Instituto Nacional de Colonização e Reforma Agrária (National  
Institute for Colonization and Agrarian Reform) – Brazil

**INE** – National Institute for Statistics

**INWTC** – International Network of Water Training Centers

**IPAM** – Instituto de Pesquisa Ambiental da Amazônia (Amazon  
Environmental Research Institute) – Brazil

**IPHE** – Ecosystem water pressure index

**IRH** – Water retention and regulation index

**IRTCES** – International Research and Training Center on Erosion and Sedimentation

**ISI** – International Sediment Initiative

**IUA** – Surface water use index

**IVH** – Supply vulnerability index

**IWA** – International Water Association

**IWS** – International Institute for Water and Sanitation - Morocco

**KWP** – Karachi Water Partnership

**LIFE** – Nature – Danube river

**Lis-Water** – Lisbon International Centre for Water  
**OECD** – Organization for Economic Co-operation and Development  
**MDGs** – Millenium Development Goals  
**SDGs** – Sustainable Development Goals  
**WHO** – World Health Organization  
**UN-Habitat** – United Nations Human Settlements Programme  
**UN Water** – Interagency mechanism coordinating the efforts of United Nations entities and international organizations working on water and sanitation issues  
**UNDP** – United Nations Development Programme  
**UNEP** – United Nations Environment Programme  
**POMCA** – Planes de Ordenación y Manejo de Cuencas Hidrográficas (Plans for the Ordering and Management of Hydrographic Basins)  
**SAVER** – Saneamiento de Vertimientos (Wastewater Sanitation) – Colombia  
**SDAGE** – Schéma Directeur d’Amenagement et de Gestion des Eaux (Strategic Plan for the Development and Management of Water)  
**SEWA** – Self Employed Women’s Association  
**SNWDP** – North-South Water Transfer Project – China  
**UN DESA** – Department of Economic and Social Affairs  
**UNBC** – University of Northern British Columbia  
**UNCTAD** – United Nations Conference on Trade and Development  
**UNDRIP** – United Nations Declaration on the Rights of Indigenous Peoples  
**UNISDR** – United Nations International Strategy for Disaster Reduction  
**UNESCO** – United Nations Educational, Scientific and Cultural Organization  
**UNICEF** – United Nations Children’s Fund  
**UNSD** – United Nations Statistics Division  
**WANI** – Water and Nature Initiative  
**WFP** – United Nations World Food Programme  
**WMO** – World Meteorological Organization  
**WWF** – World Wildlife Fund

# Introduction

The Regulatory Agency for Water, Energy and Sanitation of the Federal District - ADASA, in partnership with the National Water and Sanitation Agency (ANA), and the World Water Council (WWC), had the honor of organizing the largest event on water and sanitation ever held on the planet, the 8th World Water Forum, with participation from more than 120,000 individuals from 172 countries. This Forum took place in Brasília, from March 18th to 23th, 2018 under the theme “Sharing Water”.

Experts consider the Forum to be much more than an event that takes place every 3 years. It is a permanent process of reflection and discussion of issues related to water and its different dimensions: technical, political, social, economic, cultural, environmental, spiritual, development-related, among others. In keeping with the Forum’s spirit of sharing, ADASA, through the publication of this document, seeks to systematize the results and discussions stemming from the 8th World Water Forum as a means of contributing to the sequence of discussions and fostering the necessary advances in water and sanitation sectors worldwide.

This publication is the result of a study coordinated by ADASA providing an extensive analysis of the discussions and documents generated during the Forum and is divided into three major thematic perspectives: “*Water and the Environment*”, “*Water and Development*”, and “*Water and Society*”. Studies focusing on each of these themes generated three publications/ volumes on the 8th World Water Forum: Results and Discussions.

As part of these efforts, after the systematization of the audio and reports for the approximately 300 sessions that took place during the event (more than 400 hours of recording), a single methodology was established for the analysis and identification of the main sessions to be assessed as part of each of the studies. Afterwards, different working groups reviewed the sessions and analyzed documents in order to identify initiatives, ideas, comments, and experiences that would guide discussions and indicate trends and recommendations in relation to the proposed themes.

The experiences presented and discussed in this third volume, which focuses on the theme of “*Water and Society*” were extracted, summarized, and selected based on three key topics: (i) *fulfillment of Sustainable Development Goals 6*; (ii) *strengthening participatory water management*; and (iii) *education and training for the Integrated Water Resources Management*.

We hope that the results of the effort made as part of these publications can contribute to the continuous improvement of initiatives implemented by the sectors involved, not only with regards to ADASA’s activities, but to those institutions and actors working in the areas of water resources and basic sanitation in other parts of the world as well.

**Raimundo Ribeiro**  
ADASA’s CEO



# Executive Summary

The World Water Forum (WWF), organized by the World Water Council together with institutions from the host city and country, is the largest event on water held worldwide and takes place every three years, on an itinerant basis. Its 8th edition took place in Brasília, Brazil, from March 18th to 23th, 2018, under the theme “Sharing Water”, and the event was co-organized by the Regulatory Agency for Water, Energy and Sanitation of the Federal District (Adasa) and the National Water and Basic Sanitation Agency (ANA). Most of the sessions and discussions held were recorded and the respective documents were organized and systematized by Adasa in a database.

This publication is the result of a study, coordinated by Adasa, which promoted an extensive analysis of the sessions held at the 8th World Water Forum and is divided into three major thematic areas: “Water and the Environment”, “Water and Development”, and “Water and Society”. The publication is presented in three volumes, one for each thematic area mentioned above.

This volume analyzes the content of this database with the aim of identifying trends and generating recommendations to support water resources management policies, both for Adasa and for stakeholders around the world under the theme of “*Water and Society*”. This document presents an overview of the main technical and strategic discussions with regards to this theme during the 8th WWF.

Considering the large quantity of data stored for the 8th WWF and the relevance of the more than 400 hours of sessions recorded as the most reliable data source available, a mixed-analysis methodological design was developed, which combined data mining techniques that provided support in prioritizing the most relevant sessions, followed by listening, interpretation, and the systematic recording of the key messages from these sessions. The analysis was therefore divided into a primary stage of quantitative analysis, followed by a secondary qualitative stage.

The first step consisted of a statistical analysis of the database using the Max-QDA application, which allows the search, organization, and quantification of

codes (categorized text excerpts) in textual data. After establishing the codes based on keyword clouds, relevant to the analyzed topics, it was possible to analyze the frequency and distribution of these codes in the sessions and thereby prioritize the sessions for a more detailed hermeneutic analysis. A primeira etapa consistiu em uma análise estatística da base de dados usando como ferramenta principal o aplicativo MaxQDA, que permite a pesquisa, a organização e a quantificação de códigos (trechos de texto categorizados) em dados textuais. Após o estabelecimento dos códigos com base em nuvens de palavras-chave relevantes aos temas analisados, foi possível analisar a frequência e a distribuição desses códigos nas sessões e, dessa forma, priorizar as sessões para uma análise hermenêutica mais detalhada.

The codes established for the theme of *Water and Society* include 3 topics within their scope: the *Sustainable Development Goals (SDGs) 6.1 and 6.2; participatory water management*; and *education and training for integrated water resources management*.

The document addresses the context of the theoretical framework for “*Water and Society*”, presenting a brief conceptualization of society, the importance of water, sanitation, SDGs 6.1 and 6.2, and the strengthening of participatory management. This is followed by a presentation of the research methodology used and the results of the sessions and workshops that were selected for a more in-depth analysis aimed at extracting information about the experiences presented. The chosen topics and the theme of *Water and Society* are discussed in the third chapter, including an assessment of the innovative nature of the experiences presented, the results, and the lessons learned. Finally, conclusions and recommendations aimed at providing an overview of the results and initiatives highlighted are presented as part of an effort to solidify the legacy of this great event held in Brazil.





# 1. Background and context

## 1.1 The relevance of water in society

By carrying out a historical overview of discussions in relation to water management, it is possible to identify some remarkable moments, such as the events of Mar del Plata (1977), the discussion of Agenda 21 at Rio-92, the ministerial declaration made at the 2nd World Water Forum in The Hague in 2000, the 10-year review of Agenda 21 in Bonn in 2002, and many other events. The documents generated during these international meetings serve as a consolidated basis for discussions and initiatives related to water resource management in different regions of the world. The main challenges identified include:

- ▶ Recognizing that access to water in sufficient quantity and quality and to sanitation are basic human needs essential to health and well-being;
- ▶ Recognizing that water is essential for human life and the health of individuals and ecosystems, and a basic requirement for development;
- ▶ Fostering the increased participation of society, particularly women, in water management;
- ▶ Ensuring the supply of water and food, especially to the poorest and most vulnerable members of society, through more efficient use and more balanced allocation of water;
- ▶ Ensuring the maintenance of ecosystems through the proper management of water resources;
- ▶ Promoting cooperation and developing synergy between the multiple uses of water;
- ▶ Promoting security against floods, droughts, pollution, and other critical water-related events;
- ▶ Managing water in a manner that takes into account its economic, social, environmental and cultural values in all of its uses, considering the need for equity and meeting the basic needs of poor and vulnerable populations;

- ▶ Ensuring a competent administration that takes into consideration the involvement of the population and the interests of all actors in the management of water resources.

The United Nations World Water Development Report 2019 (UNESCO, 2019) demonstrates that:

- ▶ The world's water usage saw a sixfold increase over the last 100 years, and since 1980 has grown at a steady rate of approximately 1% per year, driven by a combination of population growth, socioeconomic development, and changing consumption patterns;
- ▶ Global water demand is expected to continue increasing at a similar rate up to 2050, representing a 20-30% increase above current water usage levels;
- ▶ More than 2 billion people live in countries experiencing a high level of water stress and about 4 billion people experience severe water shortages during at least one month of the year;
- ▶ Stress levels will continue to rise as demand for water grows and the effects of climate change intensify;
- ▶ Three out of ten people do not have access to clean water;
- ▶ Six in ten people do not have access to safely managed sanitation services and one in nine people practice open defecation.

Even more recently, according to data from the United Nations Children's Fund and the World Health Organization (UNICEF; WHO, 2019), a serious situation of social inequality has emerged in relation to the distribution of drinking water, which prevents 3.8 billion people from having access to water of a good quality. UNICEF (2021) data shows that 3 out of 4 people (2.3 billion) do not have a washbasin with soap and water at home.

This situation is very different and unequal across continents and countries. For example, in Africa, 258 million people do not have access to handwashing, in addition to 153 million people in Central and South Asia, and 20% of urban Indians, or 91 million people, lack basic facilities for washing their hands at home. In East Asia, 41 million people lack basic handwashing facilities.

In Brazil, according to IBGE (2020) data, in 2017, almost 100 million Brazilians (53.15% of the population) did not have access to sewage collection, and there were more than 258,000 hospitalizations in the country linked to diseases caused by poor water quality. These data provide a solid foundation for the importance of water to society and, as a result, offer insights into the very concept of society itself.

## 1.2 A brief conceptualization of society

According to Castro (2000), society is a set of individuals who share a culture and its inherent ways of life and related aspects and who interact with each other to form a community. According to the author, in a general sense, society is a universal condition of human life. This universality allows a biological and a symbolic, moral, or institutional interpretation to be made. Society can therefore be seen as a basic, but not exclusive, attribute of human nature, since we are genetically predisposed to social life and the phylogeny of our species runs parallel to the development of language and work (technique) and social capacities that are an indispensable part of satisfying our organism's needs.

Gramsci (2002) considers civil society to be composed of pluralistic and private institutions, such as the church, school, university, newspapers, etc., which serve to produce, shape, and reproduce hegemony or, in other words, our conception of the world, a society's predominant values, as well as provide spaces for the formation of a counter-hegemony, aimed at creating new ethical, political, cultural concepts designed to transform the existing hegemony's historical bloc.

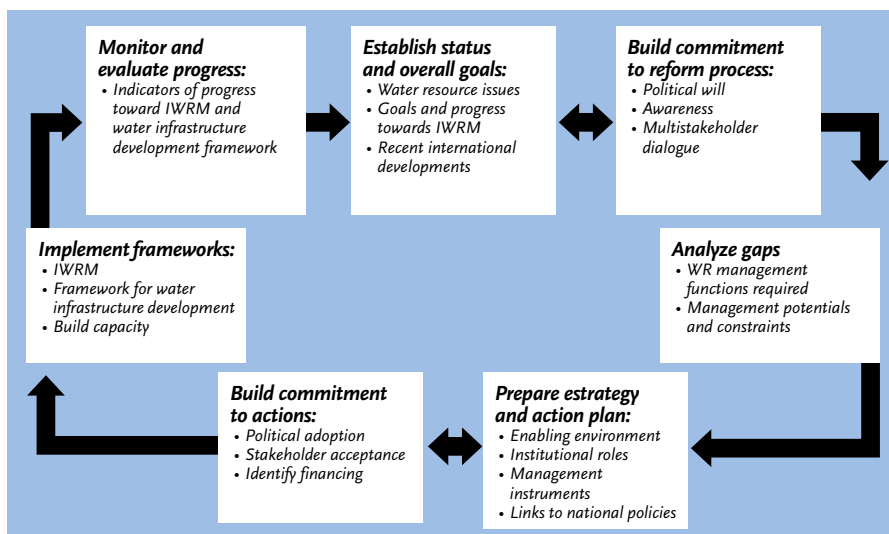
Society is connected to the context of water by the simple fact that water is necessary both from an individual and collective perspectives whenever water is used in production processes, leisure, supply, and other applications. Therefore, water is essential to all aspects of the constitution of society. As a result, it is essential that human beings understand and learn the mechanism of the hydrological cycle and the vital role it plays in water usage, whether in individual or collective activities.

According to Tundisi (2003), the hydrological cycle is the fundamental principle uniting all aspects related to water on the planet. The planet's water is in continuous cyclical movement between solid, liquid, and gaseous reserves. The phase of greatest interest is evidently the liquid phase since it is the form of the water most available to satisfy the needs of humankind and remaining organisms, animals, and plants.

The impact and dependency of human activity in relation to the hydrological cycle, in both individual and collective aspects, resulted in a need for advances in the organization of concepts actions taken by society aimed at the Integrated Water Resources Management (GIRH).

## 1.3 What is IWRM?

Integrated Water Resources Management (IWRM) has been defined by the Global Water Partnership (GWP) as a process promoting the coordinated development and management of water, land, and related resources in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.



**Figure 1.** Integrated Water Resources Management – IWRM is an ongoing process aimed at responding to situations and needs that change over time.

Source: GWP (2004).

IWRM is based on four principles – The Dublin Principles: (GWP, 2000; UNESCO, 2009; Cap-Net, 2010)

- ▶ Principle 1: Water is a finite and vulnerable resource, essential to sustaining life, development, and the environment;
- ▶ Principle 2: The development and management of water resources must be participatory involving those who plan, use and decide at all levels;
- ▶ Principle 3: Women play a central role in the provision, management, and safeguarding of water; and
- ▶ Principle 4: Water has economic value in all its competing uses and must be recognized as an economic and social good.

The pillars of IWRM consist of the integration of the 3 Es: Economy, Equity and Ecosystem (GWP, 2000; UNESCO, 2009):



- ▶ Economic efficiency in the use of water: Water should be used as efficiently as possible, taking into consideration the increasing scarcity of water and financial resources, its finite nature and vulnerability, as well as the increasing demand for water.
- ▶ Equity: The basic human right of access to water in sufficient quantity and quality to ensure well-being must be universally recognized.
- ▶ Ecosystems and environmental sustainability: The current use of the resource must be managed in a way that is not harmful to ecological and environmental sustainability, which are fundamental to supporting life, without compromising the use of this resource by future generations.

## 1.4 Water resources management models

Water resources management models have changed over time. The bureaucratic model of water resources management, the oldest and most widespread, was first adopted. The main characteristics of this model are rationality and the hierarchy of activities. The predominant objective of the public administrator, in this case, is to comply with and enforce generated legal provisions (LANNA, 1995).

This model hinges upon the idea that if something is not functioning, it is because an appropriate law has not yet been put in place. Following this line of reasoning, many legal provisions began to be created – laws, norms, decrees – not to mention the inclusion of water regulations in the country’s Constitution itself, as was the case in Brazil, which often conflicted with one other or were difficult to interpret. When a problem occurred, the legal system, which was viewed as ineffective and slow, was blamed. Over time, authority and power under this model became concentrated in public entities of a bureaucratic nature that work with processes on a case-by-case basis (LANNA, 1995).

The economic-financial model subsequently emerged, which “is characterized by the predominant use of economic and financial instruments to induce, or even enforce, obedience to legal norms and provisions”, particularly those established under the previous model (YASSUDA, 1989). In other words, since the existence of a legal framework does not necessarily mean compliance, economic instruments are adopted for the purposes of providing enforcement. Under this model, the State assumes the role of an entrepreneur and the resources obtained are used by the government to promote national or regional economic development.

According to Lanna (1995), the economic-financial model unfolds in two directions. The first approach, which is the most common, aims to meet sectoral

priorities – investment programs in sanitation, irrigation, and the generation of electricity. The role played by public companies is highlighted under this approach. The second approach is more modern and focuses on full multisectoral development of the watershed. Under this approach, the development of large-scale multisectoral entities that compete for political and administrative space with other public sectoral entities operating in the basin becomes necessary. This often impedes the necessary communication between institutions, as well as between institutions and users and communities.

Finally, a systemic model of participatory integration emerged more recently and has been adopted in most countries in line with transformations in the field of public administration in recent years. The systemic model of participatory integration takes advantage of the positive aspects of the management models presented above and adopts innovative procedures and mechanisms, including (LANNA, 1995):

- ▶ Adoption of the watershed as a management and planning unit;
- ▶ Adoption of new decision-making processes through means of multilateral and decentralized discussion and decision making among different participants within society and the State;
- ▶ Decentralization of management, which is now carried out through shared responsibility between the State and society – a process involving actors that have previously been defined – in spaces specifically created for this purpose: watershed councils, committees, or agencies;
- ▶ Guarantee of “formal participation from water users and representatives of the socio-political and business classes located within the basin in question in analyzing and approving of plans and programs for the multiple and integrated use and conservation of water resources” (YAS-SUDA, 1989);
- ▶ Valuing and adopting regional strategic planning, with the inclusion of goals, deadlines, and proposals; and
- ▶ Adoption of economic and financial instruments, such as the direct charging of water users in the basin to obtain resources to cover expenses of common interest.

This model aims to achieve greater efficiency and effectiveness in relation to actions that are implemented and presupposes greater transparency in government activity, increased access to information, and participation of the different actors involved. This decentralized and participatory model served as a reference for conferences held on the Environment and Development, Climate Change, Biodiversity and many other forums which were in turn fundamental in creating the Sustainable Development Goals.

## 1.5 Water, sanitation and SDG 6

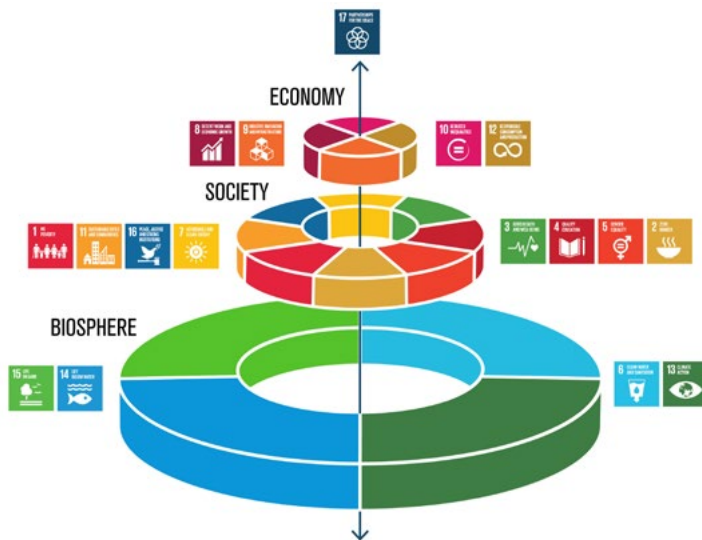
The Sustainable Development Goals (SDGs) are the United Nations' (UN) universal call to action to end poverty, protect the planet, and ensure that all humankind enjoys peace and prosperity. The SDGs replaced the Millennium Development Goals (MDGs), which started a global effort to fight poverty in 2000. The MDGs set measurable goals that were universally agreed upon to combat extreme poverty and hunger, prevent deadly diseases, and expand access to primary education for children, among other development priorities.

The 17 SDGs were unveiled at Rio+20, the United Nations Conference on Sustainable Development held in Rio de Janeiro in 2012. The aim was to provide a set of goals that would address the most pressing environmental, political, and economic challenges facing our world. These goals, which built on the success of the MDGs, also include new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected and often the key to success for one goal involves addressing issues more commonly associated with another.

Among the 17 sustainable development goals is SDG 6 – “Ensure the availability and sustainable management of water and sanitation for all” and, in an even more detailed fashion, 6.1 and 6.2. Goal 6.1 aims to achieve universal and equitable access to safe, clean water for all by 2030. Goal 6.2 seeks to provide access to adequate and equitable sanitation and hygiene to all and end open defecation by 2030, with special attention provided to the needs of women and girls living in situations of vulnerability.

It is also important to consider other aspects addressed under the United Nations World Water Development Report 2019, which suggests that approximately 90% of all natural disasters are water related. Between 1995-2015, floods accounted for 43% of all recorded natural disasters, affecting 2.3 billion people, killing more than 157,000, and causing US\$662 billion in damage (UNESCO, 2019).

In order to achieve the Sustainable Development Goals, it is essential that society understands that complete social and economic development is dependent upon a balance in interactions with nature. The water provided by rivers, oceans, biomes -- nature itself -- are the basis upon which the SDGs can be achieved, as shown in Figure 2.



**Figure 2.** The Biosphere provides a base upon which Sustainable Development can be achieved.

Source: [www.estrategiaods.org.br/brasil-pode-nao-atingir-objetivos-sustentaveis-da-onu-dizemorganizacoes](http://www.estrategiaods.org.br/brasil-pode-nao-atingir-objetivos-sustentaveis-da-onu-dizemorganizacoes)

Water-related issues continue to contribute to the displacement of an average of 25.3 million people every year due to sudden-onset disasters (IDMC, 2018). This number can vary from one year to another, but the overall risk of being displaced by disasters has doubled since the 1970s. Droughts accounted for 5% of natural disasters, affecting 1.1 billion people, killing more than 22,000, and causing US\$100 billion in damage during a 20-year period (UNISDR/ CRED, 2015).

The purpose behind presenting the preceding data was to establish the context into which discussion of the theme “Water and Society” is inserted. This publication will describe experiences in relation to SDG 6 and transversal approaches to strengthening participatory management and education and training for the integrated water resources management.

## 1.6 SDG monitoring system

Achieving SDG6 and the other remaining objectives requires that an effort to collect, process, and standardize data on a global scale be made. Therefore, it is important to understand how the Monitoring System for this SDG was built. Global monitoring of the objective set forth in SDG 6 actually began at the end of 2017, a result of a process demonstrated in the following timeline.

To ensure the timely and efficient collection, validation, and dissemination of SDG indicators, an exchange format was agreed upon and put into use by the data providers. This allowed exchanges to take place, simplifying and improving the validation and dissemination of data and information among the process's main actors.

As defined by the organizations making up the SDG Monitoring System, countries are the central starting point for supervision of national monitoring processes through means of the respective bodies involved in the collecting and systematization of statistical data. Countries themselves must decide the level of detail they wish to provide with regards to data and metadata that they share with supervisory agencies and the extent to which this data should be published since a minimum of one national aggregate per indicator is required.

Supervisory agencies are United Nations bodies (and, in some cases, other international organizations) responsible for compiling and verifying country data and metadata and submitting the data, together with regional and global aggregates, to the United Nations Statistics Division (UNSD). These agencies are able to publish country data in their own databases and use them for thematic reporting. Country data needs to be internationally comparable. For this purpose, agencies are also responsible for developing international standards and recommending methodologies used in monitoring.

Regional mechanisms may facilitate the transmission of data and metadata from the national to the global level as appropriate. Regional mechanisms also have an important role to play in knowledge exchange and training within a specific region, focusing on issues of regional importance.

UN-Water and the SDG 6's Integrated Monitoring Initiative bring together supervisory agencies for all SDG 6 indicators and coordinate their efforts to provide better support to countries with regards to integrated monitoring, with a strong focus on the institutional aspects of monitoring and the intersecting nature of water and sanitation.

Country data, compiled and verified by supervisory agencies, are published on the SDG 6 Data Portal to allow comprehensive assessment and analysis of the overall status of water and sanitation and progress made towards achieving SDG 6.

With regards to the collection of indicators, a methodology for verification is used, which moves from the concept, list of codes, dimensions, frequency, type of reports, series, area reference, gender, age, degree of urbanization, and level of education to the period of time or point to which the observation refers.

**Table 1.** Institutions responsible for data collection worldwide.

Indicators	Agencies responsible for collection
6.1.1 - Proportion of the population making use of drinking water services managed in a secure fashion	WHO, UNICEF
6.2.1 - Proportion of population using (a) safely managed sanitation services and (b) handwashing facilities with soap and water	WHO, UNICEF
6.3.1 - Proportion of safely treated wastewater	WHO, UN-HABITAT, STATISTICS DIVISION
6.3.2 - Proportion of bodies of water with high environmental quality	UNEP
6.4.1 - Change in water use efficiency over time	FAO
6.4.2 - Level of water stress: proportion of freshwater withdrawals in relation to total available freshwater resources	FAO
6.5.1 - Degree of implementation of integrated water resources management (0-100)	UNEP
6.5.2 - Proportion of transboundary watershed areas covered by an operational agreement for water cooperation	UNESCO; CEPE
6.6.1 - Change in the extension of water-related ecosystems over time	UNEP
6.a.1 - Amount of official development assistance in the area of water and sanitation included in a government expenditure plan	UN, UNEP, OECD
6.b.1 - Proportion of local administrative branches with established policies and procedures for the participation of local communities in water and sanitation management that have operationalized	UN, UNEP, OECD

Source: <https://www.sdg6monitoring.org/activities/roles-and-responsibilities/>

In Brazil, work carried out with regards to indicators was started in 2015 by the Brazilian Institute of Geography and Statistics (IBGE) and three Meetings of Information Producers have already been held with an eye towards the 2030 Agenda.

An SDG Digital Platform was launched in 2018 with the first set of global indicators and was built in a collaborative manner with other information-producing institutions (information available at <https://ods.ibge.gov.br/>). The Institute of Applied Economic Research (IPEA) has also prepared a proposal aimed at adapting global objectives to the Brazilian reality, which in particular includes the nomenclature of indicators and the relevant concepts within its scope.

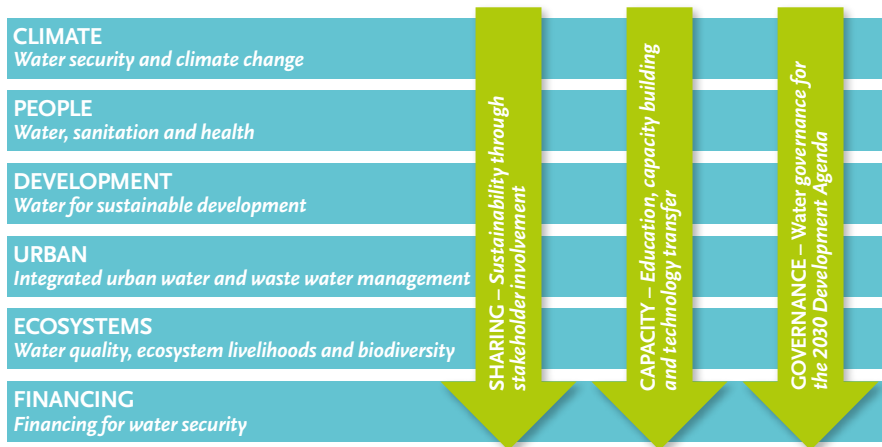
According to the National Water Agency (ANA, 2019a), the SDGs represent significant progress in relation to the MDGs due to the fact that they have brought the issue of water and sanitation to the forefront of discussions through the creation of an exclusive objective to address the theme in detail in a manner which came to include a more comprehensive view of water as a resource in terms of quantity or quality in stark contrast to the previous focus on access to sanitation services (water and sewage).

## 1.7 The 8th World Water Forum

The World Water Forum is an event held every three years in a city that has been previously selected. It is organized by the World Water Council, together with institutions in the country and in the city in which the event is held. The 8th edition of the World Water Forum took place in the city of Brasília, Brazil, in March 2018 and was focused on the theme of Sharing Water.

In order to promote wide-ranging discussions, the Forum sought to gather different segments of society around the theme of water, including water management agencies and organizations, municipalities, national and subnational governments, public policy makers and legislators, representatives from legal systems, civil society organizations, education and research institutions, companies operating in the sector or that depend on this resource for the carrying out their activities - agriculture, energy, among others.

Discussions held as part of the 8th Water Forum were structured using a thematic matrix that is further divided into 6 main themes: climate, people, development, the urban environment, ecosystems, and financing. Three overarching themes were also defined to guide the Forum's thematic discussions: training, sharing, and governance. (Figure 3).



**Figure 3.** Thematic structure of the 8th World Water Forum

Source: ANA, ADASA, WWC (2018).

The sessions of the 8th World Water Forum were organized by five commissions responsible for specific processes, namely: thematic process; political process; regional process; sustainability focus group; and citizens forum. Each process organized discussion sessions in accordance with their respective objec-

tives and the specific audiences involved. The sphere of activities for each process/commission involved in the organization of the 8th World Water Forum is presented in Table 2.

**Table 2.** Role of each process/commission in the organization of the 8th World Water Forum.

Acronym	Process	Objectives
TP	<b>Thematic</b>	To discuss the topics to be addressed in the Forum
PP	<b>Political</b>	To involve government at the local, regional, and national levels, members of legislative bodies, focusing on the establishment of memoranda of understanding, agreements, and cooperation treaties for integrated water management.
RP	<b>Regional</b>	To discuss different issues and guidelines for cooperation and integrated water management for each continent or in geographic region
SFG	<b>Sustainability Focus Group</b>	To discuss adherence to public policy and initiatives and principles of sustainable development (economic, social, and environmental) in a general manner, participating in other processes
CF	<b>Citizens Forum</b>	To promote the participation of organized civil society in discussions, exchanges of experiences, and the Forum's other activities

Source: <http://8.worldwaterforum.org/pt-br/estrutura-organizacional>

The forum's sessions were grouped according to their specific characteristics, and their acronyms were created using their titles in English (Table 3).

**Table 3.** Types of sessions held at the 8th World Water Forum

Acronym	Title	Objectives
HLP	<b>High Level Panel</b>	Participation of authorities and representatives from organizations relevant to the water debate
OS	<b>Ordinary Sessions</b>	Promotion of debate and the sharing of experiences within the scope of each Forum process
SS	<b>Special Sessions</b>	Discussion between more than one process, provided by organization or the opening/completion of a series of sessions
PP	<b>Political Process</b>	Conferences that meet the specific demands of the following subprocesses: National Governments (NG) Local and Regional Authorities (LRA) Judges and Prosecutors (JP) Parliamentarians (PAR)



About 300 sessions were held, totaling more than 400 recorded hours of discussions during the 5 days of the 8th World Water Forum (an average of one and a half hours per session). Most of the discussions and presentations were recorded through synthesis documents, videos, audios, statements, reports, and photos. All of the material was organized into a database (Table 4) constituting the main source of information for this publication<sup>1</sup>.

**Table 4.** Summary of the 8th World Water Forum database by session<sup>2</sup>.

<b>Category</b>	<b>Audio</b>	<b>Presentations</b>	<b>Rapporteur (Portuguese)</b>	<b>Rapporteur (English)</b>
<b>HLP – High Level Panels</b>	<b>81%</b>	<b>63%</b>	<b>100%</b>	<b>94%</b>
<b>OS – Ordinary Sessions</b>				
Citizens Forum	83%	100%	100%	0%
Regional Process	92%	100%	100%	100%
Thematic Processes	95%	100%	98%	100%
<b>PP – Political Process</b>				
Judges and Prosecutors	88%	13%	100%	100%
Local and Regional Authorities	93%	100%	93%	93%
National Governments	89%	0%	89%	89%
Parliamentarians	100%	0%	0%	0%
<b>SS – Special Sessions</b>				
Citizens Forum	100%	67%	100%	0%
Collaborative	83%	83%	92%	83%
Partners	93%	100%	93%	93%
<i>Regional</i>	71%	93%	100%	100%
<i>Sustainability</i>	100%	100%	100%	100%
<i>Thematic</i>	100%	65%	100%	100%

<sup>1</sup> An example of a session title would be OS-TP-01, being the first ordinary session of the thematic process of the event, or even SS-J-SFG+TP-02, which means the second special joint session from a sustainability focus group and a thematic process.

<sup>2</sup> Videos, photos, agendas and attendance lists were not considered.



## 2. Methods

### 2.1 The methodological approach adopted

The development of this research was structured into 10 distinct steps, which are presented sequentially in the Table below.

**Table 5.** Description of the 10 steps involved in the adopted methodological approach.

1. Production of reports and documents	Production resulted from the content presented and discussed throughout the sessions held during the 8th World Water Forum;
2. Database organization	Different media containing session reports, presentations used by speakers, audio, attendance list, photos (Table 4)
3. Import and organization of textual databases in the MaxQDA program	Due to the large volume of information involved, only Word, PDF, and PPT files were imported
4. Structuring a series of codes.	The codes were created using specific keywords that allow the identification of recurring themes in the text documents through means of a lexical search;
5. Coding of imported documents	The codes generated in the previous step were used to identify the text excerpts (text data mining) in the documents inserted in MaxQDA (step 3);
6. Cleaning of the encrypted database.	Removal of keywords outside the given context for the code;
7. Quantitative and qualitative analysis of the coded database.	Quantification of the frequency of topics of interest in available texts is carried out by crossing the set of pre-defined codes;
8. Determination of focal documents.	Focal documents are documents for which the greatest number of codes and objects of analysis were identified. Focal documents indicate the sessions that will be subject to more profound analysis under the central themes (codes) described in step 10;
9. Development of a model for document filing.	An electronic spreadsheet was developed to formalize the systematic process of content analysis (hermeneutics) for the focal sessions;

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10. More in-depth analysis of the contents.	Using the electronic spreadsheet developed in the previous step, a more in-depth analysis of the systematized focal document content is carried out by consulting other materials available in the database referring to their session (audio and publications). Questions and concerns with regards to these materials are clarified with the authors themselves, session coordinators, or the ADASA monitoring team.
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To ensure the representation of the sessions were not affected by a lack of documentation overlooked by the software, additional documents were identified and added to carry out the text mining phase. Documents related to the following sessions were therefore identified and included in the database:

- ▶ Session PP-NG-00: The Forum’s Political Declaration;
- ▶ Session PP-PAR-01: shorthand notes with session transcript;
- ▶ Session PP-PAR-02: shorthand notes with session transcript;
- ▶ Session PP-J-01: shorthand notes with session transcript;
- ▶ Sessions OS-RP-01 to OS-RP-62: volunteer reports in their entirety;
- ▶ Sessions SS-RP-01 to SS-RP-14: volunteer reports in their entirety;
- ▶ Session PP-JP-00: Overview Judges and Prosecutors Conference;
- ▶ Session PP-JP-01: Brasilia Declaration of Judges on Water Justice;
- ▶ Session PP-JP-03: Letter from the Global Institute of the Public Prosecutor’s Office;
- ▶ Session PP JP 03: Declaration on Water Prosecutors PT;
- ▶ Session PP-LRA-01: *ComecePelaAgua* (“StartWithWater”) WEB;
- ▶ Session PP-LRA-05: Plenary description-speakers;
- ▶ Session PP-LRA-13: Call to Action PT; and
- ▶ Session PP-NG-08: Ministerial Declaration.

A set of codes was created (step 4) for encoding the textual database imported into MaxQDA. For each code, a group of keywords was established to guide the search for specific text segments (coding). Codes for Water and Society were established based on the fundamental principles of Integrated Water Resources Management such as social equity, economic efficiency, and ecological sustainability in addition to the main thematic areas requested for this research, such as Sustainable Development Goal 6, which involves “Ensuring the availability and sustainable management of water and sanitation for all” and related targets.

Additionally, the codes sought to express the theme of strengthening water management through means of a participatory approach and the issue of education and training for the integrated water resources management, seeking integration with approaches related to climate, people, development, urban, ecosystems and financing, in addition to overarching themes involving governance and sharing.

The standard reports of each session in the Forum program were consulted in order to define search codes and keywords. The codes and their respective keywords were used to support the encoding of documents imported into MaxQDA (step 5). After this step, a rigorous cleaning of text excerpts was carried out (step 6) that, despite containing some of the defined keywords, were outside the context of the established codes.

Table 6 shows the universe of documents and numbers of coded segments that provided support for further analyses.

**Table 6.** Number of documents by code.

<b>HLP Typology</b>	<b>Documents</b>	<b>A&amp;D codes</b>	<b>Cross Codes</b>	<b>Total Codes</b>
	29	71	44	144
<b>OS</b>				
OS_CF	21	178	59	258
OS_RP	98	223	188	509
OS_TP	246	317	604	1167
<b>PP</b>				
PP_JP	17	83	13	113
PP_LRA	20	104	77	201
PP_NG	19	353	139	511
PP_PAR	05	15	01	21
<b>SS</b>				
SS_CF	03	26	22	51
SS_J_CF+RP	02	05	04	11
SS_J_CF+TP	06	34	17	57
SS_J_SFG+TP	11	12	23	46
SS_PT	65	175	138	378
SS_RP	17	55	18	90
SS_SFG	03	16	04	23
SS_TP	19	69	70	158
<b>Overall Total</b>	<b>565</b>	<b>1,736</b>	<b>1,377</b>	<b>3,678</b>

Qualitative and quantitative analyses of the coded database (step 7) were carried out using the visualization, analysis, and mixed methods tools of the MaxQDA software. The tools used were: a) Segment Matrix, b) Interactive Segment Matrix, c) Segment Similarity Analysis, d) Code Matrix Viewer and Code Connection, e) Document Portrait, f) Word Cloud, g) Code Summary and, h) Stats.

Determination of the focal documents (step 8) was carried out using the frequency of the main codes defined for the theme “Water and Society” using the MaxQDA Stats function. This function converts the codes of the text excerpts (step 7) into variables, thus allowing the selected documents, as well as the

frequencies of codes per document, to be analyzed statistically. The documents were ranked in descending order of code frequency.

Once they had been prioritized, a spreadsheet was created to record the sessions (step 9) and capture discussions relevant to their proposed aims. The worksheet was divided into three large groups of information. The first information group contains a reference for the session, while the second group provides information regarding the analysis of available materials. Finally, the third group seeks to establish connections between the session and this publication. The relevant fields, and related information for each one, are described below:

- ▶ Session Reference – item, code, and title;
- ▶ Organization – allows the insertion of the name of the coordinator and contact information for the purposes of seeking clarification, if necessary;
- ▶ 8th FMA Theme – indicates discussion of one of the Forum’s nine themes: climate, people, development, the urban environment, ecosystems, financing, capacity building, sharing, and governance;
- ▶ Available source – material from the database used to analyze the session: ppt presentation, volunteer report, audio, agenda, etc.;
- ▶ Source analysis – analysis of the difficulties in the work carried out, and the quality of the source available, which can already be registered at the first moment of the interaction with the Forum materials;
- ▶ Link between session and study – information on speaker can also be entered to facilitate the identification of findings and trends;
- ▶ Activity theme – identification of the theme for the work completed to help filter information while preparing the research report;
- ▶ Subject – indicates the subject addressed in the lecture in order to allow for the cross-referencing of lectures by subject and the identification of trends, findings, and opportunities for managing the different themes;
- ▶ Comments on the analysis – based on the description of the topics presented in the sessions, relevant issues such as trends, findings, and opportunities for the topic can be registered in this group;
- ▶ Report, experience, or initiative – this field makes it possible to identify and filter the most relevant findings;
- ▶ Observations – open field in which additional relevant information can be included;
- ▶ Authorship of the Analysis – since a particular session may be of interest, registration of the analysis’s author ensures that previously analyzed material can subsequently receive only supplementary analysis from another author.

A more profound analysis of the contents (step 10) ensures a better understanding of the lectures and discussions of each focal session. A Matrix is then completed based on the lectures analyzed and heard. Once data was entered into the spreadsheet, it was found that the most appropriate way of separating the matrix was by scale - global, national, and local. Therefore, in order to prepare the data analysis, in addition to analyzing and listening to the 176 lectures, a study of documents and reference research was carried out to further aggregate information from the lectures that were listened to and analyzed.

119 of the 176 lectures analyzed and listened to were selected for the purposes of forming a matrix due to the fact that some did not contain much information and the lectures selected were sufficiently representative of the discussions held. In the matrix, 44 lectures correspond to the Global Scale, 42 to the National Scale, and 33 to the Local Scale. 26 lectures on the Global Scale, 23 on the National Scale, and 15 lectures on Global Scale were identified as being of interest to ADASA, with a total 64 lectures considered to potentially be of interest to the institution. For the purposes of preparing this publication, the final phase of the method consisted of an analysis of all 119 selected lectures and filtering some that stood out from the perspective of scope, the involvement of actors, possibility of replication, and results to be presented here.





## 3. Discussion of the theme “Water and Society”

In this chapter, 15 experiences from the 8th World Water Forum in relation to the theme Water and Society will be presented and discussed, in particular with regards to SDG 6, water and the strengthening of participatory management, and the overarching theme of education and training for the integrated water resources management.

The boxes below briefly describe the experience presented and selected, the main results, and the location at which more information can be found. For some reported experiences, it was possible to present the lessons learned. In each BOX it is also shown the title and code of the session, as well as the name of the speaker.

### 3.1 Water and the sustainable development Goal 6 (SDG 6)

SDG 6 seeks to ensure the availability and sustainable management of water and sanitation for all. Several factors impact the ability of different strata of society and different regions to provide adequate access to safe drinking water and sanitation. This section presents some of the experiences shared at the 8th Forum, addressing issues related to gender, disadvantaged communities, financing, and other relevant aspects that impact the fulfillment of targets under SDG 6.

In terms of gender, the role of women in water conservation and management formally appears in the principles outlined during the International Conference on Water and the Environment held in Dublin, Ireland, in 1992, at which representatives from 100 countries and 80 international, intergovernmental, and non-governmental organizations met and diagnosed the future of the world’s water resources as being critical.

On that occasion, four principles were established for sustainable water management: i) fresh water is a finite and vulnerable resource, essential for the maintenance of life, for development, and for the environment; ii) its management

## BOX 1. The experience of the Self Employed Women's Association (SEWA) in India

The main objective of the Self Employed Women's Association (SEWA) is to provide access to reliable and safe water to the women experiencing the highest level of economic and social vulnerability, as well as to develop their capacities to become owners and managers of local water supply rather than mere users.

The project was carried out in the Durgapur region (India), in which most of the tribal population lives below the poverty line and experience water scarcity.

Work was carried out that was focused on placing value in savings, credit, livelihoods, and entrepreneurship. The project also seeks to provide access to quality water and develop innovations in terms of technologies for its treatment.

The project includes a strong component focused on participatory water and sanitation management involving training related to construction, raising awareness, and community management (particularly with regards to women).

Twenty-five thousand women were the target of awareness campaigns aimed at saving water and good hygiene practices, construction of tanks for harvesting rooftop rainwater, directly improvements to the quality of the local water supply, cleaning and recharging of 171 wells in the village, as well as 224 ponds, and repair and maintenance of 4,447 hand pumps.

**Uncertainty, Vulnerability, and Resilience - OS-TP-01**

**Bharti Bhavsar/SEWA**

**More information:**

[www.sewa.org](http://www.sewa.org)

[www.fao.org/3/CA2707EN/ca2707en.pdf](http://www.fao.org/3/CA2707EN/ca2707en.pdf)

must be based on the participation of users, planners, and policymakers at all levels; iii) women play an essential role in the provision, management, and protection of water; and iv) the recognition of the economic value of water.

The experience presented at the 8th Forum in relation to this theme that was selected for discussion in this chapter concerns the Self Employed Women's Association (SEWA), an organization of working women, with 1.9 million members spread across fourteen Indian states, in addition to seven other countries (Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan, and Sri Lanka). The participation of women in the management of water resources is considered a major governance challenge. Therefore, this experience is quite significant, as it constitutes work in which women find themselves in the role of a protagonist, as highlighted in BOX 1.

According to the World Bank Report, "Women in Water Utilities: Breaking Barriers (2019)", women are a minority in the water sector. Data collected from 64 water and sanitation service providers in 28 different countries show that the percentage of female workers is considerably lower than that of men. On average, the public services included in the sample reported that only 18% of their workers are women - this is less than one in five.

Greater heterogeneity was found among the public services surveyed. Although, on average, 23% of a company's engineers and managers are female; 32% of the companies included in the sample did not have female engineers, and 12% did not have female managers.

Other sources and literature corroborate these findings and show that the water sector continues to employ more men than women (IWA, 2016). The World Bank Report on the relationship between water and gender pointed out that "the low number of women

in water-related technical roles reflects their general exclusion from jobs in other areas” (DAS, 2017).

Increasing female participation in public water services can benefit women, the community, and organizations themselves. Women benefit by gaining access to more jobs and to higher-quality jobs. Communities therefore achieve greater representativity in water management bodies, which allows women to have better relationships with the community, among other benefits.

This is because women are key customers for water companies and a more gender-diverse workforce helps companies understand and better respond to the concerns and needs of female customers (GWA, 2011; HUNT et al., 2018; IWA 2016) and lead to improvements in customer satisfaction (THOMPSON et al., 2017).

The achievement of SDG 6 also fundamentally depends on the participation and engagement of the communities involved. This is evident in the SDG target 6.b which refers to “supporting and strengthening the participation of local communities to improve water and sanitation management”. In this context, it is worth highlighting the experience presented in BOX 2, which deals precisely with the need for social engagement to fulfill SDG 6.

In this case, stakeholder participation is essential to ensuring the sustainability of water and sanitation management options over time, including the selection of appropriate solutions in each social and economic context and the full understanding of the impacts of a given development decision.

Defining the procedures in policy or law for the participation from local communities is vital to ensure that the needs of the entire community are met, including the most vulnerable. Additionally, encouraging the ownership of frameworks subsequently contributes to sustainability.

On the other hand, greater efforts are needed to guarantee access to water and sanitation for Indigenous and traditional peoples. As part of a discussion of this theme, BOX 3 offers experiences and indicators for the visibility of Indigenous

## BOX 2. Social Engagement: The need for engagement from society in collaborating with the implementation of SDG 6.

The size of the challenge of achieving the SDG 6 targets in a continent like Africa indicates the need for the active involvement of society in support of governments and this initiative presented how society is being involved in the process through a Platform for Dialogue, which is present in five countries and allows for an integrated discussion, facilitating dialogue between different sectors in relation to safe water management.

The following initiatives are recommended: integrated water resources management, the establishment of strong, effective, and inclusive accountability mechanisms aimed at achieving the targets contained in SDG 6, the implementation of a robust and participatory monitoring and evaluation system, as well as the allocation of sufficient financial resources.

SDG 6 – SOURCE OF LIFE: helping countries and governments to implement their water targets

**OS TP 13 Ms. Kristel Malegue/ NGO Eau Vive Internationale.**

### **More information:**

*Global Review of National Accountability Mechanisms for SDG6* <<https://www.endwaterpoverty.org/sites/default/files/2018-07/Global%20Review%20of%20National%20Accountability%20%28Full%20Report%29.pdf>>  
<[www.fao.org/land-water/water/water-platform-and-financing/en](http://www.fao.org/land-water/water/water-platform-and-financing/en)>

### **BOX 3. Indigenous Community: The development of indicators providing visibility to Indigenous peoples in the context of sustainable development.**

Proposed indicators specific to Indigenous communities aim to assess the current state of progress made towards SDGs – targets for Indigenous peoples – and suggest ways in which the SDGs can be worked on to improve socioeconomic and health outcomes. It is recommended that a broad program be implemented to strengthen the involvement of Indigenous communities in participatory water management and to carry out further exchanges with the Indigenous groups to develop a stronger grasp on how they manage water.

#### **Liability, Justice, and Compensation for Environmental Crimes and Violation of Rights - 05-CF-05**

Mona Polaca/World Indigenous  
Forum on Water and Peace.

#### **More information:**

[www.nccah-ccnsa.ca/docs/determinants/RPT-UN-SDG-IndPeoplesCanada-Halseth-Odulaja-EN.pdf](http://www.nccah-ccnsa.ca/docs/determinants/RPT-UN-SDG-IndPeoplesCanada-Halseth-Odulaja-EN.pdf)

[www.oecd.org/iaos2018/programme/IAOS-OECD2018\\_Madden-Coleman.pdf](http://www.oecd.org/iaos2018/programme/IAOS-OECD2018_Madden-Coleman.pdf)

peoples in sustainable development, in particular the case of First Nations in Canada.

#### **Who are the world's Indigenous and traditional peoples?**

A commonly cited estimate sets the world's Indigenous population at 370 million people, constituting 5% of the global population, and comprising 5,000 different groups in 90 different countries (UN DESA, 2015). However, there is no universally adopted definition of "Indigenous peoples".

A formal and narrow definition is not seen as desirable by Indigenous peoples and organizations themselves, as labels imposed on Indigenous peoples by non-Indigenous groups have historically been misused. Indigenous peoples can be identified by the principle of self-identification, under which they have the right to determine their own identity or members according to their customs and traditions (UN, 2008).

Indigenous peoples have their own social and legal systems, languages, customs and traditions, strong links to ecosystems and environmental services, and a distinct set of rights stemming from their ancestry and the administration of their lands, territories, and resources. Many Indigenous groups share historical legacies of discrimination, dispossession of land and natural

resources, destruction of culture, and human rights violations.

Different names are given to Indigenous and traditional groups around the world. The term "Indigenous" is more widely accepted in some regions than in others (see BOX 1.2). Some groups prefer to call themselves tribal, aboriginal, autochthonous, First Peoples or First Nations, for example, and in some contexts occupational and geographic terms such as hunter-gatherers, nomads, herders, peasants, and mountain people are also used interchangeably with Indigenous peoples.

It is important to keep in mind the differences that exist among the world's Indigenous peoples and cultures, including their perceptions and approaches to water resources.

Far from being static, Indigenous cultures constantly absorb new influences and change within their own terms, informed by their own values, and cultural relationships.

A discussion of the topic of the involvement and engagement of Indigenous communities in fulfilling the objectives of SDG 6 is presented by the representative of the Indigenous World Forum on Water and Peace.

The Indigenous World Forum on Water and Peace is a coalition of Indigenous leaders, Indigenous organizations, academics, and associated individuals seeking to protect water for future generations. The Forum is shaped in the vision of Elders from a variety of groups and is supported by 60 organizations around the world (at the United Nations Permanent Forum on Indigenous Issues).

There are other indigenous organizations in the world, such as the Indigenous Environmental Network (IEN) which is a non-profit organization.

The Indigenous Environmental Network is made up of Indigenous peoples and individuals and seeks to address issues surrounding environmental and economic justice (EJ). IEN’s activities include strengthening the capacity of Indigenous communities and tribal governments to develop mechanisms aimed at protecting their sacred sites, land, water, air, natural resources, and the health of their group and all living beings.

Another extremely relevant aspect is the financing of initiatives making it possible to achieve the targets of SDG 6 under different socioeconomic conditions.

Many countries, states, and cities have a relatively small financial capacity for investing in Sustainable Development Goals. The experiences of the Asian Development Bank (ADB) in this regard can be used as a reference in encouraging other financial agents to act in favor of this agenda.

As highlighted in BOX 4, the ADB agenda sets out a plan for supporting implementation of the 2030 Agenda, providing a global framework for financing sustainable development, and aligning all actors in the financing cash flows and policies with economic, social, and environmental priorities.

#### **BOX 4. The experience of a development bank** **Resource investment from the Asian Development Bank (ADB).**

In 2018, the ADB mobilized a total of US\$ 4.01 billion in funding, with US\$ 2.73 billion (68%) expected to be allocated to mitigating climate change and US\$1.29 billion (32%) to adapting to these changes.

The increase in investments with regards to climate change theme works in tandem with goals for the expansion of sewage and drainage services under SDG 6, the improvement of operational capacity and resilience to climate change, and the provision of planning, consulting, and investment in training as part of efforts to address the above challenges.

#### **Assessment of the Impact of Climate Change on Water and Disasters - OS-RP-44**

Thomas Panella / the Asian Development Bank’s Water Sector

#### **More information:**

[www.adb.org/projects/documents/ind-42266-026-pftr](http://www.adb.org/projects/documents/ind-42266-026-pftr)

[www.adb.org/what-we-do/themes/climate-change-disaster-risk-management/main](http://www.adb.org/what-we-do/themes/climate-change-disaster-risk-management/main)

The next “Decade of Action” (2020-2030) will require significant public and private investment in moving towards fulfillment of the SDGs and Paris Agreement targets by people around the world.

The Asian Development Bank provides financing for sustainable development, taking the size, scale and level of development of each country, its gross domestic product, and its financial revenue into consideration<sup>1</sup>. However, funding is not channeled into sustainable development at the scale and speed necessary to achieve the SDGs and targets for the Paris Agreement.

“The funding gap to achieve the SDGs in developing countries is estimated to be between US\$ 2.5<sup>2</sup> to US\$ 3 trillion<sup>3</sup> per year, while investment in coal-fired power has grown by 92,000 MW, with efforts to achieve a further 670,000 MW in capacity underway, driven by investments of US \$478 billion from financial sector since the Paris Agreement was signed<sup>4</sup>”.

At the same time, flows of foreign direct investment worldwide fell by 23% in 2017<sup>5</sup>, and private investment in SDG-related infrastructure in developing countries was lower in 2018 than in 2012<sup>6</sup>.

“Finally, it is worth noting that investment in fulfilling the SDGs could open up \$12 trillion in investment opportunities and create 380 million new jobs and that action on climate change would result in savings of around \$26 trillion by 2030<sup>7</sup>”.

Although funding and social involvement, including the engagement of stakeholders, is taking place, achievement of SDG targets over the medium and long term will depend on the planning and monitoring of proposed actions. In several parts of the world, the River Basin Plan is one of the most important planning instruments for the management of water resources and can consequently be used to establish programs and projects aimed at achieving the SDG 6 targets using diagnostics performed on river basins.

BOX 5 presents the case of the Danube River Basin Management Plan, which involved 14 countries, and sought to protect the river and guarantee the amount of water necessary for the different uses of the basin. 80% of the Danube River’s floodplains and its tributaries were modified. There are several hydroelectric dams that impede the passage of fish and sediment, generating a significant loss of natural habitat and, as a result, biodiversity.

<sup>1</sup> Assets estimated at more than \$80 trillion and \$200 trillion, respectively.

<sup>2</sup> World Bank Database (2017). Gross Domestic Product

<sup>3</sup> Allianz Global Wealth Report (2018).

<sup>4</sup> UNCTAD (2014). World Investment Report.

<sup>5</sup> Research released at COP 24 by Urgewald, BankTrack and 26 partner NGOs. <https://urgewald.org/medien/new-research-revela-banks-e-investidores-finamento-expansão-global-carvão-planta-frota>.

<sup>6</sup> UNCTAD World Investment Report (2018).

<sup>7</sup> Report of the Interagency Task Force on Financing for Development (2019).

A range of targets were established under this Plan, including:

- ▶ Conserve and restore rivers and wetlands in selected areas of the Danube basin, for example, reconnecting former floodplain areas to the river system and;
- ▶ Promote the rational use of freshwater resources in the Danube River basin through communication activities aimed at local communities, the general public, and decision-makers

Field projects were essential to demonstrating the benefits of restoration for people and nature. The project lasted three years and had an allotted budget of €1,795,529 and funding from the European Union through the LIFE Program - Danube floodplains.

The project included several ambitious goals that involve:

1. Water recovery and storage of 12 million m<sup>3</sup> of water;
2. Restoration of 5,327 hectares of wetlands and floodplains;
3. Involvement of 2,100 local actors directly in local restoration activities;
4. Raising awareness with 120,000 people directly at regional and national events and activities and more than 5 million people indirectly via electronic media, *internet*, and leverage through means of financial support received from other sources (mainly public bodies) aimed at contributing to the project's objectives

In addition to initiatives related to the integrated water resources management, large-scale investments in the sanitation sector have proven to be a challenge for achieving the targets of SDG 6, especially in metropolitan regions.

An example of this problem is water pollution in Colombia, which is a result of sanitation services that are lacking or of a poor quality. As the case study highlighted in BOX 6 shows, the problem involves around 100 Colombian mu-

### BOX 5. The basin plan as an instrument for fulfilling targets set forth under SDG 6

One of the objectives of the Danube River Basin Management Plan is to contribute to achieving the targets of SDG 6, promoting the rational use of water resources through communication activities aimed at local communities, the general public, and decision-makers. There are 14 countries working in cooperation to protect the river, which has already lost much of its biodiversity. The project established focus areas for restoration, involving NGOs, governments, local communities, and the private sector. The project was developed through means of the integration of different interests: the protection of the water table at the regional level and nature conservation carried out at the national level.

Public participation is recommended, primarily through two avenues: (1) involvement of observer organizations in work being carried out; and (2) specific activities dedicated to public participation and information. A third line of engagement activities includes dialogue with interested parties with regards to specific integration issues.

#### **Ecosystems as Bridges to Services - OS-RP-51**

Sarah Davidson - WWF



## BOX 6. Sanitation program in Colombia

Colombia is currently faced with the challenge of guaranteeing the supply of clean water to the entire population by 2030 under the circular economy model, and incorporating SDG targets by 2030.

The main objective of the “Municipal Wastewater Sanitation Program (SAVER)” is to fulfill the targets set forth in the document Vision Colombia 2019 and the Sustainable Development Goals, as well as to reach a level of 50% of wastewater from residences treated. The program is focused on 10 river basins covering 42% of the Colombian population.

The program developed initiatives for: the selection and prioritization of municipalities for the construction of wastewater treatment systems; management strategies; review, update, and development of regulation aimed at adjusting instruments for sanitation policy; articulating sources of resources; and financing for the Institutional Strategic Plan.

Through means of sectoral information used in decision-making and water reuse initiatives, the program proposed a comprehensive planning of water resources and the creation of a National Water Committee responsible for long-term management of water and sanitation services in the country.

A total of 25 municipalities and 22 districts have been reached, with projects that involved 37% of the country’s urban population. Through means of a US\$ 250 million investment, a total wastewater treatment capacity of 18 m<sup>3</sup>/s was reached.

### **New Approaches to Improve Sanitation Services in Cities - OS-RP-38**

Oscar Cortes/DNP

#### **More information:**

[www.minvivienda.gov.co/conpesagua/3177%20-%202002.pdf](http://www.minvivienda.gov.co/conpesagua/3177%20-%202002.pdf)

nicipalities. The total load of pollutants in water systems reached 1.7 million tons per year (ENA, 2014) and there is no data available on water reuse. About 52.5% of Colombia’s urban population lives in areas with scarce water supply, with the greatest demands for water for domestic use seen in the Bogotá and Porcè river basins and, of the 396 basins in the country, only 6 have Basin Management Plans (or POMCA, the Plan’s acronym in Spanish) in place. Water services meet demands for approximately 97% of the population in urban areas and 73% of the rural population. Sewage collection services meet the demands for 91% of the urban population and around 70% in the rural population.

The 2014 National Water Study (ENA) constituted a technical contribution to planning carried out within the framework of Colombia’s National Policy for Integrated Water Resources Management, which is led by the Ministry of the Environment and Sustainable Development.

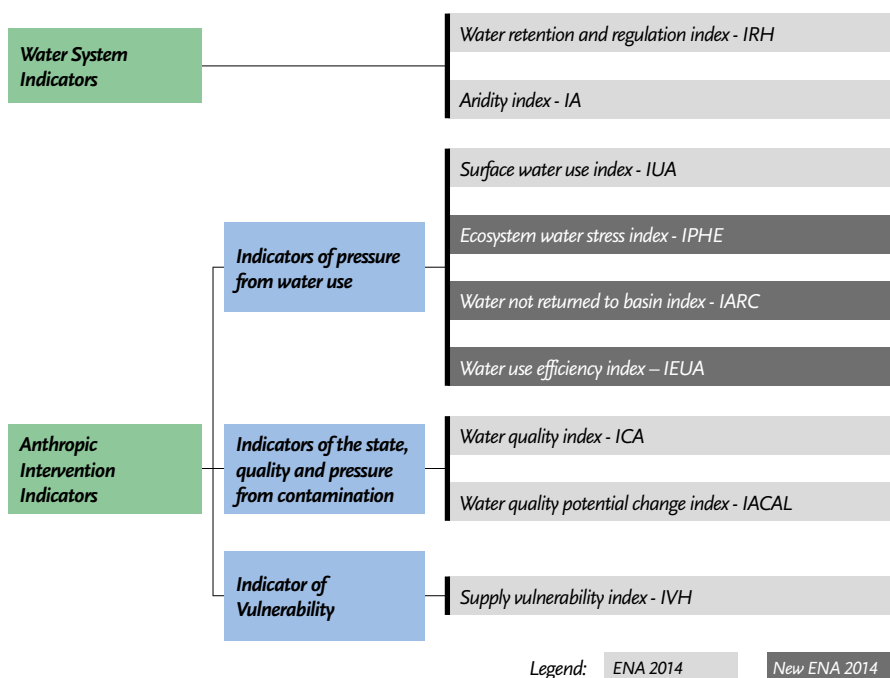
Preparation and technical responsibility for the study is provided by the Institute of Hydrology, Meteorology, and Environmental Studies’ (or IDEAM, its acronym in Spanish) Subdirectory of Hydrology, which designed its architecture and the conceptual and methodological bases through means of a comprehensive approach supported by the logic and processes contained in the hydrological cycle.

The resulting Program to manage wastewater treatment issues, “the Municipal Wastewater Sanitation Program - SAVER”, reflects the integration of different factors forming the information and knowledge base involved in different aspects of the hydrological cycle within both a natural and an interventionist framework, expressed in terms of pressures due to human use and anthropic activities.



The development of governance practices was essential to improving sanitation and sewage services in Colombia, efforts which began in 1993 with the reorganization of management and measures aimed at environmental conservation. In 2002, the Program continued with the Residential Wastewater Management Plan, the Sanitation and Sewage Management Plan, and the Sanitation and Sewage Policy, all of which were implemented between 2007 and 2014.

The national assessment of water management is concept-based and involves an integrated analysis of projects which are represented by a set of water indicators. The indicator system is made up of the following large groups: indicators that change the regime of the natural water system, and indicators associated with human intervention.



**Figure 4.** Water Indicators System (acronyms from the corresponding system in Spanish)  
Source: ENA (2014).

The basins prioritized under the program included: Bogotá River, Upper Chicamocha River, Medellín River, Upper Cauca River, Suárez River and the Fúquene Lagoon and Fonce River stretch, Pasto River, Chinchiná River, the Otún and Consota river basin, the Quindío and La Vieja river basin, and Oro River.

## BOX 7. Water diversion project – China

In order to alleviate water scarcity issues in northern China, the Chinese government decided to build the South-North Water Diversion Project (SNWDP).

The construction and operational management of projects aimed at diverting water between southern and northern China was an initiative intended to help fulfill SDG 6 targets and involved four different project companies. The first phase of the East Route project involved more than 100 municipalities from seven provinces (municipalities seated directly under the central government), covered an area of more than one million hectares, and led to the relocation of more than 400,000 residents.

To ensure the safety of project construction, a new management system for SNWDP land acquisition and resettlement was adopted under the leadership of the SNWDP construction committee and the State Council.

A study of the impacts of water diversion – a long-term monitoring strategy implemented under the aegis of the China Ecological Research Network, has been proposed as part of environmental monitoring.

### **Inter-federative relationships in the management of water diversion projects in hydrographic basins in different regions - OS-RP-16**

Yunzhong Jiang – China Institute of Water Resources and Hydropower Research

#### **More information:**

[www.iwhr.com/IWHR-English/lib/iwhr-english/index.html](http://www.iwhr.com/IWHR-English/lib/iwhr-english/index.html)

The remaining challenge in Colombia is to guarantee a supply of drinking water for the entire population. Under the circular economy approach, the program seeks to incorporate SDG targets by 2030, proposes the integrated planning of water resources, maintains the National Water Committee for the long-term management of water and sanitation services, and generates sectoral information for the purposes of decision-making and water reuse initiatives. Under this scenario, water solidarity constitutes an essential component in achieving SDG 6 targets, in particular universal access to safe drinking water.

In the same way that sewage collection and treatment generally require major investments and sizeable construction projects, the supply of water to large urban regions or to extensive production areas facing water deficits often requires large-scale interventions, as is the case of water transfers carried out between basins. Water diversion projects require that an agreement be entered into between the assigning basin and the recipient basin, which is often difficult to negotiate. In addition, water transfers can force the displacement of communities located along the water supply channel and such communities do not always receive compensation or even benefit from these projects.

A case study taken from China, which is highlighted in BOX 7, exposes some of the complexities involved in this type of project, in which the transfer of water from the south to the north of the country forced the relocation of 400,000 people.

Considering the necessity of relocating a large number of people and the colossal amount of work involved, several questions remain. How will people be relocated? What are the social and economic impacts on the population that was required to change residences? What were the impacts on aquatic ecosystems suffering changes as part of this project? Why was water diversion necessary in this case?

The South to North Water Diversion Project (SNWDP) is an ongoing effort in China aimed at channeling 45 billion m<sup>3</sup> of water annually from the Yangtze River in southern China to the north of the country through means of three separate channel systems. The SNWDP, which has cost more than US\$ 79 billion to date, is the largest and longest water diversion project, as well as the project benefiting the most people and regions.

Since 1949, water use across the country has increased fivefold. After massive flood damage in the 1960s, Chairman Mao Zedong embarked on a campaign to build dams and canals that altered the country’s hydrology and natural landscape.

As cities grew, water from reservoirs began to flow into cities. At the same time, farmers, encouraged to help the government achieve its goal of grain self-sufficiency, increasingly began pumping groundwater to grow wheat. Meanwhile, Chinese cities have also begun withdrawing groundwater. To make matters worse, scientists have concluded that climate change is reducing rainfall in the region.

Although the idea has been studied for more than half a century, starting in the 1950s, the project officially began on December 27th, 2002 and aims to alleviate serious water-related issues in northern China. Work on the eastern and central routes was completed in 2010. The controversial western route, which involves the construction of several dams in the upper Yangtze River basin and hundreds of kilometers of tunnels through the Bayankela Mountains, remains in the planning stages. The entire project is designed to take 50 years to complete.

Major cities in northern China, such as Beijing and Tianjin, are suffering from the effects of climate change, water pollution, and frequent droughts. The SNWDP is expected to strengthen urban water supply, improve water quality, promote sustainable socio-economic development, and improve the region’s ecological environment.

However, concerns remain in relation to water pollution; for example, factories installed along the Eastern Route result in water becoming unsafe to drink. The diversion of water from the Yangtze River basin to the north could exacerbate pollution problems in the Yangtze River – a problem that has been ongoing since the construction of the Three Gorges dam. However, some experts argue that conservation and increasing water use efficiency can help mitigate China’s water problems without harming the environment.

The video available at the following link offers a more in-depth look at the size of the project <[https://www.youtube.com/watch?time\\_continue=294&v=N7TyGPFQ3Tc&feature=emb\\_log](https://www.youtube.com/watch?time_continue=294&v=N7TyGPFQ3Tc&feature=emb_log)>.

## 3.2 The discussion of SDG 6 in other panels

The theme of SDG 6 was also discussed by the High Level Panel on Water and Natural Disasters, which addressed issues related to water access in regions prone to water crises, the need to pursue sustainable development, inclusive partnerships, multi-institutionality, participatory governance, the importance of dialogue between science and policy, and addressing the challenges related to water and migration.

The main objective of the High Level Panel on Water and Natural Disasters was to translate global agreements, notably the Sendai Framework for Disaster Risk Reduction, the 2030 Agenda for Sustainable Development, and COP21 (the Paris Agreement) into political commitments and concrete action, with a special focus on strengthening funding and investments for the reduction of water-related disaster risks and the promotion of science and technology.

## 3.3 Water and the strengthening of participatory management

Fulfillment of the 2030 Agenda and efforts to reach the targets included in the Sustainable Development Goals will require participation from various actors. This will require different sectors and decision makers to work together in an integrated manner, bringing together financial resources, knowledge, and experience. In the new era of development, with 17 interconnected Sustainable Development Goals and 169 associated targets and plans for building a sustainable future, it will be necessary to build innovative cross-sectoral and multi-sectoral partnerships that will play a crucial role in humanity fulfilling its commitments by 2030.

Partnerships for sustainable development are multi-stakeholder initiatives voluntarily undertaken by governments, intergovernmental organizations, large groups and other interested parties, such as Agenda 21, the Johannesburg Plan, the Millennium Declaration and the outcome document for the Conference of United Nations on Sustainable Development (Rio + 20) entitled “The Future We Want”.

SDG 17 points to the need for participatory management and strengthening means of implementing cooperation in moving towards Sustainable Development. SDG 17 recognizes the need for multi-stakeholder partnerships as important vehicles for mobilizing and sharing knowledge, experiences, technologies, and financial resources to support sustainable development. It also seeks to encourage and promote effective partnerships between the public and private sector and civil society based on experience and strategies for using partnership resources.

This subsection will therefore present experiences that are strongly correlated with SDG 17.

The first experience, highlighted in BOX 8, demonstrates the importance of building platforms aimed at facilitating discussions between different actors, an initiative that should be strengthened.

In an example brought to the 8th Forum, the Global Water Partnership (GWP) presented its experience in establishing partnerships and adopting tools that can help achieve the targets of SDG 6 through means of the participatory management necessary. For example, one of the projects under of the platform adopted by the GWP is located amidst the challenges faced in the Aral Sea region. Unequal distribution of water and potential conflicts are especially pronounced in the Aral Sea Basin (Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, Kazakhstan). For this reason, in 1992, a cooperation agreement for the joint use and protection of water resources of interstate importance was established and the Interstate Commission for Water Coordination (ICWC) was formed, which provided the two existing watershed organizations with subsidies. The Interstate Council of the Aral Sea (ICAS) and the International Fund for Saving the Aral Sea (IFAS) were also subsequently formed, and the region’s emerging institutional structure attracted the attention of international donors.

Another example highlighted by the GWP was the construction of an urban water partnership model in Karachi, Pakistan. Inadequate water and sanitation services and inefficient use of water in Karachi were the main reasons behind the formation of the Karachi Water Partnership (KWP). This partnership is intended to promote collective stakeholder action and integrated water resources management (IWRM). The partnership has evolved into a multi-party platform.

## BOX 8. The experience of the Global Water Partnership

*The forming of partnerships and the adoption of decision-making tools can facilitate the implementation of initiatives aimed at fulfilling the targets set forth in SDG 6.*

In order to democratize access to water, improve governance, adapt to climate change, and optimize the use of water resources, it is important to build a collaborative model to support decision-making through means of transparency and consensus, as well as stakeholder participation. An online platform can be used to help build partnerships aimed at fulfilling SDG targets. Projects in Asia, Karachi, Mekong that share common challenges (such as uniting people from different cultural backgrounds, transition costs, and a political agenda) require a permanent secretariat.

Multi-stakeholder partnerships, a flexible and inclusive network (one that cultivates trust and neutrality), a partnership between governments and citizens (consultation and collaboration), a public policy forum (decision making for IWRM and water security), community dynamics involving progressive and structured practices, an innovative knowledge base (training and publications), and training for collective action with regards to water management and popular engagement are recommended.

### **Inclusive Multi-Institutional Partnerships and Participatory Governance - HLP 6**

Oyun Sanjaasutren – President of the Global Water Partnership (GWP)

#### **More information:**

<[www.researchgate.net/publication/316569384\\_Collaborative\\_Modelling\\_for\\_Informed\\_Decision\\_Making\\_and\\_Inclusive\\_Water\\_Development](http://www.researchgate.net/publication/316569384_Collaborative_Modelling_for_Informed_Decision_Making_and_Inclusive_Water_Development)>  
<[www.gwp.org/globalassets/global/toolbox/publications/perspective-papers/collaborative-modelling\\_perspectives\\_paper.pdf](http://www.gwp.org/globalassets/global/toolbox/publications/perspective-papers/collaborative-modelling_perspectives_paper.pdf)>

Another platform collaboration presented by the GWP was the formation of the Women for Water Partnership (WfWP), designed to attract women from all sectors of society and facilitate collaboration in order to ensure that their voice is effectively channeled into the most significant policy proposals, discussions, and initiatives related to water, food, and means of sustenance.

In the Mekong River Basin, a platform was also built to facilitate engagement at the grassroots level and facilitate high-level dialogue for transboundary water management. The Water and Nature Initiative (WANI) was subsequently developed and received support to expand research within the village of Tai Baan. WANI developed a toolkit aimed at demonstrating environmental flows, which contributes to high-level dialogue in the Upper Mekong and influences water policy development in Laos and Vietnam.

Many of these activities face common challenges, such as the involvement of organizations employing different approaches, cultures, interests, vocabularies and values, the need to encourage the contribution of all members, the considerable transaction costs and a need to aggregate value, the need to prevent stakeholders from being “reduced” to listeners to ensure that none of the groups find themselves at a disadvantage and excluded, maintenance of a political agenda, maintaining a capacity for coordination, and the need for a long-term permanent secretariat.

The following recommendations are suggested in order to deal with such challenges:

1. Create a working relationship based on trust, mutual respect, open communication and understanding among stakeholders with regards to the strengths and weaknesses of the other party;
2. Recognize the value added by organizations in investing time and resources, as this is beneficial for all parties involved and provides visible results;
3. Gain the trust of the organization responsible for leadership in structuring the partnership with clearly defined roles and responsibilities, a work program, and operational capability;
4. Build a resource mobilization strategy; and
5. Recognize and legitimize different levels of collaboration.

Another case worth mentioning is the experience of Santo Domingo, Dominican Republic. The discussion of this case, which is highlighted in BOX 9, begins with a characterization of the region, which is formed by more than 400 rivers with a total area of 2,962.5 km<sup>2</sup>. This environmental area is home to more than 3.5 million inhabitants, 10% of which live in flood areas and 40% in areas with slopes presenting a landslide risk. About 30% of this area is not protected

by the Ministry of the Environment, nor by any other authority. As a result, the basin experiences considerable levels of deforestation.

The project’s objectives are to create adequate governance in water management and to promote fundraising, expand communication and participation, achieve sustainable management and final disposal of solid waste, the management and final disposal of wastewater, promote the management of the upper and middle basins of the Ozama and Isabela rivers, and strengthen community education and environmental awareness.

Through means of the formation of these governance practices, nine territorial groups were created, as well as three thematic working groups – focused on planning, solid waste, and the environment – and three microbasin committees (see Figure 5 below).

Regarding the sustainable management and final disposal of solid waste, cleaning and collection days were organized as part of permanent efforts carried out between municipalities and foundations. A Master Plan for the Integrated Water Resources Management was prepared, and a landfill was built using waterproofing elements, so that the leachate would not have contact with the soil and underground water.

With regards to the management and final disposal of wastewater, 12 interventions were carried out by the Santo Domingos Aqueduct and Sewage Corporation (or CAASD, its Spanish acronym) and the Ozama station – which is used to treat leachate – was built. The Management Plan for the Ozama and Isabela River Basin was also developed.

The Management Plan also contains provisions for the planting of 1.59 million trees, the creation of a watershed management office, and the building of six nurseries. There are also plans to design four additional nurseries. The Plan was also responsible for the founding of a technical school, and the planning of another one, besides establishing a watershed management agreement between several organizations, creating the Experimental Sierra Prieta Farm, and opening offices for the agricultural and livestock sectors in several municipalities.

## **BOX 9. The experience of the community of Santo Domingo, Dominican Republic**

***The empowerment of civil society is an important instrument in achieving the targets set forth in SDG 6***

Strategic planning, based on a diagnosis of over 400 rivers and which impacted 3.5 million people, aimed to recover the rivers, establish practices for management and final disposal of wastewater, promote environmental education, and create a Commission for integrated territorial action plans. Additionally, the experience involved environmental education training, provided through courses offered to 1,352 teachers and 64 community leaders, on behalf of various social organizations and foundations, with topics covering recycling and climate change.

It is recommended that democratic process for water resource management be strengthened.

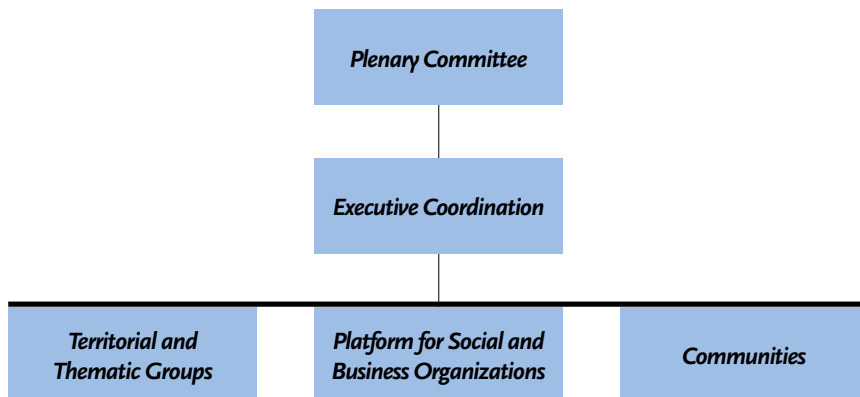
**Civil Society and Social Capital - OS-CF-15**

Onofre Rojas / Santo Domingo Community

**More information :**

<<http://www.coalicionrio.org/site/images/documentos/proyectos/ozama/recopilacion-documentales-sobre-la-cuenca-ozama.pdf>>





**Figure 5.** Project Governance in Santo Domingo.  
Source: courtesy of speaker Onofre Rojas, OS-CF-15.

With regards to environmental education and training, courses were provided for 1,352 teachers and 64 community leaders which covered recycling, climate change, and other topics and included a large number of social organizations and foundations within its scope.

Final reflections were aimed at guaranteeing a procedural dynamic of legality and legitimacy, in addition to contributing to offset rights, keeping in mind that equality is an ideal that must be pursued, promoting the most equitable actions possible.

Another example presented at the 8th Forum is the *Nossa Água* (“Our Water”) Project, led by the Environmental Research Institute of the Amazon (IPAM), which seeks to fulfill the main objective of the Brazilian government’s National Program for Universal Access to Water and Water Usage (Water for All) by guaranteeing access to quality water for families settled in the western region of Pará. The project, which is described in BOX 10, provides water for human consumption in rural areas, with the aim of contributing to human development and food and nutritional security for families living in situations of social vulnerability. The Project received support from the Ministry of Social Development and the Fight against Hunger and the partnership existing between the National Institute for Rural Settlement and Agrarian Reform (INCRA), Center of Associations of Agrarian Reform Settlers for the State of Pará, the Rural Workers’ Union of Manaus, and several grassroots organizations.

These efforts resulted in the installation of 158 water supply systems in three of the region’s rural territories. Shallow and wide-mouth tube wells and mini-water supply systems were built, providing around 590 families with access to water that is suitable for consumption. This project represents a major chal-



lenge in relation to the targets established under SDG 6: bringing water to isolated communities.

It is important to note that there is a great diversity of communities living in isolated locations worldwide and it is therefore essential that this kind of project is highly valued and replicated.

The lesson learned in a context involving the challenge of working with isolated communities is that governance and agreement on responsibilities are essential to ensuring sustainability. Scalability and sustainability depend more on good governance than on technical factors such as infrastructure and improved knowledge, or even the availability of financial resources.

Issues such as limited managerial capacity, mismanagement of financial resources, corruption, and weak institutions limit the ability to deliver sustainable results at scale. There must be a focus on results provided within a framework of accountability, and the objective must be maintained throughout the entire design process in order for a program to reach isolated communities, including in emergency situations. Governments, service providers, civil society and communities must be involved in order to promote participation and strengthen citizen monitoring systems, and accountability mechanisms.

It is critical that stakeholders, including different levels of government and private sector institutions, civil society organizations, development partners and sector professionals, are involved in the various development phases for strategies aimed at reaching different communities.

From another perspective, training is presented as being fundamental in ensuring sufficient participation from stakeholders in the management of water resources. This is the subject of the case presented by the International Commission for the Basin of the Congo-Ubangui-Sangha Rivers (or CICOS, the corresponding acronym in French). The project in question, which is highlight-

## BOX 10. Experience of participating in a non-governmental organization

***The Nossa Água (“Our Water”) project is one of the initiatives aimed at fulfilling the targets of SDG 6.***

In rural areas of the Amazon, access to quality water is limited. A serious threat to food security therefore exists, which forces individuals out of the countryside and leaves these areas vulnerable to land grabbing and deforestation.

The implementation of integrated water resources management projects in the Amazon must have their overall vision adjusted to the region’s specificities and the culture of the local inhabitants, which is more integrated with the forest itself.

The integration of environmental aspects with water is vital for the implementation of a water resources policy in the Amazon.

The *Nossa Água* project offered training in the Integrated Water Resources Management, bringing together cultural aspects and integrated management of the use of land, forests, and water.

The organization Forest was invited to record the project, which resulted in the production of an institutional documentary. The video shows the change in the lives of families assisted by the program, which was implemented by IPAM with support from the Ministry of Social Development and Fight against Hunger (MDS): <https://www.youtube.com/watch?v=6TWqrwGEhCc>

**Invisible realities: water security in favelas, as well as in post-conflict and post-disaster situations in other communities - OS-TP-15**

Erika de Paula Pedro Pinto / IPAM

**More information:**

<[www.forestcom.com.br/portfolio-item/nossa-agua](http://www.forestcom.com.br/portfolio-item/nossa-agua)>

## BOX 11. Training to improve participation

### *Improve hydrological monitoring in the Congo basin for the integrated water resources management in the context of climate change.*

The objective is to improve and implement transboundary IWRM in the Congo River basin in the context of climate change.

Work was carried out as an integral part of the Strategic Plan for the Development and Management of Water (or SDAGE, the corresponding acronym in French) from the International Commission for the Basin of Congo-Ubangui-Sangha Rivers' (or CICOS in the French language).

Project activities include providing a validated altimetry database, carrying out a baseline study on hydrological monitoring and space applications in the Congo basin, the installation of two satellite-connected hydrological gauging stations in the Congo basin, and training in National Hydrological Services.

One of the objectives is to integrate the use of satellite earth observation technologies in hydrological monitoring and to provide CICOS with the capacity to improve operational hydrological monitoring.

#### **Improving education and training. Session 1: Information and Training for Decision Makers - OS TP 76**

Mrs ENAW, née Judith EFUNDEM  
AGBOR - CICOS representative.

#### **More information:**

<[www.cicos.int](http://www.cicos.int)>

<[www.giz.de/en/downloads/giz2014-en-transboundary-water-management-congo-basin.pdf](http://www.giz.de/en/downloads/giz2014-en-transboundary-water-management-congo-basin.pdf)>

ed in BOX 11, focuses on improving hydrological monitoring and providing support for the operational development of the basin's Hydrological Information System.

The Management Plan for the Reclassification and Management of Water Resources in the Congo River Basin (PDRGRH) 2016-2020 constitutes CICOS's management plan in the water sector. A Strategic Action Plan (PAE) was also prepared for the purposes of navigation.

In accordance with the principles of Integrated Water Resources Management (IWRM), measures were implemented under the PDRGRH and PAE using a participatory approach involving meetings held by a variety of national and regional consultation platforms.

Included among the initiatives implemented by CICOS is the development of projects such as Transboundary Water Management in the Congo Basin (GETRACO) and GIZ (the German Corporation for International Cooperation), which created a training center in 2007 focused on providing the region with highly qualified personnel.

Implementing projects in transboundary basins is a major challenge. These experiences in the Congo River Basin are therefore fundamental in learning and seeking out lessons that can be applied in similar cases in other transboundary basins. This is of particular importance due to the fact that there are 263 transboundary lake and river basins covering almost half of the Earth's surface; 145 different states have territory located within these basins and 30 countries are located entirely within them. In addition, there are approximately 300 transboundary aquifers, which help to serve

the two billion people who depend on groundwater.

Cooperation is therefore essential, especially in areas vulnerable to the impacts of climate change and in which water is already scarce. Wetlands around lakes and floodplains that straddle national boundaries provide essential eco-

system services to neighboring populations, such as the supply of food, flood barriers, and natural processing of pollution.

A final case highlighted under the theme of participatory management is the experience in the Seine river basin, in Normandy, the backdrop of which includes the impacts of climate change.

It is important to reiterate that climate change is one of the major global challenges faced by humankind during this century at all levels: environmental, economic, social, cultural, and health related. Our environment will change, clean water will become increasingly scarce, and extreme events more frequent. It is therefore necessary to rethink practices and models at all scales in order to make territories more resilient and united and to understand how to adapt to extreme climatic events, as well as to deep and gradual changes.

There is therefore a strong level of awareness in relation to the Seine-Normandie basin that all stakeholders in water use and all basin territories are or will soon be affected by climate change, with communities affected in terms of drainage and urban heat islands, industries in terms of refrigeration and waste, farmers in terms of scarcity, the shortening of crop cycles, crop adaptation, increased erosion, and finally, the entire population due to floods (due to surface runoff, coastal erosion or overflow), landslides, and a lack of access to drinking water.

The importance of developing a strategy for adapting to climate change in the Seine-Normandie basin was therefore recognized, as described in BOX 12.

The general objective of the strategy implemented in the Seine-Normandie Basin was to generate and disseminate knowledge through the involvement of all interested parties, from the mayor to the committee coordinator, other actors and decision-makers present in the basin, and its inhabitants, in order to build a territory that is more resilient to climate change.

## **BOX 12. The experience in the Seine-Normandy**

### ***Strategies for adapting to climate change in Normandy.***

Climate change is responsible for an 80 cm increase in sea level, a 2° C increase in water surface temperature, a 12% reduction in rainfall, a 23% increase in evapotranspiration, and a 30% decrease in aquifer recharge in the Normandy basin. To facilitate the participation and involvement of society in the discussion and mitigation of these impacts, through means of the methodology developed by the Water Agency, more than 30 meetings were held in the basin in 2016.

Strategic responses from watershed stakeholders included the co-production of knowledge on local climate, the development of more sustainable agricultural and forestry systems, a reduction in pollution at the source, reduced water consumption and the optimization of water withdrawal, the management of rising sea levels, adaptations in navigation management, improvements to the management and governance of water resources, and the development of monitoring and knowledge generation tools to tackle the problems that have been generated.

### **Water and Climate Change in Europe - OS-RP-50**

Mrs. Florence Le Monnyer – Seine-Normandie Basin Agency

#### **More information:**

<[www.eau-seine-normandie.fr/domaines-d-action/cooperation-internationale](http://www.eau-seine-normandie.fr/domaines-d-action/cooperation-internationale)>

The planning stages for initiatives involved a major emphasis on the concepts of adaptation and mitigation, as defined below (EAU, 2016):

**Mitigation** - is a series of human interventions aiming to limit or reduce emissions and concentrations of greenhouse gases in the atmosphere or improve the capacity to store these gases.

**Adaptation** - is the process of adjusting human activities to current or expected climate realities and their respective effects. In human systems, adaptation seeks to moderate or prevent the emergence of serious problems or to take advantage of opportunities or potential benefits stemming from climate change.

The approach is wide-ranging and collaborative and based on territorial issues that take the expectations of actors into account. Several meetings in workplaces held on a variety of topics were organized throughout 2016 in order for this strategy to be constructed alongside stakeholders, thereby strengthening solidarity between territories in discussing and facing the innumerable challenges that lie ahead.

The resulting strategy was intended to be used by all water managers and users in the basin and could be updated or reformulated over time in accordance with the advancement of scientific, technical, legislative, and social knowledge. All actors are invited to take ownership of this strategy and apply it to their sectoral strategies through means of different planning and programs aimed at the occupation of the region, allowing them to be implemented in a concrete fashion at the level of the basin.

Some existing financial tools have been mobilized to implement the shared approach, including the Water Agency program, the Risk Prevention Fund (known as the Barnier Fund), and other European funds.

Working groups were created during the debates held by the river basin committees in such a way that the experience of participation, in which the scientific community and local actors were involved in the construction of the strategy, could facilitate decisions made with regards to this theme. This resulted in the unanimous approval of the strategy by the River Basin Committee, which consists of 185 members, in December 2016.

Five objectives were developed that are aimed at increasing the region's resilience in relation to climate change:

1. reduce dependence on water and guarantee human development in order to ensure a reduction in water consumption;
2. preserve water quality;
3. protect biodiversity and ecosystem services;
4. reduce flood and landslide risks; and
5. anticipate the consequences of rising sea levels.

### 3.4 Education and training for the integrated water resources management

Education and training for the Integrated Water Resources Management must be part of a permanent strategy for effectively reaching targets established under SDG 6. Government institutions, the private sector, and civil society must invest heavily in education programs, training, and guaranteeing technical, human and financial resources in order for programs to be created.

According to Irina Bokova, Director General of UNESCO (2017), Education for Sustainable Development is a key instrument for reaching the targets included in the SDGs. Furthermore, a fundamental shift is needed in the way we think about the role of education in global development, because it has a synergistic impact on the well-being of individuals and the future of our planet. More than ever before, education carries a responsibility to live up to the challenges and aspirations of the 21st century and promote the values and skills that will lead to sustainable and inclusive growth and peaceful coexistence. Education can and must contribute to a new vision of sustainable global development.

The path of sustainable development requires a profound transformation of the way in which one interferes and acts in relation to the environment. To create a more sustainable world and engage with sustainability issues as outlined in the SDGs, individuals must become agents of change for sustainability. This requires knowledge, skills, values, and attitudes that allow them to make a contribution to sustainable development. Education and training are therefore crucial to achieving sustainable development. The approach to Education for Sustainable Development (ESD) is well established and empowers social actors to make informed decisions and act responsibly in ensuring environmental integrity, economic viability, and a just society for present and future generations.

The first experience highlighted under this topic is the case of the Hydrology Program for Environment, Life and Policy (HELP). HELP’s central strategy is to establish a global collaborative network for studies and research into water basins, which also seeks to integrate science and management. This network currently consists of 91 basins located in 67 countries, working with a large number of different research topics in hydrology and water resources (BOX 13).

The program focuses on the concept of sustainable water management. The idea of sustainable ecohydrology is also used, which focuses on developing an integrated understanding of biological and hydrological processes in order to create a scientific basis for a socially acceptable, economic and systemic approach to the sustainable management of freshwater resources. This ensures that all aspects of research related to flow-ecology are covered.

## BOX 13. Hydrology program for the environment, life, and policy

### *Ecologically Sustainable and Integrated Water Management through the Hydrology Program for the Environment, Life and Policy (HELP).*

This program is an initiative from UNESCO which focuses on watersheds and aims to provide social, economic, and environmental benefits by striving for sustainability and the appropriate use of water. Ecohydrology is an interdisciplinary field that studies the interactions between water and ecosystems (aquatic, terrestrial). These interactions can occur within bodies of water, such as rivers and lakes, or on land, in forests, deserts, and other terrestrial ecosystems.

The Integrated Water Resources Management (IWRM) is essential to the planning and implementation of activities related to the rational use of these resources, taking the entire spectrum of human interaction with the water cycle into consideration. To strengthen the connection between hydrology and the needs of society, it is recommended that a new approach to watershed management that is based on IWRM be applied.

### **Mobilizing scientific activities for the purpose of reaching SDG targets through improved management of freshwater ecosystems in Asia and the Pacific - OS-RP-46**

Soontak Lee - Yeungnam University, International Hydrologic Environmental Society (IHES).

#### **More information:**

<[https://unesdoc.unesco.org/ark:/48223/pf0000122948\\_spa](https://unesdoc.unesco.org/ark:/48223/pf0000122948_spa)>  
<<http://www.unwaterbestpractices.org>>  
<<https://en.unesco.org/themes/water-security/hydrology>>

The program also includes multi-purpose decision development and integrated watershed management, the planning and management of water resources in various sectors, the participatory process, and the shared vision.

The Program operates in several basins, including:

- ▶ **North America:** Lake Champlain, Washita River Basin, Willamette River Basin;
- ▶ **Central and South America:** San Pedro River Basin (Mexico), Reventazon-Parisimina River Basin (Costa Rica) and the Pípiripau River and São Francisco Verdadeiro river basins (Brazil);
- ▶ **Europe:** Guadiana river basin (Portugal), Motala Strom river basin (Sweden), Glowa-Danube river basin, Mesta-Nestos river basin (Bulgaria - Greece);
- ▶ **Asia and the Pacific:** Tarim River and Heihe river basins (China), Indus River Basin (Pakistan), Murray-Darling and Burdekin river basins (Australia).

Therefore, for the purposes of improved watershed management as defined under the HELP Program and IWRM, this must be a process that promotes coordinated development and integrated management of water, soil, and related resources in order to maximize welfare and economic and social consequences in a manner that is equitable, without compromising the sustainability of ecosystems.

The process must be continuous, as a means of avoiding or resolving water-related conflicts and to achieving three main objectives: equity, efficiency, and sustainability.

It should be noted that the Ribeirão Pípiripau Watershed, which is one of the Brazilian basins included within the scope of the HELP Program, was one of the three Technical Visits that were part of the official program for the 8th World Water



Forum. It was selected due to advances made in the Integrated Water Resources Management in the region, which has historically experienced a significant number of conflicts related to water use (LIMA E RAMOS, 2018).

The second case involves the International Network of Water Training Centers (INWTC) and is highlighted in BOX 14. This Network is based on the assumption that, in order to reach the targets established under SDG 6, it is necessary to build new structures and improve the quality of services, thereby making advances in meeting the needs of users. For this to occur, it is essential that the governance of services be improved, existing capacities be expanded, and investments in human resources be made.

As part of an action strategy, INWTC recommends:

1. Development of professional training in the water sector involving the following activities:
  - 1.1. Reinforcing awareness of the importance of professional education and training in water management in development strategies and programs;
  - 1.2. Integration of vocational training and investments;
  - 1.3. Encouraging the dissemination of the use of best practices and innovation that are appropriate for vocational training institutions.
2. Support professional training through means of financial sustainability, including the following activities:
  - 2.1. Fund training through investments;
  - 2.2. Create “reserve funds” at the national level for the development of professional training. This could be financed through taxes, proportionate business contributions, or a percentage of water sales;

## BOX 14. International Network of Water Training Centers (INWTC)

**Mission:** To promote innovative training, especially within the context of improving the quality and cost of water and sanitation services, irrigation, and the management of natural environments and the environment as a whole.

Created in 2008, with 16 training organizations located in 15 countries, the network has four main objectives: sharing experiences between training centers, promoting technical and professional training, encouraging the creation of water training centers, and carrying out support activities aimed at national institutions, donors, and development banks.

Furthermore, the INWTC is responsible for developing permanent relationships between the institutions involved and providing for the exchange of experiences, raising awareness of the importance of professional water training in development strategies and programs, building a platform in the areas of safe water supply and sanitation, assessing the actions implemented, and strengthening the collection of data and information.

The scope of the network includes:

- ▶ 6,000 interns/year.
- ▶ 550 training sessions/year.
- ▶ 30,000 m<sup>2</sup> of infrastructure and teaching equipment for practical training.

### Information and Training for Decision Makers - OS TP 76

Edouard Boinet – Project Manager / INWTC

#### More information:

<[www.minvivienda.gov.co/conpesagua/3177%20-%202002.pdf](http://www.minvivienda.gov.co/conpesagua/3177%20-%202002.pdf)>

3. Develop professional training strategies that incorporate the principles of human development, including the following activities:
  - 3.1. Developing skills related to career advancement;
  - 3.2. Systematically developing long-term training plans both nationally and internally within water companies.

It is important to note that it is of the utmost importance that experiences demonstrating the participation of youth in working towards the targets of SDG 6 are selected. There are several initiatives provided by organizations worldwide that are mobilizing and empowering youth to participate in achieving the Sustainable Development Goals.

One example is the ECOSOC Youth Forum (<https://www.un.org/ecosoc/en/content/2020-ecosoc-youth-forum>), which is co-hosted by the UN Council on Economic and Social Affairs (ECOSOC) and the Office of the UN Secretary-General's Youth Envoy.

The Youth Forum is the largest annual meeting of young people held by the United Nations. In 2015, the Forum brought together more than 1,000 young leaders and advocates from the United Nations and called on the global community to deliver on the promise of building a sustainable, secure, and equitable future.

It is essential to effectively involve young people in decision-making on issues affecting their lives, both now and in the future. In a decisive decade for the 2030 Agenda, the participation of young people in generating solutions and swift action in relation to priority areas is crucial to achieving progress.

In the Conversation Round, “The Future of Water for future generations” held at the 8th World Water Forum’s Citizens Village, Agata Tomassi mentioned that “instead of waiting for things to happen, we want to build an intergenerational commitment to taking care of the planet’s water”.

In relation to the theme of participatory management, the final case that will be presented is that of the *Rios Urbanos* (“Urban Rivers”) project, which is presented by the organization *Rios e Ruas* (“Streets and Rivers”). The organization’s mission is to deepen the reflection on the use of public space and returning buried and submerged rivers back to urban spaces. The organization’s activities involve initiatives aimed at integrating knowledge and experiences in order to raise awareness of cities’ forgotten rivers (BOX 15).

An example of the application of this project in Brazil is the case of the Pirarungáua stream in São Paulo (SP). The Pirarungáua stream began to be revitalized in March 2007. The project included works aimed at uncovering the waters that flowed through a rudimentary underground channel built in 1940, with brick walls and a slab forming the bottom of the channel. Today the proj-



ect adheres to requirements established under the Management Plan for the Fontes do Ipiranga State Park, which offers guidelines for the recovery of bodies of water.

The work carried out by *Rios e Ruas* is a fundamental experience, not only from an environmental perspective, but also from an educational standpoint. Directing the urban population’s attention towards water, to the existence of a river that was covered during the city’s construction, means recovering the (urban) human’s connection with rivers and, at the same time, with nature. These efforts may also help to shed some light on why modern cities suffer from such severe flooding even when the amount of rain does not exceed predicted levels during a given period.

## BOX 15. The hidden rivers in cities

### ***Rivers and Streets - The history of hidden rivers in the city of São Paulo.***

An initiative like this, which seeks to reflect on the existence of rivers in urban areas, is capable of making a significant contribution to reaching SDG targets, particularly in cities like São Paulo.

Large cities sometimes hide rivers and streams under asphalt and buildings, which give rise to a variety of issues and creates even more distance between cities and their citizens. A wide range of initiatives aimed at “returning” these hidden rivers and streams to the city have been successfully implemented worldwide, often with somewhat surprising results, and offer solutions to environmental, urban, and social issues. These initiatives seek to reduce the number of floods that occur, conserve submerged waters, reinvigorate animal and plant life, fight against pollution, and reduce temperature in cities, integrate leisure areas, and transform urban spaces.

### **Urban Rivers: Citizens as agents of transformation within this environment OS-CF-03**

Luiz de Campos / *Rios e Ruas*

#### **More information:**

<[www.mostrarioseruas.com.br/plataforma.php](http://www.mostrarioseruas.com.br/plataforma.php)>



## 4. Conclusions and recommendations

Brazil's 2018 World Water Forum served as a stage for presenting a series of interesting experiences highlighting the importance of the relationship existing between water and society.

The sum of the experiences discussed was divided across three themes, which are presented in the following Tables: (i) fulfilling the targets of the Sustainable Development Goals 6, (ii) strengthening participatory water management, and (iii) education and training for the integrated water resources management.

**Table 7.** Water and the Sustainable Development Goal 6 - SDG 6

<b>Institution</b>	<b>Segment</b>	<b>Theme</b>	<b>Country/Continent</b>
Women's Association	Civil Society	Woman and SDG 6	India/Asian
Asian Bank	Public Bank	Financial Resources	Asian
Seine-Normandie Basin Committee	Various	Basin Plan	10 Countries/European
Sanitation Programs In Colombia	Public	Sanitation and SDG 6	Colombia/South America
The Government of China	Public	Water Diversion In Basins and SDG 6	China/Asian

The Self Employed Women's Association (SEWA) was able to involve twenty-five thousand women in its water conservation and hygiene awareness campaigns in addition to the construction of tanks for harvesting rooftop rainwater that were designed to make direct improvements to the quality of the local water supply. This experience is quite significant, as it represents a project in which women are the main protagonists, and female participation in the management of water resources is historically considered a major challenge in governance.

The need for fundraising is imperative with regards to the implementation of sustainable development projects. The investments made by the Asian Development Bank (ABD) in relation to the theme of climate change are in line with SDG 6 targets aimed at the expansion of sewage and drainage services

and improving operational capacity and resilience to climate change, among other issues.

One of the objectives of the Danube River Basin Plan is to contribute to fulfilling the objectives of SDG 6, promoting the rational use of water resources through communication activities aimed at local communities, the general public, and decision-makers.

The Colombian case demonstrates the significant role played by a robust sanitation program. The main objective of the “Municipal Wastewater Sanitation Program (SAVER)” is to fulfill the goals set forth in the document Vision Colombia 2019 and the Sustainable Development Goals, as well as to reach a target of having 50% of wastewater from residences treated. The challenge in Colombia is to guarantee the supply of clean water to the entire population by 2030 while incorporating SDG targets.

Water scarcity persists in several regions of the world, and infrastructure interventions are often required to guarantee water access and management. This is the case with the diversion of the Yangtze River, which is coordinated by the Chinese government. The construction and operational management of projects seeking to divert water from southern to northern China, which involves the displacement of 400,000 people, was an initiative aimed at achieving the targets of SDG 6.

**Table 8.** Experiences within the theme of Water and Strengthening of Participatory Water Management

Institution	Segment	Theme	Country/Continent
Global Water Partnership (GWP)	Civil Society/ Academia	Decision Making Tools	Five Countries/Asian
Partnership Between Government of the Dominican Republic / Community of Santo Domingos	Government/ Civil Society	Program	Dominican Republic/ Central America
IPAM	Civil Society	Communities in the Amazon	Amazon/ South America
African Governments/Congo River Basin Committee	Government/ Civil Society	Climate Change and SDG 6	Four Countries/Africa
Seine-Normandie Basin Agency	Basin Agency and Others	Adaptation and SDG 6	France/European

The experience of the Global Water Partnership (GWP) demonstrates the importance of building platforms to facilitate discussions between different actors, an initiative that must be strengthened.

The participation of civil society is an important instrument for achieving the targets of SDG 6, and the experience of the Santo Domingo community in the Dominican Republic provides an example of this type of participation. Strategic

planning, based on diagnostics performed on over 400 rivers and which impacted 3.5 million people, was focused on recovery of the rivers, establishing management practices and the final disposal of wastewater, in addition to promoting environmental education through means of training courses provided to 1,352 teachers and 64 community leaders.

The *Nossa Água* Project, led by the Amazon Environmental Research Institute (IPAM) seeks to provide families settled in the western region of Pará with access to quality water, providing water for human consumption in rural areas for the purposes of contributing to development and the food and nutritional security of families living in situations of social vulnerability. This initiative offers an excellent example of the importance of involving non-governmental organizations in the execution of integrated water resources management projects.

The experience gained in the Congo River basin was aimed at improving hydrological monitoring in the integrated water resources management in the context of climate change. One of the project's objectives is to integrate the use of satellite earth observation technologies in hydrological monitoring.

The experience of the Seine-Normandie basin, which involves building a climate change adaptation strategy for the basin, is very timely and serves as an example for other contexts, as it puts into practice several adaptive measures seeking to manage climate change in line with existing soil and water management practices.

**Table 9.** Experiences in Water: Education and Training for the integrated water resources management

Institution	Segment	Theme	Country/Continent
Lisbon International Centre for Water (LisWater)	Educational and Research Institute	Education and Training	Portugal/Europe
International Research and Training Center on Erosion and Sedimentation (IRTCES)	Educational and Research Institute	Education and Training	Headquarters in Several Countries
Unesco	Un Organ	Hydrology for the Environment,, Life, and Policy Program (Help)	Global Program/Serves a Variety of Countries and Continents
International Network of Water Training Centers	Partnership	Training Center	15 Countries/Africa/ Central America/ Europe/ Asia
<i>Engajamundo</i> / Global Youth Hub	Civil Society	Youth and SDG 6	Brazil/Other Countries/ South America/Asian
<i>Rios e Ruas</i>	Civil Society	Hidden Rivers	Brazil/South America

The Lisbon International Centre for Water (LIS Water) provides training and information for decision makers with regards to the integrated water resources

management. Training and capacity building in water and wetland management is an important component in assessing decision-making.

The International Research and Training Center on Erosion and Sedimentation (IRTCES) promotes the international exchange of knowledge and cooperation in the study of erosion and sedimentation issues. IRTCES is of interest to the theme of SDG 6, due to the possibility of civil society being trained to implement recovery programs in order to reduce sedimentation and consequently improve the quality of water and its supply.

In order to improve the link between hydrology and society's needs, UNESCO has implemented the Hydrology for the Environment, Life, and Policy (HELP) program for watersheds, which aims to provide social, economic, and environmental benefits in moving towards sustainability and the proper use of water.

The International Network of Water Training Centers (INWTC) provides opportunities for sharing experiences between treatment centers, promotes technical and professional training, encourages the creation of water treatment centers, and carries out support activities aimed at national institutions, donors, and development banks.

In addition to the need for the involvement and engagement of youth in achieving the targets of SDG 6, investment in training young people represents a renewal of frameworks for water resources management. Consequently, the work of Engajamundo, which focuses on providing decision makers with training and encouraging the participation of young people in the management of water resources within communities, deserves particular recognition and must be replicated in various areas of the world.

As a result of the disorderly growth seen in many cities around the world, many rivers were channeled and consequently hidden from a good portion of the population. However, whenever these cities experience periods of heavy rains, flooding occurs, and many individuals do not understand the origin of this problem. The *Rios e Ruas* experience means bringing nature back into urban areas, where a large part of the population has lost connection with what is natural and are not aware of the fact these hidden treasures -- the rivers themselves -- exist within their city.

The overview of these water management experiences shows that there are a wide range of institutions from the public sector, civil society, and the private sector working together in organizing and implementing IWRM projects. These projects also present a considerable amount of diversity both in terms of themes and the countries in which they were implemented, including nearly all of the world's continents and demonstrating the representativeness of the presentations and discussion held at the 8th World Water Forum.







## 5. Bibliography

- ANA. (2018). Conjuntura dos Recursos Hídricos no Brasil 2018: Informe Anual. Conjuntura dos Recursos Hídricos, Agência Nacional de Águas, Superintendência de Planejamento de Recursos Hídricos, Brasília.
- ANA. (2019). Plano Nacional de Segurança Hídrica - Resumo Executivo. Agência Nacional de Águas. ANA. ODS 6 no Brasil: visão da ANA sobre os indicadores. Brasília: Agência Nacional de Águas.
- ANA; ADASA; WWC (2018). Relatório final do 8º Fórum Mundial da Água. 8th World Forum Final Report / National Water Agency; Regulatory Agency for Water, Energy and Sanitation of the Federal District, World Water Council. – Brasília: ANA; ADASA; WWC.
- CAP-NET (2010). Tutorial on basic principles of integrated water resources management. 38 p.
- CASTRO. E.V. (2000). O conceito de sociedade em antropologia: um sobrevôo. Teoria & Sociedade – Revista dos Departamentos de Ciência Política e de Sociologia e Antropologia. Belo Horizonte: UFMG. p. 182-199.
- Danube River Basin District Management Plan. International Commission for the Protection of the Danube River (ICPDR) in cooperation with the countries of the Danube River Basin District. The Contracting Parties to the Danube River Protection Convention adopted this document at their 12th Ordinary Meeting on 10 December 2009.
- DAS, M.B. (2017). The Rising Tide: A New Look at Water and Gender. Washington, DC: World Bank.
- Declaração do Ministério Público sobre o Direito à Água - (10 princípios da Declaração) Declaração no 8º Fórum Mundial da Água. 21/03/2018.
- EAU SEINE-NORMANDIE (2016). Stratégie d'adaptation au changement climatique du bassin Seine-Normandie.
- ENA (2014). Estudio Nacional del Agua. Bogotá: IDEAM. 496 p.
- GRAMSCI. A. (2002). Cadernos do cárcere. Rio de Janeiro: Civilização Brasileira.
- Guidelines for the Customization of the Global Data Structure. Definition for Sustainable Development Goals Indicators. Date: 24 January 2019. <https://unstats.un.org/sdgs/files/SDG-DSD-Customization-Guidelines.pdf>
- Guidelines for the Global Data Structure Definition for Sustainable Development Goals Indicators. June 2019. <https://unstats.un.org/sdgs/files/SDG-DSD-Guidelines.pdf>

- GWA (2011). Gender Scan Methodology for water utilities. Gender and Water Alliance. 49 p.
- GWP (2000), Integrated Water Resources management, Global Water Partnership, Technical Advisory Committee Paper No.4, Stockholm, Sweden.
- GWP (2004): Catalyzing Change: A handbook for developing IWRM and water efficiency strategies. Stockholm: Global Water Partnership (GWP)
- GWP (Global Water Partnership) (2003) Integrated Water Resources Management Toolbox: Sharing Knowledge for Equitable, Efficient and Sustainable Water Resources Management (Stockholm: Global Water Partnership)
- GWP; INBO (2009). A Handbook for Integrated Water Resources Management in Basins. 104 p.
- HUNT, V.; PRINCE S.; DIXON-FREYLE, S.; YEE, L. (2018). “Delivering through Diversity.” McKinsey & Company.
- IBGE (2020). Pesquisa nacional de saneamento básico 2017: abastecimento de água e esgotamento sanitário. Rio de Janeiro: IBGE.
- IDMC (2018). Annual Report 2018. Internal Displacement Monitoring Centre. 28 p.
- Indigenous Peoples & Integrated Water Resources Management Training Manual. Cap-Net, UNDP 2018.
- Informe mundial de las Naciones Unidas sobre el desarrollo de los recursos hídricos 2019: no dejar a nadie atrás, cifras y datos.
- Instituto Trata Brasil. Trata Brasil: saneamento é saúde. Available at: <<http://www.tratabrasil.org.br/>>.
- IWA (2016). The Untapped Resource: Gender and Diversity in the Water Workforce. London: International Water Association. 16 p.
- LANNA, A. E. L. (1995). Gerenciamento de bacia hidrográfica: aspectos conceituais e metodológicos. IBAMA.
- Las Mujeres en las Empresas de servicios de Agua: Derriban Barreras”. El informe completo está disponible en <https://openknowledge.worldbank.org/handle/10986/32319>. 2020 Banco Internacional de Reconstrucción y Desarrollo/Banco Mundial.
- LIMA, J.E.F.W.; RAMOS, A.E. (ed.) (2018). A experiência do Projeto Produtor de Água na Bacia Hidrográfica do Ribeirão Pipiripau. Brasília, DF: Adasa, Ana, Emater, WWF-Brasil. 304 p. Available at: <http://www.produtordeaguapipiripau.df.gov.br/wp-content/uploads/2018/03/livro.pdf>.
- LIMA, J.E.F.W. [et al.] (ed.) (2018). Gestão da crise hídrica 2016-2018: experiências do Distrito Federal / - Brasília, DF: Adasa: Caesb: Seagri: Emater. 328 p. Available at: <https://www.adasa.df.gov.br/images/banners/alta.pdf>.
- OCDE (2011a). Water Governance in OECD Countries: A Multi-level Approach, OECD Studies on Water. Paris: OECD Publishing.
- OCDE (2011b). Making the Most of Public Investment in a Tight Fiscal Environment: Multi-level Governance. Paris: Lessons from the Crisis, OECD Publishing.

- OCDE (2015a). Princípios da OCDE para a Governança da Água. Paris: OECD Publishing.
- OCDE (2015b). OECD water governance indicators: a tentative proposal. Paris: OECD Publishing, 2015.
- ONU (2008). Declaração das Nações Unidas sobre os Direitos dos Povos Indígenas. Rio de Janeiro, 2008
- Relatório-síntese 2018 sobre Água e Saneamento. Relatório elaborado a partir dos dados mais recentes disponíveis sobre os 11 indicadores globais do ODS 6. julho. 2018.
- Roadmap for Financing the 2030 Agenda for Sustainable Development – 2019 - 2021 United Nations Secretary General's.
- Start With Water, Putting water on local action agendas to support global change. Published in March 2018 by the World Water Council. [www.worldwatercouncil.org](http://www.worldwatercouncil.org)
- The Global Risks Report 2020 15th Edition World Economic Forum. [http://www3.weforum.org/docs/WEF\\_Global\\_Risk\\_Report\\_2020.pdf](http://www3.weforum.org/docs/WEF_Global_Risk_Report_2020.pdf)
- THOMPSON, K.; O'DELL, K.; SYED, S.; KEMP, H.; VAZQUEZ, E. (2017). Thirsty for Change: The Untapped Potential of Women in Urban Water Management.
- TUNDISI, J.G. (2003). Água no século XXI: enfrentando a escassez. São Carlos: RIMA, 2.ed.,2003. Tundisi; José Galizia. Ciclo hidrológico e gerenciamento integrado - Cienc. Cult. vol.55 no.4 São Paulo Oct./Dec.
- UNDP. (2018). Indigenous Peoples & Integrated Water Resources Management. Cap-Net.
- UN ECOSOC. (2002). Prevention of Discrimination and Protection of Indigenous Peoples – Report of the Working Group on Indigenous Peoples on its twentieth session, UN Doc. E/CN.4/2002/21. [http://ap.ohchr.org/documents/alldocs.aspx?doc\\_id=8240](http://ap.ohchr.org/documents/alldocs.aspx?doc_id=8240).
- UNESCO (2009). Integrated Water Resources Management in Action. Publicação produzida pelo World Water Assessment Programme (WWAP). 22 p.
- UNESCO (2019). The United Nations World Water Development Report 2019 – Leaving No One Behind. UNESCO. 2019. Publicação produzida pelo World Water Assessment Programme (WWAP) em nome da UN-Water.
- UNESCO. Educação para os Objetivos do Desenvolvimento Sustentável: objetivos de aprendizagem. Paris, 2017.
- UNICEF (2021). No Dia Mundial de Lavagem das Mãos, o UNICEF alerta que 3 em cada 10 pessoas não têm instalações básicas para lavar as mãos em casa a fim de combater doenças infecciosas. 2021. Available at: <https://www.unicef.org/brazil/comunicados-de-imprensa/no-dia-mundial-de-lavagem-das-maos-o-unicef-alerta-que-3-em-cada-10-pessoas-nao-tem-instalacoes-basicas-para-lavar-as-maos#:~:text=Globalmente%2C%20tr%C3%AAs%20em%20cada%20dez,higiene%20das%20m%C3%A3os%20em%20casa> . Accessed: 24/01/2022.
- UNICEF. Gender equality: glossary of terms and concepts. Regional Office for South Asia. November, 2017. Available at: <https://www.euro.who.int/en/health-topics/health-determinants/gender/gender-definitions>. Accessed: 24/01/2022

UNICEF; WHO. (2019). Progress on household drinking water, sanitation, and hygiene 2000-2017: Special focus on inequalities. United Nations Children’s Fund; World Health Organization, 2019.

UNISDR/CRED (2015). The human cost of natural disasters: A global perspective.

WORLD BANK (2019). “Women in Water Utilities: Breaking Barriers.” World Bank, Washington, DC. World Migration Report 2017. International Organization for Migration (IOM).

YASSUDA, E. R. (1989). Gerenciamento de bacias hidrográficas. Cadernos Fundap 9.





# 6. Annex 1

## Sessions and lectures considered in the analysis of the Water and Society theme

The complete analytical matrix of these sessions is available at the following link:  
<<https://www.adasa.df.gov.br/publicacoes-da-adasa>>

### LOCAL SCALE

SESSION	PRESENTATION SUBJECT	SPEAKER	INSTITUTION
OS-TP-20	Integrating WASH in policies and programmes to fight against malnutrition: the contribution of civil society	Djaffra Traoré	Advocacy Manager, Action Against Hunger, Mali
OS-TP-70	Involving all for decision-making in water management - Project: Sustainable Development Solutions Network for the Amazon	Victor Salviati	Sustainable Amazonas Foundation - FAS
OS-TP-78	Develop water training: an urgency	Claude Tontant	Québec'eau: A training center for water training development
OS-CF-03	Urban rivers preservation and recovery program	Demetrius Christofidis	Secretaria de Recursos Hídricos e Qualidade Ambiental
OS-CF-03	"Cape Town – the divided city... 'a sprawl city'"	Caron von Zeil (Cape Town)	Reclaim Camissa - the place of sweet waters
OS-CF-03	Rehabilitation of rivers and creeks - an education opportunity for citizenship (examples from Portugal)	Pedro Teiga	Engenho e Rio
OS-CF-16	"Why choose when you can have it all? Eau de Paris's drive to combine general interest and industrial excellence"	Benjamin	Leau de Paris
OS-CF-16	Alternative sanitation solutions in isolated communities in the Amazon region, Brazil	Ricardo Silveira Bernardes	Memorial Chico Mendes

## LOCAL SCALE

SESSION	PRESENTATION SUBJECT	SPEAKER	INSTITUTION
OS-CF-18	Opportunities and challenges faced by women to be leaders and agents of change in water in Kenya	Asha Abdulrahman	Mulheres parceiras pela água- União Internacional Quênia
OS-RP-03	"Climate Change, Challenges and Opportunities The case of the Atoyac River, Puebla"	José Luiz Romero Morales	Governo do Estado de Puebla
OS-RP-11	Application of IWRM Principle in Developing and Implementing in Inclusive Urban-Water Sector Projects: Status of Urban poor in Dhaka, Bangladesh	Mukta Akter	Global Water Partnership - GWP
OS-RP-16	Interfederative relationship in the management of river basin transfer projects in the region	Sasahara Hideshi	Sasahara Hideshi, Director, International Affairs Div. Water Resources Engineering Department, Japan Water Agency
OS-RP-38	Beyond the last mile: microfinance for connecting to sanitation networks in peri-urban areas Lima	Mercedes Castro	Ong AguaLimpia
OS-RP-50	The strategy for climate change adaptation on Seine-Normandy river basin	Florence Le Monnyer	
OS-CF-03	Rivers and Streets Initiative	Luiz de Campos	Instituto Harmonia - Rios e Ruas



## NATIONAL SCALE

SESSION	PRESENTATION SUBJECT	SPEAKER	INSTITUTION
OS-TP-20	Synergies beyond SDG 6: access to safe drinking water, sanitation and hygiene for improved nutrition and public health	Celine Gilquin	Head of the Water & Sanitation Division, French Development Agency
OS-TP-38	Individual innovations, united efforts: Working in collaboration for a better Integrated (Urban) Water Management	Fany Wedahuditama	GWP South East Asia
OS-TP-38	Connecting cities with their basins for a water secure future	Sérgio Ayrimoraes	Agência Nacional de Águas (ANA)
OS-TP-38	Connecting cities with their basins for a water secure future	Katharine Cross/IWA	IWA - The International Water Association
OS-TP-40	Case study : Anuradhapura, Sri Lanka	Cléo Lossouarn	Greater Paris Sanitation Authority
OS-TP-70	Involving all for decision-making in water management - quick overview of Brazil and it's water resources policy	Antônio Augusto	Agência Nacional de Águas (ANA)
OS-TP-70	Involving all for decision-making in water management - Contribution of the Water Cycle Management to the sustainable development in the countries	Toshio Okasumi	" Secretariat of Water Cycle Policy Headquarters, Cabinet Secretariat, Japan"
OS-TP-76	Procedure in Stakeholder Mapping within IWRM in the Congo Basin	Judith Enaw	Secretary General of the International Commission for the Congo - Oubangui - Sangha basin (CICOS), President of the African Network of Basin Organizations - CICOS
OS-CF-04	Natural Infrastructure ROI Analysis: Sao Paulo Water fund	Rafael Barbieri	WRI
OS-CF-05	Community-Based Action on Water Management and Watershed Governance - focused on Chuncheon, KOREA	Jang Chul	Chuncheon Global Mineral Water Fourn
OS-CF-07	Youth-Led Innovation for Sustainable Sanitation - Case Study of Egypt: Small-scale sanitation systems in rural communities	Kareem Hassan	Bena - Sustainable Sanitation Alliance

## NATIONAL SCALE

SESSION	PRESENTATION SUBJECT	SPEAKER	INSTITUTION
OS-CF-13	Public or private: values, rights and obligations in the provision of water services to people	Ana Lucia Britto	Universidade Federal do Rio De Janeiro (UFRJ)
OS-CF-15	Experience of the Ozama Basin Civil Society and Social Capital - Dominican Republic	Onofre Rojas	Comunidade Santo Domingo
OS-CF-17	The role of youth, as the main stakeholders that can influence changes in the process of water management in Ukraine	Vadym Homchar	National University of Kyiv-Mohyla
OS-CF-18	The participatory watershed governance of Japan - The Feudal Lord governed the watershed with the strong power before the modern times 1200 - 1800	Dr.Kotaro Takemura	Secretário Geral do Fórum da água, Japão
OS-RP-03	Supporting WRM in Kenya - Managing Water Resources to Increase Resilience	Gene Brantly	RTI International
OS-RP-03	Adaptation to Climate Change in the Nile Delta through Integrated Coastal Zone Management	Mohamed Ahmed	Adaptation to Climate Change in the Nile Delta through Integrated Coastal Zone Management (ACCNDP)
OS-RP-11	Algiers Water Access Success Story	Kamal Mohammedi	University of M'Hamed Bougara Boumerdes
OS-RP-16	The Construction and Operation Management of China South-to-North Water Diversion Projects	Yunzhong Jiang	China Institute of Water Resources and Hidropower Research
OS-RP-38	Revitalizing Informal Settlements and their Environments (RISE)	Thomas Panella	Chief of Water Sector Group - Asian Development Bank
OS-RP-38	Wastewater Sanitation Policy in Colombia	Oscar Cortes	"Dirección de Desarrollo Urbano DEPARTAMENTO NACIONAL DE PLANEACIÓN de Colombia"
OS-RP-43	Wastewater reuse in Tunisia	Moez Allaoui	Director of Legal Affairs in SONEDE (the national drinking water utility) - Tunisia

## NATIONAL SCALE

SESSION	PRESENTATION SUBJECT	SPEAKER	INSTITUTION
OS-RP-44	Climate Change Impact Assessment on Water and Disasters - Case Studies of Asian river basins	Tetsuya Ikeda	International Centre for Water Hazard and Risk Management (ICHARM), sob os auspícios da UNESCO.
OS-RP-44	Climate Change and Adaptation Project in Korea	Dongil Seo	Secretariat of the 8th World Water Forum
OS-RP-50	Water and Climate in Europe	Rodrigo Proença	Instituto Superior Técnico – Universidade de Lisboa
OS-RP-50	Drought in the changing climate of Central and Eastern Europe	Sabina Bokal	GWP - Global Water Partnership Central
OS-RP-51	Metro Manila's PPP experience in contributing to SDG 6	Mark Tom Mulingbayan	Manila Water - care in every drop
SS-CF-02	Interaction and collaboration as a source of community recovery and empowerment -some insights from Kizawa for post-disaster sustainable community development	Takayoshi Kusago	Faculty of Sociology, Kansai University
SS-J-CF+RP-01	Agua y Pueblos Indígenas	Luis Olmedo Iza Quinatoa	Secretaria del Agua - Ecuador
HLP10	High Level Panel on Increasing Financial Flows for Sanitation and Wastewater Management	Nomvula Monkonyane	Minister of Water and Sanitation, South Africa

## GLOBAL SCALE

SESSION	PRESENTATION SUBJECT	SPEAKER	INSTITUTION
OS-TP-01	Uncertainty, vulnerabilities and resilience By Self Employed Women's Association (SEWA)	Bharti Bhavsar	SEWA - Self Employed Women's Association
OS-TP-01	Taking Decisions under Uncertainty	Claudia Sadoff	Director-General International Water Management Institute (IWMI)
OS-TP-01	You cannot manage what you cannot measure	Johannes Cullmann	Director of the Climate and Water Department World Meteorological Organization
OS-TP-19	Como países latino-americanos estão progredindo na implementação do marco de segurança da água	Teófilo Monteiro	Team Leader - Regional Technical Team on Water and Sanitation (ETRAS), Pan American Health Organization (PAHO), World Health Organization (WHO)
OS-TP-13	Source of Life! Helping Governments to implement the Water Targets	Paulo Buss	Fiocruz
OSTP-13	Helping Governments to implement The SDG water targets : The role of civil society in Burkina Faso	Kristel Malegue	Advocacy and International Partnership Director - EAU Vive Internationale
OS-TP-15	Promoting access to drinking water in rural settlements of Brazilian Amazon	Érika de Paula Pedro Pinto	Technical Coordinator of IPAM (Amazon Environmental Research Institute) - IPAM
OS-TP-16	How Human Rights to sanitation principles are incorporated in federal regulations - Case study from Government of Brazil	Juliana Zancul	Funasa
OS-TP-16	Integrating human right to sanitation in public policies: approaches and challenges from around the world: Case Study from the Republic of South Africa	Thobile Mthiyane	Department of Water and Sanitation
OS-TP-53	Farming and ecosystem services: Can farmers save rivers and still make a profit?	Marlos de Souza	FAO

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**GLOBAL SCALE**


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<b>SESSION</b>	<b>PRESENTATION SUBJECT</b>	<b>SPEAKER</b>	<b>INSTITUTION</b>
OS-TP-38	"How does (and will) climate change affect water security in cities? And what actions need to be taken? - Time to adapt: insights from the Global Environment Facility's experience in adaptation to climate change"	Chris Severin	Global Environment Facility
OS-TP-76	"1. How can we ensure science-based information is used by the decision-makers and local authorities in water resources management? 2. How to train decision makers to improve water management and participation of water users, citizens, youth and communities?"	Agatha Tommasi	Global Youth Hub
OSTP 76	Enhancing Education & Capacity Building	Edouard Boinet	Project manager - International Networking Water Training Center (INWTC)
OSTP 76	"1. How can we ensure science-based information is used by the decision-makers and local authorities in water resources management? 2. How to train decision makers to improve water management and participation of water users, citizens, youth and communities?"	Helena Alegre	Senior Research Officer, National Laboratory for Civil Engineering (LNEC), Portugal
OSTP 76	"1. How can we ensure science-based information is used by the decision-makers and local authorities in water resources management? 2. How to train decision makers to improve water management and participation of water users, citizens, youth and communities?"	Liu Cheng	Deputy division director from the UNESCO-IRTCES, Ministry of Water Resources (MWR), China UNESCO

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## GLOBAL SCALE

SESSION	PRESENTATION SUBJECT	SPEAKER	INSTITUTION
OS-RP-38	Optimal Sanitation - IDB Experience in Latin American and Caribbean Cities	Henry Moreno	Water and Sanitation Division - IDB
OS-RP-39	Contribution of Traditional Foggaras to Climate Change Ecoresilient Modern Water Management Systems	Kamal Mohammedi	" MESO/JURMPE, M. Bougara University Boumerdès Algeria"
OS-RP-39	Major Water Management Challenges for the Caribbean Region	James Fletcher	Independent Consultant (SOLORICON Inc.)
OS-RP-44	Climate Change and Water Infrastructure	Thomas Panella	Chief of Water Sector Group - Asian Development Bank
OS-RP-46	"Mobilizing Science for the SDGs through Enhanced Freshwater Ecosystem Management in Asia and the Pacific"	Mohamed Roseli bin Zainal Abidin	Director Regional Humid Tropics Hydrology and Water Resources Centre for South-East Asia and the Pacific, HTC Kuala Lumpur
OS-RP-51	Bridging Ecosystems With Their Services	Peter Gammeltoft	International Commission for the Protection of the Danube River
OS-RP-51	International Commission for the Protection of the Danube River	Sarah Davidson	WWF
OS-RP-51	Maximizing Finance for Achieving the SDG Ambitions on Water	Greg Browder	Global Lead for Water Security and Water Resources Management, Water Global Practice - World Bank Group
OS-RP-51	"Principles on Investment and Financing for Water-related Disaster Risk Reduction"	Tomoyuki Okada	High-level Experts and Leaders Panel on Water and Disasters (HELP), Ministry of Land, Infrastructure, Transport and Tourism, Japan
HLP3	Revitalising IWRM for the 2030 Agenda	Mark Smith - Director – Global Water Programme	Director – Global Water Programme, International Union for Conservation of Nature Co-Chair, Task Force on IWRM, World Water Council, International Union for Conservation of Nature
HLP6	Why Multi Stakeholders Partnerships (MSPs)?	Oyun Sanjaasutren	Global Water Partnership



