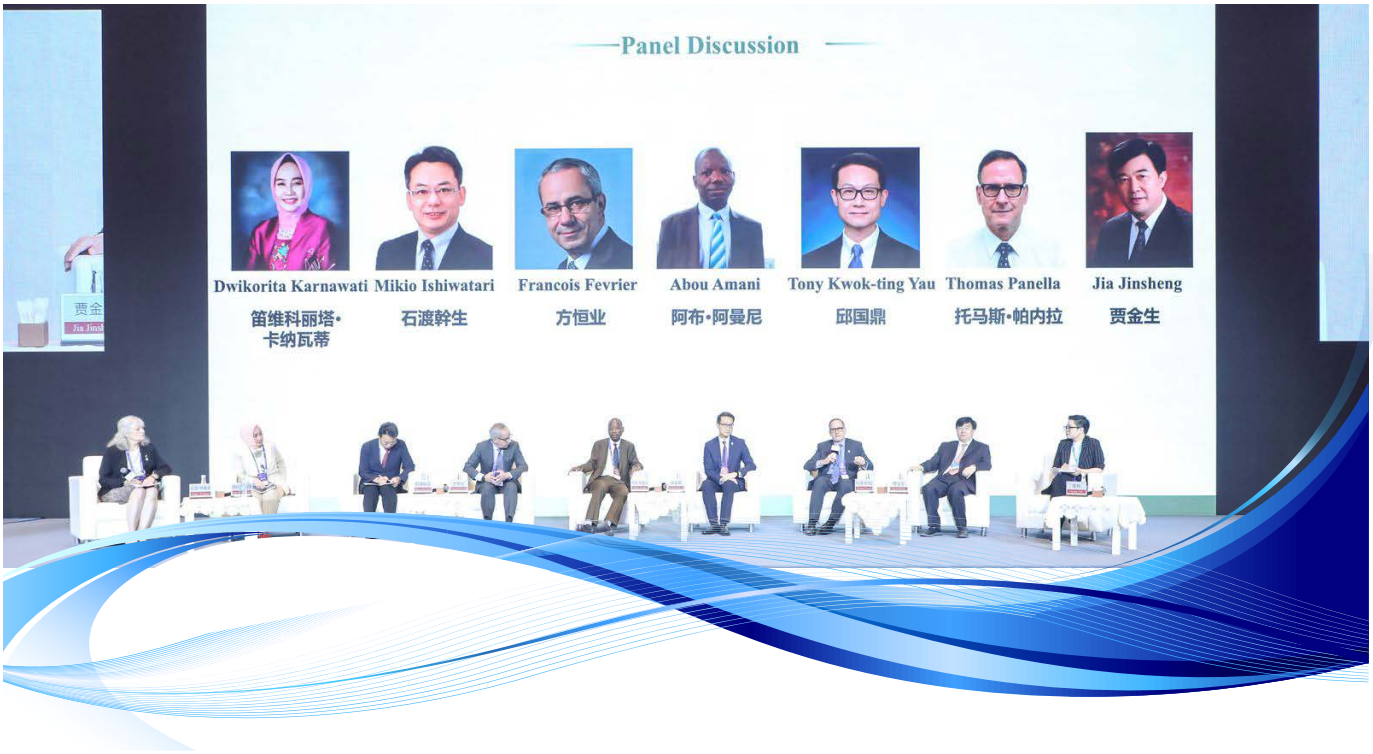


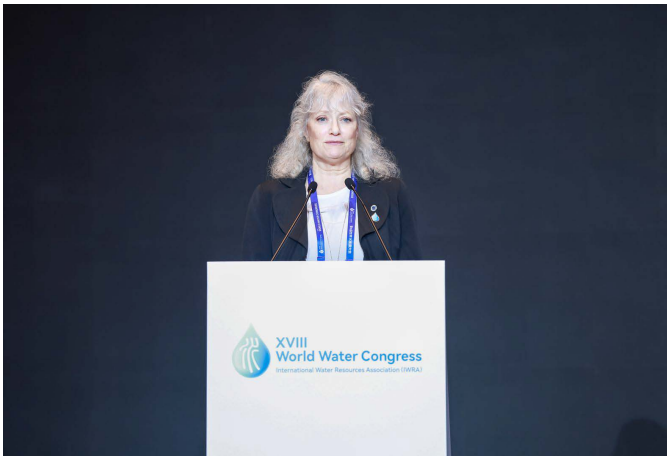
High-level exchanges and sparks of ideas

Resilient water infrastructure is one of the main ways to improve global water security.

Day Two of the XVIII World Water Congress kicks off with high-level panel on “Resilient Water Infrastructures: Safeguarding Global Water Security in a Changing World.”

The High-Level Panel session on Resilient Water Infrastructures and Global Water Security: Safeguarding Global Water Security in a Changing World,” addressed pressing issues concerning water security and the resilience of water infrastructure.

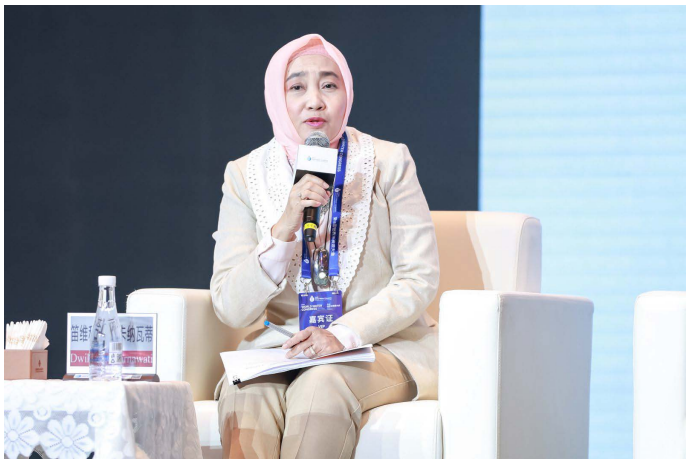
The session was moderated by Huang Yan, Deputy Chief Engineer of the Changjiang Water Resources Commission, MWR, P.R. China, and Mary Trudeau, Project Officer at the International Water Resources Association.



Keynote Speakers:

Dwikarita Karnawati, Head of Indonesia Agency for Meteorology, Climatology, and Geophysics (BMKG): Seeing from the Global mean temperature compared to 1850-1900 average, it's a increasing trend of average surface temperature. Heatwaves occurred in many places is unprecedented. Climate change puts pressure on the already scarce water resources, resulting in water hotspots, also put pressure on food security.

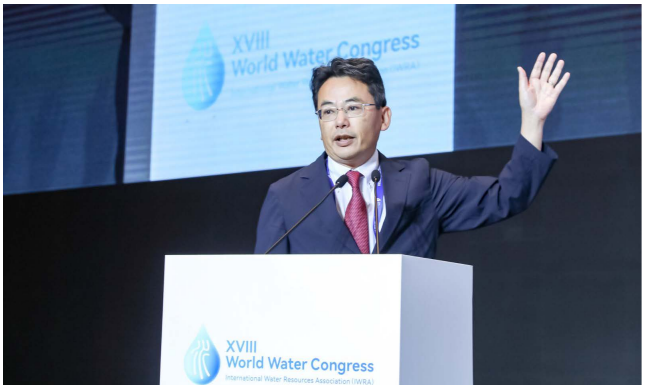
Karnawati's keynote address set the stage by highlighting the significant impact of climate change on water resources. She emphasized the rising global average surface temperature and its cascading effects, including unprecedented heatwaves and water scarcity. Karnawati called for innovative modalities to improve weather forecasts and highlighted the importance of social engagement in building resilient infrastructure.



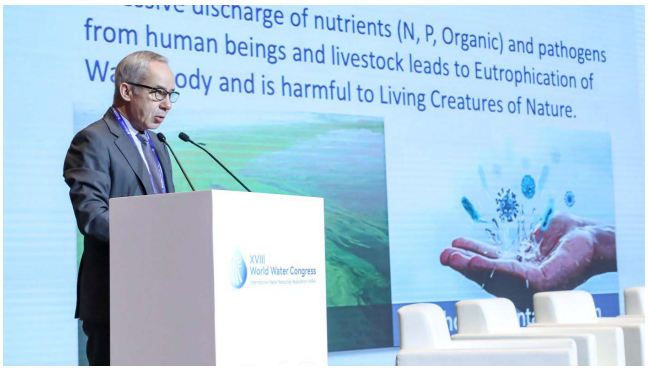
Jia Jinsheng, Hon. President of International Commission on Large Dams, addressed the strategic significance of water storage infrastructure and recent advancements in large dams. He underscored the multipurpose role of these structures, especially in developing countries, to address the growing demand for water, food, and energy. Jia also highlighted the critical need for dam safety measures and introduced innovative cemented material dams as a sustainable solution for various water storage requirements.

Panel Discussions:

During the panel discussion, **Mikio Ishiwatari,** Visiting Professor of the University of Tokyo, explored recent flood prevention investments in major Asian countries. He presented a comparative analysis, focusing on China, India, the Philippines, and Indonesia. Ishiwatari's data-backed insights demonstrated the benefits of investing in flood protection, offering valuable lessons for disaster management.



Francois Fevrier, CEO of Water and Recycling & Recovery, SUEZ ASIA, provided a comprehensive understanding of water security, aligned with the United Nations' definition. He elucidated the three primary risks to water security: quantity, quality, and accessibility. Fevrier emphasized the importance of resilient water infrastructure and regional cooperation to address these challenges effectively.



Tony Kwok-ting Yau, Director of Water Supplies, Hong Kong SAR Government, shared Hong Kong's successful strategies for mitigating climate change impacts, meeting increasing water demand, and achieving carbon neutrality. He outlined a holistic approach encompassing water conservation, efficient water loss management, recycled water utilization, and enhanced local water yield.

Thomas Panella, Director at the Asian Development Bank highlighted the evolving landscape of water infrastructure needs. He emphasized that traditional grey infrastructure alone cannot meet future demands sustainably. Panella advocated for the adoption of nature-based solutions (NBS), citing examples from around the world, including the NCC river park and Sponge Cities Concept in China, as well as various ADB projects utilizing NBS.

Abou Amani, Director of the Division of Water Sciences, UNESCO, posed critical questions about addressing global climate change, supporting nature-based solutions, and bridging data gaps for monitoring and forecasting. He introduced the Climate Risk Informed Decision Analysis (CRIDA) approach, which considers uncertainties in water resource planning and highlighted the role of innovative technologies such as Early Warning Systems (EWS) and the Internet of Things (IoT).。






Sharing China's water governance practices, telling China's stories, and collaborating on global water governance

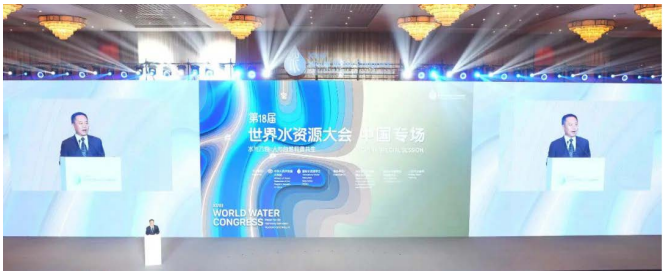
The China special session with the theme, "Chinese Water Practices and Global Water Governance" was held in the afternoon.

The session was moderated by Wang Daoxi, Vice Minister of Water Resources of China, and Siddharth Chatterjee, UN Resident Coordinator in China.

Li Guoying, Minister of Water Resources of China, Basuki Hadimuyono, Minister of Public Works and Public Housing of Indonesia, and Loïc Fauchon, the president of the World Water Council attended the sessions and delivered speeches.

Vision guides action and direction determines the future

According to Li Guoying, to promote the implementation of high-quality water conservancy development in the new stage, the first is to improve the drainage basin flood control engineering system, the second is to implement major national water network projects, the third is to revive the ecological environment of rivers and lakes, the fourth is to promote the construction of smart water consere of law management of water conservancy systems and mechanisms.



Discussion on China's wisdom and show China's strength

Keynote Speakers:

Accelerate the construction of the national water network and develop water infrastructure system. Zhang Xiangwei, director general of the Department of Planning and Programming of the Ministry of Water Resources said: "As an important part of national infrastructure, the national water network plays a crucial role in systematically solving issues of water resources, water ecology and water environment and ensuring national water security."

The goal of national water network construction. Guided by Xi Jinping thought on socialism with Chinese characteristics for a new era, China is fully implementing President Xi's water governance philosophy of prioritizing water conservation, balancing spatial distribution, taking systematic approaches, and giving full play to the roles of both government and market. With the goal of comprehensively improving water security, China is building a national water network that is well-equipped, safe, and reliable, intensive and efficient, green and intelligent with smooth circulation and orderly regulation, so as to enhance its capability to guarantee water security for Chinese modernization.

Water and Rural revitalization, Water saving and water supply in agriculture and rural areas. Chen Mingzhong, director of the Rural Water and Hydropower Department of the Ministry of Water Resources said that water is fundamental to rural revitalization. China is a big agricultural country with large population facing increasingly severe water scarcity. The country is committed to implementing the rural revitalization strategy, strengthening rural water conservancy construction, and coordinating the management of rural water resources, water environment and water ecology, and making significant progress in achieving the water-related goals of the 2030 Agenda for Sustainable Development, providing important support for winning the biggest battle against poverty in human history, ensuring food security and promoting agricultural and rural modernization.

Among the many achievements of Yangtze River management, the Three Gorges Project is an outstanding example. Lei Mingshan said: Since the completion of the Three Gorges Project, not a single major danger has occurred in the middle and lower reaches of the Yangtze River, which has strongly supported the power supply in East China, Central China and Guangdong, significantly improved the navigation conditions of the Chuanjiang waterway, made the Yangtze River navigable day and night throughout the year, and effectively guaranteed the production, living and ecological water demand in the middle and lower reaches of the Yangtze River."

The ecological protection and high-quality development in the Yellow River Basin. Zu Leiming, the director of the Yellow River Conservancy Commission said: "The management of Yellow River can be concluded as five major measures: First, focus on the long-term stability of the Yellow River, build a solid defense line against floods and droughts. Second, fully implement the principle of "four determinations by the water" and promote the efficient and intensive utilization of water resources. Third, focus on soil and water conservation. Fourth, strengthen legal management of systems and mechanisms, and focus on improving the management capacity of river basin governance. Fifth, actively promote the construction of a digital twin Yellow River."

Share experience in water management and coordinate responses to water crises

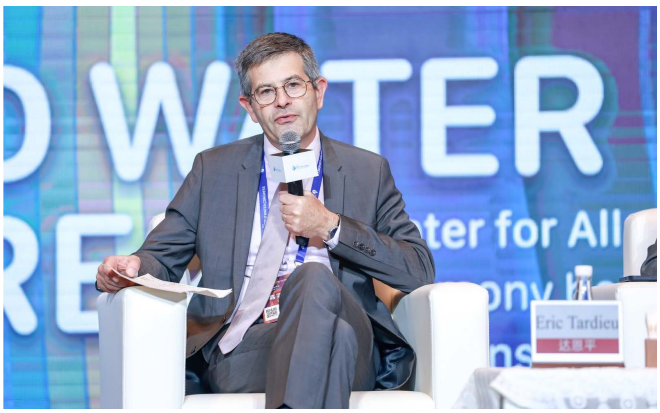
Bastian van den Berg, Director of the International Division of the Dutch Ministry of Infrastructure Water Management, introduced the situation of the Dutch water transport authorities, and for the Dutch region, its water governance includes the establishment of the International River Commission, the establishment of early warning systems, the use of nature-based solutions, the construction of sponge cities and other measures to achieve the purpose of "creating and maintaining a safe, livable and convenient Netherlands".

Martin Matos, Director of the Natural Resources Division of the Ministry of Livestock, Agriculture and Fisheries of Uruguay, delivered a keynote presentation entitled "Irrigation: Opportunities for a sustainable food Production system in Uruguay", presenting the country's efforts to promote the sustainable development of the agricultural sector through the efficient and responsible use and management of our natural resources.

Lutefi Akka, Director General of the Turkish State Water Administration, introduced Turkey's water resources situation and water management system, Turkey's total water resources are 112 billion cubic meters, water consumption has reached 58 billion cubic meters, of which 44 billion cubic meters are used for agricultural irrigation, 14 billion cubic meters for life and industry, the current situation is facing water shortages. Five watersheds are short of water and four are in a state of severe water shortage. To cope with the water shortage situation, the main measures include increasing the use of non-conventional water resources, further modernizing irrigation infrastructure, improving the national water information system, and adopting a draft water law to fully clarify the roles and responsibilities of the water sector.

Panel Discussions:

Eric Tardieu, Director General of INBO and IWRA Secretary-General, pointed out that the plannings should be considered seriously. He stressed that river basin planning is strongly linked to a political vision and to support the long-term effects of the increase of the pressure on water resources and climate change. The change of our water ecosystem becomes more comprehensive and must be included and added into water resource financial policies. Due to the increase of uncertainty and complexity of water security, the science, policy, and practice are strongly linked with each other, so that the systematic planning and science-based planning need to be considered more seriously, not only for water management itself, but also for other water-related activities.



Xia Jun, Academician of Chinese Academy of Sciences, Professor of Wuhan University: China has her adaptive measures on the way to implement SDG 6 toward Water Security, including substantial institutional changes and scientific & technological advances.

Professor Dai Jiqun, President of Nanjing Water Conservancy Research Institute, said that scientific researchers should conduct research oriented to specific scientific problems, while also considering the actual needs of economic and social development and the needs of policy makers, but cannot be completely dependent on the needs of policy makers. The conclusion of scientific research should be an objective judgment based on experimental evidence, while considering the limitations and reliability of the experiment.

Zhang Fan Lead Economist and Global Lead for Water, Economy, and Climate Change at the World Bank, pointed out that the efficient use of water resources is very important. The efficiency of water use and the efficiency of water use interact and promote each other. There are similar water shortage problems in other parts of the world that China faces, judging from China's achievements, the severe situation of water shortage can be alleviated through the efficient use of water resources.

Philippe Gourbesville, President of the International Association for Hydro-Environment Engineering and Research (IAHR) and distinguished Professor of China Academy of Water Resources and Hydropower Research said: We need innovation. One reason that we didn't innovate enough is because we regard water security challenges as the norm. And the key point is to have the vision to drive the innovation of those tools and the design of these tools.

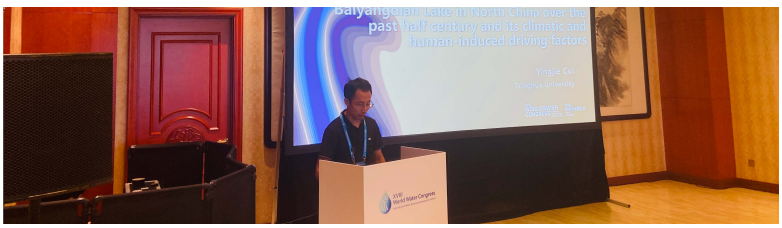
Thomas Panella Director of Agriculture, Food, Nature, and Rural Sector Office, Sectors Group, Asian Development Bank said: "Population growth, urbanization and climate change are placing increasing pressure on water resource, and urgent action is needed to ensure sustainable, safe, and resilient water management. Basins can thrive by increasing awareness of the value of ecosystem services, promoting collaboration among stakeholders, and implementing adaptive policies and practices to ensure water security for basin residents and protect the health and functioning of basin ecosystems."

World Water Management Stories: Told in Regular Sessions, Special Sessions, and Side Events

Seven thematic sessions were held on September 12th, primarily exploring climate-induced risks related to agricultural irrigation and water supply, water use efficiency, productivity improvement through integrated approaches, the management of water risks induced by extreme weather and climate events, exploration and development of nature-based water engineering technologies, risk management of extreme weather and climate events, and the health of rivers and lakes. Additionally, there were 20 special sessions, including the China Special Session and 2 China-Europe Water Platform (CEWP) side events.

Theme 1: The Interplay of "Water Resources-Population-Economy (Agriculture, Industry, Urbanization, etc.)-Ecology" in a Changing Environment

Dr. Cui Yingjie from Tsinghua University presented a report on changes in surface and groundwater in Baiyangdian Lake in North China over the past half-century and its climatic and human-induced driving factors. He illustrated the interactions among lakes, rivers, and aquifers as groundwater depth changes.

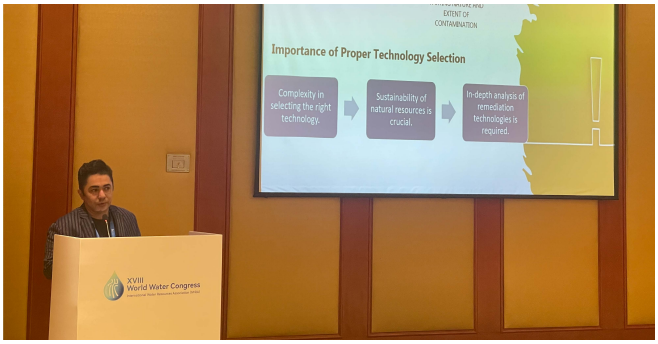


Taking the practice of Anji County of Zhejiang Province as an example, the Institute of Hydraulic and Estuary of Zhejiang hosted a special session on the value accounting and realization path of water ecological products. This session shared and discussed the general situation of water resources management reform in Zhejiang Province, the value transformation of water resources, common prosperity, the practice of Anji in Huzhou, Zhejiang Province, and the results of the reform of rural water ownership and management rights in Shantang Reservoir, Anji County.

Mr. Li Yi, division chief of International Economic & Technical Cooperation and Exchange Center of MWR, and Diana Carlos, Senior Officer of the Ministry of Environment and Climate Action of Portugal, delivered speeches on China-Europe water collaboration side events hosted by the European Secretariat of the China-Europe Water Platform. The meeting discussed the achievements of cooperation on basin management and ecological security, rural water, food security, and urbanization, and water cooperation.


Theme 2: Improve Water Use Efficiency and Promote Water Public Services

Zainab Ashkanani, from the Water-Energy-Food Nexus Research Group at Texas A&M University, presented a systematic literature review on utilizing Artificial Intelligence-Big Data Analysis to investigate contaminated soil-water and remediation approaches. Such a framework offered systemic guidance for selecting appropriate remediation techniques for cleaning polluted soil and water resources.



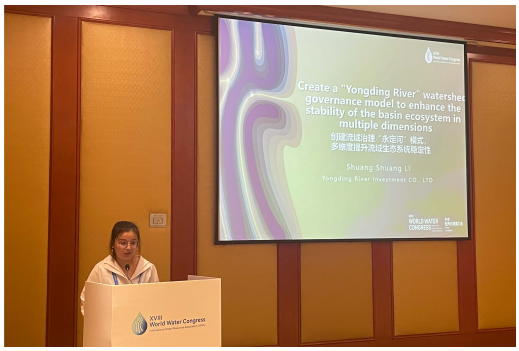
The special session on Implementing the 2030 Sustainable Development Agenda - Sustainable Water Resource Utilization and Green Development in Hunan was co-hosted by Hunan Provincial Department of Water Resources and the People's Government of Chenzhou Municipality. Luo Yijun, Director of Hunan Provincial Department of Water Resources, shared the practice of sustainable utilization and green development of water resources in Hunan Province. Wu Jupei, Secretary of Chenzhou Municipal Committee, Hunan Province, introduced the Chenzhou Water Cube model, focusing on sustainable water resources utilization.


Theme 3: Build a Resilient Disaster Prevention and Mitigation System

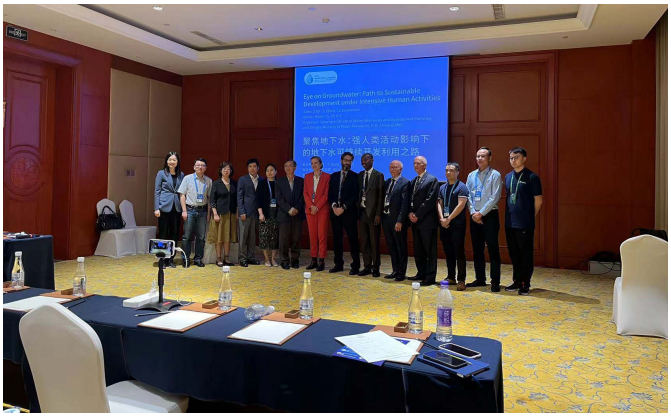
Mr. Zhao Baoxu from GIWP showed the application of flood elasticity under changing conditions in the tropical monsoon basin of Thailand. He proposes a flooding elasticity analysis framework under meteo-hydrological nonstationarity conditions, which has been preliminarily applied to the upper tributaries of the Upper Chao Phraya River in Thailand.

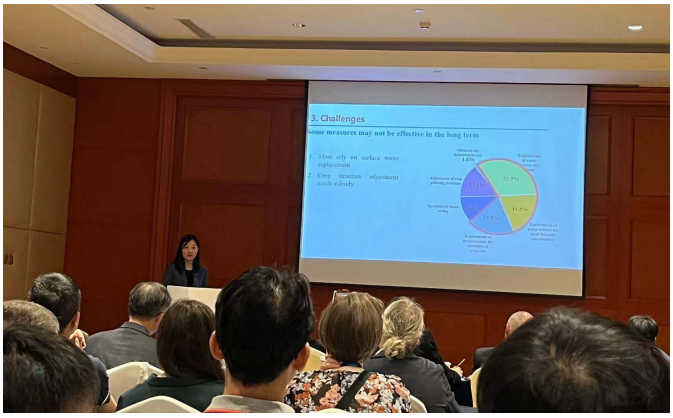
Theme 4: Enhancing the Quality and Stability of Aquatic Ecosystems

Li Shuangshuang, representing Yongding River Basin Investment Limited, presented on “Developing the ‘Yongding River’ Watershed Management Model for Multifaceted Enhancement of Watershed Ecosystem Stability.” Through a comprehensive analysis comparing the multidimensional effects before and after watershed management, the feasibility of the “Yongding River” watershed management model was elucidated.



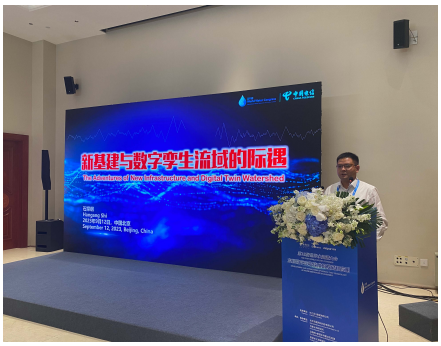
GIWP hosted a special session titled "Focusing on Groundwater - the Path to Sustainable Development and Utilization of Groundwater under the Impact of Human Activities." This session involved sharing and discussing achievements related to groundwater in the era of climate change, the combined utilization of surface water and groundwater under water resource crises, and the sustainable development and utilization of groundwater in China.

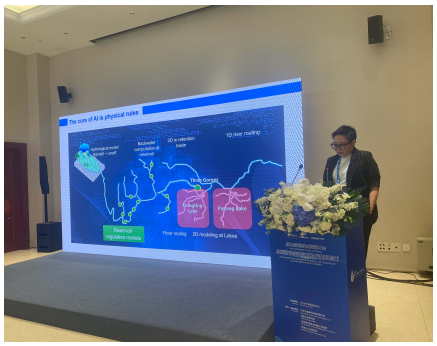


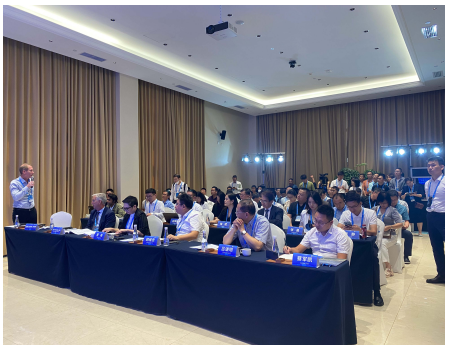


Theme 5: Advancing Sustainable Water Infrastructure Development

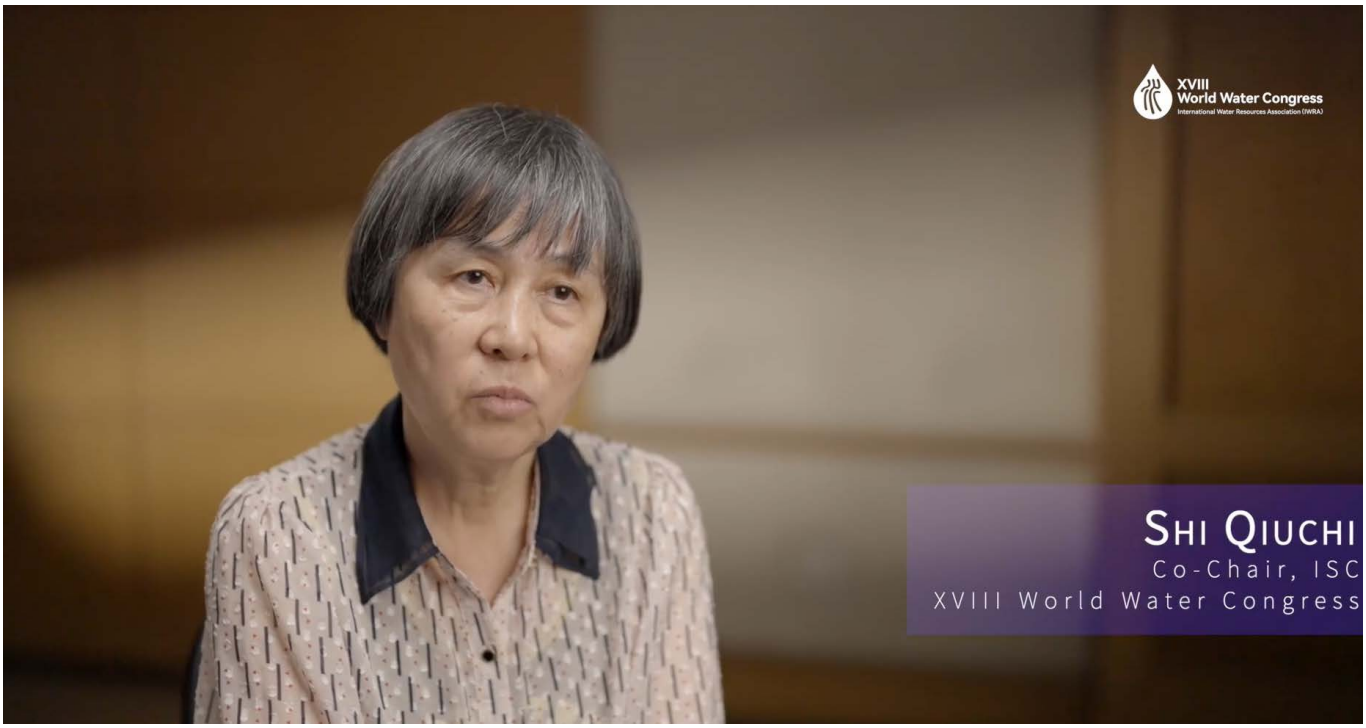
The Yangtze River Design Group Co., Ltd. led a dedicated session titled "Advancements and Applications of Digital Twin Technology in Water Resources." This session delved into the application of large-scale models in the construction of digital twins for water resources, the role of digital twins in supporting water resource management, and practical applications of digital twin technology.







Interview with Dr. Shi: Promoting Water Conservation in China and Beyond



In an exclusive video interview, Dr.Shi Qiushi, International Scientific Committee (ISC) Co-Chair of the 18th World Water Congress, shared her insights into the critical issue of water conservation and the role of Chinese citizens in safeguarding the environment.

Q: As Chinese citizens, what more can we do to contribute to water conservation, which is highly beneficial to the environment?

Dr.Shi: From a professional standpoint, let's consider the allocation of water usage. What percentage of water is utilized for different purposes? For instance, in our country, approximately 60 to 70% of water consumption is dedicated to agriculture, specifically for irrigation purposes, constituting a significant portion of the total water consumption. Globally, this proportion is similar, hovering around 60% to 70%. Therefore, to conserve water effectively, our primary focus should be on the major water consumers, particularly in the realm of agricultural irrigation.

Q. Could you provide some concrete examples of water-saving practices for individuals and industries?

Dr. Shi: "Certainly, basic measures for individuals include fixing leaky faucets, which is the bare minimum. For industries, there are several ways to save water. Improving production methods can significantly reduce water wastage. Investing in water-efficient equipment is also crucial. Our societal roles extend beyond our personal lives."

Q: How can farmers contribute to water conservation in agriculture?

Dr Shi: Farmers can optimize water usage while increasing crop yields. Although adopting advanced water-saving techniques like drip irrigation systems or sprinklers can be challenging for individual farmers, the companies that manufacture irrigation equipment should strive to provide accessible solutions to farmers. Given that agricultural water fees tend to be the lowest, it is essential to shift our thinking and prioritize water conservation, considering the burdens faced by farmers.

Q: What is the role of societal consciousness in water conservation?

Dr.Shi: The water fees for agricultural use are still the lowest, given the consideration for the burden on farmers. Therefore, it is more important to pay attention to this issue in our ideological consciousness. We all play dual roles – as individuals living our lives and as members of society. In our societal roles, we hold the power to make a significant impact on water conservation. This, I believe, is the path to follow.

Dr. Shi's insights shed light on the critical role that both individuals and industries play in conserving water resources. While personal efforts are essential, the influence of industries and societal roles cannot be underestimated in the collective effort to safeguard our planet's most precious resource - water.