

TIP Platform Session list

Technology, Implementation, Policy Platform

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Water Recycling and Reuse	WASH-Climate Resilience Solution in Community: Case Study in The World Most Populous Island, Bungin, West Nusa Tenggara and Nusa Penida, Bali	AiKite, Indonesia	10
Water for Socio-economic Development	Regional Track of Ministry of Environment, AWC and OECD Cooperative Project on Enhancing Water Security in Asian Countries	Organisation for Economic Co-operation and Development (OECD)	14
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	Nurturing Science-Policy-Practice Interface: A Paradigm Shift in Water Governance	University of Canberra, Pakistan Council of Research in Water Resources (PCRWR)	28
Water ODA	Carbon Neutrality & Green ODA: Leading to the Convergence of Science and Technology	UNESCO i-WSSM	32

Date/Time/Venue	November 24 (THU) / 13:00-14:30 / #320 (3F) EXCO
(Co-)Organizer	International Water Resources Association (IWRA)
Session title	Comparing Smart Water Cities: Key performance indicators and certification for cities worldwide

Program

Time	Contents	Speaker/Participants
13:00 - 13:05(5')	Opening remarks	
13:05 - 13:15(10')	Introducing SWC Project	
13:15 - 13:25(10')	SWC Project: KPIs on Governance and Prospective Pillar	Dr. Monica Garcia Quesada, Project officer, IWRA
13:25 - 13:35(10')	SWC Project: KPIs on Technical Pillar	Dr. Suhyung Jang, Team Leader, K-water Research Institute
13:35 - 13:45(10')	Busan Eco Delta Smart City Project	Dokyoon Kim, General Manager, K-water
13:45 - 14:30(45')	Panel Discussion and Q&A - Feedback of SWC Project Concept - Consensus on SWC KPIs(Technical, Governance)	Speakers Je Won Lee, Senior Manager, AWC

Results

Presentations

- **Dr. Monica Garcia Quesada** introduced the Smart Water City Project, its rationale and its objectives. She presented the main features of the Smart Water Cities Index and Certification scheme that IWRA, K-water and AWC are developing, and focused on one of the areas of the Index, namely the Governance and prospective pillar.
- **Dr. Suhyung Jang** explained the main features of the Technical pillar of the Smart Water Cities Index and Certification scheme, and provided information on its key characteristics, categories and indicators, as well as the scoring system and the representation of the cities' performance.
- **Mr. Dokyoon Kim** presented the experience of the Busan Eco Delta Smart City project from its origin to its current status, with focus on the Smart Village pilot experience. The presentation focused on the general characteristics of the initiative as well as on the technical features in place.
- **Dr. Mary Trudeau**, IWRA Project officer, introduced the speakers and moderated the session.

Discussion

The presentations were followed by a lively and participative discussion with the audience, which counted with Mr. Je Won Lee, from the AWC, who joined the panel. Amongst the many questions and comments made were the problems derived from the existence of biases in the definition of the indicators and in the gathering of the data, and how to deal with these difficulties. Some questions referred to certain potential absences in the areas measured by the indicators, and whether the Index and the scoring system is subject to review. Other questions referred to the types of cities that can be subject to an evaluation.

Major messages

- The main purpose of the Smart Water Cities project is the development of an Index and Certification scheme. This is an instrument to measure and compare the provision of urban water services and urban water management in cities around the world.
- The Smart Water Cities Index and Certification scheme will provide cities with a comprehensive diagnosis to learn about the strengths and weakness of their local water systems, and with a strategy to improve their financial, human and regulatory capacities.
- The Technical pillar of the Smart Water Cities index examines the use of conventional water technologies and ICTs at different stages of the urban water cycle, focusing on categories such as Urban water cycle, water disaster management and water supply and treatment
- The Governance and Prospective pillar of the Smart Water Cities Index examines the effectiveness, efficiency and trust and engagement in the water resources management in a city.
- A Smart Water City, such as Busan Eco Delta Smart City includes not only solutions for conventional water management, but also it also refers to other areas that often get under-examined, such as measures to restore the urban water cycle, planning practices to make cities more water friendly, and initiatives to improve intelligent water data management, etc.

Photos



Dr. Monica Garcia Quesada's presentation



Dr. Suhyung Jang's presentation



Mr. Dokyoon Kim's presentation



Q & A

Date/Time/Venue	November 25 (Fri) / 10:00-11:30/#321B (3F), EXCO
(Co-)Organizer	K-water
Session title	Safe and Efficient Management of Municipal Water Supply Infrastructure

Program

Time	Contents	Participants
10:00-10:10 (10')	Opening remark & Introduction	Moderator: Dr. Younkwon Kim, Head Researcher, K-water Research Institute Panelist: Prof. Kyung-Duk Zoh, Professor, Seoul National University
10:10-10:30 (20')	Analysis of Micro-plastics in Water	Prof. Hyunook Kim, Professor, University of Seoul
10:30-10:50 (20')	Smart Operation Technology for Industrial Water Treatment Systems	Dr. Jihye Kim, Principal Researcher, K-water Research Institute
10:50-11:10 (20')	A Hydraulic Model-based Approach to Retrofitting Urban Water System	Prof. Seungyup Lee, Professor, Hannam University
11:10-11:30 (20')	A Simulation Method for Saving and Harvesting the Energy of Water Distribution System	Dr. Doo-Yong Choi, Head Researcher, K-water Research Institute

Results

Presentations

- **Prof. Hyunook Kim – [Analysis of Microplastics in Water]**
 - Microplastics refer to synthetic high-molecular polymers of 5 mm or less. The inflow of microplastics in water distribution system is increasing, but its detection is being more difficult as their particle sizes get smaller.
 - Water quality inspection is usually performed by average concentration analysis sampling test, but in recent, various optical technologies are being developed such as visual detection using dyeing method.
 - Especially, continuous monitoring-based (image or video) detection methods using machine learning such as R-CNN are also being developed for effective detection of unevenly distributed microplastics in water.
- **Dr. Jihye Kim – [Smart Operation Technology for Industrial Water Treatment Systems]**
 - K-water's major smart operation and management technologies for water treatment systems; seawater desalination, ultra-pure water production, smart water treatment plant, and decentralized water treatment system are introduced as follows.
 - ✓ Seawater desalination: Development and demonstration of real-time optimal operation algorithms of DAF/UF/RO processes in desalination plant considering water treatment and energy consumption efficiency.
 - ✓ Ultra-pure water production: Development and demonstration of ultra-pure water plant operation based on virtual sensor and digital-twin for nitrogen gas management for ultra-pure water quality maintenance.
 - ✓ Smart water treatment plant: Development and implementation of smart technologies such as AI water treatment operation, facility predictive maintenance, real-time automated operational/facility/ personal safety monitoring.
 - ✓ Decentralized water treatment system: Development and implementation of distributed small-scale vertical water treatment facilities to reduce transmission distance and secondary pollution within scattered water demand supply.

- **Prof. Seungyup Lee – [A Hydraulic Model-based Approach to Retrofitting Urban Water System]**
 - The identification of water supply pipeline conditions can be divided into direct inspection and simulation-based indirect inspection, and recent efforts to develop simulation method to support or replace direct inspection are active for faster and cost-efficient pipeline inspection.
 - In the simulation of water distribution networks, calibration process is significant to increase consistency between an actual system state and its numerical model, and methods for detecting and analyzing major water pipe anomalies such as leaks using the calibration process is under development.
 - Also, as social interest in sustainability has being increased, studies on optimal management and planning of waterworks assets are emerging considering various environmental, social, and economic scenarios as well as reliable water supply services.
- **Dr. Doo-Yong Choi – [A Simulation Method for Saving and Harvesting the Energy of Water Distribution System]**
 - Recently, global efforts to reduce carbon emissions have been active such as the Net-Zero challenges to respond to climate change, and K-water is also making various efforts to manage the climate crisis, joining the 'global renewable energy 100 initiative (RE100)'.
 - The efficient operation of waterworks energy accounts for a large portion of K-water's carbon emission management (97% of K-water carbon emissions are generated). It is necessary to identify the energy state in water distribution networks considering their various operation conditions such as topology, topography and water demand for optimal utilization of the input energy in systems.
 - Based on an energy state analysis for the water distribution network, construction method of optimal block distribution system (DMA, districted metered area) and energy harvesting technology using in-pipe hydropower generation devices are being developed.

Discussion

- **Discussion point**
 - Along with various types of quantitative analysis methods for controlling and managing microplastics in water treatment, the development of related technologies to effectively remove them is required simultaneously.
 - Various technologies are being developed for producing and supplying municipal water combining 4th industrial technology now, but their reliability such as application stability and accuracy need to be improved continuously for more active implementation and spread in the water industry field.
 - As the representative underground facilities, proper visualization and real-time technologies are required to overcome the constraints of water distribution networks management, here more active and advanced application of 4th industrial technologies are expected by numerous novel studies such as virtual sensors and digital twins.
 - The development of in-pipe hydropower generation devices for pipe network energy harvest are incomplete in current, thus the various economic and technical support is needed for related technologies, based on the public sector especially, to achieve improved K-water's carbon neutrality.
 - **Major messages**
 - The awareness on microplastics hazard in water is not known to citizens enough. As abovementioned, the microplastic size is being smaller, and most risks associated with microplastics are inversely proportional to particle size. To supply safe drinking water to users, public effort and investments is required on related study.
 - In recent, water treatment plant technologies are further highlighted due to various novel demand forms such as ultra-pure water and small-scale water supply. Moreover, water treatment plants are being automated rapidly combining numerous latest technologies, and it is expected to be spread out to global water treatment industry market.
 - The efforts to advance water pipelines inspection and management methods have been tried within decades years. Direct inspection is still most guaranteed method for water pipelines management, but the accuracy and efficiency of indirect inspection methods are being improved, and it could contribute to more sustainable and safe water pipelines management.
 - The water distribution network consumes enormous energy to supply municipal water over a large area. There are many types of wasted energy within overcoming topographical conditions, and saving or withdrawing those energy is significant and effective to achieve long-term carbon emissions reduction.
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Photos



Session opening



Analysis of Microplastics in Water
(Prof. Hyunook Kim, University of Seoul)



Smart Operation Technology for Industrial Water Treatment Systems (Dr. Jihye Kim, K-water)



A Hydraulic Model-based Approach to Retrofitting Urban Water System (Prof. Seungyup Lee, Hannam University)



A Simulation Method for Saving and Harvesting the Energy of Water Distribution System (Dr. Doo-Yong Choi, K-water)



Session closing

Date/Time/Venue	November 25 (FRI) / 13:00-14:30/#321B (3F), EXCO
(Co-)Organizer	K-water
Session title	Integrated Water Resources and Environmental Management to Provide Optimal Solutions with Smart Technologies

Program

Time	Contents	Participants
13:00-13:05 (5')	Session introduction	Dr. Suhyung Jang, Team Leader of K-water Research Institute
13:05-13:25 (20')	Technical S/W Series for Digital Transformation of Water Resources Management	Dr. Joonwoo Noh, Senior Head of K-water Research Institute
13:25-13:45 (20')	Development of Integrated Water Environment Management Technology for Dam Basin	Dr. Dongkyun Kim, Senior Researcher of K-water Research Institute
13:45-14:05 (20')	Water-related disaster monitoring for utilization of Water resource satellite	Dr. Ki-mook Kang, Senior Researcher of K-water Research Institute
14:05-14:25 (20')	Securing the Environmental Flow of the River Ecosystem through smart water distribution based on a system dynamic approach	Dr. Joo-Heon Lee, Professor of Joongbu University
14:25-14:30 (5')	Summary & Session Closure	Dr. Suhyung Jang, Team Leader, K-water

Results

Presentations

- **Speaker, Dr. Joon-woo Noh**

Heavy rainfall occurred from August 7th to 8th in 2020 resulted in severe flood damage especially in the Soemjin River basin. To evaluate the flood inundation to estimate flood damages, quantitative analysis has been done based on a modeling application using flood simulation software packages including distributed rainfall-runoff model, 2 dimensional flood propagation model, and flood level simulation model. Combining such simulation models, K-water has incorporated Digital Twin platform into the decision support tool to minimize flood damages in downstream. Initiated from the Soemjin River basin, the reservoir operation system in the 4 other river basins will be improved in same manner.

- **Speaker, Dr. Dong-kyun Kim**

In this presentation, water quality deterioration in relatively new dam reservoirs was explained and the major causal factors are inflowing large nutrient loads from the watershed. Based on the research results, the significant increases of the loading during rain events was found and it was suggested the importance of automated water quality monitoring systems. Optimal strategies of dam operation associated with spatiotemporal external nutrient loading was also suggested for integrated and comprehensive water-environmental management in a watershed.

- **Speaker, Dr. Ki-mook Kang**

In order to monitor water-related disasters, it is important to rapidly acquire, analyze, and utilize satellite data. In this study, the flood mapping on the Korean Peninsula was analyzed using Synthetic Aperture Radar(SAR) that capable of observing water body in surface through clouds during a flood disaster. All SAR satellite data with International Charter were radiometrical and geometrical pre-processed, and speckles and image filters optimized for water body detection were applied. In 2025, the launch of Water resources satellite with C-band SAR satellite can monitor water resources and water-related disasters to shorten the revisit time and improve precision.

● **Speaker, Prof. Joo-Heon Lee**

In order to evaluate instream flow for regional endangered and dominant fish species, he introduced a new method for securing the environmental flow of the river ecosystem through smart water distribution using system dynamic approach. His research is separated into two parts (hydro-ecological process and social process). In hydro-ecological process, there are four steps: 1) hydrologic input data (e.g., model, stream gauge, hydrographs), 2) stream classification (hydrologic & geomorphic), 3) flow alteration by IHA, 4) flow-ecology relationships using flow-ecology hypotheses, ecological data & HIS, and River 2D for ecological flow estimation. In social process, there are four steps: 1) societal values & management needs, 2) water demand, 3) environmental requirement, 4) water budget analysis by WEAP. Based on the water supply scenarios, it was suggested appropriate environmental flows to be optimized to mitigate shortfalls for some target fish species such as Zacco platypus.

Discussion

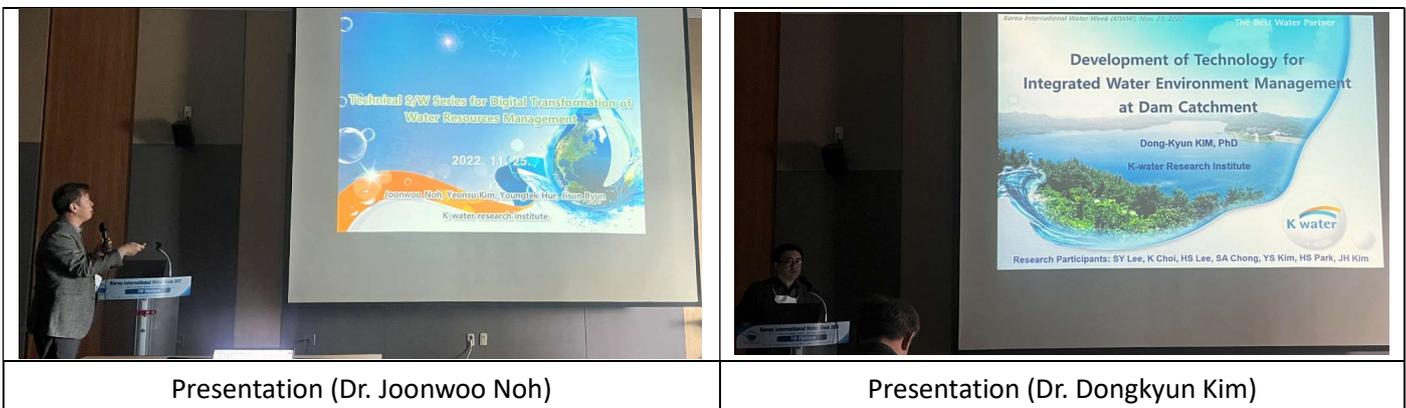
● Discussion point

- Possibility of managing flood damages based on the Digital Twin platform
- Current monitoring in a watershed with respect to quantitative point
- Flood prediction or forecast using satellite, satellite life and Space debris
- Availability of satellite data acquisition in case of disaster
- Potential municipal water shortages
- Protected stream flows for fish habitat & survival

● Major messages

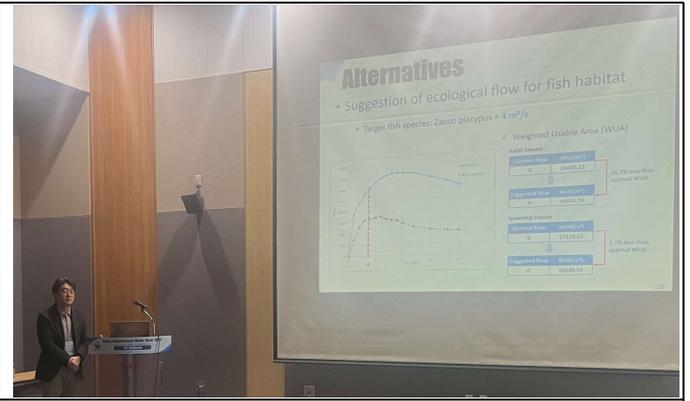
- Digital twin platform for managing flood damages is not only composed of simulation models. It also includes monitoring systems such as water level gages and CCTV. Combining simulation models and monitoring facilities will help to support reservoir operation during the flood control.
- For monitoring in a watershed, it is very difficult to quantify the budget for all processes. Yet, it is promising to implement remedial actions, specifically for hot-spot areas.
- To obtain satellite data, it is possible to utilizing microsattelites which can be acquired within 2~6 hours.
- In case of satellite life and space debris, they generally operate longer than the satellite design life. At the end of its lifespan, it disappears from the stratosphere.
- Conservation/curtailment can be optimized to mitigate shortfalls to humans and fish by STELLA and this system can be be operated to promote increased instream variability and still ensure municipal supply.
- This system also can be proposed an alternative to satisfy water demand even during the drought year.

Photos





Presentation (Dr. Ki-mook Kang)



Presentation (Prof. Joo-Heon Lee)

Date/Time/Venue	November 24 (Thu) / 10:00-12:00/#321A (3F), EXCO
(Co-)Organizer	AiKite
Session title	WASH-Climate Resilience Solution in Community: Case Study in The World Most Populous Island, Bungin, West Nusa Tenggara and Nusa Penida, Bali

Program

Time	Contents	Participants
10:15-10:20 (5')	Opening remark	
10:20-10:35 (15')	LAZISMU's Contribution to Sustaining Indonesia's Natural Harmony through Enhancing Water and Environmental Quality	Muarawati Nurmalinda
10:35-10:50 (15')	Water and Waste Management in The World Most Populous Island, Bungin Island	Nuha Anfaresi
10:50-11:05 (15')	WASH and Climate Resilience Solution in Blue Paradise Island, Nusa Penida	Risti Zahroh
11:05-11:25 (20')	Empowering Local Community in Environment and Climate Change Resilience Program	Dimas Harris
11:25-11:35 (10')	Closing Remark	

Results

Presentations

- **A speaker (Muarawati Nurmalinda): LAZISMU's Contribution to Sustaining Indonesia's Natural Harmony through Enhancing Water and Environmental Quality**
 1. **Describe about LAZISMU which one organization that have strong enough commitment to distribute fund to environmental issues**
 2. **Commitment by LAZISMU to contribute to SDGs issues:** Since 2017, LAZISMU has made the SDGs their target. Since 2020, LAZISMU has chosen five issues—education, social issues, health issues, economic issues, and humanitarian issues—as the foundation of its service.
 3. **Commitment LAZISMU to add environmental issues as the foundation of its service:** Commitment LAZISMU to workwith other organizations like AiKite to address environmental issues. LAZISMU and AiKite support rainwater harvesting to work on the water issues in Nusa Penida.
- **B speaker (Nuha Anfaresi): Water and Waste Management in The Populous Island, Bungin Island**
 1. **Identified challenges faced in the implementation of community-based solid waste management in Bungin Island:** there are still few people on Bungin Island who are aware of waste management, clean water, sanitation, and also hygiene sectors. On the other side, the lack of basic sanitation facilities on Bungin Island

2. **Identified stakeholders influence the community-based solid waste management practice in Bungin Island:** some stakeholders are actively involved including the head of the village, the police, the head of the region, some of Bungin Island community, and AiKite
 3. **Strategies and innovation that support the performance of the community-based solid waste management in Bungin Island:** made the promotion of the importance of basic sanitation to village communities, giving assistance in meeting the needs of basic sanitation facilities which include clean water, latrines, garbage, and waste disposal, and also give assistance of the efforts to prevent water and waste pollution
 4. **Identified lessons learned and recommendations from the research to improve the performance of solid waste management in Bungin Island:** there is some lesson learned by these activities in Bungin Island such as increasing public awareness to handle waste management, increasing efforts to improve the environment by continuing waste management system and implementing 3R and zero waste, TPS sustainability can be carried out
- **C speaker (Risti Zahroh): WASH and Climate Resilience Solution in The Blue Paradise Island, Nusa Penida**
 1. **Identified climate change issues faced by the people of Nusa Penida:** more than 80% of Batumadeg residents used rainwater as the main resource for their daily life without further processing and 10% of Batumadeg resident doesn't have proper toilet
 2. **Innovations and programs that are successfully addressing water crisis that involves community and local partner:** we have implemented various programs such as Education, Rain Water Harvesting Construction, Beach Clean Up, Donation for Toilets, and Visits to conservation areas to empower volunteers and raise public awareness of climate resilience in the community
 3. **Planning strategies to create more local, national, and international awareness to help WASH issues and its Adaptation/mitigation to climate change in community:** we collaborated with all related parties such as Government, NGOs, private sector, universities, and the community to tackle clean water crisis during the dry season and overcome the unprecedented situation caused by climate change
 - **D speaker (Dimas Harris): Empowering Local Community in Environment and Climate Change Resilience**
 1. Understanding the relation between Empowerment and Climate Resilience.
 2. Discussing what are the drivers and outcomes of empowerment by educating methods for the local community with three dimensions, that are
 - **Self-Empowerment:** Derived from individual action and psychological attributes
 - **Mutual Empowerment:** Derived from relationships with others
 - **Social Empowerment:** Created with the removal of social, political, legal and economic obstacles to the exercise of individual influence
 3. Implementation and analysis of empowerment programs by other institutions as an example by using empowerment categories and drivers.
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4. Outcome when executing empowerment

- **Participation**
The action of taking part in something
- **Agency**
Actively involved and bringing their own resources into play
- **Autonomy**
A group to govern themselves or organize their own activities
- **Power Shift**
Collective action grows in strength that has the potential to become movements

Discussion

- Discussion point
 1. Climate Resilience fundamental
 2. Strategies and innovation that tackle water-related disasters and waste pollution
 3. Meaning of empowerment
 4. Dimension of Empowerment
 5. The Behavioral Drivers Model
 6. Drivers of Empowerment
 7. Educate about Environment and Climate Change Resilience
 - Psychological
 - Political
 - Economic
 - Social
- Major messages
 1. Sustainable action strategy and positive feedback from the community and the government
 2. Collaboration with all parties is needed to achieve the goals

Photos

	
<p>First Speaker (LAZISMU)</p>	<p>Opening Remark</p>



Second Speaker



Third Speaker



Fourth Speaker



Photo Session

Date/Time/Venue	November 23 (Wed) / 13:00-15:00/#320B (3F), EXCO
(Co-)Organizer	OECD
Session title	The 2nd Regional Track of National Dialogues on Water enhancing water security in East Asian countries

Program

Time	Contents	Participants
13:00-13:10 (10')	Congratulatory Remarks	Mr. Hang-Ki KIM, Executive Director of Asia Water Council
13:10-13:50 (40')	Innovation support and diffusion: Non-Structural measures to mitigate water disasters. Indonesia	Mr. Edwin Alexander, Chief Technical Officer, Ministry of Public Works and Housing, Indonesia Mr. Jewon Lee, Director, Asia Water Council
13:50-14:25 (35')	Financing water for growth. Lessons from Indonesia: Financing water-related Investment (including land value capture)	Mr. Ewin Sofian Winata, Deputy Director, Ministry of National Development Planning, Indonesia
14:25-14:45 (20')	Expected benefits of Policy Dialogues	Dr. Nghia, Director General of National Centre for Water resources planning & Investigation, Vietnam
14:45-14:55 (20')	Managing water for growth. Lessons from Thailand	Dr. Wimolpat Bumbudsanpharoke Khamkanya, Chief Economist, Office of National Water Resources, Thailand
14:55-15:00 (5')	Wrap-up & Closing	Mr. Taehoon KIM, Policy Analyst, OECD

Results

Presentations

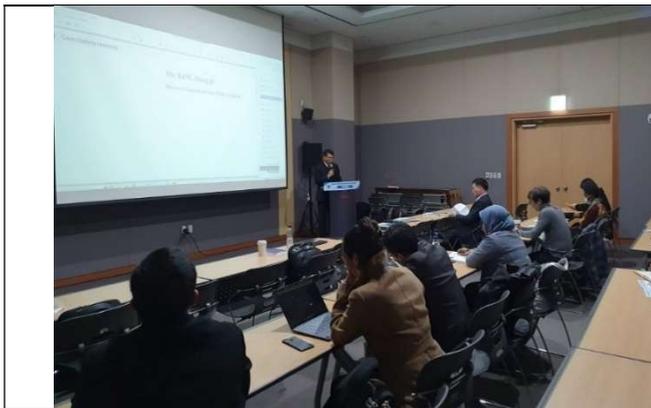
Please describe each speaker's presentation briefly.

- Mr. Edwin Alexander explained the major technical issue in managing water resources and water related disaster management including frequent and strong extreme floods in Indonesia. In addition, he introduced Indonesia endeavor to tackle these matters.
- Mr. Jewon LEE briefly explained applicable technical solution to address severe water hazard risks by upgrading flood forecasting system using satellite imaging.
- Mr. Ewin expressed Indonesian difficulties on financing water infrastructure despite solid domestic financial market and ample business opportunity.
- Dr. Nghia indicated Vietnam government is planning revision of water laws and regulation for tackling surging water shortage risk spurred by climate change.
- Dr. Wimolpat explained main water issues in Thailand and policy recommendation proposed by OECD during National Dialogue on water in Thailand.

Discussion

- Discussion point
 - Common issues in water management in South--East Asian countries and how to address these issues.
- Major messages
 - All speakers and participants agreed water shortage caused by growing population, urbanization and climate change is the most common and important water issue should be solved through multilateral collaboration with peer countries and international organizations work in water sector.
 - Preventing water related hazards such extreme flood and drought is the second impending issue to be addressed. In this regard, technical solution explained by Asia Water Council like enhancing flood forecasting capability was recognized as one of feasible solutions.
 - For the sake of promoting financing on water infrastructure, private financiers' engagement into water related PPP project is necessary. In order to achieve this aim, enabling conditions for financing water should be explored.

Photos



Congratulatory remarks



Group photos



Participants



Q&A

Date/Time/Venue	November 24 (Thu) / 10:00-11:30, #321B (3F), EXCO
(Co-)Organizer	Korean Wetlands Society, Kongju National University
Session title	Nature-based Solutions for Sustainable Water Resources Management and Socio-economic Development

Program

Time	Contents	Participants
10:00 – 10:05 (5')	Foreword and Introduction to Speakers	Dr. Heidi Guerra, <i>Post-doctoral Researcher, Kongju National University</i>
10:05 - 10:25 (20')	Global Perspectives on Climate Resilience and Carbon Neutrality.	Dr. Franz Kevin Geronimo <i>Project Officer, World Water Council-Asia Pacific Bureau</i>
10:25 - 10:45 (20')	Environmental Policies and Key Strategies for Promoting Sustainable Water Resources Management through Nature-based Solutions.	Prof. Lee-Hyung Kim <i>President, Korean Wetlands Society</i>
10:45 - 11:05 (20')	Emerging Role of Nanotechnology for Water Sustainability.	Dr. Ruda Lee, <i>Associate Professor, Kumamoto University - Institute of Industrial Nanomaterials</i>
11:05 – 11:25 (20')	Panel Discussion	Prof. Lee-Hyung Kim, Franz Kevin Geronimo, Ruda Lee, and the attendees
11:25 – 11:30 (5')	Session Summary and Closing Remark	Dr. Heidi Guerra, <i>Post-doctoral Researcher, Kongju National University</i>

Results

Presentations

- **Dr. Franz Kevin Geronimo**

Dr. Franz Kevin Geronimo described long-term climate goals, global biodiversity targets, and other environmental goals; regulatory frameworks that support the deployment of low-carbon infrastructure systems; resilience standards and regulations that consider new information about hazards and how should be handled. From his presentation, it was shown that global emissions of CO₂ were reduced due to COVID-19 related lockdowns highlighting the major contribution of anthropogenic activities to global greenhouse gas emissions. There are many major factors contributing to climate change which includes power generation, manufacturing industries, transportation, and deforestation. He also enumerated the different climate-related international paradigm and national adaptation plans to combat climate change.

- **Prof. Lee-Hyung Kim**

Prof. Lee-Hyung Kim explained the contribution of nature-based solutions (NBS) to climate resilience, which can efficiently replace, supplement, or function alongside grey infrastructure. He also discussed the border concept of the environmental, social, and economic capabilities of NBS. Major emphasis was given to how NBS can help control carbon emission and improve carbon sequestration in addition to flood control, solving urban environmental problems through blue-green networks, and ecological river restoration. Prof. Kim also mentioned the status of Korea's attempt to achieve the UN Sustainable Development Goals (SDG). According to him, South Korea is relatively successful at incorporating these SDGs in different industries and development projects. However, SDGs 13, 14, and 15 which pertains to climate action, life below water, and life on land still needs improvement and should be prioritized in future projects.

● **Dr. Ruda Lee**

Dr. Ruda Lee elucidated environmentally friendly and effective methods for removing contaminants from wastewater by using nanostructured catalytic membranes, nano sorbents, and nano photocatalysts. She discussed the contribution of different types of nanotechnology to water resources and water sustainability. She also presented examples like nanotechnology for smart-sensing and monitoring of water quality. One interesting example that she mentioned was a device that can be connected to a phone and can quickly measure water quality from a drop of water sample. The technology is still a prototype and will be released once it is improved and scaled to a smaller size.

● **Panel Discussion**

At the end of the presentation, a panel consisting of the presenters shared their opinion and answered questions from the audience. Several questions were raised which led to a productive discussion. Dr. Franz Kevin Geronimo explained the role of the youth in promoting climate change adaptation strategies. Prof. Lee-Hyung Kim responded audience according to the multifunctional benefits of NBS and its adaptability around the globe. Dr. Ruda Lee discussed the progression of her research and market versatility of technology.

● **Major messages:**

- Nature-base solutions have a great potential in addressing numerous environmental and societal problems including climate change, human health, food, water security, and disaster risk reduction.
- Successful implementation of nature-based solutions and low impact development strategies needs the participation of stakeholders including civilians and private sectors.
- As the future leaders of the world, the youth have a major role in promoting climate change mitigation and adaptation strategies specially through nature-based solutions.
- Nanotechnology has been widely used to solved major water quality problems and reduce the threat to human health for a long period of time. The possibility of using nanotechnology in combination with nature-based solutions is a step further towards sustainable development and green technology.

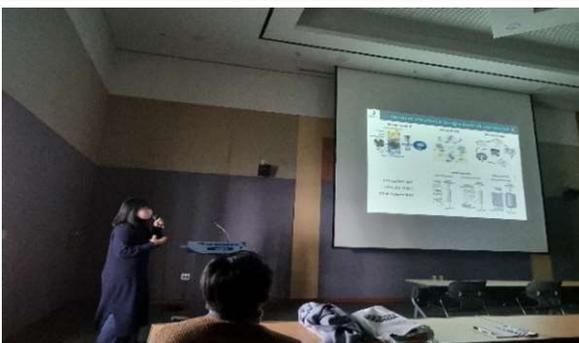
Photos



Prof. Lee-Hyung Kim's presentation



Dr. Franz Kevin Geronimo's presentation



Dr. Ruda Lee's presentation



Audience questions during the panel discussion



Prof. Kim addressing a question during the panel discussion



Group photo

Date/Time/Venue November 24 (Thur) / 16:00-18:00/#321 (3F), EXCO
(Co-)Organizer K-water
Session title Forum for Water Industry Promotion

Program

Time	Contents	Participants
16:00-16:05 (5')	Opening remark	Dr. Kyungseok Min, President of KIWATEC
16:05-16:10 (5')	Keynote Speech	Dr. Kyulho Kwak, President of KWF
16:10-16:30 (20')	Cases and implications related to the 4 th industrial revolution in the water sector	Dr. Kwangtae You, CEO of UnU Inc.
16:30-16:50 (20')	Accelerating digital transformation policy to foster smart water industry	Dr. Jongho Ahn, Director General of KEI
16:50-17:10 (20')	The platform for the Korea-Mekong Cooperation in Water Sector	Dr. Sangyoung Park, Director of KMCRC
17:10-17:50 (40')	Panel Discussion	Members of Water Industry Forum
17:50-18:00 (10')	Closing remark	Dr. Kyungseok Min, President of KIWATEC

Results

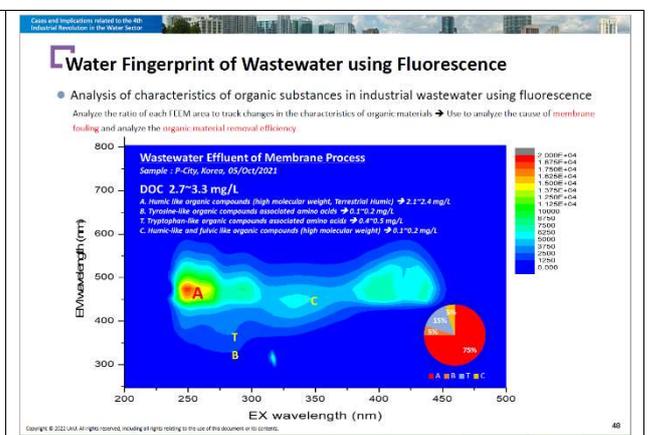
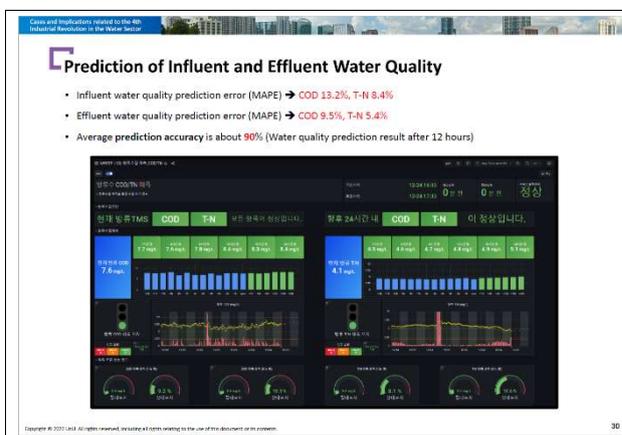
Presentations

Please describe each speaker's presentation briefly.

● **Dr. Kwangtae You, CEO of UnU Inc.**

(1) Cases and implications related to the 4th industrial revolution in the water sector

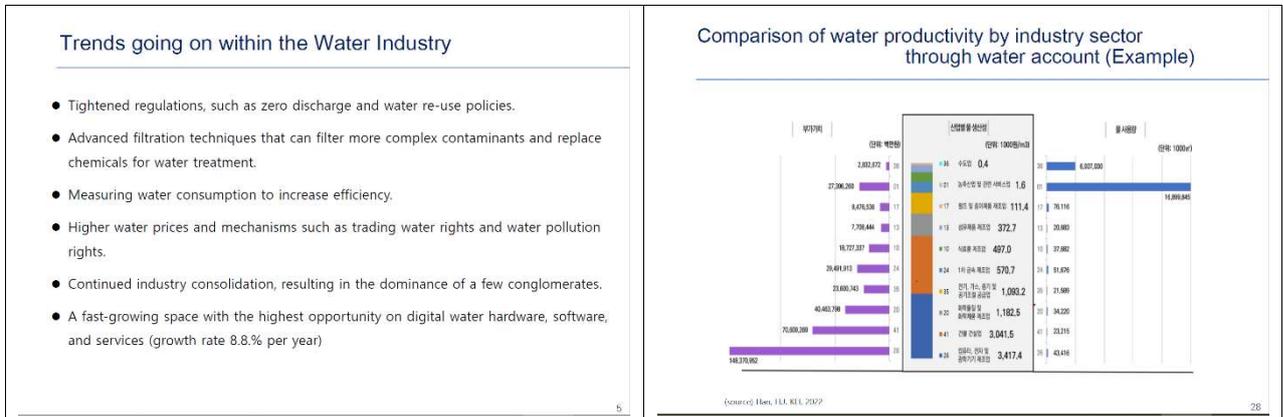
- 4th Industrial Revolution and Smart Technology
- Case Study of Smart Technology Related to the 4th Industrial Revolution
- Implications



● Dr. Jongho Ahn, Director General of KEI

(2) Accelerating digital transformation policy to foster smart water industry.

- We can set aside the domestic water industry market and focus only on targeting overseas markets
- The water industry promotion policy is focused on manufacturing such as water-related products and facilities. The policy to improve operational management expertise is not there
- We can establish a desirable linkage system between R&D water management technology and fostering the water industry



● Dr. Sangyoung Park, Director of KMCRC

(3) The platform for the Korea-Mekong Cooperation in Water Sector

- Geopolitical Significance of Mekong River Basin
- Governance Organizations in Mekong Region
- ROK-Mekong Collaboration and KMCRC
- KMCRC Mission and Collaboration Network
- Role, Vision, Goal, and Road Map



Discussion

● Discussion point

This session tells us that we, water experts, can share better knowledge of water industry and also consider how we can promote water industry further and support water companies more in domestic water market and even overseas markets.

● Major messages

From the presentation and discussion, we would provide a creative and helpful contents for policy-makers, responsible for water industry in both local and central governments, who are thinking of enhancing water industry in Korea. Also, this session will serve as an opportunity for public discussion of Korea's Water Industry Promotion.

Photos

	
<p>Panel Discussion 1</p>	<p>Presentation 1</p>
	
<p>Panel Discussion 2</p>	<p>Presentation 3</p>
	
<p>Presentation 2</p>	<p>Presentation 4</p>

Date/Time/Venue	November 23 (Wed) / 16:00-17:00/#320B (3F), EXCO
(Co-)Organizer	Sungkyunkwan University, National Smart Water Grid Research Group(NSWGRG), Smart Water Technology and Consulting, Co. Ltd.
Session title	Strategies to overseas governance and test bed demonstration of national R&D(Advanced) development performance(facilities)

Program

Time	Contents	Participants
16:00-16:10 (10')	Opening remark	Mr. KyungTaek Yum, Professor of Sungkyunkwan University
16:10-16:20 (10')	Introduction of Domestic Support Policy for Overseas Demonstration	Mr. Youngdo Jung, Senior Research Specialist of Korea Environmental Industry & Technology Institute
16:20-16:35 (15')	On-site High concentration (~12%) NaOCl Generator	Mr. Taewoo Kim, Senior Research of Techwin Co. Ltd.
16:35-16:50 (15')	Acceleration Innovation & US Market Penetration	Mr. Bryan Stubbs, President and Executive Director of Cleveland Water Alliance in US
16:50-17:05 (15')	Smart Water Management Project in Hai Duong, Vietnam	Mr. Dean Kim, Manager of Istecnology
17:05-17:20 (15')	Vietnam SWG Demonstration Construction Cooperation Case	Mr. Nguyen Chi Nghia, Director of NVWATER, NAWAPI, Vietnam
17:20-17:40 (15')	Necessity of Cooperation in Establishing SWG Demonstration in Nepal	Mr. Kapil Gnawali, Senior Division Hydrologist of Water and Energy Commission Secretariat, Nepal
17:40-18:10 (30')	Discussion	Chairman Mr. Sangyoung Park, Director of Korea Water Resources Corporation
18:10-19:00 (50')	MoU Ceremony	Techwin, NAWAPI, HADUWACO, SKKU, SWT&C Techwin, CWA, SKKU, SWT&C

Results

Presentations

- Introduction of domestic support policies for overseas demonstration (Mr. Youngdo Jung, Korea Environmental Industry & Technology Institute, South Korea)

Mr. Youngdo Jung introduced the overview of international joint localization support, major contents, and best practices through KEITI's analysis of domestic environmental market trends and environmental industry overseas expansion support policies. KEITI supports local demonstration and overseas reference establishment so that excellent domestic environmental technologies meet the environmental regulations and local conditions of the target country, and sharing of local tasks such as international environmental cooperation and overseas expansion through step-by-step support programs.

- Advancement of onsite high-concentration (~12%) sodium hypochlorite generator technology (Mr. Taewoo Kim, Techwin, South Korea)

Mr. Taewoo Kim introduces the technology, safety, effectiveness and efficiency of onsite high-concentration sodium hypochlorite generator. He introduces the technology advancement research such as freedom from toxic chlorine gas, minimization of chlorate & bromate, space efficiency, operation cost reduction, smooth maintenance and repair.

- Accelerate innovation and enter the US market (Mr. Bryan Stubbs, Cleveland Water Alliance, The United States)

Mr. Bryan Stubbs suggested test-bed installation support and demonstration, potential development area analysis and partnership strengthening, and risk minimization as a way to enter the US market. As specific measures, the goal is to collaborate with research institutes and industries, improve market entry visibility, invest and finance, install partner-linked prototypes and improve productivity.

- Vietnam Hai Duong province smart water management project (Mr. Dean Kim, ISTechnologies, South Korea)

Mr. Dean Kim introduced the effectiveness and utilization of Smart Ultrasonic Water Meter, AMI, and SWM Software related to Hai Duong smart water management project. By focusing on test bed installation and operation considering local conditions, IoT network and data utilization have been enabled.

- Cases of SWG demonstration cooperation in Vietnam (Mr. Nguyen Chi Nghia, NVWATER, Vietnam)

Mr. Nguyen Chi Nghia introduced local success cases of SWGRG and ISTechnologies' governance and pilot projects. He put emphasis on ensuring high effectiveness, quality and stability of the water supply system during project implementation. In relation to the Vietnamese government's 2030, 2050 water supply policy, SWG demanded active cooperation from partners in improving the water quality management system and entering the Vietnamese market. In this regard, ways to install and expand the proven technology will be considered.

- Necessity of cooperation plan for Nepal SWG demonstration (Mr. Kapil Gnawali, Water and Energy Commission Secretariat, Nepal)

Mr. Kapil Gnawali suggested the need for SWG demonstration suitable for local conditions in Nepal. He cited as representative examples minimizing variability through an integrated water management system, activating smart systems in current water supply means, and utilizing multiple water resources to ensure sustainability.

Discussion

- Discussion point
 - Consideration of country-specific conditions for demonstration and materialization
 - Sharing future priority tasks after successful cases
 - Verification of SWG scalability and effectiveness efficiency
 - Major messages
 - Vietnam: 2030, 2050 long-term plan needs to be established according to government policy changes, NRW reduction, IWRM activation
 - USA: Confirmation of the possibility of Korean technology entering the US market, test bed installation and business model research are required
 - Nepal: Climate (dry season: lack of energy and water storage systems), type of industry (water shortage in large-scale agriculture), and geographic characteristics (surplus basin water shortage) need to be addressed
 - Others

3 international and 3 domestic prominent experts were invited as speakers from different organizations, academia, institutions, corporations and more than 25 participants actively participated in the session. Session organizer, speakers and participants shared their ideas and thoughts on SWG's key technology: Diversification of multiple water sources and appropriate and innovative technology.
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Photos



Participants of the session



Mr. Kyungtaek Yum (Korea) Opening Remark



Mr. Bryan Stubbs (US) presenting his presentation



Mr. Tawoo Kim (Korea) presenting his presentation



Mr. Nguyen Chi Nghia (Vietnam) presenting his presentation



Mr. Dean Kim (Korea) presenting his presentation



Mr. Kapil Gnawali (Nepal) presenting his presentation



Comprehensive Discussion



MoU Ceremony (US and Korea)



MoU Ceremony (Vietnam and Korea)

Date/Time/Venue	November 24 (Thu) / 10:00-11:30/#320A (3F), EXCO
(Co-)Organizer	IWRA & UNESCO i-WSSM
Session title	Case Studies of Integrated Urban Water Management (IUWM) for Water Security

Program

Time	Contents	Participants
10:00-10:05 (5')	Opening remark	Mr. Bongwoo Shin, Director of UNESCO i-WSSM
10:05-10:15 (10')	Overview of GWSI	Mr. Seo Hyung Choi, Senior Programme Specialist of UNESCO i-WSSM
10:15-11:00 (45')	Presentations	Prof. Mona Iyer, Professor of CEPT University Amali Amali, Graduate student of TH Koeln Prof. Jan Hofman, Professor of University of Bath
11:00-11:30 (30')	Panel discussion and closing remarks	Moderator: Dr. Mary Trudeau, Project Officer of IWRA Panel: Seo Hyung Choi, Mona Iyer, Amali Amali

Results

Presentations

Please describe each speaker's presentation briefly.

- **Mona Iyer**

Prof. Iyer gave a presentation on integrated urban water management (IUWM) in the city of Bhuj, India. It includes revival and protection of local water resources, rainwater harvesting, groundwater recharge, monitoring and protection of groundwater, wastewater recycle and reuse, and decentralized water supply management. She also developed IUWM toolkits with key IUWM frameworks: city diagnosis – evaluation of water resources and planning and identify IUWM associated interventions. She found out several key learnings. First, awareness of stakeholders is must and stakeholder engagement is important for successful implementation of a project. Next, it needs to be ensured that the natural ecosystem supporting the water services is well managed and protected, especially in water sector. The societal needs are met by putting community as the main focus and driver of the decision-making process.

- **Amali Amali**

Amali presented the contribution of rooftop rainwater harvesting as an integral component of the urban water mix. Rooftop rainwater harvesting has economical benefits. Harvesting 25% of rainfall contributes to 9% savings in water consumption in Amman, Jordan. Also, contribution to water requirements ranges from 7 to 82%, which reduces costs of water pumping range from US\$ 0.4 to 38 million while energy cost ranges from US\$ 1.2 to 55 million. To implement rooftop rainwater harvesting, technical and economic instruments are required. As a decentralized system, standards and guidelines are required to ensure water quality is not compromised and downstream impacts and trade-offs need to be assessed on a large scale.

- **Jan Hofman**

Prof. Hofman assessed IWRM (Integrated Water Resources Management) in African capitals. He conducted baseline diagnosis of IWRM and water governance. He found out that several urban water management challenges in African capitals including access to water supply, limited wastewater treatment, solid waste handling, and poor climate adaptation. He concluded city blueprint analysis (CBA) can contribute to capacity development and information disclosure to support decision making and empower local young professionals.

Discussion

- Discussion point

Panels shared key messages to implement IUWM. Prof. Mona shared the challenges and lessons learned from various urban water management projects in India. Mr. Amali emphasized rainwater harvesting to meet the modern increasing water demand from population growth and urbanization. Mr. Choi highlighted the importance of awareness of stakeholders and decision-makers to implement IUWM.

- Major messages

Under IUWM, various barriers (e.g., institutional and legal) in current urban water management can be overcome and IUWM can be the solution to the challenges we experience in urban areas.

- Others

This session drew on the case studies to be published in the upcoming Global Water Security Issues (GWSI) Series by UNESCO and UNESCO i-WSSM, produced with coordination assistance by IWRA. This report's theme is Water Security and Cities – Integrated Urban Water Management.

Photos

	
<p>GWSI Introduction (Seo Hyung Choi)</p>	<p>Presentation (Mona Iyer)</p>
	
<p>Presentation (Amali Amali)</p>	<p>Panel Discussion</p>

Date/Time/Venue	November 25 (Fri) / 13:00-14:30/#320B (3F), EXCO
(Co-)Organizer	University Of Canberra, Australia/ Pakistan Council of Research in Water Resources (PCRWR)
Session title:	Nurturing Science-Policy-Practice Interface: A Paradigm Shift in Water Governance

Program

Time	Contents	Participants
13:00 - 13:05(5')	Welcome remarks	Mr. Faizan Ul Hasan, Institute of Governance and Policy Analysis, University of Canberra, Australia
13:05 - 13:15(10')	Introductory presentation "Science, policy, practice interface"	Mr. Faizan Ul Hasan, Institute of Governance and Policy Analysis, University of Canberra, Australia
13:15 - 13:25(10')	Documentary	Ms. Bareerah Fatima, Pakistan Council of Research in Water Resources (PCRWR)
13:25 - 14:05(40')	Panel discussion: Questions with the panelists What is the influence of scientific assessment on decision-making in water resource management? What are the barriers impeding the engagement of users in the design of assessments? How science, policy and practice interface can be enhanced for sustainable water governance?	Moderator: Faizan Ul Hasan Ms. Bareerah Fatima, PCRWR, Pakistan Ms. Shiksha Bastola, Integrated Watershed Management Institute, Korea Ms. Yujeong Kim, Senior Sustainable Development Officer, UNOSD Dr. Mary Trudeau, Project Officer, International Water Resources Association (IWRA)
14:05 - 14:25(20')	Q & A	Mr. Faizan Ul Hasan, Institute of Governance and Policy Analysis, University of Canberra, Australia
14:25 - 14:30(5')	Concluding remarks	Mr. Faizan Ul Hasan, Institute of Governance and Policy Analysis, University of Canberra, Australia

Results

Presentations

Please describe each speaker's presentation briefly.

Mr. Faizan Ul Hasan: There are two interconnected processes viz. "scientization of politics" and "politicization of expertise" in producing knowledge, practice, and decision-making, also called a social contract between science and society. Most of the scientists' research concentrates on theoretical issues and becomes of no significance for managers. This is also a truth that scientists usually are taken apart from policymaking and many of them are even not aware of the priorities and the process of government. Despite this, not many efforts have been put together to narrow down the existing difference between "scientists (the knowledge producers) and the decision-makers in policy and practice (the knowledge users)". Science, policy, practice interface (SPPI) is comparatively a new framework that provides an opportunity to transform scientific evidence into governance practices.

Globally, water governance is recognized as a new emerging challenge, especially in developing countries. Growing demands on water from food production due to population growth, combined with the negative impacts of climate change, threaten sustainable water resources and food security into the future. Therefore, this session is planned to bring together scientists and policymakers to deliberate how SPPI can be enhanced for sustainable water governance. Therefore, after presenting global emerging challenges in the context of water governance, he presented basic ingredients of water governance. He also highlighted the key gaps between the knowledge producer and the knowledge user. Given this background, he framed following three questions, which were addressed by the panelists in the later part of discussion:

1. What is the influence of scientific assessment on decision-making in water resource management?
2. What are the barriers impeding the engagement of users in the design of assessments?
3. How science, policy and practice interface can be enhanced for sustainable water governance?

Discussion

● Bareerah Fatima

Bareerah Fatima said that water governance is critical, particularly for economies with multiple water users. Its crisis is as critical as the emerging food security issue faced by the world. In the case of agricultural economies, water governance is likely to contribute to food security as well. In developing economies, governance of freshwater resources both from surface and groundwater sources is a complex mix of authorities, users, implementation of policies, and laws. She remarked that we have heard and been part of many debates where certain models such as “bottom-up approaches for water governance”, participatory approaches, and “carrot and stick approaches” have been discussed. Therefore, it is time that we, the scientific community may do a self-audit.

She was of the view that ideally, scientific assessment of water needs must inform the decision-making process for water distribution. It is also important to note that water demand is designed solely on the basis of per capita water needs or crop water requirements in agriculture. In doing so, human contribution to supplied water exploitation is completely ignored. As very good engineers and planners we often forget to include this human component. Consequently, much of the system leakages whether these are in financial terms, water share or water quality are attributed to poor governance.

How a domestic water supplier will make sure that a person who is supplied with two bucket of drinking water is not using it for washing his car. And how will an irrigation manager will ensure that the water allowance of the wheat crop is not actually being applied on the sugarcane crop, a crop that requires 10 times more water?

So, the answer to the first question is yes, scientific assessments should support water resources management. Whether they are in the form of volumetric metering of water supplies in the agricultural, domestic, and industrial sector or pumping of fresh groundwater resource for public and private use. This is, however, not straightforward to implement. It is important to involve users in scientific assessment since the beginning so that they learn to believe in science. Just like mobile phones and social media, people believe in them.

A similar concept is shown in the short documentary played in this session “Irrigation and Climate Advisory Services through citizen science”, a climate innovation challenge project of the Asian Disaster Preparedness Centre. The project has identified two things; firstly, no scientific assessment may be of use unless it is made in participation with users and their confidence, and secondly; just on the basis of scientific assessments and policy ambitions we cannot improve water use efficiency in the sector and resolve governance challenges unless the stakeholders are involved. This brings me to the second question; I have touched upon these questions in my earlier points. The key issue is that our planning lacks user perspective.

While being a water manager I am also a water user and I can elevate a perspective while offering a very good policy suggestion. Why do we lack this? It is our static way of thinking; the strict boundaries of research methodologies and preferences on quantitative data sets, expensive modeling, and high-impact factor publications. In following this, some very good case studies and stories are not accepted in high-impact factor publications or they miss out due to limited financial resources to create an echo.

So, in my view, the attitude of science and the way we do scientific research is the biggest barrier to the involvement of users in assessment design. In the policy aspect, Sustainable Development Goals are examples of such limited understanding. If you look particularly at SDG 6.0 “Water and sanitation for all” it focuses on developing local partnerships and capacity building of communities in achieving the sustainable management of its indicators, targets, and hence the goal itself. Unfortunately, even with this profoundly strong goal on the water the focus among many nations still remains on reporting the numbers. Because the word “sustainable management and development” has high demands which are not possible without investments in community capacity building.

And finally, to strengthen this science, policy, and practice interface science needs to be flexible enough to involve users in the process. Governance may be improved if the systems invest more in “awareness” and “participation” of the users rather than following the principles of “punishment” and “permissions”. Enhanced user awareness regarding the challenge of water availability and their trust in the scientific assessment will help users to work smartly for their own good. If only they realize their role in governance and scientific innovations, they will be in a better position to respond to the policies as well.

- **Dr. Mary Trudeau**

Dr. Mary Trudeau was of the view that science does influence the decision-making process. Refereeing an example from climate change scientists though have been communicating with decades are now started influencing the decision making process of the recent years through different communication means. She also remarked that governments are dragged by the popular opinion rather scientific assessment. Therefore, a linkage is very vital in communicating the scientific assessment. Most recently, the people have started new way like involving artists to produce a song for water resource management. In communicating any scientific assessment, there are two things important viz. what and why? Abstract nature of policy itself is a barrier. She suggested that scientists must engaged with the different communicators such as artist, song writer, poet who can better convey message to a wider audience.

- **Ms. Shiksha Bastola**

Ms. Shiksha Bastola remarked that science is a foundation to the decision-making. While giving an example of Nepal, she said that most of the decision-making is on the basis of scientific assessment which helped rational use of natural resources like water resource management. As researchers, we produce a lot of data, but a link must be developed for the decision makers to understand that knowledge of data. For this purpose, the researchers need to work a lot.

A hydrologist can easily understand that how climate change is affecting the water cycles and how rainfall pattern is changing over time. But it is hard for the policy maker and decision makers to understand these changes due to climate change. For example, we may need to change our coping pattern due to change in precipitation pattern. Therefore, there are lots of things to be interconnected for better decision making. She also recommended the capacity building of communities as one of the important factor to enhance interface of science, policy and practice. This is necessary to develop ownership of the people.

- **Ms. Yujeong Kim**

Ms. Yujeong Kim elaborated that scientific inputs play an important role in developing policies related to sustainable development. Global sustainable development report, which is periodically published, aims to bring a lot of scientific knowledge for the decision makers and facilitates a dialogue between scientists and decision makers. She was also of the view that on international level, there exist mechanism regarding interface between scientists and decision makers but at national and local levels, there are lots of things to be done.

From my experience, from decision maker point of view, they always try to take decision based on scientific data or evidence based but it is not always an easy task especially in case of water resource management. It requires expertise from hydrologist, geologists, meteorologist, infrastructures specialist, IT, etc, and it is not an easy task to group together everyone expertise. Another important factor is that scientific information is always not available in the desired format to the decision makers at the time of decision making. One of the barriers is that scientists and policy makers do not understand each other language.

There are sometimes gaps in terms of priorities and urgencies for which they may have different views. To understand two different languages, we need interpreter to understand. She also opinioned that research institute within central government must play a key role in translating the science into policy. In the last, she proposed that existing connections among scientist, policy makers and practitioners to be strengthened and have regular communication through structural mechanism.

● **Major messages**

- Science has a vital influence on policymaking and decision making
- There is a need to engage different communicators to convey message of science in a better way
- Existing connections through some structural mechanism may be strengthened.
- Participation, engagement and capacity building are the most important ways.

Photos

	
<p>Introductory presentation</p>	<p>The panelists</p>
	
<p>Q&A session</p>	<p>Group photo of the session</p>

Date/Time/Venue	November 24 (Thursday) / 1:00-2:30 / #321A (3F), EXCO
(Co-)Organizer	UNESCO i-WSSM
Session title	Carbon Neutrality and Greening ODA: Leading to the Convergence of Science and Technology

Program

Time	Contents	Speaker/Participants
13:00 - 13:05(5')	Opening	Ms. Jiwon Park (Programme Officer / UNESCO i-WSSM)
13:05 - 13:10(5')	Welcoming Speech	Mr. Bongwoo Shin (Director / UNESCO i-WSSM)
13:10 - 13:25(15')	Keynote Speech	Dr. Anne Juepner (Director / UNDP Seoul Policy Centre) <i>The Role of Green ODA in the SDG Decade of Action</i>
13:25 - 14:25(60')	Discussion	<ul style="list-style-type: none"> • Moderator Prof. James William Potter (Associate Dean / Korea University Graduate School of International Studies) • Panels Mr. Chunkyoo Park (Head / UNOSD) <i>"The distinctive features and difference between Grey ODA and Green ODA, to precisely understand Green ODA and learn necessary information needed to implement Green ODA. Sharing experiences and insight in Ministry of Environment and UNOSD"</i> Dr. Woosung Lee (CEO / RISTI) <i>"Approach to Carbon Neutrality and Green ODA through the optimized convergence of traditional to advance technologies together with problem-solving techniques. Sharing experiences regarding technology convergence in ODA and water security"</i> Dr. Jione Jung (Senior Research Fellow / KIEP) <i>"A change of environmental policies for ODA and International development cooperation projects and a method of procuring subsidies and raising fund; Defining Green Finance"</i>
14:25 - 14:30(5')	Closing	Ms. Jiwon Park (Programme Officer, UNESCO i-WSSM)

Results

- **Welcoming Speech - Mr. Bongwoo Shin (Director / UNESCO i-WSSM)**
 - Mankind has faced numerous crises such as war, depression, COVID-19, on top of the list; climate change.
 - The international direction of Official Development Assistance (ODA) is to pursue 'Greening ODA' beyond simple economic aid.
 - The primary objective for this session is to be focused on the implementation of carbon neutrality under the United Nations Framework Convention on Climate Change and the ODA policy of the international community.

 - **Keynote Speech – Dr. Anne Juepner (Director a.i. / UNDP Seoul Policy Centre)**
 - **The Current Status of Climate Change:** Results of IPCC and UNFCCC's reports
 - **The Nexus Between Environment and Development:** Climate change is a 'Global Threat Multiplier' that impacts not only our environment, but also our economy, society, and even security.
 - **Current State of Multilateral Climate Governance:** Many countries have undertaken efforts to strengthen their national climate ambitions. For example, the Republic of Korea increased its NDC by pledging to reduce 40% of 2018 emission levels by 2030, and to achieve net neutrality by 2050 through its Carbon Neutrality Act.
 - **Climate Finance:** Comprising approximately 82 percent of total climate finance, Green ODA is particularly important because it reduces areas of neglect and serves as a mobilizer of other forms of finance, such as that of the private sector.
 - **USPC's Work on Green ODA:** the UNDP Seoul Policy Centre seeks to support these partnership building efforts by leveraging relevant Korean technical expertise from across the whole of society in the area of green transition.
 - **Call for Cooperation**

 - **Discussion**
 1. **Prof. James William Potter (Associate Dean / Korea Univ. Graduate School of International Studies)**
 - Around 1970 both the world's and Korea's ecological footprint broke even. Since that time, the world's deficit has grown to more than one earth, and Korea's deficit has steadily grown to almost six piles of earth. Similarly, the total material footprint per capita has increased by one-third globally and by two-thirds in Korea. These figures suggest that consumption must be reduced if humanity is going to survive.
 - There are predictions that even if the global temperature rise is limited to 1.5 degrees, the global economy could lose 13% of its value by 2050. However, Green ODA is predicated on economic growth in both the recipient and the donor country, implying increased consumption, growing footprints, and ecological catastrophe.

 2. **Mr. Chun Kyoo Park (Head of Office / UNOSD)**
 - Integrated policy is essential to make Green ODA accountable
 - A strengthened partnership among institutions, the private sector, and agencies that can monitor carbon footprints

 3. **Dr. Woosung Lee (CEO / RISTI)**
 - Digital transformation for better monitoring of circular economy and better energy management
 - CDM/SDM for incentive mechanism for Green and Digital economy to deal with climate change and greenhouse gases reduction
 - Green ODA with digital transformation and advanced technology for better management and for better monitoring and verification
 - Green renewable energy generations with better infrastructure for smart electricity distribution
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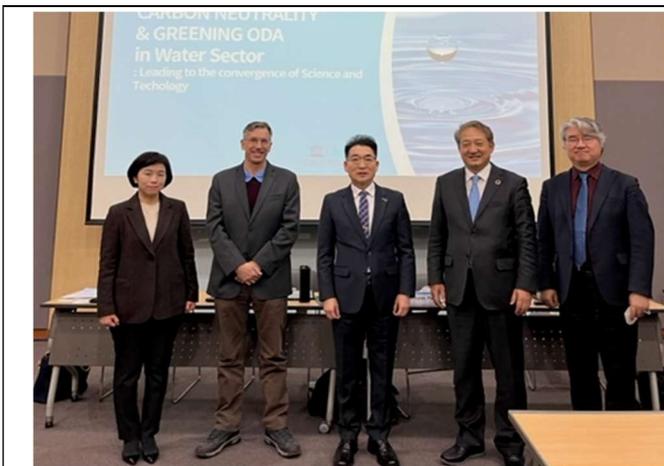
4. Dr. Jione Jung (Senior Research Fellow / KIEP)

- Korea’s current status of ODA including aid activities targeting global environmental objectives, climate change and environmental ODA, climate-related development finance, and projects in water supply and sanitation.
- Comprehensive strategy for International Development Cooperation (2021 - 2025) : Inclusive / Co-prosperous / Innovative / Together ODA

● **Major messages**

- The current positions of developed and developing countries on carbon neutrality are distinctly different. Developed countries argue that most of the greenhouse gases that triggered the climate crisis should be emitted by developed countries in the process of their industrial growth. Developing countries, on the other hand, stress that overcoming poverty and achieving economic growth is their first goal and that they should simultaneously jump on implementing the challenges of the era of carbon neutrality. Through this session, we discussed how cooperative efforts to narrow them should change.
- How traditional science and modern technology, including the water sector, can be properly integrated with other socioeconomic, technical, and environmental issues, and desired measures for stakeholders in various fields through appropriate financial support.

Photos



Session Participants



Keynote Speech



Opening Speech



Moderator



Discussion