



# SLM Forum

## Sustainable Lake Management

### Promoting SLM: Co-Creating a Better Future

The Japan World Exposition 1970 Commemorative Fund Grant Program in FY2024



The forum held on September 28, 2024, had a total of 143 participants from 20 countries around the world, with 47 attending in person and 96 online.

## Part 1 International Panel Discussion “Are Lakes Sustainable?”

Discussions focused on topics such as “Source-to-Sea,” “Education and Support,” and “World Lake Day,” to connect these discussions to the 20th World Lake Conference (WLC20) to be held in Brisbane, Australia, next July. Panelists included a diverse group of experts from Australia, the WLC20 host; past conference hosts such as Indonesia, Mexico, and the United States; as well as UNEP (Kenya), the Ministry of the Environment, Shiga Prefecture, and Taneya CLUB HARIE, totaling eight experts from six countries.



\*Click the Title or Speaker to Listen to Each Clip

## Opening Remarks –00 : 01 : 20

Kazuhiko Takemoto (President, ILEC)



Lakes are important sources of freshwater, supporting biodiversity and cultural values, but they face threats from urbanization, agriculture, and climate change. In response, there is increasing interest in sustainable lake management, with calls for policies to address these issues, the establishment of World Lake Day, and enhanced collaboration among scientists, policymakers, and the younger generation. As we approach WLC20, we hope for fruitful discussions among global experts.

Masahisa Nakamura (Vice President, ILEC)



ILEC focuses on the scientific aspects of SLM, working in collaboration with international networks to promote SLM at various levels and fostering cooperation among institutions, governments, and different sectors of society. This forum will explore three key topics related to sustainable lake management: specific challenges and measurable progress, collaborative efforts and effective strategies, and future outlooks along with international commitments.

## Presentation –00 : 17 : 00

**Are Lakes Sustainable? Why is this happening, why is this critical, what do we need to do? (Indonesia Experiences and Program)**

Inge Retnowati (Director, Inland Waters and Mangrove Rehabilitation, Ministry of Environment and Forestry, Indonesia)



To achieve SLM, we focus on integrated and innovative approaches such as ecotourism and agroforestry. Ecological improvements bring socio-economic benefits, including promoting tourism and generating income for local communities. Additionally, we are collaborating with the Indonesia Lake Environment Center to create a database aimed at raising awareness and enhancing education about lakes. The establishment of World Lake Day is expected to serve as a reminder to advance SLM, foster partnerships and capacity building, and raise awareness among various stakeholders.

### Sustainable Lake Management in Japan

Rie Kudo (Deputy Director, Office of Environmental Management of Coastal Seas, Environment Management Bureau, Ministry of the Environment, Japan)



We have designated 11 lakes that urgently need to meet environmental standards for water quality pollutants and have developed and implemented lake water quality conservation plans. While pollutant levels have decreased, the achievement rate of environmental standards for lakes remains lower than that for rivers and oceans. In addition to water quality indicators, it is necessary to develop new metrics to evaluate the health of lakes and nutrient cycling. We are also reviewing the current Basic Environmental Plan and setting environmental policy goals aimed at ensuring the well-being of future generations.

### Our Action for Sustainable Management of Lake Biwa, Shiga Prefecture, Japan

Naoya Yamamoto (Director, Lake Biwa Conservation and Restoration Division, Shiga Prefecture)



Lake Biwa is a water source for 14.5 million people, and its ecosystem is complex, making comprehensive management crucial. The Mother Lake Goals (MLGs) are an application of the SDGs to Lake Biwa, encouraging residents to take action. On “Lake Biwa Day,” established by Shiga Prefecture, many residents participate in lake conservation activities. This highlights the significance of establishing a “World Lake Day” to raise international awareness and inspire action. Lake Biwa is a mirror reflecting our way of life and a window through which we can view the state of the global environment.

### "From the Source to the Sea" Approach: The importance of considering lakes, rivers, and oceans as an interconnected system from their water sources to their endpoints

Sergio Antonio Silva (Honorific Professor, University of Guanajuato, Mexico; Visiting Professor, SOKA University, Japan)



When discussing sustainability, it is crucial to distinguish between what is feasible and what remains idealistic. Lakes are closely interconnected with rivers and coastal areas, so both lentic (still water) and lotic (flowing water) systems must be considered. In Mexico's Lerma-Chapala-Santiago basin, a model was developed to manage water resources by dividing the large basin into smaller sub-basins and managing them through watershed councils. This model has enabled stakeholders from various sectors to become involved. Since actions taken upstream significantly impact downstream areas, it is essential to sustain integrated management across generations.

### Promoting Sustainable Lake Management: Co-creating a Better Future

David Hamilton (Professor, Australian Rivers Institute, Griffith University, Australia)



To raise awareness about lakes, it is essential to connect existing national and international structures, as ILEC is doing, and ensure that researchers and managers can influence decision-making. For example, the Global Lake Ecological Observatory Network (GLEON), a global group of researchers primarily measuring data with high-frequency sensors, has successfully in raising the profile of lakes for researchers. Similarly, Lake Ecosystem Research New Zealand (LERNZ) incorporates sensors and remote sensing technology in lake restoration efforts, collaborating with communities and decision-makers. Lakes serve as vital indicators of human and climate health, and it is crucial to feedback their changes to local communities, managers, and policymakers to influence their actions.

## Presentation –00 : 31 : 20

### Are Lakes Sustainable? Current Efforts, Future Perspectives and Emerging Challenges

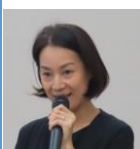
Patrick M'mayi (Programme Management Officer, Early Warning & Assessment Division, UNEP)



Since the adoption of the SLM resolution, we have been focused on integrating lake management into national policies, urging countries to secure funding for lake conservation. Common issues affecting many lakes include algal blooms and dead zones, which not only impact lakes but also extend to oceans. Additionally, microplastic pollution is spreading rapidly, yet no global solution has been established. The large-scale degradation of watersheds poses a significant threat to lake ecosystems and their economic value. It is crucial to link science and policy through data collection and utilization, guiding investment decisions to address these challenges effectively.

### Learning From Nature; Taneya Group, on the Work of Economic Organizations

Megumi Kodama (Executive Officer, Taneya Club Harie Management Division)



Our purpose, "Learning from Nature," embodies respect, gratitude, and the pursuit of knowledge from the natural world. In addressing the 21st-century challenges of "water," "food and agriculture," and "energy," we are building networks through workshops and events aimed at finding solutions. For example, we hold reed-cutting events in the Lake Biwa area to counter the decline of reeds and its industries due to development, helping to preserve water quality and biodiversity. Additionally, we have established a working group based on MLGs, striving for sustainable regional development. Through initiatives like the kickoff event for World Lake Day, we are raising awareness of the importance of lakes and actively working to solve issues such as climate change and water quality improvement.

## Panel Discussion –01 : 25 : 37

Moderator: Masahisa Nakamura (Vice President, ILEC)



Considering it is more difficult for lakes to achieve environmental standards compared to rivers and oceans, what new initiatives and strategies the Ministry of the Environment will be taking to achieve higher achievement rates?



We recognize that it is important to focus not only on water quality but also on biodiversity. Strengthening collaboration with stakeholders and identifying and sharing effective measures is essential.



While networking watershed councils can benefit stakeholders in the Lerma-Chapala-Santiago basin in Mexico, are there any challenges?



Uncertainties of data quality and policy changes complicate the management process. It is also difficult to change the mindset of decision makers and managers. Capacity building is therefore essential for basin councils to function effectively within an interconnected system.

## Panel Discussion –01 : 37 : 15



What are the initiatives of the Shiga Committee for Economic Development and the perspective of future international activities?



The Shiga Committee for Economic Development prides itself on its high awareness of environmental conservation, but in reality we feel that environmental conservation of Lake Biwa is not fully integrated into companies' business strategies. It is important to understand sustainable water resources and how to realize their conservation while still enjoying the benefits of Lake Biwa. The Commitment has around 400 participating companies, and we need to use our network to discuss the sustainability of water and Lake Biwa, and send out a strong message. The Committee also emphasizes that environmental conservation activities in Lake Biwa are not a short-term event, but an ongoing commitment. Specific action guidelines include involving a wide range of stakeholders, providing learning opportunities through hands-on experience, taking a global perspective, strengthening cooperation with external parties, and learning together with the younger generation through educational programs.



What are the challenges and future initiatives in promoting MLGs-like initiatives in regions outside Shiga?



The MLGs are not a plan or goal of Shiga Prefecture, but the goal of the MLGs Promotion Committee, which includes diverse stakeholders such as companies, research institutions and the prefectural government, and serves to share the current situation of Lake Biwa. Lake management is a constantly changing process, which is an important aspect of the MLGs. In order to realize sustainable lake management, a loose connection is necessary, and we believe that it is important to first make more people aware of the MLGs.



You mentioned that local residents tend to be less proactive about lake water quality conservation and environmental improvement unless their economic interests are directly related. Are there any initiatives addressing this issue? Additionally, could you share insights on the potential for collaboration with the industrial sector?



In Indonesia, while it is important to strengthen legal regulations for companies and businesses, it is equally necessary to collaborate with local residents. They may be unaware of their environmental impact or, even if they know, may lack the capacity to take action. Therefore, raising their awareness and enhancing their ability to engage in environmentally friendly activities is crucial. In our new project, we will focus on three lakes and work with local community groups to deepen their understanding of the importance of lakes and teach them how to measure the condition of the lakes. Additionally, we plan to involve them in activities to monitor water quality and sediment levels. Particularly, we aim to enhance their understanding of how their agricultural practices affect soil erosion, sedimentation, and lake siltation, while also increasing their knowledge of environmentally friendly agricultural methods in the watershed.

Furthermore, we will institutionalize these activities to enable residents to take the lead in managing agroforestry and monitoring the lakes. This will not only allow them to engage in ecological conservation activities but also help them derive economic benefits from agroforestry. In other words, they can achieve both environmental protection and socio-economic gains. Through these initiatives, we hope to encourage the government to take an interest in lake conservation efforts and support sustainable agricultural practices and marketing of local products in the community.

## Panel Discussion –01 : 57 : 10



I assume Australia and New Zealand are making progress with the Source to Sea initiatives, what can we learn at the WLC20?



In 2023, the Australian government implemented the "Nature Repair Bill." This presents a fantastic opportunity for the restoration of lakes and watersheds, providing incentives for communities, governments, businesses, and private investors to engage in nature restoration efforts. The concept of "T-shaped water specialists" is introduced, where the vertical part of the "T" represents deep knowledge, while the horizontal part signifies a breadth of understanding that connects various socio-economic aspects and the science we engage with. From this perspective, experts in data science and AI are believed to be incredibly beneficial for the future of lake management. At the same time, learning from Indigenous communities and leveraging their traditional knowledge for capacity building can provide sustainable solutions amid the pressures of climate change.

## Part 1 Summary –02 : 06 : 25

Walter Rast (Chair, ILEC Scientific Committee)



Since everyone was in favor of establishing World Lake Day, it is important to spread and promote this message. The ILEC Scientific Committee will approach Integrated Lake Basin Management (ILBM) with a broader perspective, starting from the problem and calling for governance that defines what actions should be taken for effective lake basin management.

Yasuo Takahashi (Director, ILEC)



We face three key environmental crises: climate change, biodiversity loss and pollution. The lake environment is also affected by these, and action needs to be taken now to protect and maintain ecosystems for future generations. An integrated approach involving geographical aspects of the whole basin and diverse stakeholders is important, and integration between past, present and future generations is also essential. To effectively promote this approach, a bottom-up strategy that takes into account local needs and knowledge is needed. This will promote sustainable change rather than short-term measures. We also strongly hope that the efforts to realize World Lake Day will bear fruit in the near future.



## Part 2

## Round Table “Sustainable Lake Management with Global Youth ~Toward WLC20”

Eight young politicians, researchers, and students from six countries — Japan, Mexico, Australia, the Philippines, Hungary, and Uganda — gathered together, along with online participants, to promote vibrant environmental conservation activities. They shared their research, eco-tourism initiatives, and app utilization, calling for youth participation and support for the establishment of "World Lake Day."



\*Click the Title or Speaker to Listen to Each Clip

### Presentation — 00:03:32

#### Automated and Dynamic Freshwater Ecosystem Mapping to GET

Roxane Francis (Research Fellow 2023 - present University of New South Wales (UNSW) and Bush Heritage Australia)



I am conducting a study to automate the mapping of freshwater ecosystems using satellite data and machine learning, based on the IUCN's Global Ecosystem Typology. This method aims to consistently classify ecosystems worldwide and facilitate international cooperation toward achieving environmental goals.

#### Study of Freshwater Microalgae

Aron Lukacs (Postdoctoral researcher at the University of Helsinki (Lammi Biological Station) and a researcher at the HUN-REN Centre for Ecological Research)



I focus on sustainable lake management, specifically aquatic plant removal. While aquatic plants support biodiversity, overgrowth and invasive species can cause problems. His project, conducted in Finland and Hungary, aims to find the best removal methods to avoid issues like nutrient enrichment and biodiversity loss. He hopes to connect science, the public, and policymakers to improve sustainable practices.

#### TRIBE: Taytay River Initiative for Better Environment

John Tobit Cruz (Local Government Unit of Taytay, Province of Rizal, Philippines; Municipal Councilor )



I am addressing pollution in the Taytay River, which flows into Laguna Lake. After discovering significant pollution through water testing, I initiated the "Taytay River Initiatives for Better Environment." This program focuses on community education, waste management, and environmental policy advocacy using the ILBM framework.

#### The Study of Aquatic Ecosystems in Mexico: Challenges and Opportunities

Mariana Vargas-Sanchez (Tropical Limnology Research Group; Associate professor, National Autonomous University of Mexico)



Our challenges include ecosystem diversity, limited knowledge, and a lack of awareness that leads to issues like eutrophication. My research group monitors six important environments, including Cuatro Cié negas, Chichika, and Lagunas de Montebello, focusing on water quality, biodiversity, biochemical processes, and greenhouse gas emissions. Our work aims to fill information gaps, raise awareness, and strengthen communication among stakeholders.

### Youth Involvement in Integrated Water Resources Management

Sharon Gubamwoyo (PhD student at the University of Natural Resources and Life Sciences)



Lake Victoria faces high pollution, complex waste management, insufficient funding, and a lack of political will. To promote sustainable management, I focus on catchment monitoring, community engagement, and partnerships. My work includes water quality monitoring and empowering local communities, particularly youth and women. I believe in community-driven approaches to tackle the challenges facing Lake Victoria.

### Harada's Seminar at Doshisha University: Garbage Application and River Environment Conservation

Koki Kubo (Doshisha University - Faculty of Economics)



We discovered that about 80% of plastic waste in the ocean comes from rivers and aim to investigate whether residents near lakes and rivers recognize their connection to the sea. We are conducting surveys in cities around Osaka Bay to assess environmental education and raise awareness about pollution. Our goal is to encourage community involvement in protecting local waterways.

### Collaborative Removal of an Invasive Alien Aquatic Weed by Volunteering University Students Around Lake Biwa, Japan

Itsuki Okubo (NPO International Volunteer Student Association (IVUSA); Ritsumeikan University, Faculty of Science and Technology, Department of Physics)



Lake Biwa, Japan's largest lake, hosts around 60 endemic species, but non-native species like the Giant Lamprey are threatening them and local fisheries. Young people need to get involved, as awareness is low and many fishermen are elderly. In September, I joined 60 students in Takashima City to remove 3,000 m<sup>2</sup> of waterweeds, supported by the Shiga Prefectural Government and the Self-Defense Forces. We aim to raise awareness, expand cooperation, and promote early detection and removal of invasive species, which is a global issue.

### Ecotourism Following the Path of Water

Rao Sasaki and Akari Taira (Alumni of Seian University of Art and Design)



Under the concept of "Trace and Enjoy," we have organized a tour to explore culture and history while following the path of water. By tracing this route from the mountains to the villages and Lake Biwa, visitors will experience the connections between local culture, daily life, and disaster prevention. Participants will learn about the significance of water by hearing firsthand accounts from local residents.

### Activity of Youth Ramsar Japan

Yuta Hotsumi (Youth Ramsar Japan)



Our organization consists mainly of young people from junior high to university. We focus on conservation, wise use, and learning, empowering youth to protect wetlands and share their value. We produce PR videos for Ramsar wetlands and conduct workshops on video creation, leveraging youth creativity for effective communication. In the future, we aim to create videos for all Ramsar wetlands in Japan, strengthen collaboration with other organizations, and promote intergenerational exchange.

### Lake Rawa Pening: Lake Management in Central Java, Indonesia

Marshal Syarif Taufiq (SMK 11 Semarang)

Lake Rawa Pening , covering 2,670 hectares, provides hydroelectric power, raw water, and tourism but faces challenges like water hyacinth overgrowth and sedimentation. We're addressing these by removing the hyacinth, replacing floating net cages with fish ponds, and implementing rainwater catchment systems. Through an urban farming field school, We promote sustainable practices and composting while raising awareness about the lake on social media.

### Lake Batur Presentation

Green Youth Movement of SB BPDAS Unda Anyar Bali

Lake Batur in Bali, which offers hydroelectric power, freshwater fishing, and tourism, but faces significant challenges like pollution and sedimentation. Eighty-five percent of the damage is caused by agricultural activities, while fifty percent comes from waste generated by fish farming. The younger generation is crucial in addressing these issues through education, environmental actions, and social initiatives. By raising awareness and participating in conservation efforts, young people can play a key role in preserving the lake.





## Actions Towards the Establishment of World Lake Day –01:01:47



To build momentum for the establishment of "World Lake Day," we propose positioning it as "Global Action Day for Healthy Lakes" and creating a hashtag to campaign and spread the word about the efforts being made by young people.

## Call for the Development of an Online Platform –01 : 04 : 53



We propose an online platform called "Lakes for Life" to raise awareness about the importance of lakes and promote sustainable management. The website will target the scientific community, NGOs, decision-makers, and the public, especially young people. It will offer educational resources, share best practices, publish research, and feature an interactive map showcasing conservation efforts. The platform aims to foster collaboration and awareness, emphasizing the need for community-wide action in lake protection. Participants are encouraged to register for updates leading to World Lake Day and the 20th World Lake Conference (WLC20) next year, and provide input on prioritizing actions, focusing on educating youth about lakes.

## Part 2 Summary –01 : 10 : 40

Stephanie Smith (Strategic Advisor, African Center for Aquatic Research and Education and Principal, Zephyr Mangata Consulting)



Thank you all for attending today and for your participation in these fantastic presentations. I'm thrilled to be here on this closing day, reflecting on a wonderful few days with such a dynamic and diverse group of motivated professionals working to positively impact our lakes.

As your facilitator, I'm Stephanie Smith from Chicago. My mission is to connect people globally to lakes and promote healthy lake initiatives. We began as strangers, but quickly discovered our shared bond through freshwater lakes. This journey has been both surprising and inspiring, especially with discussions around the upcoming World Lake Day.

We've seen how lakes connect communities across generations. Survey results show a strong desire to educate youth and actively engage in lake conservation, emphasizing the importance of collaboration.

To build on this momentum, we're developing an online platform to facilitate positive change. Our next steps include planning for WLC20 and launching the World Lake Day Campaign. We invite partners to join us in these efforts, including participating in a session at WLC20 in Brisbane in July 2025.

While World Lake Day will be an important milestone, it's just the beginning. We need continuous action year-round to foster lasting change. Our goal is to track initiatives on our platform for effective collaboration.

We look forward to connecting with all of you, both online and at shores around the world. Lastly, we had the honor of meeting the local youth making a difference near Lake Biwa. Their dedication inspires us all to move forward together.



INTERNATIONAL LAKE ENVIRONMENT COMMITTEE FOUNDATION (ILEC)

–Secretariat–

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