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MAINSTREAMING LAKES AND WETLANDS

into the Global Water Agenda and Sustainable Development Goals (SDGs)

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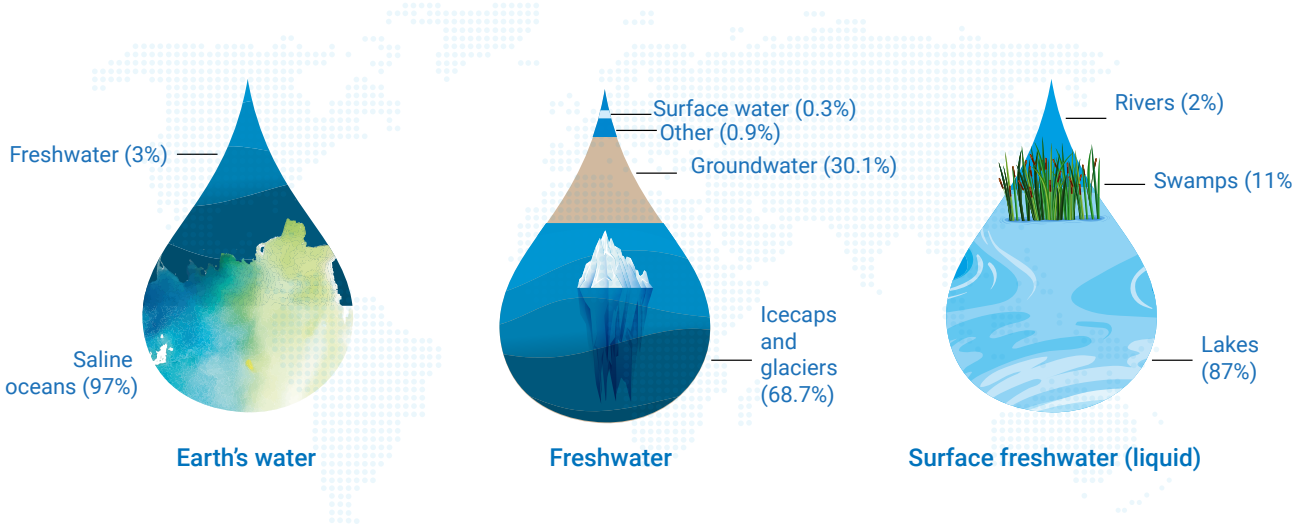
The content and policy actions outlined here are based on the Mainstreaming Lakes Statement and the related discussions on lakes and wetlands among representatives of several United Nations Member States. The emphasis on natural lakes and wetlands is in contrast to artificial lakes (reservoirs) and constructed wetlands. The latter have similarities to natural lakes and wetlands, but also exhibit significant differences requiring special attention for their effective management and intended use. The contents and conclusions presented in this brochure also reflect inputs from representatives of UNEP, UNESCO International Hydrology Programme (IHP) and World Water Assessment Programme (WWAP), UNDP, FAO, WHO, WMO, UN-Habitat, World Bank, Global Environment Facility (GEF), Sustainable Water Future Programme, International Lake Environment Committee (ILEC) and Living Lakes, among others.

Key messages

1. Achieving seven of the SDGs (2,6,7,8,11,13,15) by 2030 will depend greatly on our accumulated collective knowledge of lakes and reservoirs and their basins and how we can best manage them and their life-supporting ecosystems for sustainable use to promote human health, wellbeing and socioeconomic development, both globally and at the national level.
2. Science, policy and business must work cooperatively and collaboratively to use their ecosystem products and services, recognizing that the types and magnitude of the threats facing lakes and wetlands are many, complex and interacting, while policies to protect them for sustainable use are inadequate in almost every respect at both global and national levels.
3. Several Member States, ILEC and UNEP, in partnership with relevant United Nations agencies, NGOs and industry, are calling for the mainstreaming of lakes and wetlands into national and global environmental policy frameworks in order to ensure their sustainable use for human health and wellbeing, to facilitate socioeconomic development and alleviate poverty, and to maintain the integrity of natural ecosystems, their biodiversity and their life-supporting goods and services.

Figure 1: Distribution of the Earth's Water



Source: Timothy Bralower, Professor of Geosciences, Penn State College of Earth and Mineral Sciences, Pennsylvania, USA.

Why lakes?

About one percent of the freshwater on the surface of our planet exists in liquid form, and more than 90 percent of it is in lakes and wetlands.

There are lakes on every continent, making them one of the world's most important natural assets and a major resource for poverty alleviation, economic development, human health, food production, recreation, hydropower production and preservation of biodiversity integrity.

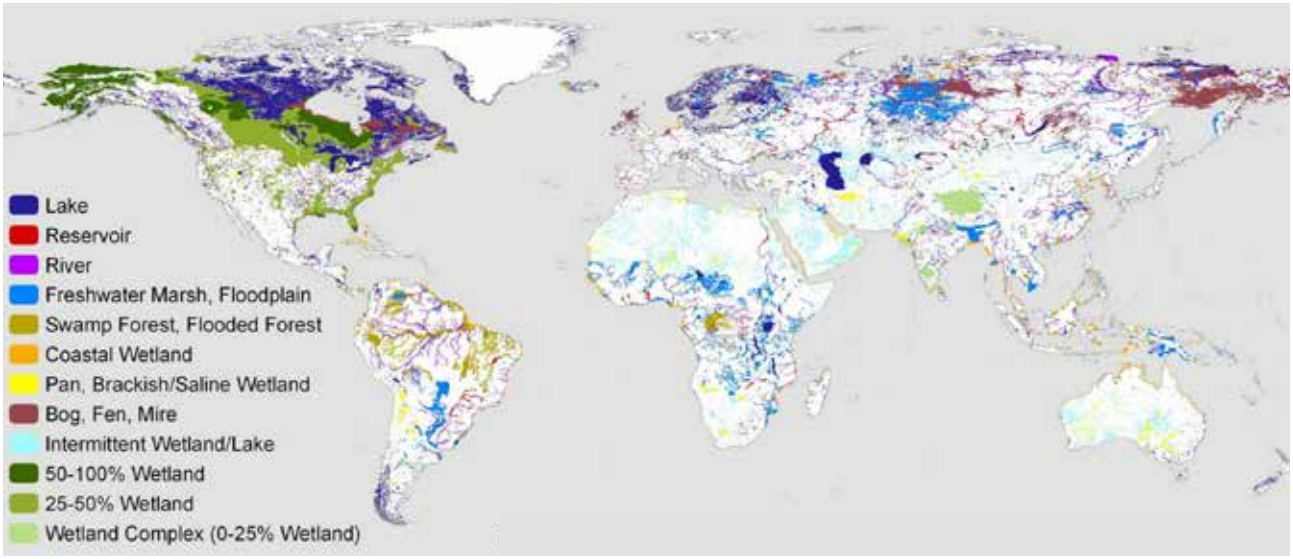
The estimated total volume of lakes is 199,000 ± 3,000 km^3, covering an estimated total area of 5,130,000 km^2.

Lakes provide a very wide range of life-supporting ecosystem services to humanity, compared to other freshwater aquatic systems.

Why we must protect the world's lakes and wetlands and their life-supporting ecosystem services

- Lakes contain the largest quantity (~ 199,000 ± 3,000 km^3) of liquid freshwater on the surface of our planet (rivers contain ~two percent, equivalent to ~2,120 km^3). Human beings and lakes and wetlands are interdependent and interact with each other. This has major implications for, and impacts on, human health and wellbeing. Lakes and wetlands also contribute significantly to ecosystem health and influence local and even regional climatic and weather conditions.
- There are literally millions of lakes and wetlands around the world. Lakes are found on every continent, including Antarctica. They play an important mitigating role in addressing the uncertainties associated with predicted changes in precipitation patterns attributable to global climate change.

Figure 2: Global Lakes and Reservoirs, and Wetlands Map



Source: Lenhner and Doll 2004

The estimated monetary contribution of the products and services associated with lakes:

Is estimated at US$ 4.4 trillion/year, with other contributions not yet accurately quantified.

Lakes and wetlands are essential factors facilitating the global achievement of at least seven SDGs and the 2030 Global Water Agenda.

The contribution of natural and manmade lakes and wetlands in terms of derived ecosystem products and services is estimated at US$ 4.4 trillion/year; other contributions have not yet even been accurately quantified.

Figure 3: The estimate monetary contribution of products and services associated with lakes under the relevant SDGs

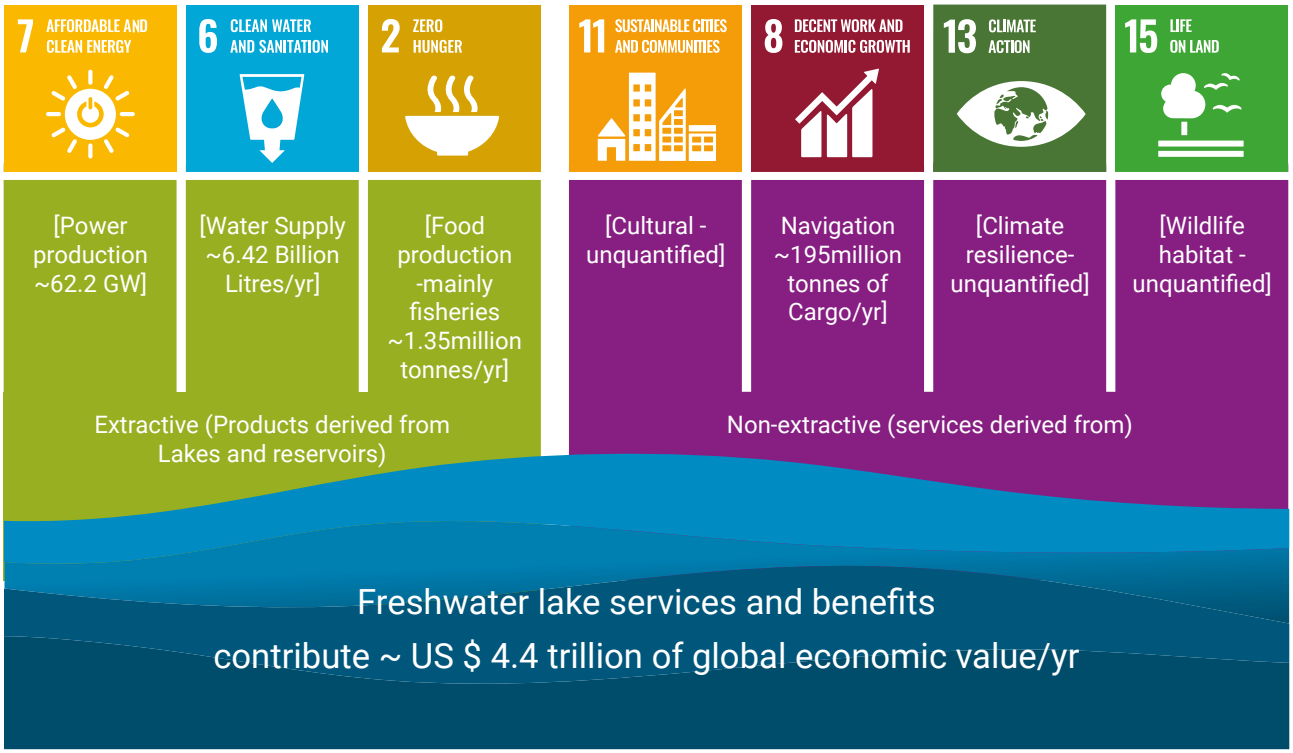
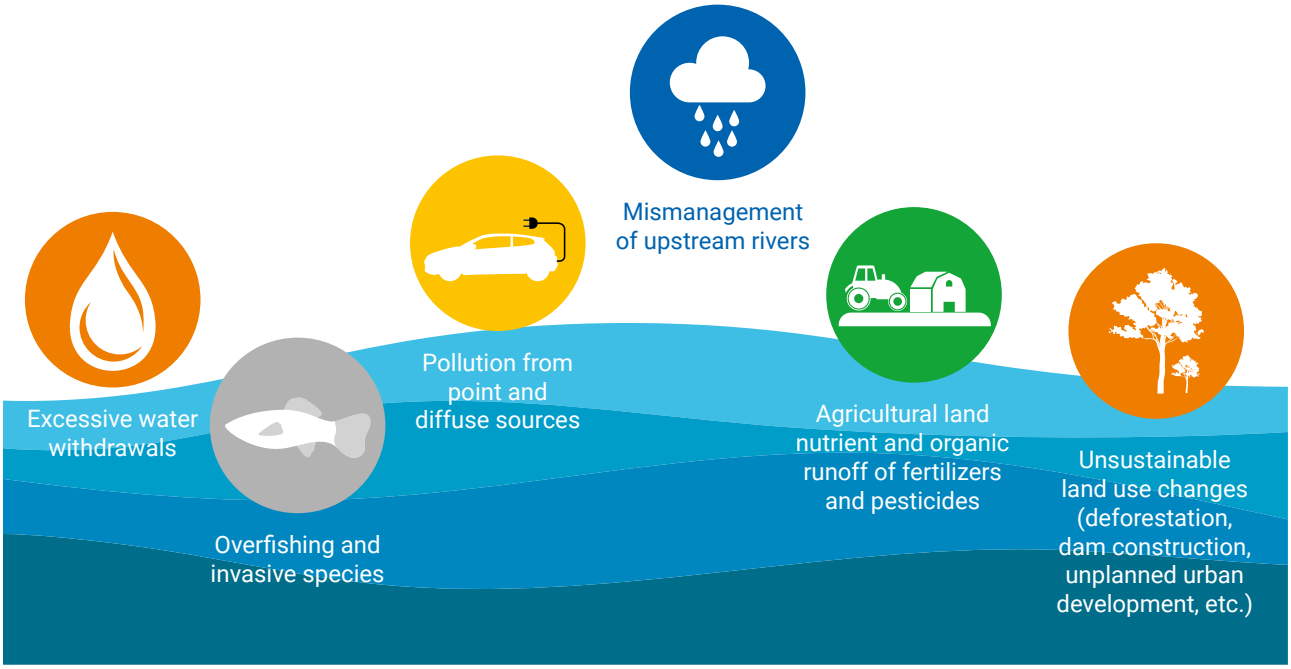


Figure 4: **Major threats to lakes and wetlands**

Lakes and wetlands are subject to constant stresses of all kinds from every direction, including from upstream (land run-off pollution) and downstream (excessive water abstraction), from above (airborne pollutants) and beneath their surface (sediment-released pollutants), all being consequences of human activities in their surrounding watersheds and beyond.



These threats are significant stresses on the overall health and sustainable functioning of freshwater lakes and wetlands. With over 55 percent of global lakes polluted, a number of countries are beginning to apply the Integrated Lake Basin Management (ILBM) approach to address their sustainable use to meet human and ecosystem needs.

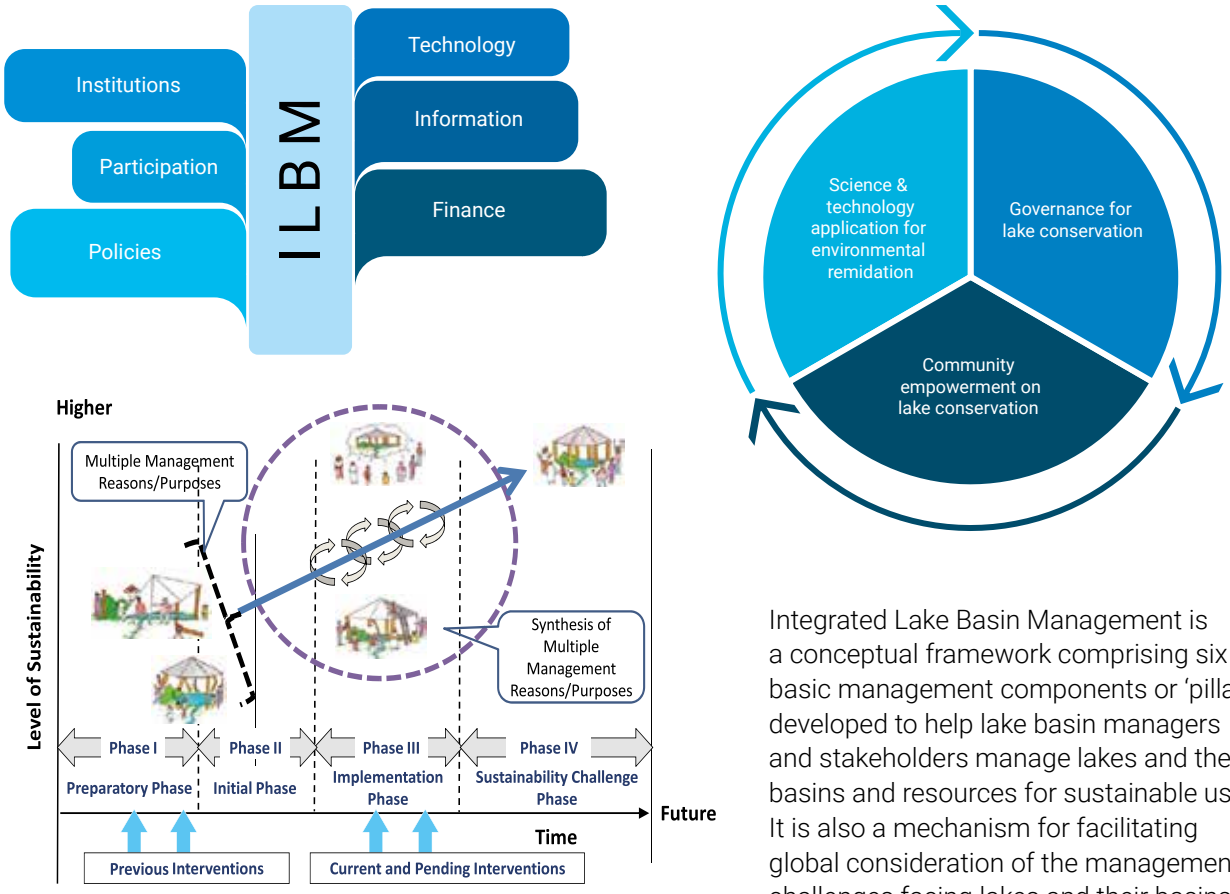
What does mainstreaming lakes in the Global Water Agenda mean?

The process of mainstreaming lakes in the Global Water Agenda means giving visibility and priority to managing lakes based on credible science for the benefit of human beings and their health and wellbeing, while at the same time considering human socio-economic development needs and ensuring that lakes and their ecosystems are sustainably managed, both nationally and globally. Ideally, it includes the involvement of all stakeholders and the application of dynamic and evolving management approaches enshrined in the science and policy frameworks of governments around the world.

Strategies for managing lakes

There are various strategies for managing lakes for sustainable use. The Integrated Lake Basin Management approach has been developed on the basis of experience in several countries, involving the joint efforts of communities (public, private business, NGOs, academia, the international community) and local and national governments in a generally bottom-up management approach. It also complements Integrated Water Resource Management (IWRM), which typically focuses on surface and groundwater sources more broadly. Whereas ILBM is essentially a continuous, incremental, participatory, bottom-up management approach, IWRM is often a project-driven top-down approach. Effective long-term management of freshwater systems typically encompasses complementary interacting efforts of both approaches on a basin scale, an important consideration for the future of the Global Water Agenda.

Figure 5: **The Integrated Lake Basin Management (ILBM) Platform**



Integrated Lake Basin Management is a conceptual framework comprising six basic management components or 'pillars' developed to help lake basin managers and stakeholders manage lakes and their basins and resources for sustainable use. It is also a mechanism for facilitating global consideration of the management challenges facing lakes and their basins.

According to the International Lake Environment Committee (ILEC), this goal is achieved through gradual, continuous and holistic improvement of basin governance, including sustained efforts to integrate Institutional responsibilities, policy directions, stakeholder participation, scientific and traditional knowledge, technological possibilities, and funding prospects and constraints.

Several countries have already applied these pillars to manage sustainably and restore their lakes and wetlands. This approach is supported by UNEP and several other United Nations agencies, partners, academic centres of excellence, NGOs, research centres and private businesses.

Examples are provided below of countries that have used the ILBM Platform and its focus on strengthening its governance pillars to manage lakes and their basins. Concerted and sustained efforts are required for the results to become apparent because of the unique nature of lakes, including their integrating nature (all things come together), their long water-retention times (degradation can take a long time to become apparent and solutions to problems also take a long time), and their complex dynamics (their behaviour is often unpredictable and uncontrollable).

National case studies

Consistent with this approach, ILEC has collaborated with selected countries in Asia and Africa to facilitate the sustainable management of their major national lakes. The examples below are overviews of ILBM application to address national lake basin management challenges, programmes and policies, and set out the experiences of and lessons learned from adopting the ILBM Framework in national water resources and river basin management plans.

These case studies were presented by national representatives at a joint ILEC-UNEP webinar and are summarized below, along with their national lake management challenges and actions. The experiences and lessons learned from these examples provide further rationale for explicit consideration in the Global Water Agenda of the management challenges facing lakes, their basins and resources.

MALAYSIA

Major challenges facing ILBM initiatives:

1. Unplanned or unsustainable catchment development.
2. Fragmentation of governance mechanisms.
3. No ILBM-based management plan for majority of Malaysian lakes.
4. Lack of central management authority for most lakes yet.

National actions toward ILBM implementation:

1. Development of strategic national management plan for lakes and reservoirs via multi-stakeholder process.;
2. Development of lakes briefs for nine selected Malaysian lakes.
3. Participation in and presentation World Lake Conferences.
4. One of ten strategies in 12th Malaysia Water Plan is “mainstreaming water in national agendas”.

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INDONESIA

Major challenge to lake management:

1. Lakes face a range of management challenges at both national and local levels, requiring action at national government level.

Actions to address challenges to lake management:

1. Formulation of integrated management plans for 30 (15 +15) priority lakes.
2. Prioritizing lake conservation and rehabilitation.
3. Enhancing community engagement.
4. Enhancing research and innovation.
5. Developing international networking and collaboration.

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PHILIPPINES

Major challenges to lake management:

1. Although relevant laws exist for conservation and sustainable use of wetlands, there is no national policy specific to wetlands conservation.
2. Wide range of lake degradation issues to be addressed.

Actions undertaken to address lake management:

1. ILBM already being applied by the Laguna Lake Development Authority (LLDA) for Laguna de Baye.
2. ILBM training provided by ILEC.
3. Philippine Government supports global initiative for mainstreaming lakes in global water agenda.

NEPAL

ILBM challenges Included:

1. Weak technical capability.
2. Financial constraints.
3. Sectoral overlapping.
4. Low public awareness/participation.
5. Inadequate capacity building.
6. Lack of national lake inventory.

National actions to address ILBM challenges:

1. Development/Publication of national lake inventory.
2. Prioritizing revised national lake strategy plan.
3. Establishment of Wetland Academy.
4. Implementation of ILBM plans for Gaidahawa Lake (Rupendahi) and Lake Cluster of Pokhara Valley (Kaski).
5. International ILBM workshop.
6. ILBM demonstration site.

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EAST AFRICA

Major lake challenges in East Africa:

1. Lakes are highly sensitive to natural changes and anthropogenic activities.
2. Human activities in lakes and their basins can adversely impact their ecosystem health and resource values.
3. The assessment and management problems facing lakes and their basins are complex and multi-faceted.
4. Lakes are largely ignored in Integrated Water Resources Management (IWRM) and Integrated River Basin Management (IRBM) frameworks.

ILBM implementation possibilities:

1. ILBM offers opportunities for cross-sectoral and transboundary cooperation.
2. ILBM offers opportunities and citizen participation in the management of lakes and their basins.
3. Long-term (trans-generational) lake basin management perspective is important.

WEST AFRICA

Major challenge to lake management:

1. Lake basins in West Africa face wide range of restoration and preservation challenges.

Actions needed to address lake basin challenges:

1. Improve existing overall management framework by considering widest range of ecosystem services.
2. Give adequate consideration to legal and institutional frameworks governing lake basins and water ecosystems.
3. Promote ILBM training and capacity-building, including generating scientific knowledge to underpin integrated lake management and interactions between lakes and their watersheds.
4. Give due consideration to climate change implications encompassing lakes and their basins.

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LAKE BIWA, A SUCCESS STORY IN THE MAKING?

- Ancient lake (4 million years old) with many indigenous species of fauna and flora
- Historical sufferance from occasional floods and droughts, being mitigated with centuries of human interventions
- Water quality degradation began to emerge in 1960s with a major red-tide incident in 1977 and subsequent emergence of blue-green blooms
- An assortment of environmental conservation measures being introduced since 1970s, with enactment of the "Lake Law" in 1984, revised in 2005
- The Lake Biwa Comprehensive Development Plan (LBCDP, 1972-1977) enabled financing for major infrastructure development including the construction of basin-wide sewerage system (1980s through 2010)
- Significant improvement of lake water quality having been achieved, but degradation of lake ecosystem began to emerge

Mother Lake 21 (2000) Plan

First Stage Objectives

- Reduce pollutant load to the 1960 level
- Increase land areas with higher permeability
- Develop and interlink biotope ecotones

Second Stage Objectives

- Improve water quality to pre-eutrophication level
- Pursue increase in forest and farmland infiltration capacity
- Establish extensive biotope networks

Third Stage Objectives

- Restore water quality to a near pristine level
- Pursue lifestyle with harmonious human-nature relationship
- Restore and maintain rich and healthy natural ecosystem

1999 — 2010 — 2020 — 2050

First Stage | Second stage | Future/Long-Term

More Emphasis on Lifestyle Change, 2010 Onward

- Conservation and Revitalization of Ecosystem Functions of the **Lake-Shoreline-Catchment System**
- Restoration of Man-Nature Harmony in Livelihood, focusing on **Families, Local Communities and Business Activities**
- Taking into Account the Roles of **Government and the General Public**

Introduction of New Policy Tools, 2015 Onward

- Enactment of National Legislation, 2015 **Law on Conservation and Restoration of Lake Biwa**
- SDG Adaptation to Lake Biwa, 2021 **Mother Lake Goals (13 Goals and Strategic Actions)**

Policy and management actions are needed now to control the degradation of lakes and wetlands around the world by:

1. Promoting efforts at the global level to mainstream lakes and wetlands as key freshwater components in developing and applying national strategic policies and programmes.
2. Developing a global platform for greater cross-fertilization and sharing of experiences and lessons learned, and to accelerate replication of successful national lake basin management practices elsewhere.
3. Developing a global platform for adoption and integration of integrated lake basin management principles and for gradual, incremental and sustained improvement of lake basin governance at the national level.
4. Adopting key symbolic actions and activities that recognize the importance of lakes on a global scale, examples being establishing a World Lake Day and associated recognition activities.

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International Lake Environment Committee Foundation (ILEC)

http://www.unep.org
https://www.ilec.or.jp/en/

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