World's Lakes and the Role of International Lake Environment Committee (ILEC)

Save Water

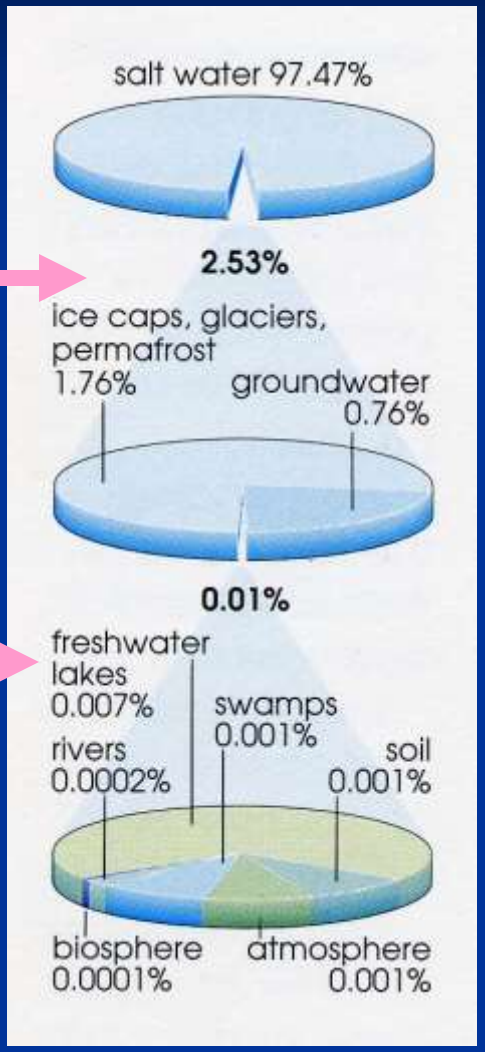
Save Lakes

WWW.ilec.or.jp, infoilec@ilec.or.jp

Global Freshwater Resources

- 97.5% salt water (unsuitable for drinking, growing crops, others)
- 2.5% (35 million km^3; =70-m water layer)
- Vast majority (>75%) of freshwater in ice & permanent snow cover (Arctic, Antarctic, Greenland) or deep underground aquifers
- Lakes, rivers wetlands: 0.26% (90,000 km^3; easy human access)

ILEC focus on Lakes and Their Basins



- Lakes contain 90% of liquid surface water
  - * Wide range of Ecosystem Services
  - * Rich biodiversity with endemic species
- **Lakes are in** Crisis, & Most Vulnerable to Global Warming

⬇

Sustainable lakes are key to our Global Water Future

Number of Lakes & Geographical Distribution

270 lakes from 73 countries

Region	Sub-region / Country	Nmber of Lakes
Asia	Japan	29
	China	25
	South Asia	11
	South East Asia	10
	Asian part of former USSR	6
Oceania		5
Europe	Western Europe	51
	Eastern Europe	44
Africa	South East Africa	15
North America	Western North America	12
	Eastern North America	35
South America	Central America	7
	Southern South America	10

Values of Lakes

- Water body to support human ives and activities
- Repositories of food and biodiversity
- Sources of recreational pleasure
- Aesthetic features & Spiritual values
- Significant repositories of natural and human history
- Flood control & Energy production
- Providing water during scarcity; Moderating climate

Supporting human life

Supporting Biodiversity

Fishery

Recreation

Religious and Spiritual Significance

Aesthetic Natural System

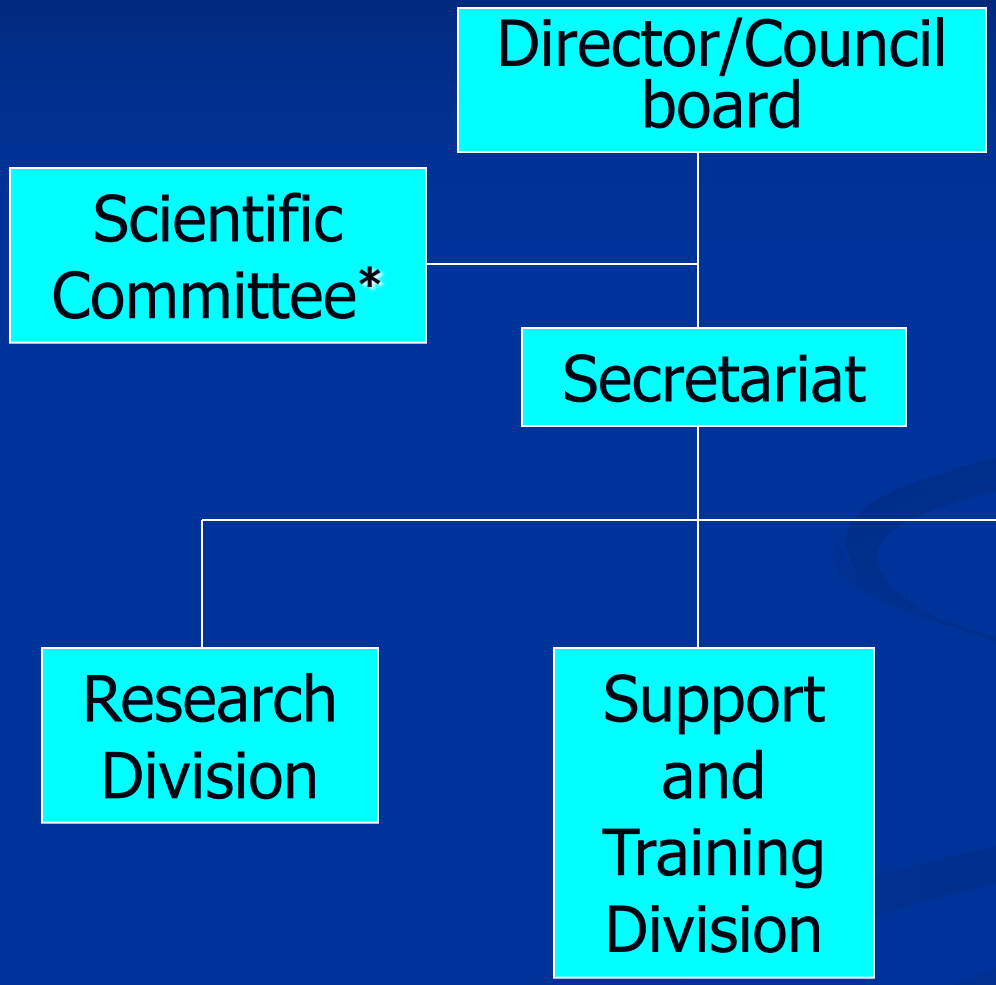
Flood Control & Electricity

Chronological Record of ILEC

1984	1st World Lake Conference
1986	**Establishment of ILEC**
1987	Legal Status from MOE & MOFA
1988~1993	World Lake Database
1989~1999	Guidelines on Lake Management
1990~	Training Program
1995	Lakes & Reservoirs (Journal)
1994~2011	Supporting Foundation of UNEP – IETC
2003	"WLV" Presented at WWF3
2005	"ILBM" Framework proposed at WLC11
2011	MOU Conclusion with UNEP

Inauguration of ILEC (1986)

Organizational Structure of ILEC



* The Committee is formed of 13 world-renowned Experts on Water and Lakes. They advise and support activities of ILEC.

Mission & Focus

* Mission: To promote the sustainable management of world's lakes through international cooperation
* Focus of Activities

1st phase (1986 – 2000)

- Setting the basics for Lake Management
  - WLC, World Lake Database, Guidelines, Journal

2nd phase (2000 ~)

- Mainstreaming Lake Basin Issues
  - World Lake Vision (WLV)
  - Integrated Lake Basin Management (ILBM)

World Lake Conference (WLC)

An opportunity for world's scientists, government officials, citizens, NGOs, … to get together

- to exchange information / experiences in lake basins,
- to discuss to explore solutions to lake environment problems

* 1st Conference held in Shiga, Japan in 1984 organized by Shiga Pref. Government.
* Conference declarations set guidelines for lake management.

- Lake Biwa Declaration (WLC1, WLC9)
- Nairobi Declaration (WLC11)
- Jaipur Declaration (WLC12)
- Wuhan Declaration (WLC 13)
- Austin Declaration (WLC14)

1st WLC (1984, Otsu, Japan)

World Lake Conferences

- 1st 27-31 Aug. 1984 Otsu, Shiga, *Japan*
- 2nd 18-21 May 1986 Mackinac Island, Michigan, *USA*
- 3rd 12-17 Sep. 1988 Kesthey, *Hungary*
- 4th 5-9 Sep. 1990 Hangzhou, *China*
- 5th 17-21 May 1993 Stresa, *Italy*
- 6th 23-27 Oct. 1995 Tukuba/Tuchiura, Ibaraki, *Japan*
- 7th 26-31 Oct. 1997 Sanmartin de Los Andres, *Argentina*
- 8th 17-21 May 1999 Copenhagen, *Denmark*
- 9th 11-16 Nov. 2001 Otsu, Shiga, *Japan*
- 10th 22-26 June 2003 Chicago, Illinois, *USA*
- 11th 31 Oct.- 4 Nov. 2005, Nairobi, *Kenya*
- 12th 28 Oct.- 2 Nov. 2007 Jaipur, *India*
- 13th 1-5 Nov. 2009 Wuhan, *China*
- 14th 31 Oct. -4 Nov. 2011 Austin, Texas, *USA*

15th World Lake Conference

15th World Lake Conference

Lakes:

The Mirrors of the Earth

Balancing Ecosystem Integrity and Human Wellbeing

September 1-5, 2014
Perugia – Italy

Under the Distinguished Patronage of the President of the Italian Republic

Organized by:

ILEC

Università per Stranieri di Perugia

ACCADEMIA DELLE ARTI PERUGIA 1573

With the Patronage of:

Regione Umbria

Comune di Perugia

VOXTECA ARCHIVIO DELLA VOCE

UNIFACTORY

ARPA umbria

ARPALAZIO

ISPRA

Consiglio Nazionale delle Ricerche

Ordine dei Giornalisti Consiglio Regionale dell'Umbria

Under the Auspices of:

UNISCAPE European Network of Universities for the Implementation of the European Landscape Convention

Role of ILEC

ILEC Plays a Facilitating Role to support ILBM Platform Activities through:

- Guidelines for Lake Brief
  http://www.ilec.or.jp/eg/index.html
  - *To acknowledge the state*
- Knowledge Base (LAKES)
  - *Interactive knowledge base on ILBM Governance*
- World Lake Database
  http://wldb.ilec.or.jp/
  - *A Global data repository*
- Training Module (Integrated Basin Management for Lake Environment)
  - *Capacity Building*

World Lake Database

http://wldb.ilec.or.jp/

Searchable by name, by country, and by Free word

Figure B14-2. A Screenshot of World Lake Database

UNEP/ILEC Guidelines of Lake Management series

Edited by ILEC SciCom Members

- Vol.1 Principles of lake management (1989)
- Vol.2 Socio-economic Aspects (1991)
- Vol.3 Lake shore management (1990)
- Vol.4 Toxic Substances (1992)
- A Focus on Lakes/Rivers in Environmental Education (1992)
- Vol.5 Acidification (1993)
- Vol.6 Management of Inland Saline Waters (1998)
- Vol.7 Biomanipulation (1995)
- Vol.8 The World's Lakes in Crisis (1997)
- Vol.9 Reservoir Water Quality Management (1999)

Training Program

- **JICA Program**
- Water Quality Management (1990~2005)
- Integrated Basin Management for Lake Environment (2006~)
- Environment Course for Water Environment Conservation (2000~)
- Nature-based Environmental Education (2008-2009)
- Country-specific
  - Iraq Marshland Restoration (2006-2008, 2010)
  - India (2008), Guatemala (2011)

*** World Bank Program**

- ILBM Training in China (2008-2009)
- UNEP Program
  - Iraq Marshland Restoration (2004)

*** Other**

- Environmental Education Class for Children

Lakes & Reservoirs: Research and Management

[Blackwell Science Issue.]

- Official publication of ILEC focusing on Lakes/Reservoirs Management
- Including International research on the management and conservation of lakes and reservoirs to facilitate the international exchange of results.
- Quarterly issued (Since 1995 May ~)
- Editor-in-chief: Walter Rast (ILEC SciCom)
- Language: English

  Size: A4

  Color: B/W

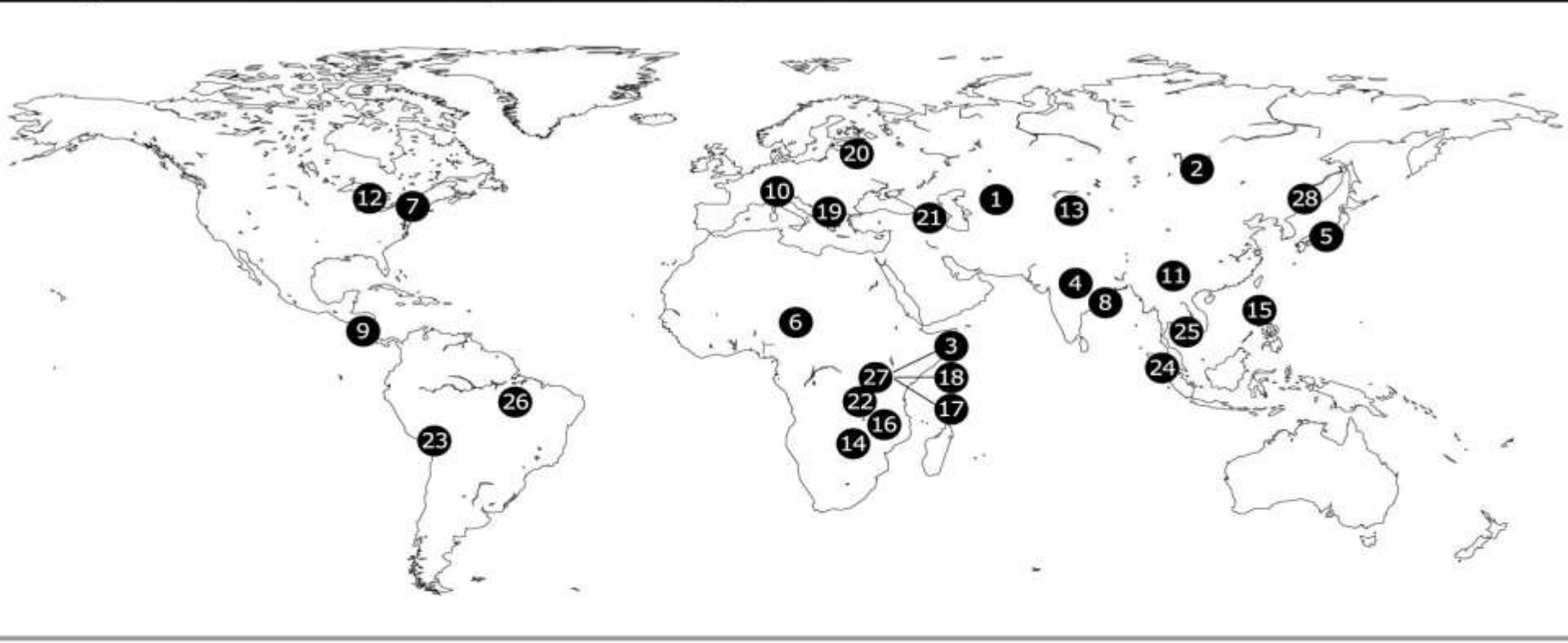
  ISSN: 1320-5331

ILBM Definition and Implications

M. Nakamura, RCSE Shiga University, Chairman ILEC Scientific Committee

28 global case study lake basins

Figure 1.1 GEF-MSP Lake Basin Management Initiative: Project Lake Basins



1 Aral Sea
2 Baikal
3 Baringo
4 Bhoj Wetland
5 Biwa
6 Chad
7 Champlain
8 Chilika Lagoon
9 Cocibolca (Nicaragua)
10 Constance
11 Dianchi
12 Great Lakes (Laurentian)
13 Issyk-kul
14 Kariba Reservoir
15 Laguna de Bay
16 Malawi/Nyasa/Niassa
17 Naivasha
18 Nakuru
19 Ohrid
20 Peipsi/Chudskoe
21 Sevan
22 Tanganyika
23 Titicaca
24 Toba
25 Tonle Sap
26 Tucurui
27 Victoria
28 Xingkai/Khanka

Global experience and lessons learned

from

- 28 lakes and teservoir basins globally
- 8 are transoundary
- 8 are from Asia
- Lake Toba from Indonesia
- 3 are man-made

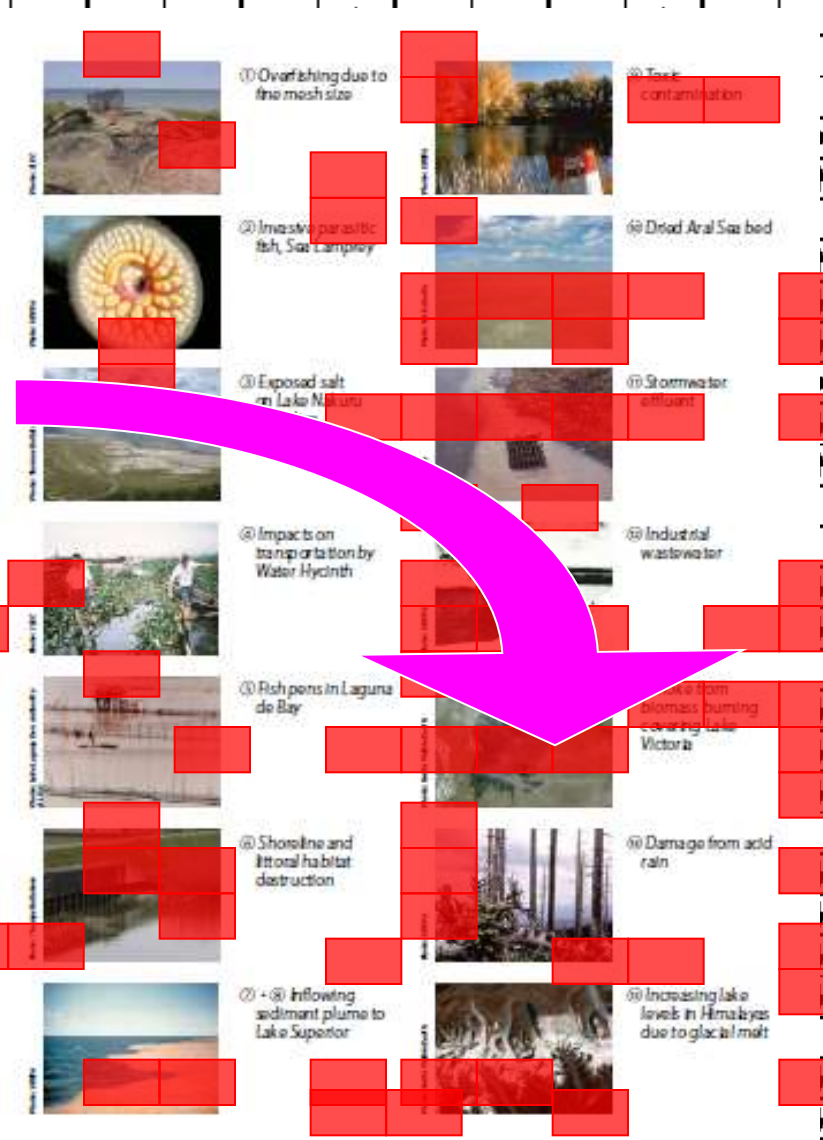
M. Nakamura, RCSE Shiga University, Chairman ILEC Scientific Committee

16 types of

In-Lake | Littoral | Basin | Global

Lakes in the World

Lake Basin	Unsustainable fishing practices	Introduced faunal species	Salinity changes	Weed infestations	Nutrients from fish cages	Shoreline effluent discharges	Shoreline industrial discharges	Shoreline water extraction	Loss of wetlands	Excess sediment inputs	Non-point source nutrients	Agro-chemicals	Water abstraction	Changes in run-off	Effluent and stormwater	Industrial pollution	Atmospheric nutrients	Atmospheric industrial contaminants	Climate change
Aral Sea			→																
Baikal																		→	
Baringo	→																		↓
Bhoj Wetland				→															
Biwa																			↓
Chad																			↓
Champlain																		→	
Chilika Lagoo			↑	↑															
Cocibolca/ Nic																			
Constance		↓																	
Dianchi																		→	
Great Lakes (N		↓														→		→	
Issyk-kul		→														↓ 4			↓
Kariba Reserv																			↓
Laguna de Ba	→	↓	→	→												→			
Malawi/Nyasa	↓ 5			↓													↓		↓
Naivasha	↑	→		↑													↓		
Nakuru																			
Ohrid	→	↓																	
Peipsi/Chudsl	↓			→												→ 6			
Sevan	↓	↓																	
Tanganyika	↓ 3																		↓
Titicaca		↓														↓			
Toba	↓	↓		↓													↓		
Tonle Sap	↓	↓																	
Tucurui Reservoir				→															
Victoria	→	↓ 8		↑												↓ 4	↓		
Xingkai/Khanka	↓															↓ 9			
Total Occurrences	12	10	3																



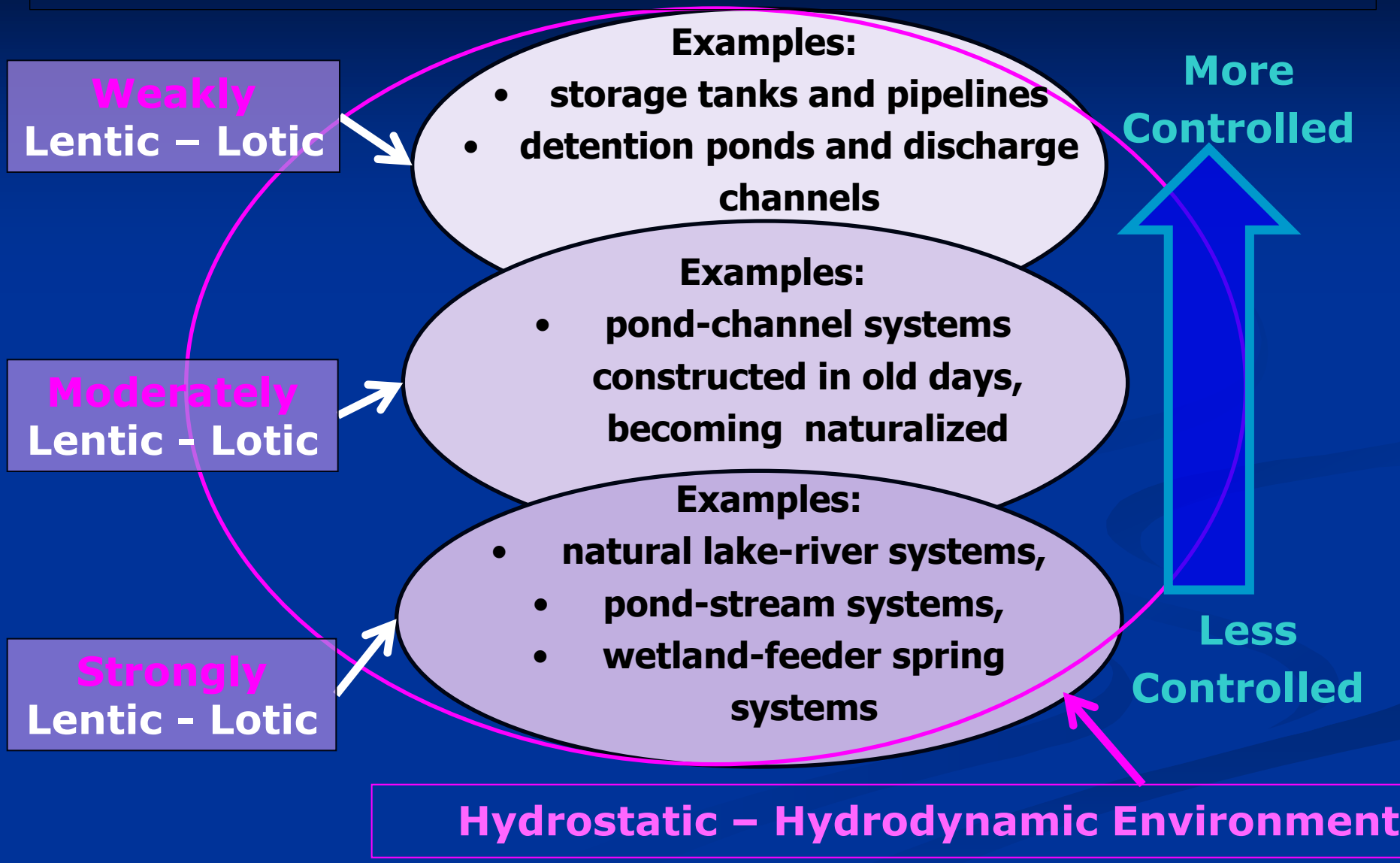
- **Hydrodynamic – Hydrostatic Waters**

  the expression of the physical state of water

- **Lentic – Lotic Waters**

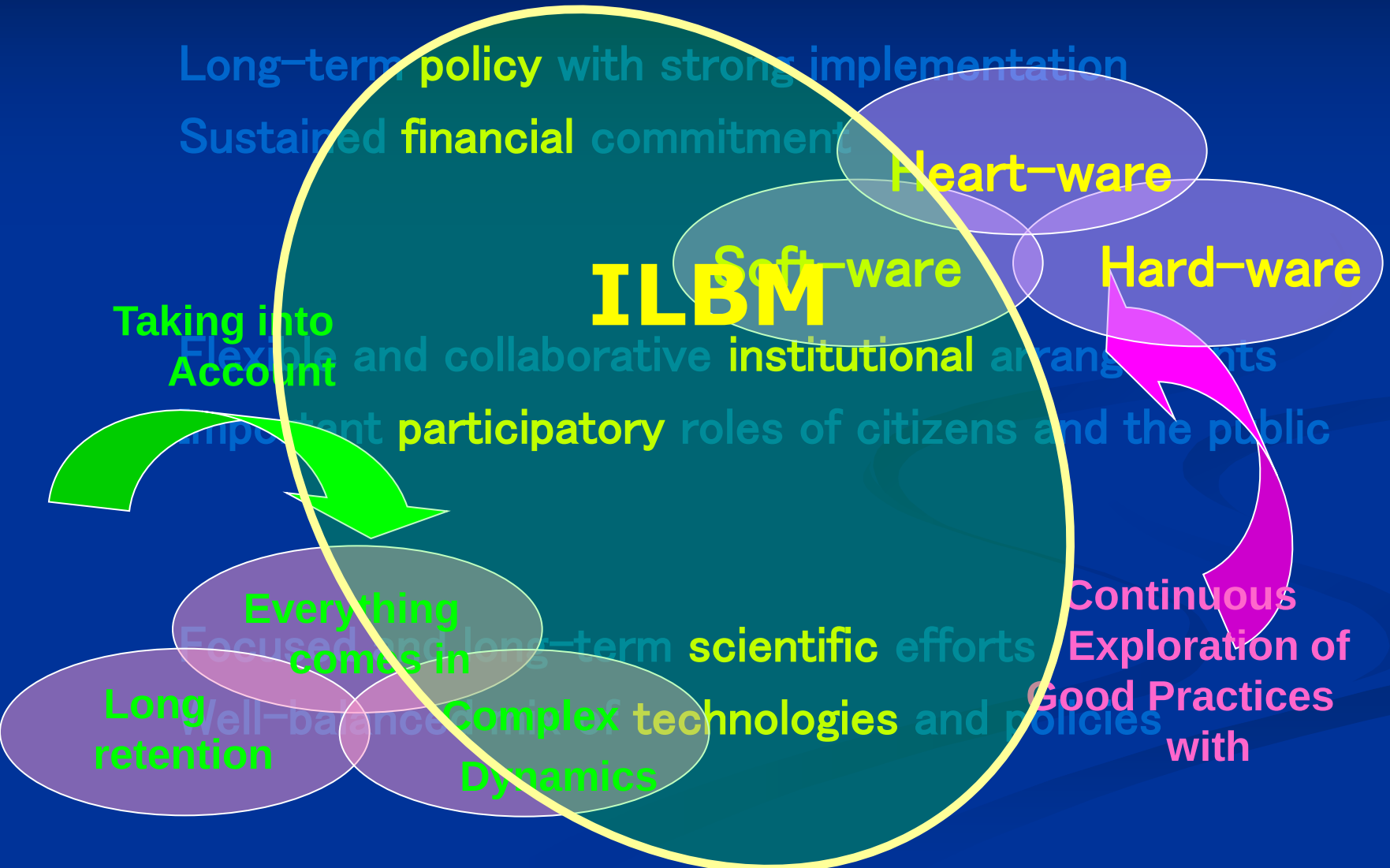
  the expression of the ecological and anthropogenic state of water with evolutional and historic memories of human–nature interaction

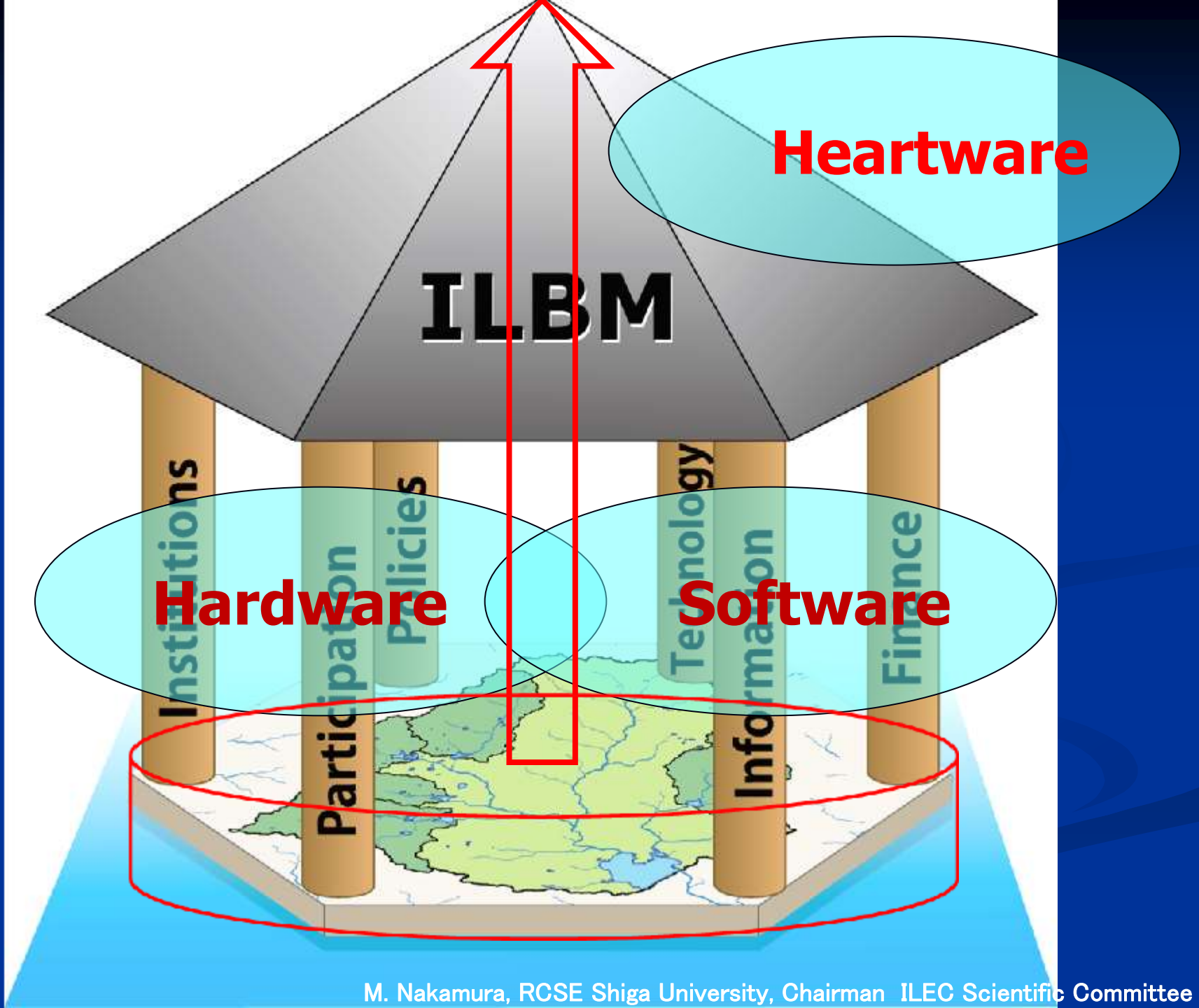
Lentic-Lotic Basin Systems in the Hydrostatic-Hydrodynamic Environment: A Conceptual Framework



M. Nakamura, RCSE Shiga University, Chairman ILEC Scientific Committee

Lessons Learned from 28 Cases:





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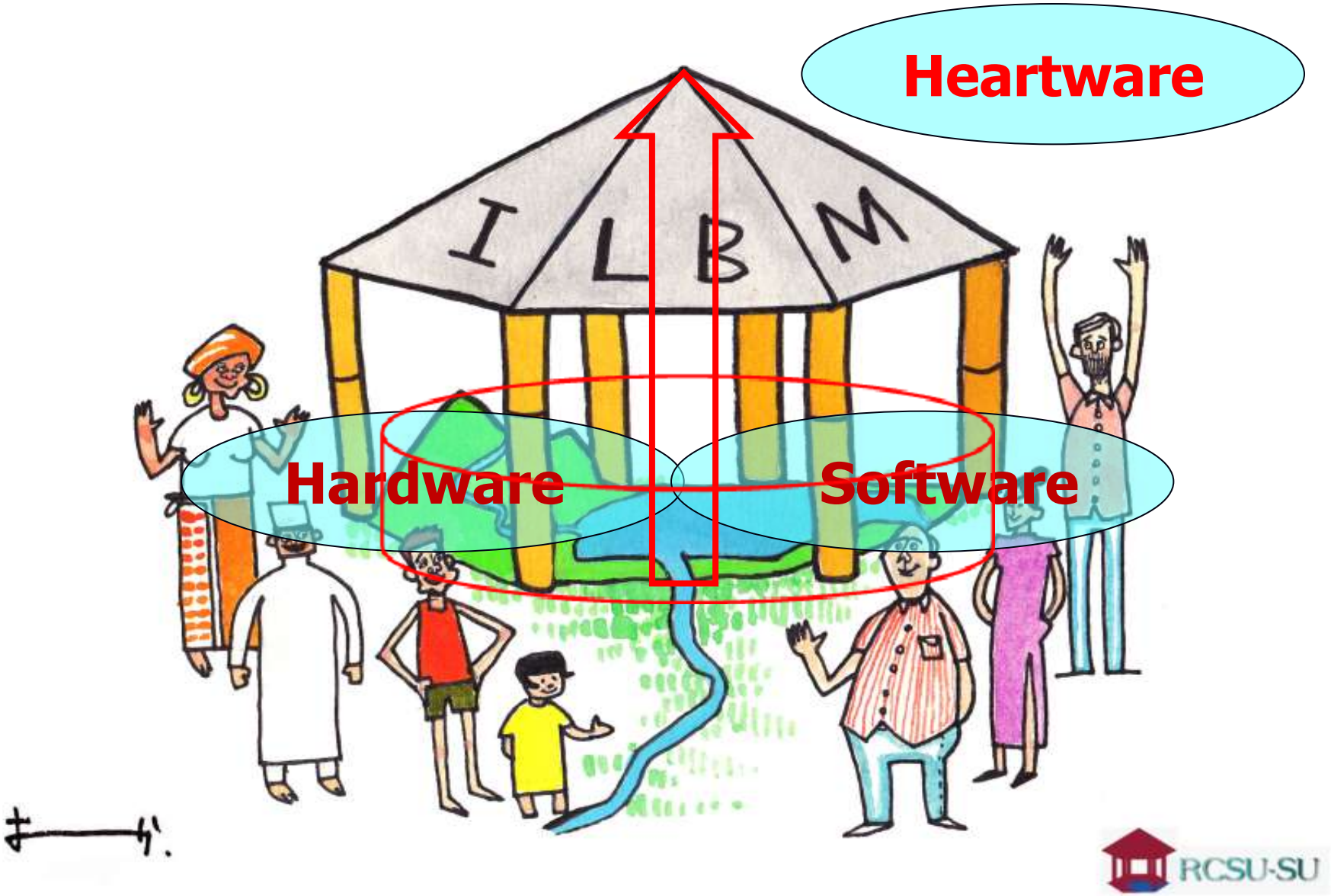
Everyone Lives in the Basin of some Lentic System, and ILBM helps them Live Happily



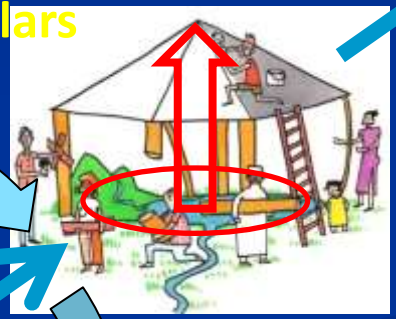
RCSU-SU

Cyclic Platform Process

More Sustainable

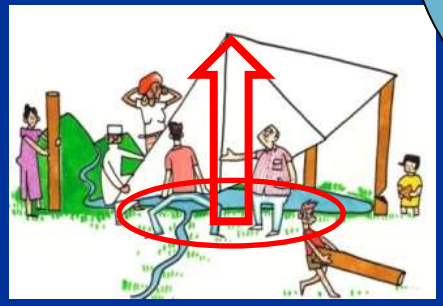
Level of Sustainability

3. Seek ways to strengthen the governance pillars



5. Continue effort, eventually to reach the long-term goal

2. Identify issues, needs and challenges



1. Acknowledge the state of lake basin

Monitoring, Reconnaissance Survey, Inventory and Databases

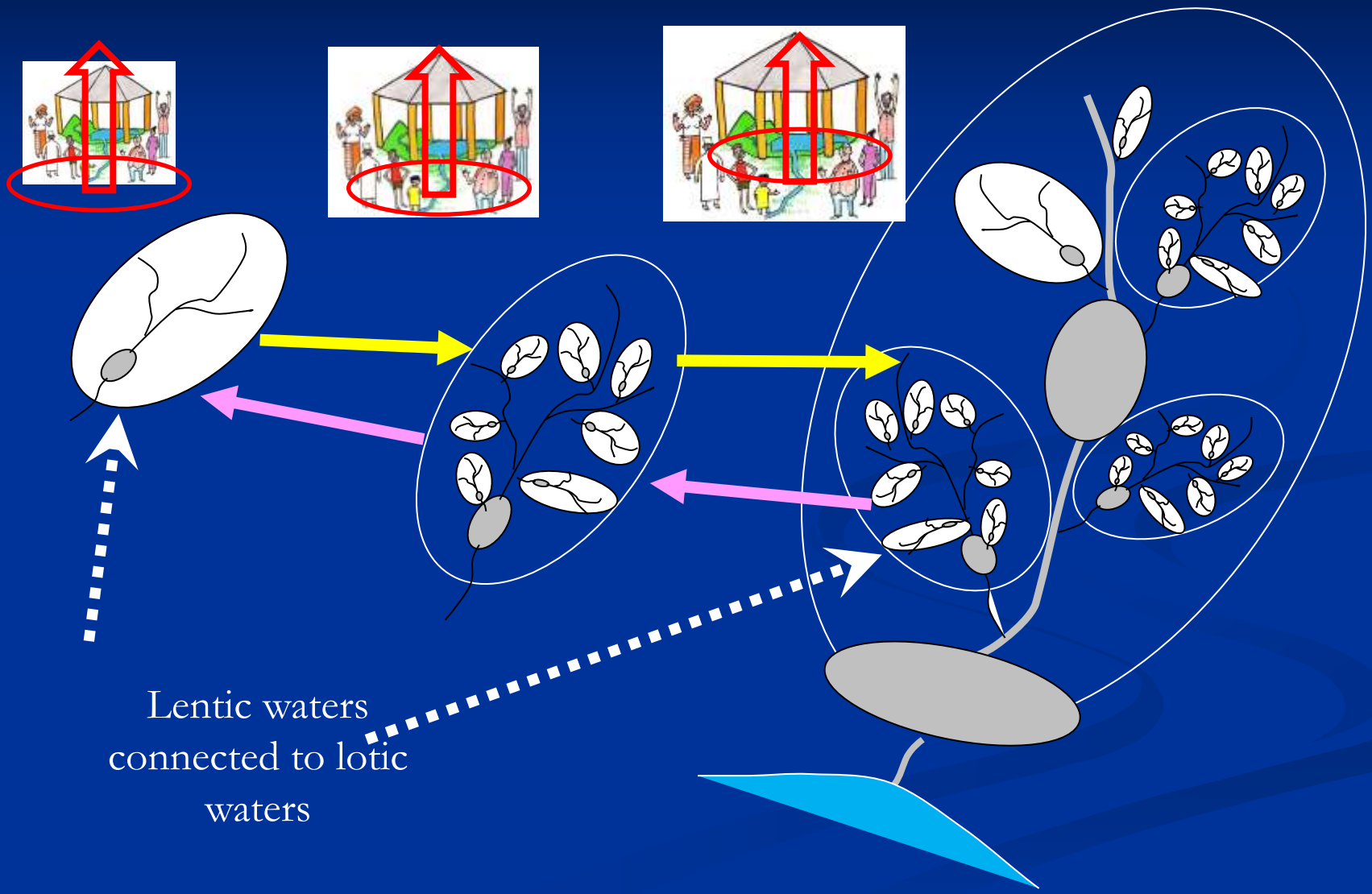
4. Assess the governance improvements

Future

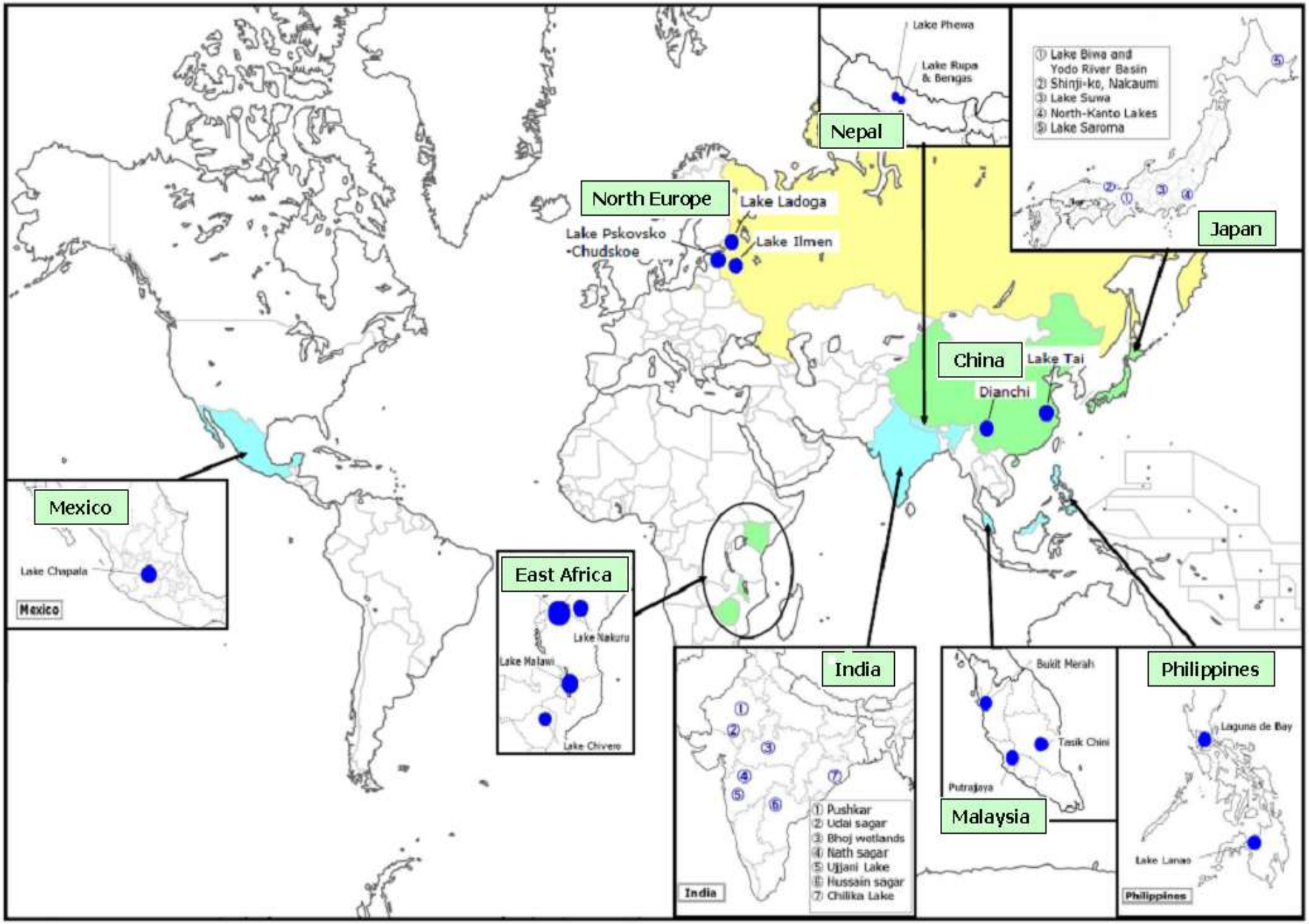
Time

M. Nakamura, RCSE Shiga University, Chairman ILEC Scientific Committee

ILBM Platforms may need to be developed at micro, meso, and macro levels



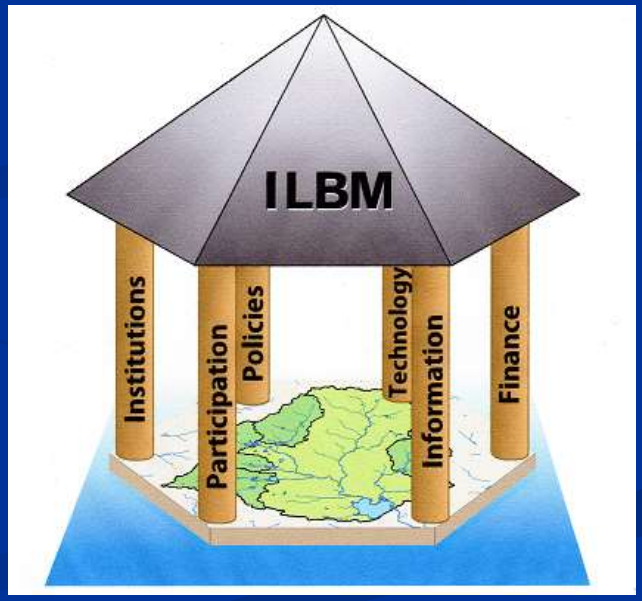
Lake Basin Governance Project (Case Study Lakes)



"ILBM" Approach

ILBM is an approach for achieving sustainable management of Lakes

- through gradual, continuous and holistic improvement of basin governance, including sustained efforts for Integrating
  - * Institutional Responsibilities
  - * Policy Directions
  - * Stakeholder Participation
  - * Scientific and traditional Knowledge
  - * Technological Possibilities, and
  - * Funding prospects and constraints.
- Focus on on-the-ground governance
- Integration by "necessity"



Sharing of the common lessons, challenges and opportunities with ILBM

- ILBM offers a platform for diverse stakeholders to deliberate on conservation issues in water sector
- ILBM stimulates interest on lake inventory and information gathering
- ILBM moves stakeholders to get involved in good governance in water
- ILBM encourages Public Private Partnership for conversation and management of water resources
- ILBM can influence decision making on the implementation of river basin management and lake basin management
- ILBM offers a unfying approach in the management of lakes, rivers and groundwater in local, national and international scale
- ILBM needs to be disseminated and understood on the ground

ILBM's Role in the Global Water Challenge?

M. Nakamura, RCSE Shiga University, Chairman ILEC Scientific Committee

Global water crisis issue examples:

- safe drinking water and basic sanitation
- water for food vs. water for environment
- climate change impacts

Sectoral concerns and interests

- ground-waters and continental aquifers
- large marine ecosystems
- oceans
- rivers

Global Water Resources Crisis

→ IWRM (Integrated Water Resources Management) :

impact on policy reforms in water resources, particularly in developing countries

Global Degradation of River Basins

→ IRBM (Integrated River Basin Management) :

impact on policy and program development in basin management

IWRM, IRBM .....

Where do “lakes” fit in?

IWRM

IRBM

What is the missing link?

"lentic properties of water systems" on the globe!

↓

Integrated Lake Basin Management (ILBM)

IWRM + *ILBM* *(ILLBM)*

IWLLBM

Everyone Lives in the Basin of some Lentic System, and ILBM helps them Live Happily