特集論文

「湖沼流域ガバナンス」研究推進活動の概要について

中村 正久

Outline of the "Lake Basin Governance Research Promotion Activities"

Masahisa NAKAMURA

Professor by Special Appointment
Research Center for Sustainability and Environment Shiga University

Standing bodies of water, such as lakes, reservoirs, wetland, ponds, estuaries, inland seas and even temporary impoundments, constitutes a major portion of the surface water on earth. Providing for vast and variety of ecosystem service values, their sustainable management is an extremely important but challenging subject. Unfortunately, however, the subject has so far failed to be mainstreamed in the global fora of debate on water, due in large part to the inadequate conceptualization of the basic principles for their sustainable management. Integrated Lake Basin Management (ILBM) is a proposed unifying concept developed through global collaboration over the past decade for addressing the governance challenges associated with planning and management of these systems. The "ILBM-Governance Project", undertaken during the period between April 2008 and March 2011, was formulated as an international research promotion project to further refine and operationalize the conceptual framework of ILBM. It was undertaken by the Research Center for Sustainability and Environment, the National University Corporation of Shiga University, Japan (RCSE-SU), with financial support from the Ministry of Education, Culture, Sports, Science and Technology. The Project was collaborated by the Faculty of Environmental Sciences, the University of Shiga Prefecture, Hassaka, Japan, and the International Lake Environment Committee (ILEC), Kusatsu, Japan. This article briefly summarizes the outline of the Project, the activities undertaken and the key study outputs. The major activity categories include the thematic research activities on "governance" spanning across various disciplinary fields, the field application and analysis of the ILBM principles at selected case study lake basins in Japan and in different parts of the world, development and use of a knowledgebase system, complemented with the already available world lake database system and training module. In addition, the above three organizations formed a research collaboration platform called the Basin Policy Research Forum (BPRF), with open participation by a large number of individuals and institutions to exchange in the form of periodic saloon-type meetings. This article introduces an outline of these activities and their provisional outputs. It will be complimented by three case study outputs, two of which pertain to specific cases of ILBM analysis, 1) on the ILBM national program development activities in Nepal facing the challenge to restore and sustainably manage the Himalayan high altitude lakes and wetlands, and 2) on the need for ILBM platform development at Lake Lanao in the Philippines where the fluctuating water level caused by the downstream hydropower system has been causing serious impacts on the life of the riparian ethnic and religious communities. The third 3) is a research paper prepared in connection with BPRF on the assessment of meaningful participation of the public in the process of formulating a long-term basin management plan for Lake Biwa.

滋賀大学環境総合研究センター特任教授

Keywords: Global Research Collaboration, Lake Basin Governance, Integrated Lake Basin Management (ILBM), Lentic Waters

1. Background and Rationale for the Need for ILBM Approach

Comprising more than 90% of the readily-available liquid freshwater on the surface of our planet, lakes and reservoirs are the key components of global water resource systems. Lakes can be created by natural processes, such as glacial scour, plate tectonics and volcanoes. Humans also construct lakes by building dams across flowing water systems to form reservoirs. Thus, the term 'lakes' includes ponds, wetlands, marshes, lagoons of natural origin, and reservoirs and other impoundments of artificial origin. Whether natural or artificial, lakes provide an enormous number and range of resource values that facilitate sustainable human livelihoods and economic development. Lakes also serve as essential habitats for an amazing variety of flora and fauna. Thus, the development, use and conservation of lakes have been major human undertakings on both a national and international scale for a very long time. Data from around the world, however, indicate their overall condition continues to deteriorate, in many cases without being readily noticed until relatively advanced stages of degradation. The reasons for the deteriorating state of lakes in the world are many, and the sustainable management of lake basins is not easy to implement. Fundamentally, there are two major reasons, i.e., one pertaining to the biophysical characteristics of lakes, and another pertaining to the socio-economic behavioral characteristics of humans.

The biophysical characteristics making lake basin management not so easy relates to three distinguishing characteristics of lake basin systems, i.e., (1) an integrating nature; (2) long water residence time; and (3) complex response dynamics, elaborated in detail in **Section 3.1**. The social and behavioral characteristics of humans making lake basin management not so easy relates to the fact that, in many parts of the world, much of lake basin resources have historically been the "common-pool resources" (**Section 3.2**) where anyone has free access and use of the resources and this basic premise still persists today in many respects. Combining the management implications of the biophysical characteristics and the "common-pool resources" characteristics, the fundamental challenge seems not so much a matter of management but a matter of governance that encompasses a much broader range of issues than management, in a much more profound way than dealing with specific plans and programs of management.

In the above context, Integrated Lake Basin Management (ILBM) [i] takes the position that good lake basin management can be realized only through continuous improvement of lake basin governance, which pertains to (1) Institutions to manage the lake and its basin for the benefit of all lake basin resource users; (2) Policies to govern people's use of lake resources, and their impacts on lakes; (3) Involvement of people to facilitate all aspects of lake basin management; (4) Technological possibilities and limitations that are often quite dictating in regard to long-term decisions; (5) Knowledge and Information of traditional, as well as modern scientific nature, forming the basis for informed decisions; and (6) Sustainable finances to support implementation of all of the above activities. ILBM also takes the position that the problems facing individual lake basins cannot be properly addressed unless the fundamental issue of sustainable resource development, use and conservation facing the lakes is addressed globally, and with long-term and strong political commitment.

2. Activities Undertaken in the ILBM-Governance Project

Generally, lakes and their basins are either managed, not managed, or are somewhere in between these two extremes. The "managed" lakes are managed at various levels, both for resource development and conservation reasons. In contrast, the "not-managed" lakes are left

alone, perhaps because their resource values are not immediately being sought, or are left abandoned because their restoration is too costly for the benefits likely to be accrued from such efforts. If a lake basin has not been managed at all, and is about to be managed for the first time, a management plan may be developed from scratch. However, such cases are rare. Many lakes have multiple management objectives, intertwined with complex, and sometimes conflicting, needs and approaches. The integration of objectives, needs and approaches for successful management has not been as easy as one would expect from envisioning a plan drawn ideally on paper. In addition, the lakes in the world today exist at various levels of adequacy of their plans and their implementation, basically as a mixture of: (i) those managed with both resource development and conservation plans; (ii) those managed only with resource development plans; and (iii) those managed without any plan at all. In all cases, we have to take fully into account the complicated situation that has evolved over the course of lake basin history, with various interventions already having resulted in an unsustainable management regime.

The purpose of this ILBM-Governance Project, therefore, was set to promote research on the basis of international cooperation on the subject of ILBM and lake basin governance issues as a whole, with a range of case study lake basins that pretty much encompass the above categorization. The case studies included field visits and consultative meetings of both Japanese and non-Japanese lake basins, complemented by a range of collaboration research with institutions around the world (See **Section 5**).

A "lake brief", the concisely structured report on the state of lake basin governance and its challenges for a specific lake, was prepared by each of the case study project teams. Together with vast sources of knowledge already compiled in the form of textual, numerical and visual resource materials on various thematic subjects of disciplinary as well as interdisciplinary importance, the lake briefs collectively constitute the key knowledge base for the developing the overall ILBM framework. In addition, the activities of the BPRF research collaboration forum proved to be an important source of knowledge about the governance challenges facing lake basin management in Japan, particularly in the Lake Biwa -Yodo River basin (See **Figure 1**). The enhancement of the ILBM

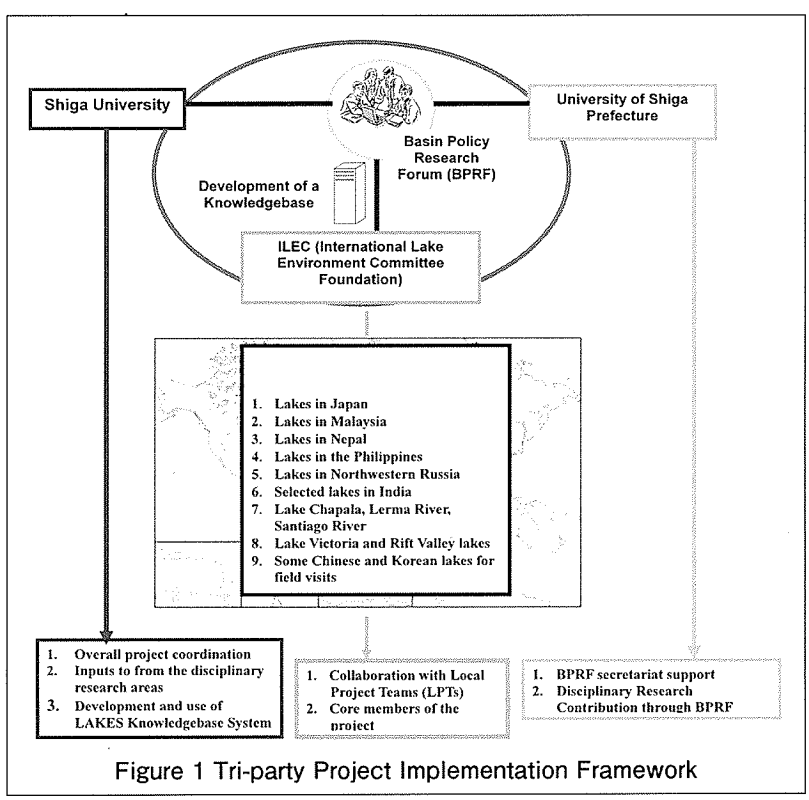

Figure 1 Tri-party Project Implementation Framework

knowledgebase was also supported by the preparation of thematic case study research papers in such fields as environmental policy analysis, environmental engineering, environmental education, economic policy analysis, historical geography, life science, constitutional law and economic sociology undertaken by the faculty members of Shiga University [ii]. For the purpose of meaningful synthesis of such knowledge, an interactive knowledgebase cum knowledge mining system called LAKES has been developed and used.

3. Lake Basin Management as a Governance Improvement Challenge

3.1 Lake-River as Lentic-Lotic Systems, and their Unique Features

Lakes and reservoirs are broadly considered as 'standing' or 'static' water systems or, using a hydrometric term, they are designated 'hydrostatic' systems. In contrast, 'moving' waters, such as rivers, can be regarded as 'hydrodynamic' systems. Similar expressions of 'static' and 'dynamic' water systems exist in the ecology literature as well. The appropriate descriptive terms are 'lentic' and 'lotic' systems. The meaning of 'lentic' is basically the same as for hydrostatic, and the meaning of 'lotic' is the same as for hydrodynamic. However, the lentic and lotic expressions also include the connotation of their imbedded ecological functions. That is, the term 'lentic' connotes the ecological properties unique to a standing body of water, while the term 'lotic' connotes the ecological properties unique to a moving water system. Thus, natural basin water systems, such as lake-river systems, pond-stream systems, wetland-spring systems, and even constructed, but naturalized, dam-river systems may be regarded as a combined hydrostatic-hydrodynamic system, as well as being a lentic-lotic system, because of their historically-fostered ecosystem functions. It is noted that lentic water can be either fresh or saline/brackish.

The occurrence and management of lake basin problems is a function of three distinguishing characteristics of lentic-lotic basin systems, including: (1) an integrating nature; (2) long water residence time; and (3) complex response dynamics.

Integrating Nature: Because of their location at the terminus of a drainage basin, lakes receive pollutant inputs via rivers and other inflowing channels from sources throughout their surrounding drainage basin, as well as beyond (via long-term atmospheric deposition). These inputs are integrated over the entire lake and riparian land interfaces, thereby causing both the lake resources and the problems associated with them to form a complex web of cause-effect relationships and propagate throughout the lake, and even through the connected inflowing and outflowing water courses to other parts of the basin. The management implication of the integrating nature is that a broad range of management policies and programs need to be introduced and implemented to deal with as many problems as possible across the entire lake basin system.

Long Retention Time: The long retention time can make it difficult for people to notice degradation problems until they have become serious lake-wide problems. It also means that, even when remedial programs are implemented to restore a degraded lake, it can take a very long time - if ever - for a lake to recover. It also leads to lags in ecosystem responses that are poorly matched to the human management time-scale. The management implications of this characteristic of incremental development of degradation problems, and the potentially long time for lakes to respond to management interventions, include a need for long-term involvement of relevant lake basin management institutions and their activities, as well as long-term funding. The potential for long-term impacts also suggests a need for a precautionary approach, resorting to the best of scientific tools available, in developing and implementing management interventions.

Complex Response Dynamics: In contrast to lotic water systems, lakes do not necessarily respond to perturbations or pollution, or to their removal, in a linear fashion. This is due in large part to their stagnancy of impounded water mass containing land-originated organic and inorganic substances, held over long time. A variety of physical, chemical and biological reactions and

interactions can take place at different depths and in different locations within the waterbody and around the riparian perimeters. The result can be a non-linear response (hysteresis) to increasing or decreasing external pollutant loads. The management implications of this characteristic of non-linear dynamics include that lake basin problems must be anticipated as far in advance as possible, through monitoring, developing indicators and analytical studies, as well as the need to carry out scientific studies to better understand the complex processes and their implications, and also to help develop solutions to the resulting problems.

3.2 Common-Pool-Resources and Ecosystem Services

Aquatic and terrestrial (basin) resources, such as offshore and artisanal fishery products, irrigation water for watershed and riparian crop lands, supplies of water for municipal and industrial uses, etc., may be considered as the "common-pool resources" which, without any control, tend to be exploited by resource development sector activities in both the private and public domain, resulting in the "tragedies of the commons" phenomenon, even leading to the deterioration of the non-use values (non-consumptive use values) of a lake, such as tourism, navigation and leisure/recreation. As common-pool resources, lake resources may be owned by national, regional or local governments, by communal groups, or by private individuals and organizations. When these resources are not owned by anyone, they are used as open access resources. The use control of the "common-pool-resources" requires a management rule. If a lake is a government property, the required management rule would be that directed to the public good. That is, it would involve governmental policies, rules and regulations, and responsible actions by citizens. If a lake is a communal property, the management rule would be that of the common property resources. It would involve traditional community rules for quotas, moderation in extractable uses, and sharing of the sense of collective conservation. If a lake is a private property, the management rule would be that of private goods. It would involve rules for meeting its optimal use.

The overall degrading trend of the world's lakes, however, suggests that, regardless of the form of ownership, their management leaves much to be improved. Using the language of the MA (Millennium Ecosystem Assessment) Framework, i.e.;

1) ***Resources Provision Services:*** These represent the products people obtain from ecosystems, including water supplies; fish; crop irrigation; wood and fiber; fuel; hydropower generation;
2) ***Regulating Services:*** These refer to the benefits people obtain from the regulation of ecosystem processes, including flood and drought mitigation; self-purification capacity; health provision; navigation routes; climate mediation; aquatic habitats; diverse food-chains; fertile lands; coastal ecotone buffer capacity;
3) ***Cultural Services:*** These refer to the non-material benefits people obtain from ecosystems, including aesthetic and scenic values; religious sites and spiritual values; historic sites; educational resources;
4) ***Supporting Services:*** These refer to the services necessary for the production of all other ecosystem services, including heat energy; geological formation; nutrient cycling; and primary production.

The challenge is for humans to gradually attain a balance between the resource provision services and the regulating services of the overall ecosystem services, which requires a much longer timeframe and much broader spatial implications than the conventional idea of lake basin management.

Of particular interest within the context of lake basin management is that increasing human use of lake-specific resource provision services can result in degraded regulating services. Even more important, however, is that increasing loss of regulating services also can, in turn, result in decreasing provision services, as well as the loss of cultural and supporting services as well. This reality highlights the need to transform unsustainable resource development to sustainable resource use.

3.3 A Six Pillar Framework, Preparation of a Lake Brief, and Development of an ILBM Platform

For individual lake basins, an assessment of the

existing management practices can be systematically undertaken for six major identified topics of management concerns, i.e., Institutions, Policies, Participation, Technological, Information, and Finances. These six major topics are the essential governance ingredients that collectively form the management regime for an integrated approach in lake basin management, referred to as the Six Pillars of Governance in ILBM.

A broad range of issues, pursuits, successes and failures, accomplishments and challenges, etc., have been complied over the past years, in the form of thematic and policy documents even before this ILBM-Governance Project. They have provided ample experiences from which to draw lessons for lakes basin stakeholders around the world to share. In the meantime, new lake briefs have to be prepared as the respective lake basins are brought into their ILBM process. Analysis of the state of basin governance for the case study lakes, with regard to ILBM, begins with the development of a lake brief with wide stakeholder participation. The document entitled, "Guidelines for Lake Brief Preparation"[iii] is separately published.

A lake brief generally has the following basic structure:

1) Introduction
2) Description of the Lake
3) Management of the Lake and Its Basin
4) Major "Impact Stories" of the Lake
5) Major Lake Basin Governance Issues
6) Key Challenges to Lake Governance
7) References

Annex 1. Checklist of data and information on biophysical and managerial issues facing the lake basin

Annex 2. Checklist flowchart of the governance issues facing the lake basin

The desired lake brief preparation process, and the desired adequacy level of lake brief to be prepared, vary from one case to another, depending on, for example, the availability of existing data and information, as well as on the degree of collaboration obtainable from various stakeholder organizations. The process of preparing a lake brief, and of revising it periodically through a consultative process, can evolve over time through the ILBM Platform process to be discussed below.

The Annex 1 Questionnaire guide the lake brief preparation process by asking the stakeholders to confirm such items to as biogeophysical features, socio-economic status, resource values, and possible causes of their impairment. The Annex 2 Questionnaire provides a framework for systematically assessing the state of each of the Six Pillars of Governance and how it may be improved (see **Figure 2**).

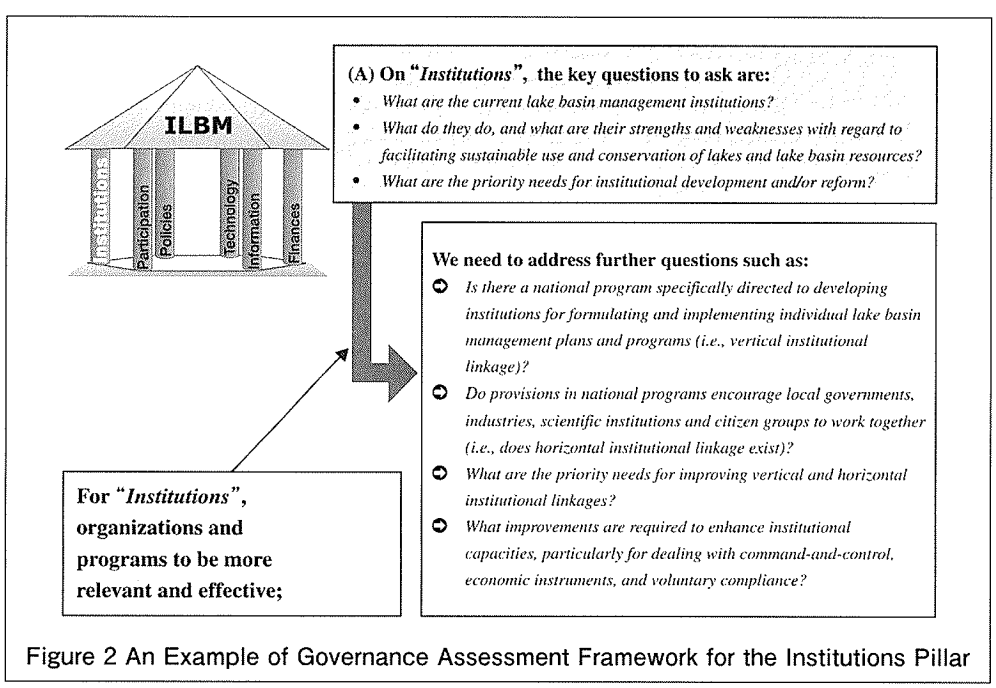

Figure 2 An Example of Governance Assessment Framework for the Institutions Pillar

Lake basin management is a process not a plan, and ILBM is a framework of basin governance analysis that supports such a process. The improvement and enhancement of lake basin governance would require the stakeholders to continuously and concertedly work on identification of the governance challenges on each of the Six Pillars. Such a process can be pursued making use of an ILBM Platform that usually exhibits a cyclic feature as shown in **Figure 3**.

4. Summary of the National ILBM Project Activities and their Implications

The ILBM Platform similar to the one described above has been developed over the course of this Project for some twenty case study lake basins identified from Southeast Asia (Lake Laguna, Lake Lanao and Rinconada Lakes in the Philippines, Lake Putrajaya, Lake Chini and Lake Bukit Merrah in Malaysia); South Asia (Lakes Bhopal, Lake Hussain Sagar, Lake Pushkar, Lake Udasagar, together with Ujjani Reservoir in India, Lake Phewa, Lake Rupa, Lake Begnas and other small lakes in Nepal); Northern Europe (Lake Ladoga, Lake Chudskoe/ Peipsi and Lake Illmen in Russia), Latin America (Lake Chapala and Rio Lerma Basin in Mexico). The following are brief description of the state of lake basins studied in each of the six ILBM case study countries other than Japan.

1) Philippines

The number of identified lakes in the Philippines is 211 as of 2001. Among them are two major lakes in the country, i.e., Lake Laguna (Laguna de Bay) and Lake Lanao. Lake Laguna is a shallow (mean depth of 2m) lake but its surface area is one of the largest in Southeast Asia (900km2) situated just next to the main part of the Manila Metropolitan jurisdiction. The lake basin has a population of about 6 million spreading across 6 provinces with 13 cities and 48 municipalities, and the land area of 3820km2. The Laguna Lake "Experience and Lessons Learnt Report" prepared by Laguna Lake Development Authority (LLDA) in 2005 was revised in 2009, following the above Guidelines. Lake Lanao is the deepest (maximum depth of 112m) and the largest (surface area of 352km2) freshwater lake in the Philippines on the island of Mindanao. It is located some 700m above sea level along the Agus River discharging to the Illigan Bay of the Bohol Sea, connected to the Sulu Sea and the South China Sea. The local NGO and the Government of Lanao de Sul, with support from LLDA, was able to put together a Lake Lanao Lake Brief, reflecting the output of the ILBM workshop held in 2009. The "Rinconada lakes" refers to three sister lakes, Lake Bato, Lake Buhi and Lake Baao-Bula, located in the Province of Bicol,

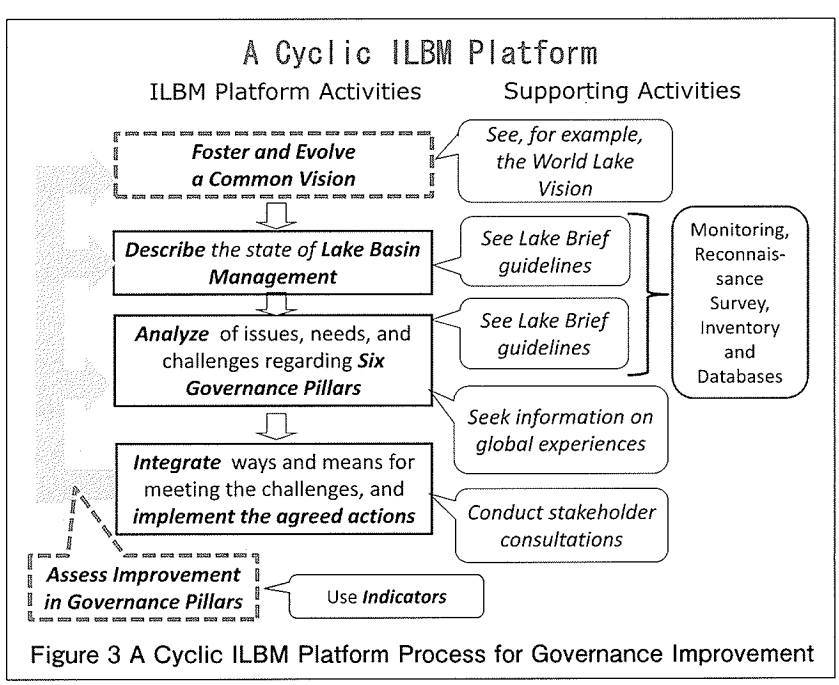

Figure 3 A Cyclic ILBM Platform Process for Governance Improvement

Southern Luzon Island. Bato and Buhi are basically culture fishery lakes, and Baao-Bula is an irrigation lake. The ILBM Platform activities have begun to be nicely integrated into the existing national program framework, with full recognition of its added value.

2) Malaysia:

The National Academy of Science, Malaysia (ASM), and the National Hydraulic Research Institute of Malaysia (NAHRIM) jointly undertook a preliminary desk-top assessment on the status of lake eutrophication was undertaken in 2005, reporting that, out of 90 natural and man-made lakes, some 62% were eutrophic while the rest was mesotrophic. The assessment exercise was followed by the "Colloquium on Management of Lakes and Reservoirs in Malaysia" in July 2007, with a focus on the development of a Strategic Plan for Lake and Reservoir Management in Malaysia. In the course of development of the Strategic Plan, eight lake briefs have already been prepared including one each for Lake Putrajaya, Lake Chini and Lake Bukit Merrah. Lake Putrajaya is a ten-year old man-made lake constructed as a part of the landscape of Putra Jaya, a planned city inaugurated as the federal administrative center of Malaysia in 1999. Lake Chini (also called Tasek Chini) is one of the few natural freshwater lakes in the Peninsular Malaysia. The main water sources contributing to the lake come from the Chini River (also called the Sungai Chini), a tributary to one of the largest river in Peninsular Malaysia, the Pahang River. Lake Bukit Merah is the oldest man-made lake in Malaysia constructed in 1906, located in the north western part of Peninsular Malaysia. The ILBM Platform activities are being pursued as a basis for the national program development, aiming at integrating as well as expanding on the ILBM framework.

3) Nepal

The Nepalese Government established the National Lake Conservation and Development Committee (NLCDC) in 2006 within the Ministry of Aviation and Tourism. The Committee undertook a national survey, and identified nearly 5400 lakes, in the low altitude, midland altitude and high altitude regions that serve for various purposes, including those serving as vital sources of water and other livelihood for the riparian communities. They also support tourism, playing a key role in the preservation of biodiversity in the Himalayan environment. The momentum generated though the initial round of activities will be expanded to lakes in the high mountain, the mid-hill region and in Tarai district. During the period, a lake brief was prepared each for Lake Phewa, Lake Rupa and Lake Begnas in the Pokara Region. The ILBM activity framework is expected to play an instrumental role in carrying forwad the momentum created by NLCDC.

4) India

Impounded (Lentic) water systems in India, exceeding well over one million in number, can be categorized into natural lakes, reservoirs, ponds, temple tanks, step wells , and wetlands, and they are all relatively shallow and small in size. The proportion of man-made water bodies is much larger than that of natural water bodies. Historically they have been subjected to three major causes of resource degradation, i.e., a) urbanization reclaimed a number of smaller lakes and drastically reduced the water body morphology; b) water pollution due to sewage, nutrient-rich agricultural run-offs and toxic industrial effluents causing loss of productivity and quality use in such sectors as fisheries, dairy, and recreational activities, and c) failure of sustainable management due to a variety of socio-economic, political and religious factors, according to one report . The lake briefs were prepared for: 1) the reservoirs located on rivers (Ujjani Reservoir on the Upper Bhima River a tributary of the Krishna River, Lake Bhopal or Bhoj wetland on the Kolans River, a tributary of the Halali River); 2) the impoundments based on topography (Lake Hussainsagar in Hyderabad, Lake Anasagar in Ajimer); 3) temple tanks (Lake Pushkar); and 4) reservoirs downstream of urban areas (Lake Udaisagar and related lakes in Udaipur). The ILBM Platform activities have sprouted out and have been actively pursued in most of the above lake basins, with possible linkage with the National Lake Conservation Plan promoted by the National Government.

5) Mexico

The ILBM Platform activities in Mexico have been focused on Lake Chapala (Lago Chapala), the largest and most important inland water body in the country, with the inflowing river called the Lerma River (also called the Rio Lerma) was selected as a focal case study lake basin in Latin and Central America. Since its first workshop in September 2008, through the project entitled "Planning for Integrated Management of Lerma-Chapala Basin", a lake brief was prepared over the course of three years and three regional ILBM workshops. The project was quite instrumental in raising the profile of the Lake Chapala basin management challenges by bringing the Lerma River watershed stakeholder organizations in many sub-basins in parts of the States of Jalisco, Guanajuato, Michoakan, Edo de Mexico, Queretaro that have since been jointly seeking ways to make practical application of the ILBM Platform framework. The ILBM framework is being promoted now to interface with the State Water Comission programs on lake basin management.

6) Russia

The case study lake basins are Lakes Ladoga, Chudskoe (Peipsi) and Illmen in in the northwestern Europe (Lake Chudskoe/Peipsi is a transboundary lake between Russia and Estonia, but the other two are in Russia). Their lake briefs were prepared at the initiative of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg. These lake briefs are first batch of such a report in Russia, and there is an ongoing effort to expand the activities to other major lakes in the region, including those in Central Asia. They are expected to be linked with the activities of the International Data Centre on the Hydrology of Lakes and Reservoirs (HYDROLARE) operated at the Institute of Limnology, Russian Academy of Sciences. The ILBM promotion in other parts of Russia and Central Asia, as well as in the Baltic Sea Region, is being exploreol by the two Acdemy Institutes.

5. Summary of the Three Year Study Outputs

5.1 Beneficial Attributes of the ILBM Lake Briefs

The general observations on the design features of the ILBM lake briefs reported by the lake basin focal points were as follows:

1) ***Non-prescriptive Lake Brief design:*** The non-prescriptive and flexible narratives of the lake brief allow the basin community's values, in terms of socio-cultural and historic backgrounds, to be properly reflected in the ILBM Platform process.
2) ***Updating of Lake Briefs:*** The periodic revision of lake briefs also helps update the issues and prepares the stakeholders to meet new challenges.[iv]
3) ***Joint Preparation of a Lake Brief:*** The joint preparation of a lake brief helps clarify specific needs, challenges and approaches for productively addressing the important lake basin governance issues.
4) ***Wide range of issues without prejudice:*** The lake brief design and ILBM Platform concepts are such that they accommodate a wide range of views from stakeholder groups and individuals without undue prejudice or prerogatives.
5) ***Fostering of the common vision ILBM:*** Platform provides a basis for sharing of the common vision and for resolving differences in ideals.
6) ***Suitable framework for lentic waters:*** ILBM's conceptual framework and theoretical foundations, particularly the unique features of lentic waters, the ecosystem service principles, the spatial and temporal implications of lake basin governance, not found in Integrated Water Resources Management (IWRM) and Integrated River Basin Management (IRBM), suit quite well for the situations faced, though each of these concepts is complementary to the others.
7) ***Development of national strategic plan:*** The lake brief guidelines and the ILBM Platform framework were quite helpful in developing the national strategic plan for lake basin management in the case of Nepal[v] and Malaysia[vi].

5.2 Reported Merits of the ILBM Platform Process

The general observations on the merits of the ILBM Platform process reported by the lake basin focal points were as follows:

1) ***Stakeholder collaboration in lake basin activities:***

The ILBM Platform process has helped connect the stakeholder groups that have previously been independently working, making possible the improvement of the lake basin governance pillars from widely different perspectives.[vii]

2) ***Formalization of collaborative relationship:*** Government agencies, research institutions, citizen groups, NGOs and private sector organizations having previously had only informal collaborative relationship, sometimes with competing and/or conflicting interests and activities, have been able to formalized the relationship, helping to accelerate the implementation of joint actions through ILBM.[viii]

3) ***Advisory assistance from research institutions:*** Research institutions including universities have played an instrumental role in providing consultative inputs by providing scientific information, in participating in local meetings and in facilitating the ILBM Platform process.[ix]

4) ***Cross linkage of existing activities:*** Cross linkages on activities have been achieved among the participating members, regardless of their local, regional, national and international focuses, in terms of information sharing, contributory roles, and possible joint effort for ILBM Platform process.

5) ***Cross linkage of new issues:*** Cross linkages have emerged on such seemingly separate thematic issues as disaster prevention, child nutrition and maternity health, water and peace, health risk assessment and management, water and wastewater facility rehabilitation, etc.[x]

6. ILBM Platform as a basis for Pursuing Sustainable Lake Basin Management

How each of the case study lake basins will be able to improve its governance toward sustainability depends on a number of factors, with or without the ILBM Platform approach. For some lake basins, the conventional approach in planning, without explicit reference to the concept of ILBM, may be just adequate for addressing their sustainable management. The experience and lessons learned from the ILBM cases compiled over the years imply two things quite clearly. Firstly, lake basin management is not a project but a governance process, and the governance process will evolve, with or without ILBM, over many years, decades and centuries toward the sustainability goal that in many cases may never be reachable. Secondly, lake basin management even without explicit reference to ILBM is still ILBM in implicit way. Without explicitly recognizing, the conventional thinking in lake basin management is, when successful, always achieved through gradual but continuous improvement of lake basin governance. **Figure 4** illustrates that the process involving 1) acknowledge the state of lake basin, 2) identify issues, needs and challenges, 3) seek ways to improve the governance pillars and then 4) assess the governance pillars, as being continuously cyclic where the eventual goal is never explicitly stated. The figure also illustrates that there may be occasional opportunities for recollection of the wishful thought about the wishful vision of the fully accomplished lake basin sustainability, which of course is unlikely to be known, if not to exist.

The pursuit for operationalization of the concept of ILBM for practical application has reached a point where the development and implementation as well as cross fertilization of experience and lessons learned of ILBM Platforms ubiquitously promoted across continents is becoming extremely important. It is so because the lake basin governance challenges faced by individual lake basins are in fact the challenges to be shared globally by all lake basins because of the "integrating nature"

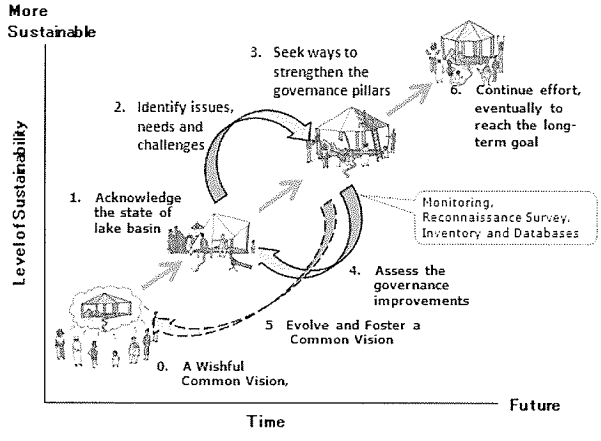

Figure 4 Gradually Emerging Target state of Governance in ILBM

encompassing far beyond individual lake basins toward the global dynamics of governance implications.

7. Supplementary Note

Apart from the Outline presented above, there is an array of outputs that have not been elaborated in this article. They include the analysis of all of the individual lake briefs and their implications to respective ILBM Platform activities, the thematic research activities on "governance" spanning across various disciplinary fields, the field application and analysis of the ILBM principles at selected case study lake basins in Japan, development and use of the LAKES knowledgebase system, and the activities undertaken through the research collaboration forum BPRF. The specific cases of ILBM analysis on lake basins in Nepal and Lake Lanao in the Philippines will be presented in the next part of this special feature article compilation. Also presented in the last part of this compilation is a research paper prepared in connection with BPRF on the assessment of meaningful participation of the public in the process of formulating a long-term basin management plan for Lake Biwa.

---

[i] The basic ILBM concept was developed during the process of summarizing the results of the Global Environment Facility (GEF) / World Bank project, entitled "Towards a Lake Basin Management Initiative," which was executed by the International Lake Environment Committee (ILEC) between 2003 and 2005. See, for example," How Can We Stop Degradation of the World's Lake Environments? A User's Guide to the GEF-LBMI Report, "Managing Lakes and their Basins for Sustainable Use", 2007. http://www.ilec.or.jp/eg/pubs/ILBM/ILBM_Report_E_07oct02.pdf

[ii] See the general outline of the thematic research projects are shown in: http://rcse.edu.shiga-u.ac.jp/gov-pro/plan/2009list/19thematic_gov-res.pdf

[iii] The Guidelines for Lake Brief Preparation is downloadable from: http://www.ilec.or.jp/eg/pubs/ILBM/Guidelines_for_Lake_Brief_Preparation.pdf.

[iv] The Laguna Lake "Experience and Lessons Learnt Report", the original lake brief prepared by the Laguna Lake Development Authority (LLDA) in 2005 was added with descriptions on new developments and was complemented with ILBM impact stories.

[v] In Nepal, The National Lake Strategic Plan was completed in Aril 2010, with assistance from IUCN-Nepal, with the identified activities in three program areas, i.e., governance, lake conservation, and sustainable development based on conceptualization, literature review and lake inventory, appreciative inquiry and expert consultations, filed visits and observations, and consultative workshops and documentation. The ILBM workshops played an important role through the process.

[vi] In Malaysia, the National Colloquium on Lakes and Reservoir Management, held in August 2007, was the first opportunity for the concerned organizations at the national, state, and local levels to identify the strategic program development needs in the areas of management plans and programs, research and applied study agenda, promotion of stakeholder participation, and capacity building and lake information system. It also set a stage for development of "a National Plan for Integrated Lake Management", based on the ILBM concept, with 8 case study lake basins selected initially for preparation of a lake brief, followed by another 8 having just initiated in April 2011.

[vii] In Mexico, the ILBM activities have been participated by 197 people from 53 institutions, including the federal, state and municipal institutions; public and private research organizations, civil society and producer groups. They were formed into networks to develop plans focusing on training, exchange of experiences and fostering of projects in the sub-basins. The National Institute of Ecology, together with prominent national universities, has been playing an instrumental role in engaging other national government agencies in the promotion of ILBM.

[viii] In the Philippines, as for the Lake Lanao case, where there are issues of contention and possible conflict, the ILBM workshop drew a crowd of participation far beyond the organizers' expectation and has since opened the way for collaborative resolution of contentious issues. As for the Rinkonada (Lakes Buhi, Bato and Bao) case in the Bicol Region, much awaited ILBM workshop was held for the first time in 2010. It played a catalytic role in bringing together participants from various stakeholder organizations, including local fishermen organizations, local government offices, universities and other research institutions, and the regional office of the Department of Natural Resources and Environment, to name a few, to deal with this extremely challenging situation.

[ix] In Malaysia, together with such national research institution as the National Hydraulic Research Institute of Malaysia (NAHRIM), National Academy of Sciences of Malaysia (NASMA), Drainage and Irrigation Department (DID), various Universities across the nation have been playing an instrumental role in assisting lake brief preparation and ILBM Platform development.

[x] There is an increasing number of attempts reported on such new subject areas to relate to ILBM as combatting against child malnutrition, poverty alleviation, disaster risks and their reduction, and water and peace. Specifically, there are lake brief supplementary information such as "ILBM Impacts on Biodiversity and Child Malnutrition: A Case Study of Tribal Belt in Western Part of IndiaIndia", "Jala Dindi – Pilgrimage on Water – A Unique Experiment to Integrate Tradition and Culture with Awareness and Conservation of Ujjani Lake and Its Basin, Maharashtra, India", " Participatory Aquatic Environmental Education as a Means to Promote Sustainable Watershed Management in the Northern-Thailand Tribal Communities."