

Thematic Paper

Institutional Aspects of Asian Lake Basin Management

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A. Introduction

This paper reviews the institutional aspects of lake basin management for the eight Asian lakes reviewed in this initiative. Its main focus is on eight overarching questions that are themselves derived from the lake briefs, from discussions at the Manila workshop on Asian lakes, and from an analytical framework, the latter included as a separate paper and outlined in Appendix 1.

B. Common (but not universal) Characteristics of Asian Lakes and Their Basins

More widely shared characteristics. As a whole, the Asian lakes were similar in a number of ways to the lakes of the Americas/Europe, as discussed at the first workshop in Vermont in the United States. The quality of the engineering work was high in both regions. The range and experience of institutional arrangements and administrative tools used for the Asian lake basins also were similar, at least on the surface. They differ in a number of important ways, however, from the African lakes in the project, as discussed in the following section. Like many lakes throughout the world, most Asian lakes are faced with a governance environment emphasizing decentralization, economic liberalization and wider stakeholder involvement, often triggered or impelled by budgetary crises at the national level.

Comparisons of the Asian and African Lakes in this Study.

1. The number of GEF-supported lakes in the Asia group is far smaller than for Africa, likely reflecting the relative autonomy of the management agenda of Asian lakes from international donors (with the notable exception of Tonle Sap).
2. With the exception of Xinghai/Khanka, all the Asian lakes are in a single country. In addition to case, only Tonle Sap lies within an international basin, with both appearing to be exceptional cases. An explanation for the relative high share of non-international lakes may lie in the fact that a large number of the countries either have large surface areas or are composed of islands. Half of the selected Asian lakes are even within the compass of a single second-level administrative unit, including Lake Biwa (Shiga Prefecture), Chilika (Orissa State), Bhopal (Maharashtra State), and Dianchi (Yunnan Province). In almost all cases, however, the basin as a whole extends beyond the above-noted administrative unit.
3. The population density in the Asian lake basins are usually high and often growing, either through natural increase or migration, although perhaps not at the rate exhibited for many African lakes. Where there is a high rate of migration relative to natural increase, as in Africa, tensions can arise between established populations and newcomers. This tendency also was noted for Lakes Biwa and Tonle Sap, and perhaps also is relevant for Laguna de Bay, Dianchi, Chilika and Bhoj.
4. In typical Asian cases, rapidly growing and shifting economies, often globalizing, generate even greater stresses than does population change *per se*. Examples include the growth of urban areas and industries around lakes; large commercial fishing activities, bringing with them capital-intensive fishing techniques (fish pens, introduced species, fish and shrimp farms, etc.); chemicalized agriculture; and water degradation from commercial (and often illegal) logging. Globalization and urbanization also affect African lakes (e.g., Victoria, Naivasha, Nakuru) to some extent, even though the national economies are not growing as rapidly in Africa as in Asia.
5. Compared to Africa, and perhaps also to some of the American and European lake cases as well, the administrative bureaucratic systems in Asia are well-established and comparatively dense, complex and stable (exceptions being Tonle Sap and possibly Toba). Indeed, it is possible that the governance problems associated with firmly entrenched interests and residual traditional reliance on top-down authoritarian decision-making have resulted in weak social capital, endangering the success of devolution and subsidiarity

programs. Climate appears to be less of a driver in the Asian lake cases than for a significant portion of the African ones (e.g., Chad, Lake Victoria, smaller Rift Valley lakes).

6. Ethnicity and colonial legacies appear to be less divisive in Asia than in Africa, although they are not absent. African states and administrative capacities tend to be “softer” than for Asia.

C. Overview of Asian Project Lakes from an Institutional Perspective

The institutionally-important features of the Asian lakes include their size dimensions (which are important for other reasons as well) and the administrative context (e.g., international), whether there is an institutional arrangement tasked with development or coordination activities on a basin-wide basis, and trends in human stressors (economics, population density, politics, etc.) A brief characterization of the individual lakes, from an institutional view, together with selected features of the relevant dis/enabling environments is provided in the following section:

Lake Biwa -- Although it is the largest lake in Japan in both volume and surface area, Lake Biwa and its inflowing watershed lie almost entirely within the Shiga Prefecture. The Prefecture has successfully defended its “administrative property rights” over the lake against the national government. Conflicts with downstream prefectures and the Osaka Municipality have occurred regarding both water quantity and quality issues. The Lake Biwa Comprehensive Development Program (1972-1997) provided compensatory construction projects, such as flow control structures and facilities, river improvement schemes, and regional sewerage facilities, some being aimed at environmental improvement, in exchange for water release rights by downstream administrations. A 1970s consumers’ movement against phosphorus detergents was eventually successful in eliciting positive, innovative responses from manufacturers and the government. The Lake Biwa Research Institute was established in 1982 to provide science-based policy research, with both the International Lake Environment Committee (ILEC) and the International Environment Technology Centre of the United Nations Environment Programme (UNEP) subsequently establishing offices in Shiga. The Prefecture has engaged in significant environmental awareness and education activities, and the Lake Biwa Museum provides a focus on lake management. Further, a Lake Biwa department recently was created within the prefectural government, although there is no free-standing development or management authority. Regulation of water users (including dischargers) is largely done by sectoral departments. Although the population of Japan is growing slowly, there has been a significant migration of commuter families into the Shiga Prefecture, whose wage-earners actually work downstream. As a result, Shiga has changed from a largely agricultural to a largely suburban prefecture, exhibiting one of the top average incomes in Japan. Tourism, lifestyles, and the nature of environmental interests have changed correspondingly. A divide has opened up between the south, which is changing most rapidly, and the north, which remains agricultural and traditional. Development and non-agricultural stressors are concentrated around the shallow and more fragile Southern Lake near the outlet.

Lake Toba -- Administratively, Toba is under the administration of the Environmental Impact Management Agency (Bapedalda) of North Sumatra, whose governor has set up a Coordinating Board for Lake Toba Ecosystem Preservation. The prospects are high, however, that this government-dominated committee will meet resistance at the local level. A proposal for a Lake Toba Management Body was abandoned in 1999, for example, because of resistance from local stakeholders. Local communities are traditionally rivalrous (beggar-thy-neighbor), with little well developed capacity for cooperation, despite their shared minority religious status as Christian Bataks, and the activism of at least some church leaders. Outside development to use lake resources to benefit non-residents has provoked strong resistance, especially against Indorayon. Proposed watershed developments are likely to damage the lake’s water quality. Decentralization policies have uncertain prospects, especially given the history of the centralized government.

Lake Dianchi -- The provincial capital of Kunming and its urban-industrial complex lie at the inlet of the lake (opposite from the Lake Biwa case). The sectors affected by lake degradation (fishery, lake transport, tourism) may be less powerful economically and politically. External funders, including international organizations as well as the central government, may serve a role in elevating the lake environment on the day-to-day agenda, although how or how well this process works is not clear. Agencies involved in lake management are “led” by the local government, presumably that of Kunming Municipality and/or Yunnan Province.

Lake Xinghai/Khanka -- This is the only lake in the Asian group that straddles an international border. Little coordinated management is apparent, either between China and Russia or within either country. The Russian side is suffering from economic depression. Although both countries have signed agreements regarding the lake,

it is far from the capital of either country, thereby minimizing its visibility. Ramsar status, however, may eventually impel some joint action.

Lake Chilika -- The Chilika Development Authority (CDA), established in 1992, was largely ineffective for 5 years because the Revenue Department dictated a controversial prawn and fish pen policy that relied on and (at least was the popular perception) benefitted outside capital, while local catches fell and the lake was degraded. Violent clashes with the fishers, and a change of government in Orissa in 1997, led to a management change at the CDA, producing what appears to be one of the most effective lake management authorities in these Asian lake case studies. A key element was an engineering solution to lake degradation (i.e., dredging a new lake outlet). Remaining problems include upstream development, watershed degradation, and institutional sustainability if either CDA senior management or the state government changes.

Bhopal (Bhoj Lakes) -- The Upper and Lower Bhoj lakes are quintessential Indian urban lakes, stressed by both watershed activities and heavy lakeshore users, including upscale real estate, religious rituals and launderers. The latter appear to be almost the exclusive target of management. It is unclear how or who manages the lakes at present, although it is probably done within the urban government.

Lake Tonle Sap -- Tonle Sap is very difficult to manage, as it is an open system in many aspects. It varies highly from season to season, and is closely linked to the Mekong River system in a passive way. Cambodia has weak governance and a low level of management capacity, because of its poverty, the devastation of the Khmer Rouge era, and ongoing conflicts between ethnic groups and between migrants and others.

Laguna de Bay -- The Lake Laguna Development Authority (LLDA) has an extensive, well-documented history of institutional development, including innovative funding arrangements and linkages with local stakeholders, including local governments. It is the most comprehensive lake management authority in this regard, with coordinating and regulatory functions, as well as promoting development.

D. Overarching Institutional Questions and the Asian Lakes

Eight overarching questions, or filters, were used to delineate institutional information from the Asian lake cases. These questions were derived from the institutional analytical framework presented in Appendix 1. One of the filters (“Whose perspective is heard in the brief, and whose is not?”) seeks to make explicit the institutional perspective of the author(s) of the briefs, noting that these views vary considerably and lead to a significant lack of congruity in presentation. It does not address institutions themselves, however, which has been provided separately as Appendix 3. The remaining filters, presented here for each lake, with reference to the pages and line numbers from the lake briefs as presented at the Regional Workshop in Manila, are:

1. Who “manages” the lake basin?
2. How are the key governance actors funded?
3. Who uses the lake basin?
4. What drives institutional changes?
5. What is the impact(s) of the overall governance framework?
6. How are governance and use conflicts addressed?
7. How is successful implementation carried out?

1. Who “manages” the lake basin?

Biwa -- The prefectural government has the lead role in managing Lake Biwa, having successfully defended its right to do so against the national (and regional branch of the) Ministry of Land, Infrastructure and Transport (formerly, Ministry of Construction), which tried to assume bureaucratic “ownership” rights over the lake in the revision of the River Law. The near one-on-one correspondence between the lake watershed and prefectural boundaries facilitates Shiga’s assumption of the lake’s management. At the same time, the Lake Biwa watershed is only the upstream portion of the Biwa-Yodo watershed, giving Shiga a “control” position, but also leading to friction over the management of the larger basin system, including natural and artificial downstream flows. The Lake Biwa Comprehensive Development Plan (LBCDP) was a mechanism for resolving this conflict, which has persisted through two renewals, but is no longer of great use to the downstream prefectures. A Lake Biwa office has been established within the prefectural government, although loyalty to line agency project and budget

orientation remains strong. Lake Biwa offers an interesting example of organization within the existing government structure, rather than through the creation of a separate development agency, as was the case for Laguna de Bay or Chilika.

Toba -- Formally, Lake Toba was in the purview of the Environmental Impact Management Agencies (Bapedalda) of North Sumatra and of the six Districts in the region. The Bapedaldas focus on studying environmental conditions, and do not coordinate preservation activities or initiate partnerships with other organizations (pg. 15, lines 3-10). An attempt to create a Lake Toba Management Body (LTMB), under a Presidential Decree prepared by the national Department of Tourism, Art and Culture, was abandoned in 1999 because of local stakeholder resistance (pg. 20, line 27ff). Particular concerns were expressed about Bataks being excluded from their land on the grounds of environmental protection; that preservation would rule out economic (especially industrial) activities altogether; and the LTMB would add an additional layer of bureaucracy that would attenuate the authority of the local government. There is a Coordinating Board for Lake Toba Ecosystem Preservation since 2002, established by the North Sumatra governor and consisting primarily of government officials (pg. 26, line 37).

Although the vast majority (87%) of the catchment is in the North Tapanuli District (Kabupaten), the district does not have the capacity to dominate lake management as in the case of the Shiga Prefecture and Lake Biwa.

The concept of management committee for Lake Toba has been proposed by various stakeholders, from government, private sector and NGOs, up to the community which aimed [at] the optimal development and preservation of Lake Toba. It has never been materialized, however, due to different perceptions and interests among the stakeholders (pg. 14, lines 25-29).

Dianchi – The lake briefs are not clear in regard to who has management responsibility. The statement, “The central government leads the national environmental protection bureau and the lake management institutions,” is followed by a simple characterization of the environmental protection bureaus as an administrative hierarchy (presumably reflecting the CRAES authorship; pg. 8, lines 40-44). This statement is followed by reference to an “integrated management plan” in the appendix (pg. 24) that turns out to be a list of national plans and construction projects, none of them under the environmental protection bureaus. Lake basins of national importance are the responsibility of the Ministry of Water Resources, not the SEPA, which may be the case for Dianchi as well.

Although page 4 (lines 26-30) notes that 2 districts (prefectures) of Kunming Municipality are within the drainage area of Dianchi, it is not clear if this includes all the drainage area. It also is noted that the “local government” established a management bureau for Lake Dianchi in 2002 (pg. 10, line 50). In the breakout session at the Manila Workshop, the Dianchi Protection Committee and Bureau was identified as the coordinating authority, being characterized as interagency.

Xingkai/Khanka – Being an international lake between two former enemies, the portions of Khanka/Xingkai that lie within China and Russia are largely managed in isolation by the two countries, respectively, although the lake brief indicates some agreements are being made. For the Chinese portion of the lake, management is made difficult by the presence on the ground (and water) of different administrative levels and actors, including the military, noting “Lake Xingkai and its drainage basin [belongs to] the People’s Government of Mishan City, the Xingkaihu State Farm, Xingkaihu Agriculture Factory of Heilongjiang Province and Army in China.” The result is “confused management” lacking a “unified plan” or “authoritative organization.” [pg. 4, lines 49-53].

Chilika -- Before 1992, the Orissa state Fisheries and Tourism departments were responsible for the lake. The Chilika Development Authority, established in 1992, was largely ineffective until 1997. During that period, the Revenue Department dictated a controversial (prawn, fish pen) fishing policy (pg. 5, lines 13-32). Chilika is a downstream sub-basin, however, with its future depending largely on what happens elsewhere on the Mahanandi.

Bhoj -- The Madhya Pradesh Lake Authority is largely responsible for the lake.

Laguna de Bay -- The Lake Laguna Development Authority (LLDA) is responsible for lake management, with increasing authority over the years, and likely increasing activities in the future.

Tonle Sap -- The lake is currently managed by the Cambodia National Mekong Committee (to the extent that anyone manages the lake). Because of the lake’s high variability, and its dependence on the flows of the Mekong River, Tonle Sap is particularly “unmanageable”. Its characterization as an “international commons” indicates there are a large number of international actors seeking a role in managing Tonle Sap. In addition, Cambodia has

weak governance, a low level of “administrative capital,” and also presumably a low level of social and human capital, due both to its poverty and to the devastation during the Khmer Rouge era.

2. How are the key governance actors funded?

Biwa – Participants at the Manila Workshop were particularly curious about budgeting and financial flows for Lake Biwa. They also appeared to be confused about the Lake Biwa Comprehensive Development Plan, which financed construction, as well as the financing of post-plan operations and maintenance. More information on these topics, including recovery of costs for sewage and irrigation water, would be insightful, as would the nature of the institutions that deliver and charge the fees. Some information on the revenue-sharing mechanism funding the LBCDP also might provide better understanding of how that functions.

Toba – The lake brief focused on funding of community-based watershed management programs. Other than the mention of a US \$3,200,000 wastewater treatment public works boondoggle (pg. 3, line 3) and a US \$40,000 seed grant from CSG/US-AEP (pg. 3, line 29), the lake brief did not appear to indicate any other funding sources. Although it mentions that the “main obstacle to project sustainability is the security of funding,” (pg. 23, line 30), there is no indication of how funding can be secured for lake management.

Dianchi -- Project funding comes mainly from various external sources, mainly loans (World Bank, national government, provincial government). “The local government leads the management institutions and give[s] some financ[ial] support” (pg. 11, lines 14-15).

Xingkai/Khanka -- Funding of lake activities in both countries is from governments (pg. 17, lines 8-9). A transboundary diagnostic analysis was supported by UNEP, and partially with Japanese Government funding, with possible support for a follow-up project by the two riparian countries (pg. 17, lines 43-51). However, the lake brief does not indicate an identifiable lake-specific “key actor” on either side, except perhaps from some level of the environmental protection administration.

Chilika -- State government funding to the CDA is seriously “insufficient” (pg. 25, line 10). Although reference is made in the lake brief to external fundraising, the sources of the funds are not identified in the cited annexure, which merely lists activities (pg. 25, lines 12 & 29). According to annexure 2, the major funding source is the national government (Ministry of Finance).

Bhoj -- No key institutional actor is clearly identified in the lake brief. Funding for the Bhoj Wetland Project comes from JBIC (Japan Bank of International Cooperation) (pg. 4, lines 13-15).

Laguna de Bay -- The lake brief contains an impressive amount of information on funding, perhaps because LLDA is the only “self-sustaining organization” among the Asian study lakes.. At the same time, however, the information also raises questions for even more elaboration.

Identified income sources are “regulatory fees and fines, laboratory services, resource user’s fee (aquaculture operation and water abstraction), and ... corporate investments and marketable securities.” (pg. 6, lines 1-4). The EUFS (environmental user fee system) was introduced in 1997 for Biochemical Oxygen Demand (BOD) loadings and has been expanded progressively since that time (pg. 14, line 15 to pg. 15, line:20). Adjudication and litigation are the means for handling non-payments (15:8-9). In a breakout session at the Manila Workshop, an LLDA official indicated that the externalization of dispute resolution may cause difficulties for LLDA.

There also seems to be a problem regarding what is to be done if, and as, the EUFS proves effective in reducing BOD discharges, causing a potential loss of revenue to LLDA (exposing it to possible regulatory capture by the dischargers), or forcing a politically- and ethically-difficult raising of discharge rates as the quality of the discharges improve, or else pushing the regulator to extend its regulatory net for revenues rather than environmental purposes.

Fishpen fees are a significant source of revenue for LLDA and lakeshore municipalities, even those without fishpens (pg. 17, line 18 to pg. 18, line 6). A remark in the Manila Workshop presentation on Laguna de Bay about how each new administration wants to redraw the fishpen map indicates this to be a very political, perhaps patronage, source of influence and funds. As stated in the lake brief, “The benefits from the industry... have gained the approval of politicians, businessmen, and even the Authority itself.” (pg. 36, lines 7-8) This situation might put the LLDA on the side of the (legal, fee-paying) fishpen operators and against others, including the “illegal” fishers who lack an “alternative source of livelihood” (pg. 36, lines 51-53). It is unclear who these fishers

are, and whether or not they are related to the marginal fishermen population of the 1980s. The description of different actors in the fisheries (legal and illegal), their political connections (e.g., local officials, whose governments receive fishpen revenues, coming to the aid of illegal fishermen; pg. 36, lines 50-51), and their changes over time is both confusing and tantalizing.

The lake brief also indicates that, even though the funds are self-generated, they are inadequate to address all mandates (pg. 1, lines 37-38), with funding flexibility “largely ... constrained by the Philippine Government’s multi-layered approval process for fund solicitation” (pg. 31, lines 8-9). External international funding plays an important role in the narrative, being cited as a major cause of improvements in LLDA’s administrative capacity and also, interestingly, its credibility (pg. 27, lines 13 - 16).

If, as proposed, the LLDA is allowed to expand into development concerns, it will establish a trust fund to implement environmental projects, including research and NGO activities (pg.31, lines 25-29).

Tonle Sap – Funding is very donor-driven, with heavy reliance on international funding, with NGOs creating initiatives. The lake brief suggests a lack of consistency of purpose, direction and scope among “well-intentioned international initiatives, facilitation and resource mobilization,” citing specific foci such as the Tonle Sap Biosphere Reserve (pg. 14, lines 8-12).

3. Who uses the lake basin?

Biwa -- The population of the Shiga Prefecture has changed considerably since the early-1970s, now having a high percentage of new migrants who work outside the Prefecture. Thus, a generation has grown up without a memory of a lake without algal blooms. These population shifts have doubtless affected popular attitudes toward lake management, and perhaps widened the “north-south” divide. Further, the flow of temporary visitors (tourists) appears to have increased, many (but not all) coming to directly use the lake, and most presumably on an individual basis, rather than on organized tours. This situation may lead to the visitor industry acquiring more influence regarding lake management.

Traditionally, fishery was a major user of Lake Biwa. Commercial fishery appears to have declined, however, as the fish catch has decreased. Japan’s fishing cooperatives are relatively strong, because they usually have some use rights over waterbodies. In the case of Lake Biwa, they have largely been unable to regulate their common use of the fishery, leading to over-fishing.

Toba -- The Christian Bataks occupy the lake basin. The lake project team claimed that, although minority religious status did not appear to handicap relations with higher government administrative levels, it would be a good idea to have this situation stated clearly. The lake has been an important tourist site, although the lake brief only indirectly discusses its importance in quantitative terms.

Dianchi -- Tourists and fisheries are onsite water users for amenity and environmental purposes. Industry, municipal (urban sewage) and agriculture are users of the lake, apparently primarily as a drain. The urban industrial aggregation is located upstream of the lake, opposite to that for Lake Biwa. Industry and agriculture appear to be the most important sectors, although no comparison is made with other economic sectors. Table 2 of the lake brief (pg. 18) provides industrial and agricultural output values, indicating that industry is considerably more important economically, even though agricultural runoff contributes 40% of the total nitrogen (TN) and 53% of the total phosphorus (TP) load to the lake (pg. 4, lines 33-35). The indications are that engineering measures are being taken to reduce sewage and industrial discharges to the lake (pg. 3, lines 51-54).

Xingkai/Khanka -- The main economic activities in the basin are “agriculture, mining..., some industry, fish and cattle breeding, forestry and tourism” (pg. 3, lines 56-57). The relative uses of the lake and its waters (including inflowing waters) by these activities is unclear. Water is drawn from the lake for irrigation, with some indicative figures given for the area irrigated (pg. 4, lines 23,28), but it is not clear how much water is drawn for this purpose or whether or not this withdrawal is sufficient to affect the lake? Reclamation and industry are carried out “in [the] core of the protection zone and thus is one of the main reasons for environment problems...” (pg. 8, lines 53-54). Agrochemicals are identified as a major contributor to declining biota in the lake, although the pesticide concentrations are declining (pg. 9, line 29). Inferences are made to forestry as a “user” of the watershed (pg. 9, lines 31-37). “Nature,” defined as that which is protected in a nature reserve, also is a lake user, but requires human agencies (e.g., WWF) to interpret its interests.

Chilika – Lake users include traditional fishermen, the Ramsar Convention and its local advocates; and (until recently) Tata Aquatic Farms Ltd. [prawn cultivation][pg. 11, lines 19-21]. Upstream consumptive (quantity, quality, silt) users are in the Mahanandi basin.

Bhoj -- Because these are urban lakes, there is a wide, heterogeneous variety of users. Domestic water users for non-consumptive uses include washing and bathing [pg. 4, lines 8-9], drinking [pg. 5, line 13], recreation [pg. 5, line 13; pg. 12, lines 35-36] and shoreline real estate developers [pg. 7, lines 43-44], *dhobighat* operators [pg. 6, line 5]; performers of rituals (e.g., idol immersion, floral offerings; pg. 6, line 8; sewage disposers (e.g., from growing slums; pg. 7, lines 34-35), and upstream users of water and land in the catchment [pg. 14, lines 14-25]. The latter are not discussed in much detail.

Laguna de Bay -- The lake brief states that the lake “is a multiple use resource but the dominant use is for fishery” [pg. 1, line 26] “The least recognized use of the lake is as a medium for the growth of other aquatic life and as part of the flyway of migratory birds” [pg. 2, lines 40-41] It has vastly untapped potential for recreation and nature appreciation [pg. 2, line 42]. “Rapid urbanization and industrialization have greatly increased the demand for environmental goods and services” [pg. 1, lines 11-12]. “It provides food, water for irrigation, power supply, cooling of industrial equipment and lately, ... a source of raw water for domestic supply” [pg. 2, lines 36-37]. It also is used for transportation and flood control [pg. 2, lines 36-38]. Informal settlers form a large part of the region's population, clustering in areas prone to severe flooding, that are environmentally sensitive, and that generate solid waste that is subsequently carried to the lake [pg. 13, lines 9-13].

Tonle Sap – The lake comprises an upstream and downstream (flood control) user of the Mekong River, with resident and seasonal migrant populations [pg. 2, line 57]. It has commercial and community fishers, the latter with lower incomes than non-fishing families [pg. 4, lines 30-36]. The lake receives domestic waste, untreated industrial effluent, and agrochemical runoff [pg. 4, lines 40-42]. However, there also are biodiversity advocates, such as UNESCO [pg. 4, lines 16-19], in spite of rampant illegal fishing in reserves [pg. 6, lines 29-30]. The lake also receives tourists, especially in the Angkor Wat area [pg. 10, lines 44-46]. Inference also was made to conflicts between resident and migrant populations, raising questions regarding the mechanism of seasonal migration and traditional rights, and how these have changed, etc.

4. What drives institutional change?

Biwa -- In general, Japan is known for the glacial pace of its institutional change. The positive side of this characteristic is that there is a high level of institutional (organizational) stability. Local governments are often more open to change than the national government, and have sometimes been more progressive in environmental actions, despite the many constraints on their decision-making powers imposed by the national government and its ministries. The Shiga Prefecture appears to have been a local policy innovator within Japan, especially on lake management issues, and has often been well ahead of external political forces (e.g., the national government).

The appearance of nuisance algal blooms appears to have been a major forcing factor in the anti-phosphate detergent movement, the creation of the Lake Biwa Research Institute (LBRI), and the promotion of sewerage treatment. The decline in the lake's fish catch has been significant in recent years, although the institutional response to this situation is not clear.

Although not mentioned in the lake brief, the new southern suburban population appears to be more “environmental” (as suburban populations tend to be), than the traditional northern agricultural and small-town old-timers. Part of the reason for this situation is economic, and part is because of the differences in the lake water quality in the north and south portions of the lake.

The LBRI and others have been instituted to generate policy-relevant science-based information regarding the lake, and their scientific research efforts have considerably advanced our understanding of the lake and its ecological processes. The extent to which science, and awareness of the environmental consequences of previous policies (e.g., shoreline development) drive institutional and policy change, however, is unclear.

Toba – Non-governmental organization (NGOs; domestic and foreign) pressures and influence appears to be important in the Lake Toba basin, as are wider political changes in Indonesia, including its decentralization policy. Foreign and non-local business interests are identified as being exploitative of the lake and its residents [pg. 17, lines 28-29], including Swedish aquaculture [pg. 17, line 31], hydropower plans [pg. 17, lines 37-39], and Indorayon, which was built by a powerful non-resident Indonesian family. The lake brief provides very little information on the well-publicized, often violent, protest movement against Indorayon. It would be useful to assess

what (if any) institutional changes resulted from the movement. Although some literature indicates involvement by churches and village headmen, this aspect is not explicitly discussed in the lake brief. Although mention is made of obvious deterioration in lake quality (e.g., oil; fecal coliform), it is not clear if it is possible to trace any direct connection between these data and policy responses.

Dianchi -- What drives institutional change in the case of Lake Dianchi, and further elaboration on this topic is desirable. "There is no incorporation of scientific information and research in the lake management program." [pg. 11, lines 47-48]

Xingkai/Khanka -- The lake has international status as a Ramsar Center.

Chilika -- Bloodshed, especially by police and publicized in the media, has a role in the institutional changes for this lake [pg. 11, lines 17-19]. The Chilika Bachao Andolan (Save Chilika Movement) in the mid-1990s, was identified as a "mass movement" somehow related to the "traditional fishermen community" (pg. 1, lines 44-46). An assessment of the ways in which this movement was related to institutional change, as compared to World Bank involvement in the river system as a whole, for example, would be informative. The dynamics of the protest movements (including others than the Chilika Bachao Andolan) may be found in an IDS paper by Ranjita Mohanty, but not likely elsewhere..

Bhoj -- "Drastic alternation of its morphometry and degradation of water quality... prompted the authorities to initiate the action plan for rehabilitation, protection and conservation of the two lakes. The outcome of this initiative was the Bhoj Wetland Project, funded by the Japan Bank of International Cooperation..." [pg. 4, lines 11-14]. The lake brief is clear in identifying what drove change, since deterioration was presumably a long-term process. It may have been the availability of external funding, or its entry onto the agenda of political parties, or citizen protest, or some combination of these factors.

Laguna de Bay -- The LLDA itself is a driver for institutional change, especially that which will secure its funding and institutional autonomy. "The potential of the lake and its environs for further development and the perceived threats from the rapidly changing character of the lake region" is identified as a driver for relevant legislation in the early-1960s, including establishing the LLDA. [pg. 4, lines 28-30]. Conflicts over fishpens also produced some institutional responses [pg. 36, lines 7-44]. Changes in political leadership and patronage networks appears to be a stressor, if not a driver, for institutional change. The role of science, and awareness of the state of the lake, on policy is unclear.

Tonle Sap -- The lake was designation as UNESCO Heritage Site [pg. 8, lines 11-13]. Whether or not there are any domestic drivers for institutional changes is unclear.

5. What is the impact of the overall governance framework (including decentralization, level of economic development and integrated basin management)?

Biwa -- There is a structural tension in Japan between the central and local governments, due in part to the overlay of a centralized Meiji structure adopted from continental European (especially French) models, and a decentralized post-war structure influenced by the United States. Centralization of tax revenue collection by the national government, and subsequent public works allocations to prefectures, has played a key role in Japan's governance and political system. Multi-party politics also is sometimes more contested in the higher income prefectures than in the country as a whole, which is largely a one-party democracy. Ministerial territoriality (*tatewari*) is notorious in Japan, although it is unclear how pronounced it is compared to other countries..

Toba -- With decentralization to local governments, coordination on a lake-wide or basin-wide level is very difficult. Community organization and awareness building appears to be an attempt to provide a counterweight to the pursuit of environmentally-damaging forms of economic development by local officials.

Dianchi -- Despite decentralization to provincial and municipal levels, governance is still very much top-down and engineering-oriented. Non-governmental stakeholders are basically not involved in either the design or implementation of programs [pg. 11, lines 31-32]

Xingkai/Khanka -- The complexity of its status as an international lake is compounded by a residual military presence. The Russian portion of the lake and its basin is in a state of economic decline, reducing water consumption pressures, but also making governance more problematic [pg. 12, lines 1-4]. Although China has a well-developed system of environmental laws and institutions [pg. 13, lines 48-50], implementation is still

problematic, due in part to a multiplicity of actors on the ground [pg. 4, lines 52-53]. China's administration has always had a complex interplay of vertical and horizontal authority (*tiaotiao kuaikuai*) that complicates environmental governance.

Chilika – The lake brief makes mention, though not explicitly, of a democratic system with changes of political parties and shifts in dominant-vested interests. Basin development along Mahanandi is important in the governance of Chilika. It seems that much has depended upon the personality and political skills of the current head of the CDA, and whether or not any efforts being made to reduce dependency of institutional performance on a single charismatic individual. Otherwise, this “strength” can eventually become a long-term “weakness.”

Bhoj – The lake brief contains little information on the governance framework.

Laguna de Bay – The lake brief provides an excellent study of the problems and possibilities of an integrated authority. Even though set up as a quasi-independent entity, with its own regulatory and revenue raising powers, the LLDA still has to devote a great deal of effort to maintaining or expanding its autonomy. Each time there is a change of Presidential administration, the continued existence of the LLDA as an independent entity comes into question, and proposals have been floated to either merge it into a ministry, or split it up [according to separate functions such as regulation and development]. The General Manager is a political appointee, and the lake brief characterizes this reality as a destabilizing factor. A counterargument would be that, as a public enterprise, having a political appointee as the chief administrative officer is a way to ensure its accountability to the public. Further, it provides someone who can supply the LLDA practical political experience and contacts.

The LLDA covers, or intends to cover, the entire Laguna de Bay basin, putting it in an intermediate administrative and political position between the national and local governments. It is not clear whether the consequent structural tension can be fully overcome, or whether its net effect is positive or negative in terms of ensuring representation by shareholders (especially “marginalized” ones, such as squatters and informal fishermen) and in lake management.

Tonle Sap -- Cambodia is still recovering from “three decades of extreme violence and political volatility that deprived most everything from the people and the communities” [pg. 13, line 28]. “A major concern pertaining to institutional linkages of the government system is probably the need to adopt the evolving decentralization policies such as Seila against the seriously disintegrated hierarchical system of governance, from the Mekong River Commission, through national and provincial authorities, all the way to the poorest and isolated communities across the lake watershed cum flood plains” [pg. 14, lines 4-8]. “Well-intentioned international initiatives” lack coherence [pg. 14, lines 8-12]. Further, Ministries “do not seem to maintain a good track record of cooperation” [pg. 14, lines 19-22]. “The overlapping zones, complicated with general lack of zone demarcation, and the changing fishery management practices” complicate wetland and biodiversity management initiatives. [pg. 14, lines 16-19]

6. How are governance and use conflicts addressed?

Biwa – The conflicts are addressed between governmental bodies, through interagency negotiation and political action. In the case of the anti-phosphorus detergent campaign, they were addressed through cooptation and legislation. Citizens have access to the courts, and one specific (and ultimately unsuccessful) suit was launched against the Lake Biwa Comprehensive Development Plan (LBCDP) by downstream plaintiffs. However, judicial procedures tend to be very slow and biased against anti-development plaintiffs.

Toba -- Major industrial water users (PT. Inalum and Indorayon) pay annual fees for environmental preservation. These fees appear to go to the district where the plant is located, raising the possibility that the funds are not spent optimally on preservation on the whole lake. In fact, the brief indicates that the use of the funds is “unclear” (pg. 21, line 15), and presumably diverted for other purposes. Further, the funds are paid to Districts that do not appear to be in the Toba watershed (cf pg. 12, lines 25-37; pg. 14, lines 2 & 13).

Dianchi – It is unclear how these conflicts are addressed, although it is presumably administratively.

Xingkai/Khanka -- How these conflicts are addressed is unclear, although they do not appear to be handled well.

Chilika -- Changes in water use rights allowing outsiders access provoked conflict [pg. 11, lines 11-13]. Although there appears to be a number of mechanisms for aggrieved parties to protest, they do not always prevent violence, including firing on protestors by police [pg. 11, lines 15-18]. Culture (Gheri) fisheries were banned by executive order in 2000 [pg. 25, line 21]. Problems from upstream areas, especially from intensification of agriculture under OWRCP, appear difficult to resolve, as are erosion and untreated sewage from the western catchment [pg. 10, line 53; pg. 11, line 9]. One of CDA's primary functions (at least for now) is to resolve conflicts between state and user stakeholders, and among governance stakeholders.

Bhoj -- The lake brief mentions public awareness programs, the relocation of washing facilities and idol immersion, and integrated approaches for resolving conflicts. It contains little information on conflict management institutions.

Laguna de Bay -- Unlike Chilika, the LLDA co-opted fish pens (or vice-versa) as a source of revenue (with allocation of pens at the whim of each new administration).

Tonle Sap -- The lake brief mentions creation of plans, legislation, and a decentralization program. However, no effective conflict management mechanism is noted.

7. How is successful implementation carried out?

Biwa -- The Manila Workshop provided many questions about implementation, and there appears to be a high level of compliance with regulations once they are enacted. If true, it is remarkable and deserving of some elaboration, including discussion of the role and relative importance of non-regulatory (informal regulatory?) mechanisms, such as administrative guidance and pollution control agreements.

Toba -- A popular protest closed Indorayon for several years (but not forever). Other than this occurrence, it is unclear whether or not there are any examples of successful implementation for this lake.

Dianchi -- There is a reliance on engineering works for this lake.

Xingkai/Khanka -- It is unclear whether or not there has been any successful implementation carried out for the lake.

Chilika -- An engineering project was undertaken to improve the lake's quality. There also was a withdrawal of use rights by outsiders, and subsequent development of CDA as coordinating agency.

Bhoj -- The polluting activities for this lake were relocated, with a reliance on engineering works.

Laguna de Bay -- The Philippines have both a well-developed legal system and an entrenched patron-client culture. Implementation involved licensing of fishpens, as well as (perhaps) the progressive extension of an environmental use fee system. Attention is needed regarding provision of recurring financial support to the coordinating agency.

Tonle Sap -- It is unclear if anything has been successfully implemented for this lake.

APPENDIX 1

Institutional Analytic Framework for Lake Basin Management (draft as of 11 March 2004)

The following is a sketch of an analytical framework delineating factors that could be considered in analyzing lake management institutions, and for making reforms and modifications in institutional performance in lake basin management. The framework is intended to cover lakes anywhere, but has been included here as it has lain behind the selection of the seven overarching questions used to filter the cases of the Asian lakes. One thing this framework indicates is the number and complexity of potentially significant institutional factors. Given this reality, the actual management of a given lake basin remains more of an art than a rote application of analytical principles.

1. Definition: "Institutions"; here are "rules-in-use."
2. Towards a framework: Fit, interplay and scale
 - a. *Fit*: Matching ecosystem properties and human governance activities [cf. World Lake Vision, Principle 1]
 - i. Sources of mismatches
 1. Poor scientific knowledge or understanding of indigenous knowledge
 2. Institutional constraints
 - a. Social institutions
 - b. Political governance
 - c. Jurisdictional boundaries
 - d. Bureaucratic politics and cultures
 - e. Embedded interest groups
 - f. Institutional rigidity
 3. Rent-seeking behavior
 - a. Economic
 - b. Political opportunism
 - ii. Examples of measures to address persistent mismatches
 1. Basin development and management authorities
 2. Policy-oriented research institutes
 3. Continuous review of implementation
 4. Institutional flexibility
 5. Precautionary principle
 - b. *Vertical interplay*
 - i. National government, local government, local communities
 - ii. International actors (NGOs, IFIs, capitalists etc.) and domestic parties
 - iii. Integrated management vs. subsidiarity/decentralization
 - c. *Horizontal interplay* (e.g., between agencies or prefectures)
 - i. Who are the key stakeholders
 1. Administrative units (e.g., prefectures)
 2. Bureaucratic units (e.g., agencies)
 3. Key non-governmental stakeholders
 - a. Formal, informal
 - b. Regulator, user
 - ii. How do they work together (or in opposition)
 - d. *Scale*
3. Examples of lake management problems with institutional implications
 - a. Physical signs of mismatches of fit [and responses]
 - i. Pollution [and its control]
 - ii. Decline in fisheries [and their management]
 - iii. Eutrophication [and countermeasures]
 - iv. Decreased biodiversity (including introduction of exotic species) [and countermeasures]
 - v. Shrinking of the lake size [and control over lake reclamation and occupation of lakeshore buffer areas]
 - vi. Reduction or intensification of inflow [and regulation of consumptive uses, watershed management (+responses to climatic change)]
 - b. Institutional signs of mismatches

- i. The entire basin is not adequately considered in lake planning and management [World Lake Vision, Principle 2]
 - ii. Decisions are made reactively, especially to crises [World Lake Vision, Principle 3]
 - iii. A “project culture” dominates, inhibiting long-term decision-making, sustained commitment to goals, broad stakeholder involvement and, possibly, good governance [World Lake Vision, Principles 3, 5, 6 and 7]
 - iv. Inadequate governance and accountability systems, including an inadequate legal system (enabling framework, specific laws and regulations, implementation, fairness and efficiency, etc.) [World Lake Vision, pp 8-9]
 - v. Funding and revenue inadequacies and distortions
 - vi. Conflict among overlapping agencies
 - vii. Conflicts between central government, local government, local communities, and other stakeholders (including inadequate coordination and participation)
 - viii. “Invasive economic species”: mismatches between outsiders linked to global markets and traditional (“subsistence,” non-global) users
 - ix. Ignorance of ecological or socioeconomic conditions [World Lake Vision, Principle 4]
- 4. Institutional themes related to the above problems
 - a. External support: strategic intervention
 - b. Integrated water resources management
 - i. Role of basin authority
 - ii. Institutional learning
 - iii. Social learning (social capital)
 - c. Property and use rights [especially salient with fisheries and watersheds?]
 - d. Relative roles of markets, hierarchies, and collective [especially fisheries]
 - e. Membership: who are the “stakeholders” (especially in “open systems”)? What is their proper role in project formulation, implementation and assessment?
 - f. Conflict resolution or maintenance
 - g. Generation, storage and dissemination of useful information
 - i. Policy-oriented research institutes
 - h. Efficient, accountable and financially sustainable use of water and land while addressing poverty
 - i. Lake user involvement/empowerment
- 5. Institutional questions applicable to the study as a whole
 - a. How can we measure success or failure of institutional measures?
 - i. Simple institutional diagnostics and design implications (from Young)
 - 1. Ecosystem properties
 - 2. Actor attributes
 - 3. Implementation issues
 - ii. Other ways of measuring
 - b. How transferable are institutional experiences?
 - i. Developed country to developing
 - ii. Developing country to developing
 - c. What kind of strategic intervention appears to be most effective? (Special focus on GEF/non-GEF)
 - i. Program foci of GEF (biodiversity, international waters)
 - ii. Regional foci (especially Africa, developing country)[look at exceptions]
 - iii. Funding policies and mechanisms [I may need some help on this]
 - iv. Indications of institutional catalysis (or lack thereof)[ditto]
 - v. GEF as part of a donor portfolio
 - d. What are the strengths and weaknesses of formal international institutional mechanisms cf. informal lake alliances, established informal networks?

Appendix 2

Memorandum on Breakout Session Discussion of Asian Lake Institutions, 4 September 2003

Moderator: J. Nickum (JN)
(Lakes not represented: Biwa and Xingkai/Khanka)

JN proposed five areas for discussion, as outlined below:

- 1 What are the leading institutional problems? [it was left up to the participants to interpret "institutional" in their own ways]
- 2 Who are the stakeholders and how are they involved (or not)?
 - Distinguish the management/governance stakeholders from the actual lake users.
- 3 What issues arise in vertical-horizontal interplay? In particular, what is the role of a coordinating/development authority?
- 4 What are the leading issues in the governance framework? [Not dealt with explicitly in the discussions].
- 5 Where are the gaps in the lake briefs? [Not discussed explicitly in the discussions].

Given the limited time, the focus was on the first three areas, as follows:

A. Leading institutional problems identified by the Breakout Group fell under eight categories (listed in the order raised):

- 1 Coordination
 - (a) Within government agencies
 - (b) Between the government and civil society
 - ① Domestic users: WUAs, fishery cooperatives, etc.
 - ② NGOs: Domestic, international
 - (c) Between multiple donor programs and their imperatives
 - (d) With politicians
- 2 Finance
 - (a) Transparency, especially of the government budget
 - (b) Accountability in the fee collection process etc.
- 3 Limited expertise, professional capacity
- 4 Information generation, exchange, and retention
- 5 Institutional sustainability (related to lack of retention of information, loss of institutional "memory")
- 6 Lack of trust
 - (a) In government (based on poor governance, past performance or lack of it)
 - (b) Due to perception of failure, generated by media focus on sensational events
- 7 Decision-making process
 - (a) Decisions made at inappropriate locations or levels
 - (b) Absence of transparency
- 8 Inappropriate organizational structure

B. Vertical interplay problems

- 1 Cumbersome approval process in vertical systems – need a single window.
- 2 Legislative rigidity in face of change, absence of legislation, lack of implementation.
- 3 Different levels and sectors of government are operating on the ground (in the water).
- 4 Authorities with approval powers lack expertise.
- 5 Conflict settlement mechanisms (e.g., court cases) often prolong conflicts
 - (a) Need to develop and give preference to alternative and informal dispute resolution (reconciliation, mediation)
 - (b) This may include giving the lake agency adjudicative authority (e.g., LLDA)

C. Horizontal interplay problems

- 1 Agencies' (and other agents') responsibilities are unclear and/or overlapping
 - (a) An example is China: Water Resources, Fisheries, Resources, Agriculture

- (b) Another example is Orissa and M.P.: Water Resource Dept., Irrigation, agricultural universities, Fisheries, Tourism, Environment, Transportation, Revenue/Finance, Cooperatives, water user associations, Forestry, Urban, Industrial, Land Use and Flood, Town and Country Planning
 - 2 Inter-ministerial coordination can be time consuming, and result in poor phasing with funding schedules
- D. Who are the coordinating (C) and regulating (R) authorities? (note decentralization as a forcing factor in some cases)
- 1 LLDA (under DENR) (C & R)
 - 2 Chilika DA (under the Revenue Department)(C)
 - 3 Madhya Pradesh Lake Authority
 - 4 Cambodia National Mekong Committee (C)
 - 5 Water Resources Department in Orissa and MP (for basin planning)(C & R)
 - 6 Dianchi Protection Committee and Bureau (interagency) (C)
 - 7 Authority is under construction for MP urban lakes
 - 8 Department of Lake Biwa and the Environment, Shiga Prefectural Government
- E. What are the lessons of LLDA? (Nepomuceno)
- 1 It is important to have a legal framework and authority that allows administrative flexibility to engage in “ready, fire, aim” approaches: Permitting, policy, financing, and implementation
 - 2 The agency needs to assert its authority, to let the users know it exists (via licensing, permitting, and coordinating projects)
 - 3 Things to avoid where possible:
 - a. Government appointment and dominance of the policy board
 - b. Imbalanced representation of stakeholders
 - c. Brief tenure of general manager based on political changes; appointment sometimes without regard to qualifications
 - d. Funding that does not carry over beyond a project
 - 4 Note: Other places (e.g., Orissa) have an alternative coordinating model with stronger government involvement (including the chief minister) but broad representation within the government and with other stakeholders at the table.
- F. Stakeholder issues
- 1 Differences in size and power
 - 2 Problem of legitimacy: Who has standing, and how representative are institutions claiming to speak for them?

Appendix 3

Whose perspective is heard in the lake brief, and whose is not?

Overview. The Asian papers were written from a number of different perspectives, making them sometimes difficult to compare. Lakes Chilika and Laguna de Bay are written from the perspective of their parastatal development authorities. Lake Biwa tends to take a local government view, as do, some extent, also Lakes Bhoj, Dianchi and Xingkai/Khanka. Lake Toba is considered from an NGO/community development perspective, while Tonle Sap is presented by involved outsiders as an “international commons”.

Biwa – The perspective is from the Shiga Prefecture, which is the primary coordinator and regulator, and shares developer status with the private sector, the central government (Ministry of Land, Infrastructure and Transport, formerly MoC Kinki Bureau) and downstream prefectures/municipalities.

Implications: The focus is on governmental policy, plans and regulations, and inter-government (cross-boundary) negotiations. The Prefectural government is spoken of as if it were a uniform entity. How things work *within* the “black box” of Shiga government is dealt with lightly (e.g., who speaks for the lake within the government; who is pro-development; how has the situation changed over time). It is implied that regulations, once enacted, are complied with, but it isn't clear if this is true. If so, why? Popular opinion is also treated as if it were uniform: “The people of Shiga ... “ Is this simply rhetoric, or is it based upon some measure of public opinion?

Toba -- The perspective is that of international organizations (e.g., UNESCO, LakeNet). Their focus is NGO activity, particularly community organization and participatory development. The arguments for this focus are that more direct community involvement can avoid wasteful aspects of top-down development and “bridge the gap between national policy and local practice.” (pg. 23, lines 17-18) Inference is made to other stakeholders, such as “government, business, industrialists, researchers, environmentalist even politicians,” but without details on how their interests specifically play out. Even the “community” is undersketched –there is nothing in the lake brief discussing religious dimensions and the role of the church, which is a core traditional organization in the community whose support or opposition could be critical to success.

Decentralization is seen (perhaps incorrectly) as opening the possibility for community involvement (pg. 23, lines 10-12), although there is little consideration of the pros and cons of supra-community governance alternatives, aside from the LTMB and the Coordinating Board. The linkages between these and the community also are sketchy.

Dianchi -- The perspective appears to be of an academic/bureaucratic nature. The lake brief raises issues in response to the checklist, but does not elaborate on them. The brief is sketchy on institutional matters (or engineering ones, for that matter). It would benefit from much more explanation of issues, alternatives and choices.

Xingkai/Khanka – The perspective appears to be of a Government think tank (perhaps Chinese Research Academy for Environmental Science, CRASE?). It is predominantly a Chinese perspective, although with consultation with Russia.

Chilika -- The perspective is of the Chilika Development Authority. The lake brief has a good section on linkages with other stakeholders. There is a tendency to report on the Chilika basin as a “stand-alone,” without contextualizing it as the tail-end of larger river basin system.

Bhoj – The perspective is of downstream urbanites, who are researchers.

Laguna de Bay – The perspective is of the LLDA, a coordinator, regulator, and (in theory) developer. This perspective may lead to inadequate presentation of views of other major players, such as local governments.

Tonle Sap – It is an International discourse (UNESCO), reflected in “international commons” rhetoric. It may underplay local concerns, because of the lack of a mechanism to articulate them independently of foreign financed agendas..