22 June 04
Lake Basin Management Initiative
Thematic Paper

The Role of Local Authorities in Lake Management

Prepared by
Aniruddhe Mukerjee
Deputy Secretary,
Department of Animal Husbandry and Fisheries,
Government of Madhya Pradesh,
Vallabh Bhawan,
Bhopal, M.P., India- 462004

Introduction

Lakes of the world are no strangers to the environmental catastrophe overtaking the world with the pervasive invasion of environmental degradation. Lake water diversion has caused decreasing water levels, eutrophication, acidification, introduction of exotic species, salinization, siltation and contamination by toxic substances are the major impacts threatening lake ecosystems worldwide. Lake water is perceived as belonging to everyone and no one, resulting in it being frequently undervalued and insufficiently managed.

Lake management issues involve many levels of government and a multitude of stakeholders and are thus not entirely within the sphere of influence of any one level of government. Management of lakes has become a matter of increasing concern to people and institutions all over the world. First, there are the stakeholders around the lake bodies, whose livelihood often depends on the health of the lake. The ongoing destruction of the lake ecosystem contributes to increased poverty and insecurity, particularly among the most disadvantaged, who are also those least able to plan for or mitigate environmental change. Their interests tend to be parochial unless there is an immediate danger to their livelihood if the lake is not properly managed. Often these people are not organized and are unable to articulate their views adequately, though the powerful among them form organizations to try and impose their interests on the community. Sustainable development initiatives to address environmental protection must provide for a more secure future for all citizens, especially those with the fewest resources. Only when people are secure in their basic needs can they be expected to embrace the forward-looking policies necessary to achieve a harmonious balance between human needs and the environment.

Another group includes the informed citizens' groups, usually academicians, researchers and the press who are able to express their views but these sometimes get lost in a climate of political and economic concerns. A number of NGOs play an important role in educating stakeholders and governments of the need to manage the lake and secure funds for lake conservation efforts, provided they do not overly concern themselves with narrow goals or are perceived to be platforms for individuals' promotions. A number of international bodies concerned about the

health of lakes try to promote an interest in their management through local projects, through publicity as well as discussions at international forums. National governments clearly have an important role as jurisdiction over the lake and its watershed generally rests with them, either unilaterally or, as is often the case, a number of such governments share the lake borders. Conservation policies are generally the function of such governments as are the sources of funding and regulatory powers. Finally, one has the “local” governments, constituted as municipal, district and regional or “state” governments, which are the bodies closest to the ground and have the responsibility of feedback, initiation of ameliorating activities and execution of policies.

It is important to engage all the different stakeholders, including environmental groups, business and industry, government agencies, farmers and individual citizens, in a dialogue for preparing the program for developing and managing lake resources. Finding effective ways to facilitate dialogue and to forge partnerships among these diverse groups in lake watersheds is the one important way to sustainably manage the world's lakes. Ultimately the future of the lakes rests in the hands of the people who live and work within the lake region and it is they who have to realize that lakes have to be managed as a common good and a finite economic water resource as well. Though global, national and regional bodies each have a role to play in achieving the above goals, local agencies have the major day-to-day responsibility for them by the very nature of their commitment. Hence they are the best placed for facilitating such a dialogue at the cutting edge execution level. Local governments need to be the key components of national sustainable development strategies if such strategies are to succeed.

Changing Role of Local Governments since 1992

"Local action moves the world." Since the Earth Summit at Rio-de-Janeiro in 1992, local governments have been catalysts for development and community leadership with a strong emphasis on partnerships with business (private) and civil society. There is an acceptance by national governments of the effectiveness of local action. The trend toward localization can build society's capacity to address sustainability by facilitating government action that is tailored to the unique social, ecological, and economic conditions of each place. This good local governance can enable the local government to facilitate partnerships and to respond to local needs in addressing the economic, social, and environmental challenges of sustainable development.

Local governments throughout the world have set up a Local Agenda 21 (LA21) process - a community based participatory planning process to integrate the economic, social and environmental dimensions of local development as an aftermath of the Earth Summit. This is a voluntary initiative by proactive local governments and is an effective mechanism for uniting citizen and government actions to achieve sustainable development. It is a participatory stakeholder-based sustainable planning process that integrates local priorities and actions into government decision-making.

The World Water Actions report presented at the Third World Water Forum mentions “Community organizations, NGOs, private and public sectors, local administration and national governments to work in partnerships for the best in water management because water is

everybody's business" and "Governments to focus on capacity building for the new institutions created by decentralization and their newly assigned roles and tasks".

The so-called subsidiarity principle states that water resources should be managed at the lowest appropriate level. There are many good reasons for this, but one of them is that water resources management issues at local level are often profoundly different from water (and land) resources management issues at the national level. In recent discussions at many world forums, the role of local participation has been given due recognition and weight. There has also emerged a sense of frustration at the disconnect between the rhetoric of conferences and the reality of actions that have followed. A sense of urgency has clearly been felt that these are real issues for real people and real action is now necessary, which is not likely to take place without consensus among stakeholders and support from the community. Participation, bringing in more stakeholders, making their different roles effective, and getting action through partnerships, is the key to getting this real action started and sustained in the long run. There was a general agreement that '*what is required is to make distributed governance effective'*. Distributed governance describes a system where many different parties have roles and responsibilities – government, civil society, private sector, individuals - with the State no longer acting alone. '*An effort must be made to co-ordinate the many actors related to lake water resources, plan harmonising mechanisms between them and take into consideration that it is unreasonable to have just one organisation deciding on lake matters*'. There is a trend towards distributed governance, the State's role is changing as civil society, communities, local government and the private sector take on more responsibilities. There are positive signs of the dynamic transformation from a centralised and overburdened State to a distributed network of players.

As the level of government closest to the people, local government are key actors in the field of fresh water management. Their position as service provider coupled with their ability to create behavioral change in their communities provides them with an opportunity to influence the way in which the population responds to the global crisis of pollution and mismanagement of freshwater resources. The leadership provided by elected representatives can lead to profound and rapid changes. Local governments have achieved success in making government more inclusive by encouraging representation from women, poor, youth and other marginalized groups and allowing direct participation by the people letting them influence decision-making more directly. Building local capacity and establishing local stakeholder groups that are interested and committed to achieving long-term improvements in local water management is a key to sustainable governance and management.

Local governments can develop participatory, multistakeholder strategies to implement sustainable development, respond to the communities' needs and provide good local governance involving the recognition of:

a) the importance of transparency, accountability, and participation in governance;
b) the critical role of integration in breaking down the compartmentalization of policy-making and program delivery within and between governments;
c) the need to engage in strategic partnerships which bring diverse perspectives to the table; and,

d) the central role that information, knowledge, and capacity-building play in ensuring an informed and sustainable process.

The world is currently facing a global fresh water crisis, but the situation facing each community is unique. Water issues are permanent features of communities and water resources management is a de facto part of local governance and will remain so in perpetuity. Everyday, local governments around the world respond to the needs to improve water security of their communities. They are doing so because they must. Despite not having complete jurisdictional control, it is the local authorities that bear the responsibility vis-à-vis the public.

Hence it is clear that lake water management plans and regulations can only be enforced locally with the support of local populations to be sustainable. Water quality enforcement provides a good example. Although legislature and effluent standards exist in many places experience has shown that regulation is often ineffective. But the regulation is enforced where local pressure is executed by those directly affected and where local government assures responsibility. This makes all the difference between regulation on paper and in practice. Empowering local authorities to work with other levels of government and community stakeholders provide a more stable foundation for sustainable development.

Local authorities take decisions related to land use zoning, transportation, construction, public health, protection and management of recreational and ecological areas, solid waste management, taxes and incentives for industrial growth. In all these decisions water resources are either directly or indirectly involved and impacted by the decisions that are made.

Local governments have a number of regulatory and economic instruments available to them that can help them influence public behavior. They can be categorized as rate structures and changes, fees for permits and other governmental services, special taxes and surcharges, incentives such as rebates and bonuses and fines and penalties. Regulation often focuses on establishing regulatory powers and legislation narrowed down to the formulation of new laws and in most countries there is a plethora of rules and laws. The ultimate test however is effective enforcement. In a recent meeting of local government representatives, most identified this as the single-most important issue in regulation. However, a variety of real world factors place limitations on their use and enforcement.

Present Status of Local governments in Lake Management

Individual local government successes in sustainable development abound. However these best practices have not been replicated, expanded or become commonplace because of systemic challenges and barriers to change. Yet, in spite of the subsidiarity principle, local water management is often the blind spot of overall water management plans. Local organizations are seldom involved enough and the local governments have not been able to play a significant role in arresting the degradation of lakes, and nowhere in the world have they been accorded the deciding authority in lake governance.

Current actions to address lake water management in local authorities and their related watershed areas are often fragmented and disparate. It is practically impossible for a local authority

working alone to tackle the complex multidimensional issues of integrated water resources management. They rarely have complete jurisdiction over the lake which implies cooperative action by a number of such bodies if they are to play a relevant role. Also in order to create changes, partnerships involving a wide range of stakeholders at a variety of spatial scales are needed. The current sector based water management practices of most countries make coordinated action difficult. Action strategies can be prepared for specific local realities but they are impossible to implement in isolation from the policies, investments and programs of other spheres of government.

In absence of significant penalties for over-abstraction and pollution of water, lake water resources are misused. Urban areas concentrate these actions and in doing so magnify their consequences and their impacts on the water quality. In recent times the volume of waste entering the lake system from agricultural, industrial and domestic sources is far above the sustainable carrying capacity limits.

Clearly a point of crucial importance is to study the different management structures, the responsibilities that have been allocated to different local and provincial bodies, the mechanism through which they may come together and play a role in managing the lake as well as the successes of the structure. The appendix gives in tabular form the management structures and the current status of twenty-eight of the world's lake basins. A perusal of this shows that each lake has its own location and history to contend with and that initiatives for preserving it have come from diverse sources, including governmental action, effect of international opinion and pressure from local stakeholders. However it is possible to classify them into several broad groups based on the type of organisation responsible for managing the lake currently.

The first group is of the lakes that are managed by a local government or by a number of local governments acting together. Clearly this is possible only when the lake lies within the boundaries of a single country, a situation which is true of a minority of the lakes studied here. There are only two such cases in the list, being those of Bhoj Wetlands in India, and Lake Baringo in Kenya. Bhoj Wetlands falls under the jurisdiction of the Bhopal Municipal Corporation (BMC) but on account of being the state capital the state government is executing the management plan using its departments as well as the BMC. Lake Baringo is controlled by the Baringo County council and the lake is managed through a committee with representatives from the government, community and NGOs.

Case Study: Bhoj Wetlands
The Bhoj Wetlands is located in the capital of the state of M.P and falls under the jurisdiction of the Bhopal Municipal Corporation (BMC) and had been subject to pollution by release of untreated sewage waters, property development activities on the lake fringe area and siltation. The State Government has been executing the Bhoj Wetland Project since 1995. The BWP has been able to institute corrective steps like catchment area treatment, desilting, removal of weeds and solid waste management. Some of the high pollution-generating activities have been restricted e.g. shifting of idol immersion activity away from the Upper Lake and removal of washermans' colonies from the lakeshore. NGOs are running an effective public awareness programme. The BWP has however been able to secure the full support of stakeholders. There is now a proposal to create a Lake Conservation Authority controlled by the state government with the BMC's and stakeholders participation to manage the lake.

In a second class is Lake Naivasha, where the initiative for lake management has come from local stakeholders, primarily through LNRA, which began as an association of property holders that has now expanded its membership to become more representative. It has drawn a management plan approved by the national government, which has also formed the LNMIC as a more wide body, having additional representation from district and national level and even one international member, the IUCN. LNMIC has no legal powers or formal budget and the plan is implemented through consensus building.

In the third group one may consider lakes like Biwa and Chilika, which are managed by single regional governments having jurisdiction over the lake. The powers of such governments are certainly more effective than municipal or district bodies and are not dependent on authority delegated by national governments. Biwa is managed directly by departments of the Shiga prefecture, whereas the Chilika Development Authority is under the direct control of the state government, with full regulatory and executive powers.

Case Study: Lake Biwa

Lake Biwa is a classic example of concerned citizens' movements that influenced the local government, the Shiga prefecture, to initiate action for lake preservation. The result has been that the local government has evolved over the years into one with an exemplary record in lake management and one that has taken the lead in many environmental activities within the country.

Housewives in the area were concerned about the incidence of diaper rash and eczema caused by synthetic detergents and had started a "Soap" movement in the beginning of the 1970s. Increased eutrophication of the lake, partly due to detergents containing phosphates, led to growth of exotic flora in the lake, causing taste and odor problems in drinking water as well as "freshwater red tide" from an algae. The Soap movement instituted a detergent boycott in 1977, which led to widespread awareness and soon spread to the entire prefecture establishing the "Citizen Forum for Conservation of the Aquatic Environment around Lake Biwa (Biwa-ko Forum)" in 1978.

The Shiga Prefectural Government supported the Soap Movement in full scale, starting deliberation about making an ordinance for that purpose. Detergent manufacturers responded strongly against this movement of the prefectural government, and deployed extensively an anti-campaign against the regulation of synthetic detergents. Ironically, this anti-campaign made more people in Shiga know the issue of phosphate-containing synthetic detergents.

Backed by strong public support, the prefectural government enacted the Eutrophication Control Ordinance in 1979. It was a trial for the first time in Japan to regulate not the activities of companies but ones of farmers and ordinary people. The Soap Movement born in the watershed of Lake Biwa expanded to become a nationwide movement to purge synthetic detergents. Within three years, most of prefectural governments in Japan had initiated some actions for the detergent issue. The Eutrophication Control Ordinance of Shiga Prefecture then had a tremendous influence on the water quality control of lakes and environmental movements in Japan,

Lake Toba is another lake which lies within the jurisdiction of a single regional authority. However in this case, no effort has yet been made to coordinate lake management except carrying out environmental studies and local bodies of the region control the lake in arbitrary ways. Raising awareness is done through NGO programs.

Apart from these, there are cases in which several other lakes fall within the boundaries of a single country but where the management of the lake is directed by the national government, either directly through government departments or through an authority constituted by it. In this group fall lakes like Laguna de Bay, Nakuru, Tonle Sap, Tucurui, Issyk-kul and Sevan. In the last four cases, lake management is yet to get off the ground and only preliminary studies are being carried out. In the other two, where a controlling authority has been set up, management process has progressed substantially. The case of Laguna de Bay is particularly instructive as the

LLDA enjoys wide regulatory powers and has been successful in taking several initiatives. In all such cases local governments play a peripheral role, primarily as members of an authority, where one exists. However, in some cases they have been able to execute environmentally significant projects and contribute to overall management.

Case Study: Laguna de Bay
Laguna de Bay conservation efforts were initiated by politicians from riparian provinces who got the Laguna Lake Development Authority setup in 1966 by presidential decree. The LLDA has a number of members including (1) regulators; (2) policy makers, planners, and coordinators; (3) developers (land and water including infrastructure development and provision of basic services); (4) research and development institutions; (5) resource users; and (6) Local Government Units (LGUs). It became proactive in conservation in the 80s and has a good record of management. It was the first agency in the Philippines to apply concepts of natural resource pricing in the form of fishpen fees and, more recently, the imposition of wastewater discharge fees. Another innovation has been Environmental User Fee Systems.

Conflicts between different stakeholders have been successfully resolved in some cases, aided by the regulatory powers the LLDA has. However there are other agencies with overlapping jurisdiction over some areas of the watershed and thus LLDA policies have not always been implemented. Government support has been vacillating at times, but several industrial houses have been persuaded into aiding the management.

Finally the largest group of the remaining sixteen lakes consists of those that are shared between a number of different countries, ranging from two in the case of Aral Sea to five in the case of Chad. The common situation here is that a lake authority or project has been set up to manage the lake by an interstate treaty/agreement and some powers have been delegated to this authority. The positions of the lakes range from model arrangements like the one arrived at in Champlain, where there is broad participation from all stakeholders, including regional and local bodies, user groups, the research community and concerned citizens in the decision making setup; to more informal structures like Constance, where the stakeholders participate through indirect methods. In many cases, like Dianchi and Nyasa/Malawi, such an authority is yet to be set up and any conservation effort is uncoordinated. The authorities are also a mixed bag; some have enjoyed a limited success, as in the case of Baikal or Ohrid; others, in spite of being in place for many years, have not really become effective, like Chad or Aral; a large number of others have come up recently and it is too early to assess their impact.

Case Study: Lake Champlain
The LCBP is a partnership among the States of New York and Vermont, the Province of Québec, the USEPA, other federal and local government agencies, and many local groups, both public and private, working cooperatively to protect and enhance the environmental integrity and the social and economic benefits of the Lake Champlain Basin. The 31-member Lake Champlain Management Conference (LCMC) was initiated in 1991 to lead the planning effort, including development of a comprehensive plan, conducting research and monitoring studies, and implementing an education and outreach program. After its dissolution in 1996 after producing a plan document, The LCBP Steering Committee is comprised of a broad spectrum of representatives of government agencies, the chairs of advisory groups representing citizen lake users, scientists, and educators. These advisory groups include: a Technical Advisory Committee, composed of resource managers, physical and social scientists, and economic experts; Citizens Advisory Committees from New York, Vermont, and Québec; an Education and Outreach Advisory Committee; and a Cultural Heritage and Recreation Advisory Committee. The first revision of the management plan was a two-year process that began in 2001 and relied extensively on partnerships with stakeholder groups, public meetings and citizen involvement. Since its inception, the LCBP has evolved into an internationally recognized natural resource management initiative characterized by inter-jurisdictional management, and the enhancement of the stewardship role of local leaders. Transboundary relations are guided by a sequence of nonbinding, nonregulatory consensus-based agreements. The LCBP process encourages open and public discussion, with subsequent meeting summaries (but without recorded transcript), so that committee members can freely explore decisions before making commitments. Many management policy debates arise from different perspectives on issues about which there is inadequate information. Flexibility in the decision-making process has enabled the LCBP to take an adaptive management approach to difficult issues. When scientific information is not adequate to guide a management decision, the LCBP allocates funds to support focused

and timely research or monitoring to address the knowledge gap.

The larger and more complex the lake organization, the more circumscribed is the role of local bodies. In the latter cases municipal governments have mostly interacted through membership in apex bodies and through execution of projects for the apex body, the last being a role particularly suited to them. It may also be noticed that lake management currently means only that of the lake and its immediate surroundings. However the greater issue of lake basin management, without which lake conservation efforts would fall short of their intentions, is rarely tackled, exceptions being lakes like Champlain, Laguna de Bay or Chad. In many cases the bodies creating the lake management authorities do not have jurisdictional authority over the lake basin/ watershed.

A glance through the above cases shows that municipal governments have the management control of the lake only when the lake falls completely within their jurisdiction or in that of a small number of such bodies within a single country. With larger ones, the management is the concern of a regional government, or the concern of a single national government with local municipal bodies involved in the execution alongside the regional government agencies.

However, the majority of the lakes considered here are shared by a number of countries and the management has usually been entrusted to an apex authority crossing their political boundaries, which is created by mutual agreement with some regulatory powers being entrusted to such a body. Since execution of the policies of the apex body is best done by local institutions, the latter find their role primarily in handling such projects, though in many cases they merely have a representation on the apex policy-making body without an actual executional role. Such a solution has been adopted even when the lake lies within a single country or region, and seems to be the role local governments are best suited to play – i.e. one primarily concerned with the execution of policies rather than making them.

Barriers to the functioning of Local Governments

Government structures & Institutional framework
While responsibility for the delivery of services is being funneled to local governments, the authority and resources to effectively meet the needs of citizens often is not. Local government is on the frontline of service delivery. It must have adequate authority and resources to address context specific issues. Unfortunately local authorities' efforts to influence water management in their communities are frequently restricted by their limited jurisdiction in this area and the difficulty they have in bringing other levels of government to the table.

Jurisdiction and conflicts and compartmentalization
Local government functioning is hampered by complex and unclear jurisdictional issues. Insufficient clarity regarding legislative jurisdiction results in inaction by all spheres of government on key issues or in uncoordinated action where the policies of one sphere of government undermines the objective of another. Lack of cooperation within and between spheres of government inhibits the holistic planning necessary to address all factors in sustainability. Sustainability will most likely succeed through local application within the context of cooperating spheres of government.

Allocation & management of resources

Local government lacks sufficient financial and human resources capacity to properly implement sustainability initiatives particularly when capital investments are required. Even if funding is available there is a lack of local control over stable funding sources on account of the dependency on grants, from the national governments. This results in short term programs.

Lack of political will
The relative brevity of electoral terms encourages the adoption of short-term goals with immediate results as compared to long range planning for sustainability where benefits will not be visible for years. Potential leaders in government, public administration and community are not recognized for their support and work in sustainability.

Local governments, especially in developing countries, have a poor record in showing necessary political will to use the powers that have been vested in them, especially financial and regulatory ones. The main reason for this lies in their attention to diverse responsibilities, where the lake and its watershed occupy a very low position on their priority list. Indeed, they have often emerged as one of the leading culprits in producing lake degradation by their indifference to pollution via urban sewage systems and by diversion of funds meant for lake governance to other activities; in some cases they have even opposed proposals to remove these pollution-generating activities. In many countries, the local governments are heavily politicized, and scoring a political point has often come in the way of evolving a consensus on doing what is best for the lake. In this way, local governments have acted much in the same hierarchical manner as distant regional or national agencies and have not been able to attract participation from an indifferent electorate, that views them as another institution of voteseekers. This has obviously weakened their claims to play a significant role as arbitrators of lake management efforts.

Long Term Role of Local Governments in Lake Basin Management

From the previous discussion it is obvious that the watershed/ basin is the most logical geographic unit to use in addressing lake management issues. However there appears to be a poor understanding among managers and the general public of the boundaries of the hydrological system. The strongly sectoral organization of governments does not usually lead to policies that integrate all of the cost and benefits of a proposed action into a common decision making process. Integrated basin management provides the management of lake water resources on a whole basin basis rather than by conventional administrative boundaries.

Local authorities on account of their sheer jurisdictional size can only be part of the watershed areas. As a result they are capable of initiating watershed or subwatershed management activities within their own jurisdiction. Local “sub watershed” management activity can play a significant role. In addition proactive local authorities can play a lead role in initiating watershed planning activities outside of their jurisdiction particularly where such activities impact on the security/quality of water to their communities. Working alone, local governments are not able to solve all of the issues. In conjunction with their constituents, however, they are in a position to bring together stakeholders to look for watershed planning to protect lake water resources.

Such efforts enhance communication between stakeholder groups and promote integrated action among watersheds and sub watershed interests. Local authorities are capable of mobilizing a

variety of local stakeholders including users of the lake such as local authorities, fisher folk, recreational uses, power generation company staff, water distribution & sewage authorities as well as catchment groups such as farmers, industrialists and urban community groups for providing a long-term solutions. Involvement of stakeholders is a fundamental part of integrated catchment management and requires community level participation.

From the previous analysis it appears essential to establish a single **lake basin management authority** and empower it with full responsibility and authority for managing the entire basin and fringe area of the lake. The authority would consist of representatives of local bodies, community groups and specialists and function as an information node and a facilitator for developing the capacity for community action. The lake basin management authority would enable a long-term partnership with local authorities and watershed committees consisting of the stakeholder community groups, which would implement the actual programme. The LCBP appears to be a good model in this regard.

There have been initiatives in developing countries over the past several years to harness stakeholder participation in areas of water management and there have been a number of successes in its programmes for water conservation through simple, labour-intensive techniques, which have been adopted readily. The watershed management will have to be viewed as a programme to be sustainable, not merely for lake soil erosion, nutrient and solid waste run off and toxic contamination control, but for **providing opportunities to neglected and weaker sections to have better access to the resources and will need to be implemented with a labour intensive strategy**. This would lead to poverty alleviation of the community in the catchment area which is essential for sustainability of any efforts of lake conservation.

The most important element of the strategy would be to make people the hub of all development activities. It is essential to bring diverse groups together and encourage them to come forward with their aspirations and needs and to convert community demand into community action. For this the bottom to top participative strategy would have to be adopted. This would hinge on:

- Establishing multidisciplinary coordinating structures at various levels to act as the facilitators for community organisation, capacity building, planning and implementation and community action processes.
- Making people the key actors in the programme in planning, implementation, monitoring, management and maintenance for which necessary community structures at village level in participatory manner have been evolved.
- Location specific and need based action plans.
- Involving people's representatives and members of local government institutions in the programme.

It is evident that local leadership, partnerships and initiatives are essential for achieving sustainability in the management of lakes. Local authorities are the one stakeholder that can ensure enforcement of rules and regulations concerning the basin management. Action and involvement of the local community and other stakeholders is a priority for effective long term water security. Management solutions will fail unless adequately supported by the community

that they are meant to serve. Lake water must be governed as a common good, managed as a finite economic resource and protected as the ecological formation of life. Regarding the value of water, the influence of the resource itself needs to be better understood in term of public health, economic development, sustenance, recreations, culture, aesthetic value and environmental requirements. Without this understanding the call for protection of the resource by all stakeholders with not be successful. Education and awareness raising is a key ingredient for conservation and proper management. This is best supported by the creation of a committed and empowered cadre of local political leaders. Progress towards more integrated use of lake water resources can be enhanced by the presence of enlightened local leaders and and/or effective local partnerships representing different interests.

Resources, professional support and capacity building of the local bodies is needed for helping them perform the desired functions. National governments need to become more receptive to facilitating local governments' access to financial and information resources, and to providing and enabling an environment in which priority issues, defined at the local level, can be addressed. There needs to be a strong and equal partnership between all spheres of government. The international, national and local must work together for success.

APPENDIX: Status of local participation in lake management

Lake	Local Government participation
1. Lake Naivasha	Example of grass roots management. Initiatives taken by LNRA established in 1929 by landowners subsequently to become broad based. Government has set up LNMIC, which has no regulatory powers, these being exercised through old laws about grazing and water rights. LNMIC membership is intended to be representative of more of the stakeholders' interests consistent with administrative and decision-making efficiency, whilst at the same time being a firmly locally based initiative. LNRA started the process of drawing up a Management Plan for the Lake, which would have the support of all sectors, and which was based on voluntarily adopted sectoral codes of practice under an overall management strategy. In 1996 the Management Plan was adopted by the membership and subsequently by the District Development Committee in Nakuru and thereafter by the Government as the official Management Plan for Lake Naivasha. As of today Lake Naivasha is completely locally managed.
2. Bhoj Wetlands	Bhopal Municipal Corporation has complete jurisdiction, pre-empted by state government, which has set up Bhoj Wetlands Project. BMC still executes some of the interventions and concerned citizens' groups and NGOs function to raise awareness. Lake Authority being proposed.
3. Lake Baringo	Baringo County Council has the authority for managing the lake supported by others like Fisheries Department, Kenya Marine and Fisheries Research Institute, Block Hotels, Kenya Forestry Research Institute and Community Based Organisations (CBOs). NGOs such as World Vision, Rehabilitation of Arid Environment Trust and others have also been involved in the lake basin management through facilitation. As a result of the project's awareness creation activities, the local people have decided to establish four community managed wildlife sanctuaries. The project successfully lobbied with Baringo County Council to establish a management committee for Lake Baringo ecosystem. The committee draws its membership from the County Council of Baringo, District Administration, other government departments, community leaders and NGOs and is responsible for the management of the ecosystem. It is currently working on developing an integrated management plan for the ecosystem.
4. Lake Biwa	Shiga prefecture has control over management through various departments. It was motivated by public movements against pollution and has since an exemplary and innovative record of management, enacting several laws that have been emulated elsewhere in Japan.
5. Lake Chilika	Regard for the lake merely as a financial resource led to degradation and protest movement by the fishing community leading to CDA being set up by the state government. The fishermen have also become conscious of the need to maintain the lake and have adopted suitable practices. An organisation called the CCCL consisting of CBOs and NGOs interacts with CDA to maintain the lake and also runs programmes to increase awareness.
6. Lake Toba	Government and local governments are responsible and have only carried out environmental studies to date. Districts have independent control of the lake portion in their zone. NGOs have piloted watershed management projects aimed at increasing awareness. In terms of stakeholders' participation in this project, a total of almost 1,000 community members were involved in the clean lake and community meetings.
7. Laguna de Bay	Laguna Lake Development Authority (LLDA) was set up by national government in 1966 backed by political leaders of lake provinces and provided with regulatory powers. LLDA has a number of members including (1) regulators; (2) policy makers, planners, and coordinators; (3) developers (4) research and development institutions; (5) resource users; and (6) Local Government Units (LGUs). Conflicts between these are common and LLDA has not always been able to resolve them as some activities (e.g. quarrying) are not under its control and local bodies oppose control of pollution via sewage and industrial waste. It has many successes including fishpen fees and environment user fees
8. Lake Nakuru	LNCDP set up by the government has established strategic partnerships with local communities and organisations, building on existing resources and skills and the critical element of demonstrating how conservation can generate economic benefits for people. The Project encouraged the formation of environmental committees at the village level and has run training programs and workshops. Many uneducated people have become environmentally conscious and now participate actively.
9. Lake Tonle Sap	Managed by separate government departments with no coordinating body. Plans being drawn up which may give local bodies a role.
10. Lake Issyk-Kul	Managed by separate government departments with no coordinating body. Plans being drawn

	up which may give local bodies a role.
11. Lake Sevan	No single controlling authority though local government and interested public can voice concern. Initiatives with government.
12. Lake Tucurui	Under government control. No local participation in management of the lake, actually a reservoir designed primarily for power generation.
13. Aral Sea	Riparian states have set up Interstate Council for Aral Sea Affairs (ICAS), which has no legal powers. Consensus building going on. Local bodies have no role yet.
14. Lake Cocibolca/ Nicaragua	Action still limited to binational agreements with little attention paid to stakeholders or local governments. Plan to include them but still very hazy. Municipalities organized in an Association of Municipalities of the Great Lake (AMUGRAN), which consists of 32 municipalities has agreed on a Declaration of Policies for Uses of the Lake Cocibolca and its basin and on their conservation. The AMUGRAN acts as a pressure group on the government.
15. Lake Dianchi	Still working out interstate agreements, little participation from stakeholders. Publicization of lake-related matters on China side. The local government established a management bureau for part of Lake Dianchi in 2002. The duty is to unify to manage, correspond, organize and actualize the task for protection and control.
16. Lake Chad	Lake Chad Basin Commission set up by agreement between four countries, (a fifth being admitted in 1994), but it has no regulatory powers and has to move by convincing members. Several local initiatives like rehabilitation of Logone wetland in Cameroon in 1993 by the community and associations of fadama (wetland) farmers as well as water users associations (WUAs) in Nigeria. Local governments play a part in promoting these. Advocacy brokered by IUCN in the Komadugu Yobe basin, has led to broad-based stakeholder participation in the resolution of upstream-downstream conflicts.
17. Lake Kariba	ZRA set up by treaty between Zambia and Zimbabwe with many powers still with governments. Plans being formulated. Local stakeholders have a role but none so far for local bodies.
18. Lake Ohrid	Interstate agreements in place and LOCP in existence, with representation from local bodies. Workshops and pilot projects to educate local community by NGOs as well as LOCP.
19. Lake Baikal	Representatives of regional and local governments sit on Baikal commission. Later law establishing Baikalprioda. Not much coordination between states of Russia and none with Mongolia. Funding from international bodies to protect biodiversity, none specifically for the lake except in sense of watershed management. Local bodies execute projects given by commission and these have proved successful.
20. Lake Constance	A commission IBKF monitors the lake and has induced regional governments to pursue environment friendly practices. Municipalities are similarly motivated via an aware public though public has no formal role. A number of local bodies have enacted environment statutes independently.
21. Lake Nyasa/ Malawi	Interstate cooperation with no local body participation. Project supported by international funds mostly on initiative from Malawi
22. Lake Xingkai/ Khanka	Management shared between various regional and local governments in both China and Russia with no coordinating body. Agreement in place between countries but action on the ground due to some local initiatives e.g. that of Mishan City on Chinese side. Protected reserves exist in both countries.
23. Great Lakes	The present era of resource management has seen the transition from a top-down, command and control, government dominated approach to a bottom up, partnership-based, inclusive one. An agreement between Canada and the US set up an IJC which has recently become more responsive to the public and representatives find a place in advisory panels. The Great Lakes states also have a council to discuss lake management and public awareness and the research activities of many universities also play a role in environment protection.
24. Lake Champlain	Model arrangement of cooperation between national governments of two countries, state and local municipal governments. Local citizens were encouraged to be involved and participate in all deliberations and policymaking.
25. Lake Peipsi	Interstate agreements between Russia and Estonia to set up Transboundary Commission, which is to consult NGOs and local bodies but yet to be set up. In the meantime management in hands of government departments.
26. Lake Titicaca	Interstate cooperation via ALT set up by Peru and Bolivia, which oversees corrective activities like dredging in the ecosystem. Local bodies have no share in management as yet.
27. Lake Victoria	Interstate LVEMP set up as well as other transboundary institutions. Stakeholder committees set up e.g. via BMUs for fishing but no role of local governments yet.
28 Lake Tanganyika	Interstate agreements in the process. No local government component as yet. Biodiversity protection agreements in place