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LOCAL GOVERNMENT WATER REPORT

Improving Local Management and Governance for a Shared Resource

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The International Council for
Local Environmental Initiatives

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Improving Local Management and Governance for a Shared Resource

Prepared by the international Council for local Environmental Initiatives (ICLEI)
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The **International Council for Local Environmental Initiatives** (ICLEI) is an association of more than 400 local governments dedicated to the prevention and solution of local, regional and global environmental problems through local action.

ICLEI was launched in 1990 as the international environmental agency for local governments under the sponsorship of the UN Environment Programme, the International Union of Local Authorities (IULA) and the Center for Innovative Diplomacy. ICLEI maintains a formal relationship with IULA and has official consultative status with the UN through which it advocates the interests of local government before international bodies.

ICLEI's mission is to build and serve a worldwide movement of local governments to achieve tangible improvements in global environmental and sustainable development conditions through cumulative local actions.

This mission is achieved through its international campaigns, targeted programs and technical services. The campaigns—Cities for Climate Protection™, Local Agenda 21 and Water—generate widespread political awareness and recruit local governments to make formal commitments to environmental improvement and sustainable development. Together, ICLEI's campaigns, projects and related services are designed to create high standards of performance and to ultimately produce tangible positive results **[www.iclei.org].**

RESEARCHED AND WRITTEN BY K. MORRISON

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EXECUTIVE SUMMARY

All action is ultimately local, and requires the support of local populations to be sustainable. However local authorities are often under-utilized as partners to promote sustainable development action in their communities and are often overlooked in efforts taking place within their boundaries due to political barriers. Empowering local authorities to work with other levels of government and community stakeholders provides a more stable foundation for sustainable development. It encourages greater recognition of the innovative work of local stakeholders, including the community and private sector, to improve their quality of life.

In spite of the enormous amount of attention paid to freshwater management issues (such as water pollution, water supply and sanitation) by international organizations over the last two decades, the global freshwater environment is deteriorating. The multifaceted and complex nature of humanity's relationship with this resource is at the root of society's inability to come to terms with its mounting "water crisis."

This paper highlights some of the key issues in global freshwater management as they impact upon local governments' efforts to address their individual water supply and conservation challenges.

- The world is currently facing a global freshwater crisis, but the situation **facing each community is unique.**
- **Water "issues" are permanent features of communities;** water resource management is currently a de facto part of local governance and will remain so in perpetuity.
- **Global climate change** poses a threat to current water resources and infrastructure that needs to be addressed at the local, regional and national and global levels.
- Water resource 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.
- Sustainable water resources management ultimately requires **moral and ethical leadership** on the part of governments.
- The **community** is often the most logical social unit of analysis to consider in addressing water services management.
- **Public, private and "informal"** economic sectors all have a vested interest in water issues.
- The lack of water and sanitation for some residents poses **health threats to all** of the inhabitants of a community. Local health problems, such as cholera and pneumonic plague, have the potential to become international problems[1].
- **Technology is ultimately no substitute** for the sound governance and management of water resources.

[1] The 1994 outbreak of pneumonic plague and the panic it caused in Surat, India, as well as the recent resurgence of cholera in Latin America (Water Aid, 1996) have caused international consternation. The ease with which water-borne diseases can spread within and between cities and countries through people, agriculture and livestock (including contaminated fish) turns these local results of inadequate water management into global threats to human health and wellbeing.

- **The principle of polluter pays** needs active promotion, but ultimately can best be achieved through effective governance.
- The watershed is the most logical geographic unit to use in addressing water resource management issues. **Watersheds can be defined at a variety of scales.**
- The provision of water services in communities is strongly linked to **land use and land tenure issues.**
- **Freedom of information** (such as who owns the land, who puts what into the water) made available to communities can be a powerful tool for change.
- The active involvement of **young people** is key to inspiring sustainable change.
- **Local politicians are community leaders;** they act on win-win opportunities and water can provide a number of these.

INTRODUCTION

As the level of government closest to the people, local governments are key actors in the field of freshwater management. Their position as service provider (water distribution, sanitation, etc.) coupled with their ability to create behavioral change in their communities provides them a unique opportunity to influence the way in which a large percentage of the human population responds to the impending global crisis of overuse, pollution and mismanagement of freshwater resources.[2]

Yet current actions to address water management in local authorities and their related watershed areas are often fragmented and disparate. They lack a common vision for the area that is supported by the community. This lack of a common goal, or framework for action, makes cumulative and synergistic benefits of local integrated water resources management programming difficult to achieve. In order to ensure that the needs of all water users (including non-human ones) are met in a sustainable manner, the current wasteful paradigm governing urban water resources management must change.

Inasmuch as it can be difficult for organizations to work together, it is practically impossible for organizations, working alone, to tackle the complex, multidimensional issue of integrated water resources management. In order to create sustainable changes, partnerships involving a wide range of stakeholders at a variety of spatial scales are needed. There are clear synergies between the ultimate goals of national, regional and local environmental protection efforts. Difficulty arises when organizations become entrenched in battles to protect their own interests at the expense of the broader vision. The current-sector based water management practices of most countries make coordinated action even more difficult. The need for dialogue and coordinated action is a prerequisite for effective water management.

To address these needs, this paper focuses on local management and governance solutions for water supply and conservation challenges. Good governance and the need for local action are discussed, including the need for ethical principles to effectively manage freshwater resources. The role of integrated water resources management and watershed management concepts in local government management of water is investigated. Links between water and climate change are presented. Sustainable development planning for water management through Local Agenda 21 (LA21) is highlighted. Finally, the role of LA21 processes in incorporating marginalized groups in successful water management is explored.

[2]It is estimated that by 2020, 62 percent of the population worldwide will be urban (Soussan et al, 2000).

EFFECTIVE GOVERNANCE

Motivated and empowered local authorities fill a unique niche in international efforts to improve the governance and management of water resources. They are able to create behavioral and organizational changes in communities. The leadership provided by mayors and city councillors can have profound and rapid changes in public perception and public commitment to changes in their behavior and attitudes.

Effective governance, particularly at the local level, is fundamental to sustainable changes in social and economic behavior on the scale that will be required over the next decade to address pressing water management concerns. According to Pugh (2001):

> **"The term "governance" is given a wide variety of meanings and is used in different contexts. Governance does not merely refer to the exercise of governmental authority, but is rather an expansion of the notion of government to include forms of collective decision-making, formal and informal, participatory and representative, and national as well as local."**

Effective governance in the water sector is particularly important given the increasing pressure on governments to negotiate and oversee private water management contracts, to provide water services to low-income communities, and to involve themselves in broader issues of water security and watershed management. Given the demands of competing and conflicting claims on water resources, and the impact that political leadership has in changing the way cities function, moral and ethical leadership from political leaders is needed in order to negotiate solutions. While transparency and accountability are cornerstones of sustainable change, ultimately real change must be supported by the actions of political leaders. As Pugh (2001) noted:

> **"Transparency can move the policy debate forward in terms of highlighting environmental and health inequalities and advocating policy debates among those with influence and education within cities. But it is argued that the willingness to be transparent can only really be facilitated by higher levels of ethical professional and personal behavior of those with power."**

To date, the moral and ethical dimensions of water resources governance and management have provided a significant barrier to effective and focused action. For example, the debate at the 2000 World Water Forum clearly illustrated that the question of whether or not there exists a human right to water has yet to be satisfactorily resolved. The need to protect a baseline "environmental flow" of water has been widely disregarded in a number of places—there are examples of very large river systems that no longer reach the sea.[3] The economic value of water is another area of debate—both its value in nature, and its value as an economic good. Water is increasingly becoming a limiting factor for development as the incremental cost per unit of "new" water increases. There are unresolved questions around the ownership of water both within and between nation states. And, last but not least, there is the incalculable intrinsic social, cultural, religious and aesthetic value of water that appears to be debated most intensely at the local level. The Dialogue on Water and Governance being organized by the Global Water Partnership in the build up to the 2003 World Water Forum is an important step in raising public awareness of this fundamental issue.

[3] For example, the Colorado River, which flows from Western Canada through the United States.

The Local Government Water Code—An Ethical Framework for Freshwater Management

In light of the current global water crisis of overuse, pollution and mismanagement of freshwater resources, and in the face of mounting evidence of global climate change, widespread changes are needed in the way water is managed and valued. In designing a sustainable water management campaign for local governments, it became apparent to local governments leaders in the International Council for Local Environmental Initiatives (ICLEI) network that many of the most complex issues, such as the provision of water and sanitation services, could not be resolved in the absence of a moral and ethical framework for decision making.

The Local Government Water Code is a global call for action for local authorities to resolve pressing and difficult water management situations sooner rather than later. To resolve these issues, local action planning processes need to be supported by a clear set of principles that guide them toward sustainable development.

In the area of integrated water resources management, the principles of the Local Government Water Code, given below, are serving as a framework to create a global movement of local governments that are committed to such ideals.

01 Access to clean and affordable drinking water is a fundamental right. As such, governments have an obligation to ensure water and sanitation services for all.

02 Water must be governed as a common good.

03 Water must be protected as the ecological foundation of life.

04 Water must be managed as a finite economic resource.

05 Water must be preserved as a shared cultural asset.

Through the ICLEI Water Campaign, local councils around the world are encouraged to: a) discuss the five principles contained in the Local Government Water Code (also known as the Lisbon Principles) with their constituents; b) supplement the Water Code with additional principles that reflect their unique local situation and priorities; and c) adopt the Water Code through a resolution of council.

In order to support this philosophical debate about the value of water, the influence of the resource itself needs to be better understood in terms of public health, economic development, sustenance, recreation, culture, aesthetic value and environmental requirements. Without this understanding the call for protection of the resource by all stakeholders will not be successful. Education both within the local authority, industry and general public is a key ingredient for water conservation and proper management. This needs to be complemented by the capacity to handle conflict resolution of competitive demands on water resources. This may be generated through public debate, dialogue and transparency in matters of water management and governance at the local level. This approach also creates space for traditionally marginalized groups to actively participate in water management.

The adoption of the code can be used as a mechanism for reviewing and updating local policies and bylaws related to integrated water resources management. Its value also lies in stimulating local debate over the principles and values that currently guide local decisions in water. Focused attention on the education and awareness raising of community leaders is a key aspect of moving sustainable development agenda forward. This is best supported by the creation of a committed and empowered cadre of local political leaders.

THE NEED FOR LOCAL GOVERNMENT ACTION

Through the cumulative impact of local actions, local authorities are in an excellent position to inspire global action to change the current water management paradigm. In the field of water resources management, local authorities have two important advantages:

01 they are the level of government closest to the people,

02 the geographic area they represent is impacted by the success of all the activities to maintain the health and wellbeing of all residents in that area (e.g., water and sanitation service, solid waste collection, urban drainage, social services, etc.).

These two features create a unique and powerful niche that local governments can use to protect, enhance and secure their water future. Action and involvement of the local community and other stakeholders is a priority for effective long-term water security. Water resources can no longer be taken for granted by those who live around them.

Given that "water is life," local governments have a moral obligation to provide all of their citizens with access to water services, and to protect those resources for future generations. Many local governments are also legally bound to provide water and sanitation services to the public, to protect the health of their residents and to comply with national water quality regulations. Trying to meet these obligations in a cost-efficient and effective manner has led local governments to question their current water management systems and to look for new solutions to their water management problems.

While the world is facing a shared global freshwater crisis, the situation facing each municipality is unique. Factors such as the administrative framework, history of infrastructure development, geography, prospects for future growth, access to funds and even the legal framework in each city combine to create very different water management scenarios. There is no single "correct" solution to freshwater management problems. Therefore, there are tremendous opportunities for local governments to learn from each others' experience and tailor other cities' programs to meet their own needs.

Although information exchange is extremely important and ad hoc solutions to isolated problems have had limited success, broad-scale processes such as LA21 planning and environmental management systems have proven to be much more effective and adaptable in addressing local water management concerns. Governance is a key issue, as time and again it has been shown that water management solutions will fail unless they are adequately supported by the community that they are meant to serve.

Properly designed water management activities can become catalysts for community involvement in the wide range of local management processes. This involvement can free up significant in-kind and financial resources within communities. It can also provide local politicians with a base of public support on which they can build to undertake larger scale water management processes within their jurisdictions.

Every day, local governments around the world are forced to respond to the need to improve the water security of their communities—in terms of service provision, water quantity and quality, and environmental protection. They are taking action in these areas in full recognition of the fragmented government jurisdiction over water resources management—within the boundaries of their municipalities and water supply catchment areas. They are doing so because they must, not because they are experts in water management issues. On a day-to-day basis, actions that impact urban water resources take a wide variety of forms and cover the full spectrum of issues. For example, local

authorities make decisions related to land use zoning, transportation and transit, construction, public health, education, protection and management of recreational and ecological areas, solid waste management, taxes, and incentives for industrial growth. In all of these decisions, water resources are either directly or indirectly involved and/or impacted by the decisions that are made. Whether local action is helpful or harmful, moral or immoral, polluting or protecting often depends on the circumstance and perspective of the perpetrator of the action. Industries need water for their processes, farmers need water to grow crops and human beings need water to live.

Even in the absence of formal water distribution systems, water is obtained. Similarly, in the absence of formal sanitation facilities, the biological processes of elimination continue. In the absence of clear land use and land tenure regulations and restrictions, settlements are constructed. In the absence of significant penalties for the over-abstraction and pollution of water, water resources are abused. Urban areas concentrate these actions and, in doing so, magnify their consequences and their impact on water resources.

The long-term cumulative consequences of poor water resources management have been clearly illustrated in a plethora of recent articles and publications (see Literature Cited). Factoring in the externalities of neglecting water resources makes the consequences even more apparent. According to the World Water Council (2000):

"Rapidly growing cities, burgeoning industries, and rapidly rising use of chemicals in agriculture have undermined the quality of many rivers, lakes and aquifers. The industrial revolution turned the Thames into a stinking black health hazard as it ran through London in the late 19th century. Major investments in wastewater treatment and cleaner production have gradually restored its recreational and environmental value."

"Most large cities in newly industrialising and developing countries have rivers in the same condition as the Thames in the 19th century. They are a health hazard. They threaten downstream irrigation areas. And they destroy ecosystems."

Water management examples from the developed world teach us that it is more advantageous not to degrade water resources, than to consequently take reactive and expensive measure to repair them (for example, urban stream daylighting). Despite the strength of their economies, and the sophistication of their technology, people in developed world cities are still living in close proximity to polluted waterways and are still threatened with mortality and morbidity from drinking contaminated water. In May 2000, in Ontario, Canada, seven people died from drinking tap water contaminated with the pathogen *Escherichia coli.* Throughout the world, experience has shown that financial resources and technology are ultimately not an effective substitute for the sound governance and management of water resources.

Urban Stream "Daylighting"

The daylighting of urban streams—returning underground streams to surface watercourses—aims to increase aquatic and riparian habitat, and improve water quality and the recreational and aesthetic value of neighborhoods. In addition to these objectives, which support biodiversity and human quality of life in urban areas, it has been shown to be a cost-effective alternative to expensive culvert replacements.

In the city of Zurich, Switzerland, the daylighting of perennial and ephemeral brooks has become city policy in order to divert clean water from the city's overloaded sewage treatment plant. Since 1988, the 14.5 km of brooks have altogether diverted an average flow of 17 million litres per day from the city's two treatment plants.

Daylighting practices have been documented in Canada, Denmark, the United Kingdom, Germany, Switzerland and the United States of America. (Source: Pinkham, 2000).

INTEGRATED WATER RESOURCES MANAGEMENT

Integrated water management for local governments focuses on the interrelationship between the activities and policies of various local government departments and their cumulative impacts on the water environment. It addresses policy, administrative, service delivery and infrastructure concerns within a municipal corporation and the need for improved communication between levels of government and other actors in the urban water management arena.

The integrated approach contrasts with the more traditional "silo" approach to environmental management that is still prevalent in many local, subnational and national governments. The approach is new in that it calls for changes in management, not for changes in other skills. The focus is on sharing existing knowledge and skills.

The silo approach has traditionally divided environmental management considerations by service function. Even in communities that have a demonstrated record of strong environmental performance, failure to develop policies and programs in tandem with other departments invariably leads to lost opportunities for environmental protection and cost-effective service provision. This weakness has been particularly apparent in the water sector. For example, the Swiss Agency for Development and Co-operation (SDC) found that the success of a water supply project may make other water problems in a city worse. In a review of its experience in Cirebon, Indonesia, the SDC (1995) noted that:

"The manifold increase in supply tended to exacerbate the long-standing problems of surface water drainage and sanitation... Consideration of the transsectoral framework from the outset contributes to more efficient planning and implementation."

Integrated water management also helps address water resources impacts that fall between local government service areas, for example, between:

- solid waste and urban drainage,
- water quality and water supply,
- land use and urban drainage,
- land use zoning and water services,
- land tenure and water rights,
- human health and water services,
- water supply and finance,
- sanitation and finance,
- sanitation and water supply,
- environmental quality and property values,
- community education and environmental issues,
- industrial pollution and wastewater treatment,
- energy and water use, and
- sanitation and urban drainage.

The failure of local government departments to adequately address these relationships is a common cause of local water management problems. For example, the clogging of stormwater drains by solid waste causes local flooding, inefficient water pumping systems waste valuable energy resources, and the pollution of local water resources reduce tourism and recreational revenue and increase water supply and health service costs.

Ignoring storm runoff and local floods has often resulted in complete failure of the sanitation projects in developing countries.

SOURCE: MAKSIMOVIC, 1999

Effective water governance systems place a great deal of value on effective information sharing and prioritization within a municipality. In the urban context, the ICLEI Water Campaign has found that these actions commonly take place within three areas:

- the municipal corporation,
- the community, and
- local watershed areas.

Shanghai, China, "had to move its water supply intake 40 kilometers upstream at a cost of $300 million because of degradation to river water quality around the city."

SOURCE: WORLD BANK, 1992 IN: WRIGHT, 1997

Such communication can significantly, and efficiently, reduce the impact of urban development on the freshwater environment. Coordinated efforts can also reduce municipal costs related to water management and other management areas (e.g., road maintenance, public health costs, etc.). Over the course of a few years, the savings provided by more efficient, coordinated actions can more than compensate for the cost of undertaking the process. In most areas, sufficient knowledge currently exists to reduce the negative impact of local government operations on the freshwater environment. The problem is that this knowledge is not effectively shared between local governments.

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. Despite the fragmentation of local councils' direct responsibility in the area of water management, they bear the burden of public health problems and social malaise that is caused by inadequate water and environmental sanitation services and poor ambient water quality. National governments need to become more receptive to facilitating local governments access to financial and information resources, and to providing an enabling environment in which priority issues, defined at the local level, can be addressed.

Jurisdictional Problems

The matter of jurisdiction [in Bangalore, India] is further clouded by the fact that the powers of local government institutions are regularly and legally usurped by other bodies at the request of the state government.

For example, from the beginning of May until late July 1995, the Bangalore City Corporation was run by the Mayor, the head of the Development Authority, the Mayor again, the head of the Development Authority again, the Housing and Urban Development Secretary and, finally the head of the Development Authority again. Among other things, the corporation is responsible for dealing with sewage and waste issues in the city (Source: Perry, 2000).

Local councils are confronted by the economic cost of damaged freshwater ecosystems through, for example:

- increasing costs for water and environmental sanitation services;
- property damage from flooding and drought;
- reduced tourism and recreation income; and
- lost wages and productivity, and increased health care costs, due to water-related illness, such as gastroenteritis, hepatitis and cholera.

These costs are often borne by municipal budgets, despite the fact that the root cause of the problem may not have come from within their area. Since the external costs of poor water management frequently run downstream, in the decades ahead the impact of global climate change on water resources will add yet another element of cost and complexity to the issue.

Local governments have a number of regulatory and economic instruments available to them that can help them influence public behavior. The economic instruments in use by and available to local governments can be grouped under the following major headings:

- rate structures and charges,
- fees for permits and other governmental services,
- special taxes and surcharges,
- incentives, such as bonuses and rebates, and
- fines and penalties.

Local authorities use these instruments to varying extents depending on the regulatory environment in which they operate. With increased decentralization and devolution of responsibility to local governments, their ability to use such instruments effectively is expected to increase. In the end, however, economic instruments, similar to other tools, are imperfect. A variety of real-world factors place certain limitations on their use, including leakage and boundary effects, split incentives, and conflicts of interest.

WATERSHED MANAGEMENT

Urbanization has dramatically altered the hydrological cycles of local and regional environments. The result often has been a reduction in the efficiency of water use and an increase in wastewater management and flooding problems. The most effective and comprehensive long-term solution to water management problems is to prevent the export of local water problems—whether they are water supply demands or water pollution problems—further downstream. Solutions to the global freshwater crisis will ultimately be founded on strategies that are harmonized with the capacity of local hydrological cycles and local ecosystems.

WATERSHEDS and AQUIFERS

The watershed management philosophy applies equally well to the management and protection of surface water and groundwater resources.

A watershed area may be delineated according to the drainage area of an aquifer.

The ability to realize the benefits of a safe and continuous freshwater supply has been jeopardized by human society's collective over-exploitation of water systems' ability to accept and remove domestic, industrial and agricultural waste. The "carrying capacity" of any freshwater system[4] is bounded by the local characteristics of the water ecosystem. When the carrying capacity is exceeded, the system is jeopardized.

The carrying capacity framework supports the notion that freshwater resources are inherently "renewable." Indeed, the complex interaction of the system's flora, fauna, hydrology and geology allows for a certain amount of self-purification and regeneration. In recent times, however, the volume of waste entering water systems from agricultural, industrial and domestic sources has obliterated sustainable "carrying capacity" limits. Instead of being "removed," the hazards and costs of water pollution have increasingly been transferred to downstream water users. In addition, rates of water extraction are often well beyond that which can be replaced by natural means. In other areas, flooding is increasingly common due to widespread changes in land use patterns and the morphology of complex river systems. In order to bring a holistic consideration of upstream and downstream issues to the table, a watershed management approach is necessary.

The UN's Economic Commission for Latin America and the Caribbean (ECLAC) has taken a strong interest in promoting greater municipal involvement in watershed management activities. According to ECLAC (1998):

"The worst water-related problems are not physical or technical—they are related to the policies, laws and organizations that exist for the management of water, and to the form of citizen involvement in decision-making."

The Commission also noted that nonstructural options are more favorable than structural ones in the majority of cases given that structural controls are highly dependent on effective and stable long-term financial and institutional arrangements (ECLAC, 1998).

[4]"Carrying capacity" may be defined as the amount of water extracted for human use, and the amount of effluent (including solid and liquid waste) being discharged, that a water ecosystem can handle without being disrupted.

Watershed planning is a process that can be approached in a number of different ways, using a wide variety of techniques. Regardless of the theoretical framework used to develop the watershed plan, the value of strategy building lies in its ability to facilitate meaningful conversation about regional environmental policies that have direct impacts on the quantity and quality of the freshwater resources that are available in the watershed area. As the UN Centre for Human Settlements (UNCHS, 1999) noted:

"...strategy-building is not simply a technical exercise, but is an activity of consensus-building and compromise across a range of technical, political, social and economic factors and interests. This point is especially important for environmental issues, which cut across sectors, across geographical boundaries, and across time."

Whatever their form, watershed associations are generally responsible for either:

- all of the natural and constructed resources in the watershed area,
- only the area's natural resources,
- only the area's constructed resources, or
- only the water resources in the watershed area.

The involvement of the water users and polluters, the local government and the state is paramount. It is particularly important that the rules of participation are made very clear so that private interests can make decisions based on the information they receive.

It must be noted here that no one project can manage a watershed (ECLAC, 1998). A multitude of projects on a variety of social, economic and environmental topics are needed and their combined effects will be that which influences the quantity and quality of the water that is available within the watershed area. Given the trend toward the decentralization of responsibilities to the municipal government, the need to undertake a number of coordinated activities with other members of the watershed area is becoming increasingly important.

Working alone, local governments are not able to solve all of their water-related problems. In conjunction with their constituents, however, they are in a position to bring together other stakeholders to look for broader solutions—such as watershed (or catchment) planning—to protect valuable water resources.

Watershed Planning Framework

According to the Government of Ontario, Canada (1993), watershed planning and management can be considered as a five-part framework that defines, on an increasingly detailed and localized basis:

01 broad water and related resource goals and objectives on a watershed basis;

02 basic management strategies identified in a watershed management plan to meet stated goals and objectives and principles;

03 specific directions to guide land use planning decisions through the development of subwatershed plans;

04 water resource requirements on individual land parcels through site specific plans such as a stormwater management plan and development conditions that will meet the goals, objectives and principles of subwatershed plans; and

05 specific management techniques through site plan controls, stormwater management plans, subdivision agreements, and erosion and sedimentation control bylaws.

These components constitute levels of planning, but also aspects of watershed management when implemented. At all levels, clear roles and responsibilities are assignable to appropriate agencies or groups, and provisions are made for full public consultation.

Local authorities frequently both contain, and are part of, watershed/catchment areas. For this reason, they are capable of initiating watershed management activities within their own jurisdiction. Local "sub-watershed" management activity can play a significant role in uniting communities. In neighborhoods around the world, watershed planning activities such as volunteer water quality monitoring, tree planting and "garbage clean-ups" have become major civic activities. 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 and/or the quality of potable water supplies for their populations. Such efforts enhance communication between stakeholder groups and promote integrated action among watershed and sub-watershed interests.

Local authorities are capable of mobilizing the action and interest of a variety of local stakeholders (including industry, community groups, the media and educators) through a combination of public education, regulation, and proactive, supportive programming. Watershed planning at the local and regional level is fundamental to providing long-term solutions to water management problems. Sub-watershed planning has the power to unite communities. Local authorities bridge the gap between local and regional water management activities by looking out for the long-term water security of their inhabitants.

Within the local authority there is a need for greater recognition of the linkages between urban development and changes in local hydrology. Currently most cities are interested in dealing with surface runoff and have made little effort in dealing with the problems associated with groundwater until this resource has been over exploited. Other linkages only appear to gain prominence during extreme events such as drought or flood. Urban managers need to move away from the departmental approach and improve communication between land use planners, environmental departments and service sectors.

Institutional changes to allow for catchment-wide management of the watersheds are possible. Examples from the city of Rio de Janeiro, Brazil, have shown that even within the local authority it is possible to merge jurisdictional boundaries successfully with the watershed boundaries. This allows for easier management and protection of the watershed. This is also the pattern in the rural areas in Japan, where each prefecture boundary coincides with the hydrogeological delineation of a watershed. The entire administrative and agricultural practice overlaps—making it very efficient to operationalize related decisions. Similar solutions need to be sought to ensure proper management of catchment. Environmental management and stakeholder-based "partnerships" need to be accountable and linked to democratic processes. This requires grass roots mobilization—especially in highly stratified societies.

CASE EXAMPLE

Katsura & Sagami River Basin Council
Kanagawa and Yamanashi Prefectures, Japan

Under the framework of their LA21 Plan, two prefectures in Japan have collaborated to improve the quality of the river running though their jurisdictions. Upstream, in Yamanashi Prefecture, the river is named the Katsura; downstream it flows through Kanagawa Prefecture and is called the Sagami. Increasing domestic and industrial demands on the river have traditionally been met by constructing dams along its length. A decline in local water quality motivated community action to improve the river.

Programs such as the "Clean Campaign" and the "Upstream/Downstream Exchange Project" were initiated by the governments to educate the community about the need to protect the river. In 1998, the Katsura & Sagami River Basin Council was established. It consists of citizens, business and local government representatives. The formation of the Council, in conjunction with the LA21 process, has given the citizens of the area an important voice in managing the river water. For example, the Council provided a forum for citizen's to raise their objections to the construction of a new weir in the Sagami River on the basis of the harm it would do to the environment.

The LA21 plan that has been developed for the area emphasizes:

01 forestation,

02 symbiosis,

03 preservation of the quality and quantity of the water,

04 waste management within the community,

05 development of public works, and

06 collaborative work.

This formal commitment to improving local watershed management will significantly benefit the citizens and the environment in the Katsura and Sagami watershed area.

CASE EXAMPLE

Holistic Watershed Management by an NGO
Huron River Watershed Council, U.S.A.

The Huron River Watershed Council has five main objectives:

01 to promote and facilitate watershed-based land use planning and practices,

02 to foster a watershed awareness and identity,

03 to promote economies that sustain a health watershed,

04 to develop and implement innovative educational strategies, and

05 to coordinate and network with areas groups and individuals to better protect, rehabilitate and sustain the Huron River system.

It has been particularly successful because:

"As a non-governmental organization [NGO] it can cross the conventional disciplinary and political boundaries that inhibit true holistic watershed management... an important aspect of the Council's work is to provide member governments with a forum for the resolution of inter-governmental disputes or inter-jurisdictional problems arising from the management of shared water resources (Brenner et al., 1999)."

CASE EXAMPLE

International Watershed Management
OSIENALA, Africa

OSIENALA, "an environment and development non-governmental organization formed by local communities to create an enabling forum for addressing various problems affecting the Lake Victoria environment and that of its catchment" (Global Water Partnership, n.d.) undertakes watershed management work in Africa. The organization crosses international boundaries, with membership from Kenya, Tanzania and Uganda. Its governing vision states that:

"OSIENALA is dedicated to the improvement, restoration and protection of the environment of Lake Victoria and its catchment through the involvement of local communities."

The membership of the organization includes representatives of women's and men's groups, fishermen, fish-mongers, cooperative societies, farmers, environmental clubs, NGOs and research institutions in the region. The membership includes professionals and community members. Government agencies are co-management partners in a number of the organization's activities, such as the Otiwa Fisheries and Wetlands Management Project.

CASE EXAMPLE

Watershed-Based Water Quality Improvements Colombia

The contamination of water resources is one of the most serious environmental problems facing Colombian society. In the 1990s, only 2 percent of Colombia's wastewater was being treated before disposal (Shaman, n.d.). The Ministry of Health has recorded enteritis and diarrhea as the leading causes of death for children under five. Water degradation in some areas of the country is absolute. For example, no fish or migratory birds survive along the Bogota River downstream of the city of Bogota.

The annual cost of health problems due to the use of contaminated water is staggering. Other costs include increased water treatment costs, land devaluation, loss of fishing resources, negative impacts on tourism and recreation, increased operation and maintenance costs for hydroelectric facilities, and damage to agricultural lands.

In 1993, the Colombian Ministry of the Environment acknowledged that the contamination of the country's water resources was a serious problem. The "command and control" approach to pollution prevention that was in place was judged insufficient to address pollution problems. To obtain the desired environmental quality for the society, at the least economic cost, "la Taza Retributiva" was adopted by the Colombian government. It established the government's right to collect compensatory fees for the utilization of Colombia's environmental resources as a "garbage can." To combat the problem of water pollution, the Ministry of the Environment designed an innovative new regulatory system based on pollution charges, watershed boundaries and the involvement of local industrial, municipal and community stakeholders.

In this system, which is overseen by a regional watershed agency, the principal stakeholders in a watershed area are required to negotiate pollution reduction targets over a five-year period. To date, the program focuses on two water quality parameters: biological oxygen demand and total suspended solids. The base rate for the pollution charges (set by the Ministry of the Environment) increases incrementally until the polluter has met the required targets for the period, or to a pre-established maximum fee. Other pollutants remain regulated under the former "command and control" system.

Discussions about how best to involve the agricultural sector in this scheme are underway. The objective is to create a system where industries and municipalities are encouraged to find solutions to the problem of contamination that cost less than the payment of the established fees for discharging pollutants. The pollution charges are collected and redistributed by regional water management agencies. The charges are renegotiated every five years.

In the Rio Negro watershed where the program was piloted, the successful reduction of industrial pollutant loads brought to light the fact that 70 percent of the region's contaminants are being generated by the hundreds of small municipalities in the Rio Negro region. Most municipalities in the region have neither wastewater treatment facilities nor adequate funds to finance development plans. Using the fees collected from the pollution charge system, the regional watershed agency

is providing 100 percent of the financing for municipal wastewater treatment plants. The municipalities provide the land for the plants. Thus, it can be seen that municipalities in Columbia can receive direct benefits from their participation in this watershed-based water management program.

The regional watershed agency's board of directors, composed of representatives of all of the key stakeholder groups, designated 50 percent of revenues for financing municipal treatment plants, 30 percent for helping industries install clean technology equipment, 10 percent for research of new technologies, 5 percent for raising environmental awareness in communities and schools, and 5 percent for administration of the program.

Unfortunately, the success of the pilot program in the Rio Negro river basin, as not been easily replicated in other basins:

"As politics have fueled the fray, the collection of charges in Bogota [Colombia] has been put on hold. ...The delays have been catastrophic. Health authorities report over 35,000 cases annually of enteritis, skin disease, and other illnesses related to water pollution along the Rio Bogota. The cost of generating electricity has soared because of corrosion to turbines, and drinking water quality... has been seriously compromised."

"Conservationists see similar problems of political will and environmental consciousness elsewhere in Colombia. Though by law municipal authorities must comply with the pollution-charge system, mayors in some of the nation's largest cities are making legal and jurisdictional challenges to avoid paying the fees and investing in wastewater treatment facilities. They insist that schools, hospitals and other infrastructure projects take priority (EcoAmericas, 2000)."

Given the magnitude of the influence that political leaders can have on the success or failure of integrated water resources management initiatives, more attention should be given to the education and awareness raising of this important stakeholder group.[5]

[5]Additional information on this case example is available from the World Bank's New Idea's in Pollution Regulation Program [www.worldbank.org/nipr/].

WATER AND CLIMATE CHANGE

The combination of climatic variability and current human water-use patterns is changing hydro-environmental behavior. The changes pose "unprecedented problems for water resource managers, making their task increasingly complex" (WMO, 1998).

Traditional approaches to risk management (based on the idea of planning for a 100-year storm, for example) may no longer be suitable if the predicted increases in extreme weather events and broad-scale meteorological and hydrological changes occur. Changes in the global climate could put unprecedented pressure on current engineered water management solutions.

100-year design storm

Urban water infrastructure in many countries has been built to withstand a hypothetical 100-year storm. The storm may be designed using statistical predictions from previous weather records, or it may model a particularly extreme weather occurrence for which adequate historical data are available.

In Southern Ontario, Canada, for example, the record precipitation events leading up to and including Hurricane Hazel in 1954 are used to design all new infrastructure in the area. This cautious approach encourages the over-design of infrastructure systems for public safety reasons.

The impact of global warming on urban water and sanitation infrastructure was elaborated upon in Cities at Risk (ICLEI, 1998). This document details the potential impact of global warming on water systems "because of their particular vulnerabilities to changes in climate and sea level."

The report notes that changing precipitation and extreme weather patterns may overload reservoirs, flood control systems and sewage treatment and stormwater facilities. In other areas, these changes may lead to more severe drought and inadequate freshwater reserves. It states, "variability can be as serious a problem as under-supply in municipal drinking water and sewage treatment system management." Rising sea levels will also threaten the municipal infrastructure of coastal cities.

Thus, the phenomenon of global warming poses a significant threat to freshwater management. As Dracup (1989) stated:

"Whether or not the world actually faces a permanent climatic change, water resource planners must prepare for the eventuality... Given a lead time of 10 to 20 years in building new water resource projects, planners must face the possibility of a worst-case global scenario now..."

The interrelationship between water management and global climate change poses an additional challenge to water managers locally, nationally and globally.

CASE EXAMPLE

Raising Stakeholder Awareness of Climate Change Impacts Toronto, Canada

The city of Toronto, Canada, and the Toronto Region Conservation Authority have taken proactive steps to raise the awareness of local stakeholders of the need to plan for the impacts of climate change. In 2000, a local symposium was held to raise awareness and begin to plan for various climate change scenarios. The conclusions of the symposium are relevant to the international water community. The symposium participants concluded that the appropriate development of adaptation strategies would require:

01 **an increased focus on the development of local climate change scenarios.** These scenarios should be developed using a variety of approaches, be funded by a partnership of governmental and other organizations and involve municipal and natural resource practitioners in their development in order to identify possible local impacts;

02 **substantial changes to federal and provincial strategies and guidelines** for groundwater, surface water, water conservation, land use planning, energy conservation, and transportation to help society reduce emissions and adapt to the expected impacts of climate change;

03 **improved communication and coordination within municipalities** between those departments dealing with policy and planning issues and those dealing with water, stormwater, sewage, energy, transportation and the natural landscape; and

04 **extensive social marketing** from all levels of government, as well as from professional organizations, about the need for new expectations, changed behaviors, and improved technologies for both mitigation and adaptation strategies to deal with climate change.

SUSTAINABLE DEVELOPMENT PLANNING AND WATER—LOCAL AGENDA 21

Since the 1992 Earth Summit, the implementation of Agenda 21 on a global level has been disappointing in many regards. Among the most successful initiatives to come out of the Earth Summit, however, was one lead by local governments. The "local" Agenda 21 process that was catalyzed by Chapter 28 of Agenda 21 has been recognized as one of the most significant and widely recognized achievements arising from the Rio Summit.

The challenge and role of local governments in achieving a sustainable future is clearly stated in Chapter 28 of Agenda 21:

"Because so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities, the participation and cooperation of local authorities will be a determining factor in fulfilling its objectives. Local authorities construct, operate and maintain economic, social and environmental infrastructure, oversee planning processes, establish local environmental policies and regulations, and assist in implementing national and subnational environmental policies. As the level of governance closest to the people, they play a vital role in educating, mobilizing and responding to the public to promote sustainable development."

Solutions must be tailored to communities—they must be involved in design, implementation, monitoring and evaluation of solutions. By 1996, over 1,800 local governments heeded this call through the implementation of LA21 (ICLEI, 1996) and the incorporation of sustainable development concepts into their governance structures. Through the innovative use of local regulatory tools (such as policies and bylaws) and forward-looking planning and management actions, many local authorities have successfully slowed, and even reversed, the downward spiral of environmental degradation in their communities. The water environment has benefited greatly from such enlightened local governance. Whether due to local demand to protect water as a key cultural, recreational, economic, aesthetic or environmental resource, local government actions have improved the quality of life in many communities. Local government actions, however, are often impeded by complex and unclear jurisdictional issues in this area. Lack of capacity and resources also inhibit more effective local action. Particularly in developing countries, as the urban population increases, local authorities will have even greater need of supportive international, national and regional water policies and programs.

The linkage between LA21 and water management was recently recognized at the 4th European LA21 Roundtable, held in Stockholm, Sweden. The outcome of that meeting, known as the Stockholm Statement,[6] makes a strong call for the European Community to recognize the linkages between LA21 and local water management initiatives in the context of the need for improved public participation in the implementation of the European Water Framework Directive. This message has broader application to the international community, however, as LA21 has been used to catalyze local action to improve the water environment in cities around the world.

LA21 has been shown to be an effective mechanism for uniting citizen and government actions to achieve sustainable development. LA21 is a participatory, stakeholder-based, sustainable development planning process that integrates local priorities and actions into government decision-making systems. It has been undertaken both as a voluntary initiative by proactive local governments, and has been incorporated

[6]The statement is entitled: Adding Value to Sustainable Water Management—Creating Synergies with LA21 (ICLEI, 2001).

intonational legislation governing local authorities in several countries (e.g., United Kingdom and Sweden).

In thousands of communities worldwide, local governments and their communities have embarked on the LA21 process of articulating a vision for their city or community, and defining a mechanism for stakeholder involvement in the decision-making and action planning processes related to the achievement of the vision over the long term. Through this process of dialogue and common goal setting, local efforts to achieve sustainable development have been able to build on the talents, interests, resources, ingenuity and creativity of local residents. The LA21 process involves five main steps—building partnerships, community-based issue analysis, action planning, implementation and monitoring, and evaluation and feedback. LA21 plans are developed through a process of multisectoral stakeholder involvement, a process that specifically recognizes the need to involve women and marginalized groups.

There are many synergies between LA21 planning and urban water management. The city of Rio de Janeiro, Brazil for example, organized its LA21 process (called Forum 21) along urban watershed boundaries. The six catchment areas that comprise the city of Rio each have an LA21 process in place—they all feed into the larger Forum 21 for the city which has citywide thematic working groups that focus on issues of particular importance.

In a reverse example, there are examples of water management activities that have catalyzed LA21 efforts. The City of Hamilton, Canada, is an internationally recognized leader in LA21 planning, having won both the Dubai Award (UNCHS Best Practices in Local Leadership Award) and the ICLEI Local Initiatives Award for Governance.

One of the most interesting features of this initiative is that the city's very successful program of citizen involvement was catalyzed by a Great Lakes program of the International Joint Commission (IJC). The IJC was established under the 1909 Boundary Waters Treaty to prevent and resolve water related disputes between Canada and the United States. In the 1980s, the IJC promoted local stakeholder dialogues in the search for solutions to the pressing problems of the 43 most polluted areas of the Great Lakes ecosystem. In 1986, Hamilton Harbor had the dubious distinction of being one of the most "toxic hot spots" in the Great Lakes.

The Great Lakes' Remedial Action Plans were designed by Canada and the United States with the explicit goal of meeting the expectations of both government and the public.

The Remedial Action Plan (RAP) process successfully incorporated the voices of a wide variety of local stakeholders. The plans were designed with the goal of meeting the expectations of both the government and the public. This recognition of the importance of public acceptance of environmental programming and the local experience in the RAP program paved the way for a broader process of community participation in local decision making, through the municipality's LA21 process (called VISON 2020). The experience of Hamilton provides an interesting example of the powerful stimulus that higher levels of government can provide to local communities through the creation of an effective enabling environment for responsive action.

The quality of local sub-watershed areas can be dramatically influenced by local action even though improving the quality of the major water system running though an urban area may require action at the regional watershed level. The promotion and publication of local actions to protect freshwater resources serves to build public and governmental support for increased public and municipal involvement in watershed management discussions at higher levels of governmental organization.

A stakeholder forum for water management within a city is particularly necessary where inadequate infrastructure and irregular service causes residents and businesses to take informal and sometimes clandestine measures to meet their water and sanitation needs. Efforts to reduce water pollution and improve upon drainage and sewer systems often require special educational programs and participatory approaches that build popular support and confidence, particularly when municipalities seek to identify and/or eliminate unregulated or illegal practices. Participation is also often required to augment the limited staff capacity of many municipalities.

The value of proactive programs that support citizen empowerment in the area of freshwater pollution by industry has been illustrated by the World Bank's New Ideas in Pollution Regulation Program. The Program for Pollution Control, Evaluation and Rating, which began in Indonesia, has been incredibly successful and is rapidly expanding to countries throughout the developing world. This program highlights the potential for positive change that can be harnessed by involving the community in meaningful dialogue about environmental pollution issues. The social capital that is available to the community to implement environmental programs cannot be underestimated.

CASE EXAMPLE

Program for Pollution Control, Evaluation and Rating Indonesia

In 1995, the Program for Pollution Control, Evaluation and Rating (PROPER) began its pilot phase in Indonesia, under the management of the national pollution control agency, BADEPAL. BADEPAL realized that the command and control approach it was using to control industrial pollution was not working. The combination of a limited regulatory budget and corruption in the court system made it next to impossible for the agency to enforce the industrial discharge standards that were in place.

Faced with this predicament, BAPEDAL decided to initiate a program for rating and publicly disclosing the environmental performance of Indonesian factories. BAPEDAL hoped that the resulting pressure would provide a low-cost way to promote compliance with regulations and create new incentives for managers to adopt cleaner technologies. The program began by rating water pollution from 187 industries, representing medium- and large-scale polluters from several river basins on the islands of Sumatra, Java and Kalimantan.

FIGURE 1:

Performance Levels	PROPER Ratings
Gold	Clean technology, waste minimization, pollution prevention
Green	Above standards & good maintenance, housekeeping
Blue	Efforts must meet minimum standards
Red	Efforts don't meet standards
Black	No pollution control effort Serious environmental damage

PERFORMANCE LEVELS IN THE PROPER SYSTEM

The PROPER ratings were designed to be easily communicated to the public. The program educates and informs non-governmental organizations, market forces and community groups (including religious institutions, social organizations, citizen's movements and politicians) giving them enough information to successfully pressure polluters to conform to social norms. The regulators gain their leverage over the polluters through the provision of concrete information to communities, plant managers and markets. The PROPER ratings are shown in Figure 1.

The public disclosure of the PROPER ratings is both a political act and a media event. In Indonesia, BAPEDAL's carefully thought out strategy included a high-profile public ceremony to congratulate the "good guys"—the five green-ranked industrial facilities whose performance exceeded formal requirements. After publicly rewarding these best actors, BAPEDAL privately notified other plants of their ratings, and gave the non-compliant plants six months to clean up before full public disclosure.

Table 1 shows PROPER's impact in Indonesia after 18 months of operation. The cost of implementing the program was about $100,000 over those 18 months. With 187 plants rated, the per-plant cost was $535, or $360 per year—just $1 per day. Given that this expenditure produced a 40 percent reduction in organic water pollution, PROPER must be judged a spectacularly cost-effective program. It is significant to note that, after 18 months of operation, the PROPER program was able to operate independently of public assistance.

Analysis of the program has shown that PROPER's effects varied according to ownership. Reputation-sensitive multinationals responded most strongly, followed by private domestic firms, and then state enterprises. The program had a disproportionate impact on small factories, whose marginal abatement costs are typically high. It was found, however, that targeted efforts by government helped small factories overcome this disadvantage.

TABLE 1
EFFECTIVENESS OF THE PROPER SYSTEM OVER ONE YEAR

	June 1995	December 1996	Change	% Change
Gold	0	0	0	0
Green	5	5	0	0
Blue	61	94	33	+34
Red	115	87	-28	-24
Black	6	1	-5	-33

In recognition of the effectiveness of this program, other countries have undertaken similar efforts. The EcoWatch program in the Philippines is one such example. In addition, Mexico, Colombia, Venezuela, China, India, Bangladesh and Thailand are all either currently involved in PROPER-type programs, or they are planning to implement them.

The PROPER program demonstrates the value of social capital (the informal relationships and institutions that strengthen communities) and, the value of providing good environmental information to local actors in order to fuel effective local negotiations. The need for complementarity between social norms and formal laws is another lesson that can be learned from this program.[7]

Water Management Concerns in a Global Context—Local Agenda 21 Survey Results

During 2001, ICLEI and the UN Secretariat for the World Summit on Sustainable Development jointly implemented their second worldwide Local Agenda 21 Survey in collaboration with the Capacity 21 program of the UN Development Programme (UNDP). The following information is taken from the survey results as of October 2001. The survey results will be published in a special report for the World Summit on Sustainable Development in 2002.

[7] Additional information on PROPER is available from the World Bank [www.worldbank.org/html/extpb/greening.htm and [www.worldbank.org/nipr/].

To date the ICLEI survey has received over 600 responses from individual cities as well as responses from associations representing over 100 countries. Of the responses received from cities about 90 percent indicated that they were involved in LA21.

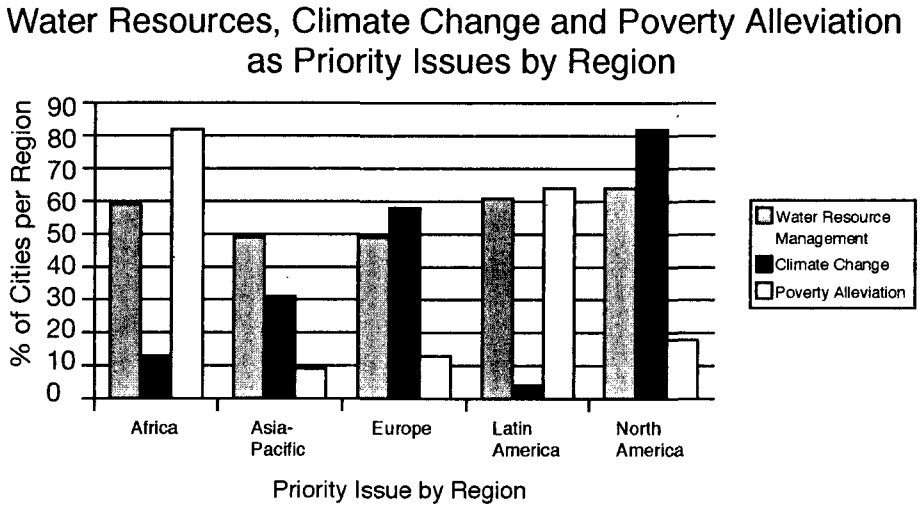
One of the primary tasks of the survey was to identify the issues that cities are currently working on and those designated as priority issues for future action in the next three to five years. Of the 559 cities that responded to the related questions, air quality, water resource management, energy management,transportation and natural resource management were the issues most commonly indicated as important by cities internationally. Other issues, such as poverty alleviation and climate change, were not as heavily represented in global totals but were central issues for different regions. Almost 50 percent of all cities indicated that they are working on water resource management and this is a future priority for over 55 percent of all cities. On a global scale, poverty alleviation is a much lower priority with only 15 percent of cities currently working on it and only 20 percent of cities marking it as a future priority.

However, when these same issues are looked at regionally poverty alleviation becomes an critical issue, especially in Africa where over 80 percent of cities indicated that it is a future priority. Similarly, while climate change was rated as a top priority by 40 percent of cities worldwide, only 4 percent of Latin American cities compared to 51 percent of European cities rated it this way (SEE TABLE 2).

Unlike poverty alleviation or climate change that show dramatic regional difference, water resource management is an issue that cities almost uniformly indicated as important both in the present and as a future priority. In every region more than 40 percent of cities indicated that water was one of their future priorities.[8]

TABLE 2

PRIORITY AREAS FOR FUTURE ACTION BY REGION



[8]Additional information on the Local Agenda 21 Survey is available from ICLEI [www.iclei.org/rioplusten].

INVOLVING YOUTH IN LOCAL WATER ISSUES

One of the key messages of Agenda 21 is the need to involve youth in the identification of solutions for their societies. The education and involvement of young people also impacts their families and friends. Several examples of ways that local governments have involved youth in their water management programs are provided below.

CASE EXAMPLE

Involving Youth in Water Quality Improvement Projects
Blantyre, Malawi

The Warlords Youth Organization "has waged war against the city's polluted rivers by undertaking an ambitious effort to replant trees along some of them. Lloyd Moffat, the organization's deputy director, said the programme will start with efforts to rehabilitate a river which is a source to a water reservoir that feeds most parts of the city. Blantyre's town clerk, Don Alufandika, has commended the young people's efforts, saying the council is proud to be part of the initiative. Jones Mwamputo, a senior forestry official, called upon the youth to sensitise their families against practices that may affect the sustainability of the river and the dam. "Please tell your parents not to uproot these seedlings," he advised the youth at the seedlings handing over ceremony." (Source: Panafrican News Agency, 1999)

Santos, Brazil

Teams of local university students undertook a door-to-door campaign to explain the "Recover the Recreational Quality of the Beaches" program, and other local pollution problems, to city residents and to ask building owners and users to cooperate in the identification of clandestine hookups to the sewage system, a main source of the beaches' pollution (Source: ICLEI Case Study #16).

Hamburg, Germany

The Environmental Authority of Hamburg made the city's schools an attractive offer. For every Mark (DM) that the schools save for heat, electricity and drinking water, half stays in the schools to be spent at their own discretion. The other half of the money stays in the city's accounts. Therefore, all profit: the schools, the city and the environment. The savings at the 24 schools that were involved in the pilot project were considerable. The heating needs sank 8.6 percent. This is equal to the yearly needs of 400 households. Electricity demands were shrunk by 6.9 percent—equivalent to the yearly needs of 175 households. Water consumption was reduced by 12.1 percent, which is enough to supply 80 households for one year. Together, the schools were able to save 422,000 DM. In addition, the themes of water and energy conservation were integrated into the classroom programs. (Source: Local Sustainability Case Description #27, 1996)

Curitiba, Brazil

The Fountainhead Project of the city of Curitiba was created to "allow Curitiba's population to take a fresh look at the city's rivers." The program involves the whole community in the preservation and conservation of its rivers. It innovates by translating the complex instruments of water quality control into an accessible language, allowing school-age children and youngsters to monitor the rivers. Their diagnosis triggers several actions, ranging from the contributions to a database about the conditions of the city's rivers to the intervention by the appropriate authorities in problem areas. (Source: ICLEI, 2000a)

LOCAL GOVERNMENTS, WATER AND POVERTY REDUCTION

The relationship between water and poverty is a complex one. The influence of local governments on this issue is equally complex. Nonetheless, there is a clear trend in recent literature on the topic that a "people-centered" approach to water and environmental sanitation maybe the most effective way of making tangible changes to the currently overwhelming number of people lacking basic water services (UNCHS, 2001).

A review of 14 case studies from the five regions of the world by enda third world (2001) found that:

"When the municipal authorities cannot cope with waste collection [including water], the communities using a participatory approach ... have produced solutions to deal with the situation."

The report goes on to suggest that:

"Government authorities and municipal services share the heavy burden of equipping and managing the cities without sufficient financial means. The problem is that management continues to be undertaken in the conventional way, using models and techniques that are often incompatible with local realities [such as:]

- **excessive centralization, which leaves little room for local initiatives;**
- **unisectoral approach, which disseminates responsibilities and prevents a global approach to the management of residential areas;**
- **administrations which are often considered too technocratic and bureaucratic and which keep residents and communes away from decision-making."**

A significant and dramatic example of such an approach is provided by the city of Porto Alegre, Brazil (ICLEI, 2000). Through the strong foundation of public accountability and transparency measures that are embedded in Porto Alegre's Cidade Constituinte and participatory budget processes, residents of a very marginalized community of fishers in the community of Betem Novo have successfully reduced local poverty and improved the river environment through a variety of measures. Among the lessons learned from their experience is that:

"Eventual confrontations between the municipality and the community do not always result in a lack of support from the municipality. If the process is conducted openly and there is basic trust on both parts, it is possible to increase municipal support, including financial support. It is important to keep permanent and open communication channels."

In the area of water and poverty, the international community needs to be more aware of the need for local leaders to emerge from the community in order to support sustainable changes.

Other major issues in the context of local government's role for ensuring water supply to poor communities are the following:

01 **benchmark** data availability for the requirements of water in poor rural and urban areas through suitable mapping;

02 **participation** of these "poor" communities in the decisions which affect them regarding the choice of technology from among various options, mode of financing and payment of water service charges, systems of maintenance, water use regulation within the community;

03 **training** for capacity building for absorbing the technology of water supply through proper use and institutionalized maintenance;

04 **financial capacity** to pay for water service and its upkeep;

05 **community regulation** of water use among its members through commonly accepted principles; and

06 **concurrent devolution** of responsibility with authority.

It is important to bear in mind that providing basic water services cannot be reduced to the financial criteria. There are the governance considerations of maintaining social peace and harmony and containing social discontent.

Sustainability comes from affordability as well as community acceptance and support—donor driven projects risk becoming "white elephants" if questions of sustainability, long-term management and operation are not addressed. Clearly, the continued good work of the international donor community cannot be considered sustainable if the local and national governments are not prepared to provide additional support for maintenance and the legal framework to ensure the protection of the community assets. This points to the need for adequate consultation with the local governments and their inclusion in the development agenda where the donor and NGOs are active in their cities. Too often the city is not adequately included/consulted in "solutions" for their cities. Top down agendas imposed on cities by national/international bodies still occur. UNCHS (2001) noted the need for change where it stated:

"Each city needs to develop its own urban development programme, based on a careful evaluation of its own problems and of the resources it can mobilize. Even if current levels of international aid to urban development were multiplied many times, urban centres would still not receive more than a useful supplement to their own resources. What is needed is to place a far higher priority on the better use of existing resources to increase the capacity of local governments and channelling more funds directly to community-based organizations and the local NGO's with whom they choose to work."

Through the Local Agenda 21 campaign, ICLEI works with local stakeholders to develop their own vision and goals for urban and/or community development. The vision and goals are used to guide stakeholders through a process of action planning that encourage them to take concrete steps toward improving their local environments. The process is an iterative one, where short-term interventions set the stage for the planning and development of actions requiring a longer time horizon. The process is flexible. ICLEI has found in its work that stakeholder groups need to work at their own pace to be able to reach the most appropriate conclusions.

Local governments have a role to play in presenting the community with alternative strategies and technologies from which the people can choose. This could enable more contributions from the prospective users and also better post-construction upkeep. Very often the communities contribute by providing constructive suggestions for creative problem solving of the water problem in their locality. By tapping on the local expertise and knowledge of the communities local government may serve the water needs of a community more efficiently. Local governments need to encourage and support processes that work with, and learn from, local decision makers and community leaders. These are long, slow processes, however, they are more likely to be sustainable and they will ensure locally responsible use and protection of the local water resource.

CONCLUSIONS AND RECOMMENDATIONS

The water-related issues of quality and quantity that local communities face are similar around the world. Local communities, however, are isolated from one another. They spend a great deal of time and energy "recreating the wheel" in their local development of programs and policies for the governance and management of water issues. Caught up in their day-to-day responsibilities and activities, local practitioners often lack the time and resources necessary to keep track of other activities taking place in and around their locality, not to mention national and international trends and knowledge in this field.

Water is a very significant component of sustainable local development and yet, in part because it is perceived as belonging to everyone and no one, it is frequently undervalued and insufficiently managed. The fragmentation of governing authority and the multitude of stakeholders whose actions influence the sustainability of local water resources are two important factors to consider. Action to improve water resources in communities around the world is hindered by the multitude of actors whose actions impact the local water environment. International, regional, national and provincial policies directly impact the quantity and quality of water available to local communities.

An underlying assumption that should pervade decision making is that local communities will never run out of pressing water management problems. Water resources management and improvement is an iterative process that is likely to become even more challenging in the future as pressure on water resources increases and the impacts of global climate change are felt locally. It is for this reason that building local capacity and establishing local stakeholder groups that are interested and committed to achieving long-term improvements in local water management are key to the sustainable governance and management of this vital resource. Governance is a crucial component of any water management solutions. Moral and ethical considerations influence the way that water management decisions are made and the way that resources are allocated. Clear leadership in the area of moral and ethical water resources management is urgently needed. The Local Government Water Code is one attempt to raise the awareness of local councillors of the need to enter into an important debate about these issues.

It is extremely important to link community action to municipal decision-making processes and governance systems to move away from isolated, piecemeal solutions. Local authorities can only be as flexible as the law and bylaws allow them to be. Local communities and the dialogue process can only be fully developed when local residents develop a sense of ownership and the will to change their system. Other partners will perhaps have more leeway to adopt, adapt and change. The change in local government will not be at the pace of industry or NGOs or civil society, but it will come if long-term efforts are made to communicate and educate public leaders and citizens.

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The ICLEI Water Campaign
ADDRESSING LOCAL CONCERNS WHILE MITIGATING THE CURRENT GLOBAL WATER CRISIS

INTRODUCTION

Local governments have a vested interest in being proactively involved in freshwater management activities within their jurisdiction and throughout their surrounding watershed.

Cities and other local governments confront the economic cost of damaged freshwater ecosystems through:

- increasing costs for water and environmental sanitation services;
- property damage from flooding and drought;
- reduced tourism and recreation income;
- lost wages and productivity, and increased health care costs due to water-related illnesses.

Unfortunately, local governments' efforts to influence water management in their communities are frequently restricted by their limited jurisdiction in this area. Despite this limitation, local governments bear the burden of public health problems and social malaise that is caused by inadequate water and environmental sanitation services and poor ambient water quality.

Working alone, local governments are not able to solve all of their water-related problems. In conjunction with their constituents, however, they are in a position to bring together other stakeholders to look for broader solutions to protect valuable potable water supplies.

In light of the current global water crisis of overuse, pollution, and mismanagement of freshwater resources, widespread changes are needed in the way water is managed and valued.

THE CAMPAIGN

"...we have the ability to change the vital systems of this planet... To change them for the better, we must recognize that the well being of people and ecosystems is interwoven and that the fabric is fraying. We need to repair it, and we have the tools at hand to do so. What better time than now?"

(WORLD RESOURCES, 2001/2002)

The Water Campaign of the International Council for Local Environmental Initiatives (ICLEI) provides local governments with a supportive framework for addressing their unique local water management concerns while contributing internationally to mitigate the current global water crisis.

Established in June 2000, the Water Campaign's mission is to build a worldwide movement of local governments with their stakeholders, who are together committed to achieving tangible improvements in the sustainable use of freshwater resources by protecting and enhancing local watersheds (catchments), reducing water pollution, improving the availability and efficiency of water and environmental sanitation services, and improving public health. Participants in the campaign work through five milestones in their efforts to support this mission.

CAMPAIGN MILESTONES

1. Inventory and forecast direct and indirect impacts on water resources.
2. Establish targets for water quantity and water quality.
3. Develop and obtain approval for a Local Water Action Plan.
4. Implement policies and measures.
5. Monitor and report results.

The campaign promotes various approaches to water management to assist participants in meeting these milestones, including sustainable watershed planning, integrated water resources management, and household-centered environmental sanitation.

For More Information

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