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**“Conventional Strategies and Systems for Wastewater Disposal:
Comments and Recommendations emphasizing in Social and Gender
Aspects”**

Commission 6: Water Management
Water Management in Large Metropolises

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1. Introduction

Currently, metropolises all around the world are undergoing a process of fundamental change, particularly large cities with more than 1 million inhabitants and megacities (those with a population of 5 million or more), primarily due to the unprecedented growth of urban population, and as a consequence of this, the countless and big problems that have emerged including those related to water resources management, and among them, the wastewater disposal that represents important challenges.

Therefore, efforts must be made to contribute to the process of transforming cities around the world, mainly the two categories mentioned above, into liveable and democratic metropolises ready to meet the needs of the future, taking account of their different traditions, culture and idiosyncrasy.

Provision of clean water, treatment and disposal of wastewater and stormwater has become increasingly complex for cities because of the rapid urbanization process in developing countries. In 1950, about 30 percent of the people in the developing world lived in urban areas. At present, the corresponding figure is about 50 percent. In 1985, 30 cities in the world had populations of more than 5 million. By 2015, this number is likely to double, to 58.

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But independently of the size and sophistication of a settlement, provision of clean water and safe disposal of wastewater remain basic necessities for daily survival and for virtually all economic activities.

2. Growth of Urban Population

According to the UN World Water Development Report: “Water for People, Water for Life”, by 2030, over 60% (nearly 5 billion people) of the world's population will be living in urban areas.

In 1975, there were 22 cities in the category of megacities, in 2002 there were 39 megacities in the world (with nearly 385 million people) and 350 large cities with a population of 1 million or more, and it is expected that by 2015, there will be about sixty megacities in the world. (see Annex 1).

At present, the 50% of the world's population (6.3 billion people) live in urban areas. Each year, the world population grows by around 80 millions. Practically all of this growth is urban all over the world, primarily due to migration of people from rural areas attracted and dazzled with the possibility of better conditions of life.

The current global trend is that the most rapid growth of urban centres is taking place in an uncontrolled fashion, in the economically weakest countries and in regions where water resource endowments are limited, technical and management capacities are comparatively poor, and institutions are relatively weak.

This demographic change is bigger than any other change in human history. In 1975, only 190 million people lived in cities with more than 5 million people, the figure had increased to 394 million by the year 2000.

The most recent UN forecast estimates that over 600 million people are expected to live in megacities by 2015. An example: the population of Sao Paulo was of 300,000 at the beginning of the 20th century, up today, it accounts for about 18 million people.

3. Urban Water Supply, Sanitation and Society

All the facts about the growth of urban population, regarding water resources management, means that competing demands from domestic, commercial, industrial and peri-urban agriculture are putting enormous pressure on freshwater resources and therefore make successful water management in megacities of the developing world a most challenging task.

Regarding Water Supply and Sanitation provision, currently around the 90% of the wastewater and the 70% of the industrial effluents in developing countries are discharge to water streams and bodies without any kind of treatment.

The lack of treatment of wastewater and of adequate drainage systems leads to the contamination of subterranean and superficial water resources.

When accelerating water scarcities and pollution problems in and around urban centres are superimposed on issues like continuing urbanisation, lack of investment funds for constructing and maintaining water infrastructures, high public debts, inefficient resources allocation processes, inadequate management capacities, poor governance, inappropriate institutional frameworks, and inadequate legal and regulatory regimes, efficient water management in large and megacities poses a daunting task for the future.

So, special attention must be paid in matters related to the provision of clean water, and wastewater and stormwater disposal, and the effectiveness of policies to deal with these basic and vital functions of city life.

The effects of these processes on livelihoods environments, peoples health and living conditions has been diverse, generally harmful, like the introduction of irrigation by means of wastewaters in peri-urban sectors of large and megacities, what has meant an increase of the agricultural production and in the economic development and social welfare as well, but at the same time it has brought ecological problems and health and cultural deterioration.

Since the beginning of human settlements, as human population has continuously increased, so have the water and wastewater disposal requirements. Water management was not a serious problem when population were low and concentrations of the people were not high. But population started to increase dramatically after 1950, and the rate of urbanisation began to accelerate, provision of clean water and safe disposal of wastewater and stormwater for large and megacities of developing countries became increasingly more complex and serious.

The main problem in these metropolises is the fact that rates of urbanisation and the continuous, urgent and growing needs for additional water and sanitation services have often far exceeded the capacities of the national and local governments to plan and manage the demographic transition efficiently, equitably and sustainable.

Large and megacities are expanding with increasing distances to the water sources, what usually makes quite difficult to arrange supply within a river basin context. Also, the economic significance and political power of these metropolises in the context of overall national development, implies that bulk supply of water is being secured through national policies and financial arrangements, rather than through corresponding institutions at the local or regional administrative levels. Their growth has therefore seriously constrained the current concept of river basin management, from both supply and wastewater disposal considerations, but the physical river basin where they are located are still the logical and most important approach for the integrated and harmonious water resources management.

A particular feature of these metropolises is the coexistence of a highly sophisticated part (modern industries and technologies, financial and commercial institutions, universities, research centres, etc.) and other part with lack of planning and hazardous living conditions in socioeconomic terms and also in terms of the physical environment and deplorable living conditions for people.

The increasing supply of water to households, industry and other activities of large and megacities means an increasing volume of wastewater as well. Rivers within and around metropolises of the developing world have often become polluted. Apart from wastewaters and other liquid wastes, metropolises produce substantial amounts of solid wastes that generate dissolved substances that, due to a lack of proper disposal arrangements, seep into the ground, or are transported through the flow of water and with the wind to surface water streams.

In most developing countries only a fraction of the urban wastes generated is taken care of in an organised manner on a regular basis. Information provided by the United Nations Human Settlements Programme (UN-Habitat), shows that the proportion of households in major cities connected to piped water (house or yard connection) are:

- World: 94%
- Africa: 43%
- Asia: 77%
- Europe: 92%
- Latin America and the Caribbean: 77%
- North America: 100%
- Oceania: 73%

And the proportion of households in major cities connected to sewers are:

- World: 86%
- Africa: 18%
- Asia: 45%
- Europe: 92%
- Latin America & the Caribbean: 35%
- North America: 96%
- Oceania: 15%

Provision of clean water, wastewater and stormwater disposal, lingering poverty and the enormous environmental threats, require huge investments for the water sector in the coming years. Indeed, there is a considerable backlog of essential investments in the water, sanitation and waste disposal sectors, which require priority attention, but, somehow secure funding for the required investments is hampered by the widespread societal view that water services should be free, or heavily subsidised. Also, in the

design of some of the investments in waste management, it is difficult to identify who should pay, when and how much.

The facts mentioned above have triggered a management crisis, which requires a critical assessment of the dominant model for urban water management. In almost all countries, the public sector has been the sole agent for policy formulation, execution and evaluation. Both in terms of mounting difficulties to mobilise enough of investment funding and in terms of organising the services in an efficient manner, the current situation is far from satisfactory.

Water decisions are among the most critical ones in shaping the future of these metropolises in terms of economic significance, social and cultural transformations, political factors and environmental issues. It seems that urban water crisis can only be met by changes in cities management and governance that lead to more sustainable use of the water resources.

Some examples of this mismanagement are:

- the significant lack of adequate provision in cities throughout Africa, Asia, Latin America, understanding as adequate provision sanitation toilets connected to a sewer.
- half the urban population in Africa, Asia and Latin America suffers one or more diseases associated with inadequate water and sanitation, and this fact shows that when infrastructure and services are lacking, cities are among the planet's most threatening environments.
- among the urban population of low-income countries, one child in six dies before the age of five.

Metropolises require a very large input of freshwater and adequate and secure wastewater disposal, and the more populous the metropolis and the richer its inhabitants, the greater the demand on resources and, in general, the larger the area from which these are drawn and discharged. Wastewaters are then returned to rivers, lakes or the sea at a lower quality than that originally supplied. Storm and surface runoff also collects large pollution loads as it flows through cities, especially where there is inadequate provision for solid waste collection as much of the uncollected waste generally finds its way into water bodies, incrementing pollution.

Contamination of rivers, lakes, seashores and coastal waters is an example both of the impact of city-generated wastes and of governments' negligence in controlling pollution and managing water and wastewater flows, and both means a damage for people and communities. This often leads to serious health problems for large numbers of people whose water supply is drawn from these water sources. In cities on or close to coasts, untreated sewage and industrial effluents often flow into the sea with little or no provision to pipe them far enough out to sea to protect the beaches and inshore waters, thereby posing a major health risk to bathers.

The solution for these situations should be great incentives and improvements in reducing water pollution, either through stricter controls on industrial discharges or more sophisticated and comprehensive treatment of sewage and stormwater, but in most cities in low- and middle-income nations, these problems are not so easily addressed. Additionally there are more serious non-point sources of water pollution because of the lack of sewers and drains in many city districts and peripheral areas, and the uncollected wastes are washed into streams, rivers and lakes.

Liquid wastes from cities activities often have long term environmental impacts. It is common for river and coastal fisheries to be damaged or destroyed by liquid effluents from city-based industries with significant numbers of people losing their livelihood as a result. River pollution of this sort can lead to serious health problems in settlements downstream and the source may become unusable for agriculture, water supply and other activities.

It is difficult to generalize about more effective approaches to water management when considering all the world's cities. Clearly, there is a very urgent need to improve and extend provision for water, sanitation and hygiene in cities in low and middle-income nations, and in large and megacities but in small towns and rural areas as well. This includes the need for financially sound, operationally efficient, consumer-oriented water and sanitation agencies, whether these are public, private (commercial or non-profit) or community-based. Also, innovative public-private-community partnerships must be used to implement, maintain and manage the project which provides access to secure water supply and sanitation provision.

4. Societal Perspective

Adequate wastewater managing and integrated water resources management as well, consists of harmonizing the uses of water and manage them in benefit of the society as a whole. This management must be based on the participation of all the stakeholders or sectors of interest in a river basin because they are those that would give the sustainability to this process when they get the feeling that their participation and decision have determined what will be the development within their river basin.

This conviction is the one that will assure that this process will be stable and lasting. Community-supported programmes provide perhaps the most important means to meet not only the Millennium Development Goals but the solution for many problems related with water supply and wastewater production and disposal.

Given the wide array of technologies, and the community-wide impacts of unhealthy water and sanitation systems, community involvement is important in deciding on the most appropriate technologies when foreign options are unaffordable. Given weak and underfinanced utilities and local governments, community involvement can also be

important in determining how the chosen systems are to be financed, developed and maintained.

Therefore proper management of water supply and sanitation issues has particular importance for water and sanitation in large and megacities because it recognizes the rights of the inhabitants of the area where the management is made to have basic infrastructure and services.

By involving stakeholders in the process of designing projects, arrangements and/or strategies, governments can better anticipate stakeholders concerns while building support for the arrangements. Stakeholders include customers who are already connected as well as people who need to get connected, many of whom are poor and live in informal settlements.

It is necessary to identify stakeholders, engage them effectively in the process, benefit from their knowledge and creativity, and explicitly consider each groups interests in designing the actions and at the project management level. Consulting citizens and other interested groups while developing strategies, projects and/or arrangements will help build consensus. Decisions are most effective and sustainable when the government is well informed and when the most affected groups are involved in decision making.

Stakeholder engagement is effective when communication lends legitimacy and when the goals and method of communication are consistent. The importance of effective communication is underscored by examples of insufficient stakeholder communication. Failure to properly involve stakeholders and support reform has contributed to the collapse of some actions, with projects cancelled or terminated soon after operations began.

NGOs, community-based organizations, and other civil society organizations should not be treated as a single group. They represent different stakeholders and different interests, and need to be engaged with a clear understanding of whom each organization represents and what its interests are.

Some NGOs and community-based organizations will be effective conduits for dialogue with consumers. These may be neighbourhood associations, or they may represent particular groups of customers. For example, women's organizations may be a natural route into understanding the needs and concerns of women consumers. Some organizations may provide a service watchdog function or even provide services themselves. Failure to involve such groups can contribute to poor design and subsequent demand for revision or cancellation of the actions

Other NGOs represent issues, rather than consumers. These may include groups promoting environmental protection, transparency, and other values. Often the causes they represent will be important in the design of the arrangements, and it may be helpful

to outline how proposed reforms take these values into account and invite suggestions for improvements.

To engage customers, it is helpful to have basic information for all customer groups, including:

- Where customers are located (households in informal settlements may not be formally registered on government records)
- Whether customers are connected to piped water and sanitation services and if not, how people access water and dispose of excreta
- Typical household size and the number of people typically benefiting from a single connection
- Employment levels and source of employment
- The level of household income and how income may vary by seasonal patterns
- The volume and variation of water consumption, especially in low-income households;
- What customers are paying for water and sanitation services and what coping costs they might incur, for example, installation of pumps and tanks to improve service and pressure, or time spent fetching water from a standpipe
- What types of service customers want, and what they are willing to pay for them
- Gender issues in terms of for example, women's role with respect to water and sanitation services.

Large and fast-growing cities face particularly serious problems given a large backlog of households and businesses in need of better provision and the continuing rapid growth of the population and economic base. But even here, there are many examples of local innovation showing how good-quality water provision and management is financially feasible in low-income cities:

- Many nations have developed innovative ways of increasing the possibilities for low-income households to buy or build their own new homes, which in turn provide for better water, sanitation and drainage. Support for low-income groups' savings schemes and for their acquisition of land with infrastructure on which they can construct their own homes is an important part of improving provision for water and sanitation. This is demonstrated by the large number of low-income households that have acquired better-quality housing through community-managed schemes in some developing countries.
- In addition, there are examples of low-income settlements with good-quality provision for water and sanitation and full cost recovery from user charges – or with users paying enough for the overall costs to be affordable to existing local authorities.
- Similarly, where provision for water and sanitation has been privatised, effective demand in lower-income areas of cities is rarely sufficient to motivate profit-seeking companies to extend good quality provision for water and sanitation.

Nonetheless, there are often intermediate solutions that combine public, private and community provision in ways that greatly improve provision and can recover most or all costs.

- Even though a transparent policy and an active involvement of representatives of water users and other interested groups in water management in large and megacities it is not an easy task, especially in informal settlements, there have been interesting cases where public participation is seen as a constitutional right and where opinions and decisions of local constituencies are part of the management, and this is useful for the management of water resources.
- When municipalities work closely and continuously with the inhabitants of low income settlements achieve quality and extent of infrastructure and service provision.
- There are many innovations that show more effective approaches, from basin-wide water governance systems that incorporate all stakeholders to simple innovations in a particular squatter settlement that cheapened water costs while greatly improving access.
- Also, and as it was mentioned above, it is relevant the fact that representative organizations of the urban poor and the local nongovernmental organizations (NGOs) that work with them are able to work with local government in developing major improvements in sanitation that both, users and authorities can afford.
- For some communities and smaller urban centres within low income nations with less possibility of good governance, perhaps the most that can be hoped for in the more deprived neighbourhoods is regular, reasonably priced, protected water supplies available to each home or yard where possible, through enough well-maintained public standpipes to ensure that there are not excessive queues and long distances to carry water.
- It is possible either household or community investment in good-quality toilets, accessible public toilets or pit latrines with effective and harmless provision for emptying them and wastewater disposal.

5. Good Water Governance

One possible generalization concerning improved water management valid across all the world's cities is the need for good local governance systems, understanding water governance as the capacity of a country to coherently organise the sustainable development of water resources and encompasses both the capacity to design socially

acceptable public policies that foster the sustainable development of water resources and to implement them effectively through the relevant institutions.

With adequate governance watershed management can be improved, lessen the ecological disruption caused by water withdrawals and wastewater returns, and to achieve a better use of existing water resources. Achieving all of this and other water related problems such as disaster avoidance and preparedness, generally includes a need for coordinated action across different administrative boundaries.

The problem in low and most middle income nations is that, generally, governance structures have not developed to efficiently and equitably address these problems and resolve the inevitable trade-offs. As it was stated above, good water governance implies not only frameworks to ensure provision but also regulations (to protect water sources and to protect and promote health) and revenue raising (a reasonable payment for the system's functioning, maintenance and expansion).

Therefore, good water governance means more than just effective government institutions but also more efficient relationships between government and civil society, where all stakeholders needs are considered and the institutions responsible for water and wastewater management are accountable to them. Also means setting limits on where industries can locate and developers can build, as well as on what local water sources they can tap and what wastes they can dispose of.

To achieve this good water governance, a basin-wide perspective within the context of the integrated water resources management process is required, but it is difficult to achieve since political or administrative boundaries not always are set to serve water basin management. In most large and megacities, there are many different political divisions within the water basin, with local governments controlled by different political parties and politicians refusing to collaborate with their neighbours to ensure an ecologically sound and fair regional water management system.

Inadequate city governance generally has two aspects: local government institutions that are weak, unaccountable to citizens and under funded (including water and sanitation utilities with little or no investment capacity), and higher levels of government that are unwilling to allow local institutions sufficient resources and revenue-raising powers. Of course.

It is common for low-income groups to pay two to fifty times more per litre of water than higher-income groups because they have to purchase from vendors while higher income groups are being undercharged for water piped to their homes.

The inadequacies of urban governance in low and middle-income nations have also meant that many issues other than those directly related to water and sanitation provision have been poorly managed. Existing freshwater resources remain unprotected and are often continuously degraded or depleted. Surface water sources are often

polluted, and much the same applies to nearby lakes, estuaries and seas. Additionally, in their bid to meet soaring demand, metropolises are going deeper into ground water sources at costs clearly unsustainable.

Watersheds are often degraded because of ineffective controls on industrial and urban developments. It is also common for urban expansion to take place over ecologically important areas such as wetlands and mangroves.

For many large and megacities, powerful industrial and commercial interests, allied to the higher income groups that have piped water, can appropriate freshwater resources from other watersheds, often drawing on them from large distances with negative consequences for the ecology and the water users in these areas, also known as negative externalities. Although most nations have the environmental legislation in place to limit water pollution, it is rarely enforced.

A core element is effective monitoring to support an ongoing process of improving governance and management and there is a need for complementary, locally-driven assessments that serve local service providers and reveal the equity issues at the local level.

6. Gender Perspective and Mainstreaming

Sustainable development inevitably goes through the recognition that there are different groups of interest & that they have different necessities, relations and opportunities respect to the access and use of water. Within these groups of interest there is a natural relation between gender and water, so to take in account the specificity of men and women & their participation from that perspective in water supply and sanitation provision have greater probabilities of improving its impact, effectiveness and sustainability.

Poor targeting, inequitable distribution of benefits and burdens, and poor operation and maintenance structures have hindered development projects aimed at addressing issues of sustainable development in water resources management and water supply and sanitation as well.

Community participation and management approaches have failed to address these issues largely because communities are often seen as a collection of people with a common purpose. The reality is that a community is not a collection of equal people living in a particular geographic region. It is usually made up of individuals and groups who command different levels of power, wealth, influence and ability to express their needs, concerns and rights. Communities contain competing interest groups. Where resources are scarce, there is competition for supplies and those at the lowest end of the power spectrum, often the poor, will go without.

People centred approaches do not always ensure that gender perspectives are taken into account. Thus a deliberate strategy of gender mainstreaming can be useful to ensure that these issues are part of analysis, project planning and evaluation.

With a gender analysis, planners gain a more accurate picture of communities, natural resource uses, households and water users. Understanding the differences among and between women and men (who does what work, who makes which decisions, who uses water for what purpose, who controls which resources, who is responsible for different family obligations, etc.) is part of a good analysis and can contribute to more effective initiatives. Women and men tend to have different uses, priorities and responsibilities for water resources.

Gender differences and inequalities mean that women and men experience changes in water availability, services or water policies differently. Thus, any initiative should be studied for its differential impact on women and men to ensure that all implications are clearly understood and there are no unintended negative repercussions.

Specifically in urban water supply and sanitation there are many gender aspects to be considered like:

- In most cultures, women are responsible for disposing of wastewater and for the collection and storage of water for domestic use and depending on locally available water resources, this can be an enormously time consuming task, taking hours of time on a daily basis.
- Despite these responsibilities, women often do not have equal access to consultation processes regarding improvements to domestic water supply, to management and decision making roles, or to paid work in water supply management and maintenance.
- In most cultures, women are also responsible for educating children in hygiene and sanitation, as well as ensuring the health of their children.
- Cultural practices and constraints also need to be taken into consideration when planning for sanitation. Apart from personal preferences, some customs are controlled by religious or social norms/taboo.
- There is need for appropriate and affordable technical options to take into consideration the varying requirements of women, men, children, the physically disadvantaged and the poor people themselves must be able to be part of the decision making process in a gender-sensitive way.

Experience shows that participation of women along with men in projects of wastewater management and disposal can enhance efficiency in water supply and sanitation projects. Benefits to project performance include better functioning facilities, more hygienic and better use of facilities, enhanced coverage of capital and maintenance costs, and improved maintenance.

At the same time good water supply and sanitation can be integral to the success of other projects like educational and women's employments projects. Women, as primary users often have a greater incentive than men to keep facilities functioning, report breakdowns and contribute their labour and money for construction, operation and maintenance of systems. Moreover, by recognizing women's preferences and willingness to pay along with men, projects are more likely to be sustainable and women may have more time for income-generating activities. A demand based participatory approach that includes both women's and men's preferences can help ensure installation of facilities that are more likely to be used and maintained. Not taking these preferences into consideration can result in facilities remaining unused because they do not meet the preferences of users.

7. Demand Side Water management

Other possibility to meet the needs and solve the problems of wastewater disposal in metropolises is the Demand-Side Water Management, which can be defined as the implementation of policies or measures that serve to control or influence the consumption or waste of water. Some of the benefits of this management are: reduced water consumption; a more cost-effective means of meeting demand; protection of the environment by making the best use of existing water resources and minimizing wastewater discharges; and the responsibility for implementing demand management can be spread between the utility and its users, as benefits will be felt by both.

Its options for influencing wastewater management are many, some of them are: encouraging industrial and commercial users to reduce their dependency on potable water supplies by increasing the level of recycling and implementing waste minimization strategies; recycling of domestic wash water (grey water systems) by users which involve recycling of bath and shower water for toilet flushing, etc.

Simple and economic demand-side management techniques that can be implemented by domestic users and that do not drastically change their normal water habits, are more likely to be implemented and maintained than schemes that would require a significant capital or time expenditure.

But this solution may take some time to filter into common use due to the cost and inconvenience for implementation.

Educating all users in the benefits of demand-side management will increase the likelihood of success for any demand management scheme. The utility that provides of water supply and sanitation service to the population may find greater support by recognizing that careful water usage will reduce consumption, wastewater production and personal water costs, and make available water to meet demand elsewhere.

Water utilities have been criticized for taking a supply-fix approach by assuming that increasing demands have to be met by increasing supplies. Advocates of demand-side

management argue that by increasing end-use efficiency and reducing waste, these demands could be met, wholly or in part, from the water saved.

Demand-side management in low-income cities should not only focus on water conservation but should also give attention to two issues: securing better access to water for the urban poor; and promoting hygiene.

In conditions of poverty, it is important that demand-side management recognizes that improved health is one of the major benefits water can provide, but that the health outcome depends upon how the water is used. Users often lack a relevant knowledge of hygiene, and it is therefore important for demand-side management to focus on reducing unnecessary water consumption in low-income settlements.

8. Conclusions

A significant proportion of those living without proper water supply and sanitation are urban dwellers, mainly in the peri-urban areas. They are forced to draw on water sources that are unsafe, unreliable and often difficult to access. For sanitation, they have poor quality latrines – often shared with so many others that access and latrine cleanliness is difficult – or they have no provision for sanitation.

Virtually all urban dwellers with inadequate provision live in the low and middle-income nations of Africa, Asia and Latin America and the Caribbean. Inadequacies in the provision of water, sanitation and hygiene bring an enormous health burden: half the urban population in Africa, Asia and Latin America suffer one or more of the diseases associated with inadequate water and sanitation, and among the urban population of low-income countries, one child in six dies before the age of five.

For the underserved urban population, there may be insufficient funding for conventional utilities to extend piped water, sewer connections and wastewater disposal in each home, but it is possible to greatly improve provision through community-municipal partnerships or support for community provision.

Some initiatives at small scale that have been developed under a concept based in the communities capacity of participatory self management, associated to innovative technical solutions for the treatment and disposal of wastewater that have arose a productive development and may mean an important improvement in the economic, social, cultural, ecological, health and living conditions in metropolises.

Urbanisation process and the associated water resources management presents both opportunities and challenges in metropolises, the thing is to be able to realize and detect the problems associated to wastewaters, their magnitude, the damage caused and turn into a different approach looking for simple, innovative and non expensive solutions; environmentally friendly and affordable by grassroots organizations in order to get a

sustainable management of the water resources together with large scale or national solutions.

Efforts are being made to provide better water and sanitation services to the world's cities, but much remains to be done. There is a clear need to broaden and deepen the coverage of global assessments of the quality of provision for water, sanitation and hygiene in urban areas so they show the proportion of people with safe, sufficient and convenient as well as improved provision. The goal to improve such provision requires not only surveys based on representative samples of urban populations, but also site-specific information about the deficiencies to be used by water and sanitation providers to plan improvements or by local residents to articulate their demands.

There is an equally urgent need to limit the extent to which uncontrolled urban development impacts on the surrounding areas, and to implement more effective infrastructure and water governance systems. A shift from supply-side only to a mix of supply- and demand-side initiatives could provide a more cost-effective solution in many settlements.

The current situation in large and megacities is becoming increasingly serious as urban populations continue to grow throughout the world and actions must be taken now in order to provide the world's urban populations, especially the poor, with the safe, clean, accessible water and sanitation because it is their right.

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- Annex 1

List of megacities up to 2002 (Source: United Nations)

Megacities	Country	Millions inhabitants
Tokyo	Japan	26.444
Mexico City	Mexico	18.066
Sao Paulo	Brazil	17.962
New York	United States	16.732
Mumbai (Bombay)	India	16.086
Los Angeles	United States of America	13.213
Calcutta	India	13.058
Shanghai	China	12.887
Dhaka	Bangladesh	12.519
Delhi	India	12.441
Buenos Aires	Argentina	12.024
Jakarta	Indonesia	11.018
Osaka	Japan	11.013
Beijing	China	10.839
Rio de Janeiro	Brazil	10.652
Karachi	Pakistan	10.032
Manila	Philippines	9.950
Seoul	Republic of Korea	9.888
Paris	France	9.60
Cairo	Egypt	9.462
Tianjin	China	9.156
Istanbul	Turkey	8.953
Lagos	Nigeria	8.665
Moscow	Russian Federation	8.367
London	United Kingdom	7.640
Lima	Peru	7.443
Bangkok	Thailand	7.372
Chicago	United States of America	6.989
Teheran	Iran (Islamic Republic of)	6.979
Hong Kong	China. Hong Kong SAR	6.860
Bogota	Colombia	6.771
Rhein-Ruhr	North Germany	6.531
Madras/Chennai	India	6.353
Bangalore	India	5.567
Santiago	Chile	5.467
Lahore	Pakistan	5.452
Hyderabad	India	5.445
Wuhan	China	5.169
Kinshasa	Dem. Rep. of the Congo	5.054
TOTAL INHABITANTS IN MEGACITIES		384.519