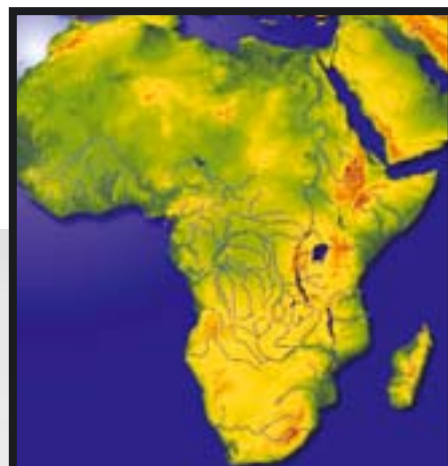


# Water for Cities

by Anna Kajumulo Tibaijuka



## *Initiatives in Africa can point the way forward*

*Cities are growing fastest in developing countries, where water and sanitation needs are the greatest. In a recent address, UN HABITAT's Anna Kajumulo Tibaijuka stressed that more support would help solve the most critical problems.*



**A**frica has entered the new Millennium with a sense of hope and renewed confidence. With widening and deepening of political reforms, economic liberalization and a strengthened civil society, an increasing number of African countries are striving towards economic recovery and sustainable development.

But also Africa is a continent of paradox. Home to the world's longest river, the Nile, and the second largest freshwater lake, Lake Victoria, Africa has abundant water resources contributed by large rivers, vast stretches of wetlands and limited, but widely spread, groundwater.

Yet only a limited number of countries are beneficiaries of this abundance. Fourteen African countries account for 80% of the total water available on the continent, while 12 of the countries together account for only 1% of water

availability. Some 400 million people are estimated to be living in water-scarce condition today. Indeed my home country, Tanzania, claims over 40% of Africa's water resources from Lake Victoria, Lake Tanganyika and other major water bodies.

Water in Africa is not only unfairly distributed by nature but, due to backward technology and underdevelopment, it remains also inadequately allocated by man. At the turn of the new Millennium, over 300 million people in Africa still do not have access to safe water.

But perhaps nowhere is the challenge more complex and demanding than in the rapidly growing African cities. With an average growth rate of 5% per annum, Africa is the fastest urbanizing region in the world today. Between 1990 and 2020, in many of our life times, urban populations in Africa will rise fourfold from 138 to 500 million.

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The ecological footprints of African cities are expanding far beyond their borders. Large-scale inter-basin transfers are becoming increasingly common. Johannesburg is forced to bring its water from sources more than 600 kilometres away in the highlands of a neighbouring country, Lesotho. In regions of water stress with declining per capita water availability, intense competition is developing between cities and countries for shared water resources.

Water scarcity in African cities is fast becoming a potential source of social and political conflict. More than half of the populations living in African cities today are denied access to municipal supplies and the poor are forced to pay street vendors for a litre of water as much as five to twenty times what their affluent neighbours pay for municipal supplies.

It is unbelievable but true that a habitant of Kibera, the largest slum in Nairobi and Africa, earning less than a dollar a day, pays as much as five times the price paid by an average US citizen for a litre of water. This is also true for water prices in Dar es Salaam, Tanzania and other least developed countries.

Those who are connected to municipal supplies are often not necessarily much better off; in summer months, taps may run dry for days. Traditionally, girls in Africa take the brunt of the burden of carrying water home, missing out on the opportunity to attend school. Increased access to water can considerably reduce this workload of girls, and change their future.

## Ripple effects of water problems

We can not talk of water for cities without the related problem of sanitation. In fact, the focus of the international community on water has often masked the growing problem of poor sanitation which present the most dehumanizing aspect of the daily battle for survival for the urban poor. The poor pay a heavy price for the lack of clean water and sanitation, in disease and squalor. The cholera epidemic that broke out in East Africa in recent years had a devastating effect on both life and the economy of the countries.

The affected countries lost in exports, the fishing industry nearly collapsed and the tourism industry plummeted. All these could have been avoided with modest investments in water and sanitation.

Paradoxically, while the urban poor struggle for water, more than half of the water produced at a high cost to serve the needs of our burgeoning cities is lost even before it reaches the consumers. To give you an example, the volume of water lost as “unaccounted for” in the capital city of Nairobi because of leakages and illegal connections

could meet the water needs of Mombassa, the second largest city in Kenya. There is also little disincentive for wasteful and profligate use.

Industry is a growing user of water but seldom practices water recycling or water reuse. To give you one example, the Kenya Breweries alone consumes nearly 6% of the total drinking water supply to Nairobi. A large part of this water is used for washing the vessels, which could be easily recycled.

## Crisis of governance

The water crisis in African cities must be recognized for what it really is: a crisis of governance – of weak policies and poor management – rather than a crisis of scarcity, at least in the immediate term. We need a fundamental change in our approach to urban governance if we want to see a meaningful change in our lifetime.

A serious obstacle to making a clear break from the past has been our inability to perceive the economic, social and environmental value of water in all its competing uses. Today, the poor subsidize the rich — a situation clearly absurd and unacceptable. We must put in place a realistic pricing policy that will allow its conservation, discourage waste and will ensure that the poor will be able to meet their basic needs at a price they can afford. The lifeline tariff of South Africa is a clear example of how a progressive tariff can be used as an instrument of social equity.

Secondly, there is an urgent necessity to manage the urban water demand onto a sustainable track before it spirals out of control. Unfortunately, much less attention is paid by governments and the international community to demand management strategies than they actually deserve. A wide range of affordable technical solutions are now available. Public information campaigns and water education could go a long way to use water with responsibility and reason. Demand management could “buy precious time” by postponing costly investments to more appropriate times.

Thirdly, we must address with priority the increasing pollution of water sources by wastes generated by cities. Some of the rivers passing through major cities have degraded into open sewers. Cities should put in place monitoring, assessment and forecasting systems that can identify imminent threats to sustainability of water resources.

## Regional initiative for change

Now let me turn to action, for at this junction you must be wondering what is taking place.

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I am pleased to inform you of an important regional initiative which is supporting African countries to establish a new model for water management in African cities.

The “Water for African Cities Programme” is demonstrating, in seven African countries (Côte d’Ivoire, Ethiopia, Ghana, Kenya, Senegal, South Africa and Zambia), how to put in place an integrated urban water resource management strategy that could bring three key sectors – urban, environment and water – to work together. Tanzania is the eighth country to have joined the programme recently.

In a relatively short span of time this programme has created a new demand-side focus in water management. By cutting down on wastes and containing excessive demand, several cities have clearly demonstrated how service coverage, especially to the urban poor, could be extended with modest additional investments.

Catchment management strategies, introduced by the programme in the participating cities, are demonstrating practical application of integrated water resource management at the local level. The programme provides a unique platform to bring together diverse stakeholders from the urban, water and environment sectors and community groups into action-planning, monitoring and implementation of local environment management of water resources. Some of these community groups have, within a short time, become effective lobbies for bargaining with local authorities with a diversity of issues such as local environmental management, protecting their livelihoods, promoting investment etc.

The regional activities of the programme are extending its outreach and benefits to other cities in the continent through sharing of information and experience on good practices and through policy dialogues and research. Recently, the programme has launched a major water education initiative in African cities and a comprehensive capacity building programme is currently under way.

Last year, we requested Mrs. Margaret Catley-Carlson, the Global Water Programme Chair, to evaluate the impact of the programme and to provide guidance on how we should take this process forward. I am very pleased to have received her report, which is not only positive in what has been achieved with very modest resources, but also gives us constructive guidance on how the effectiveness and impact of the programme can be further enhanced. The evaluation also provides us with a forward-looking strategy to move to the next phase to deepen the impact of the programme.

I applaud the timely and vital support given by the United Nations Foundation, under the able leadership of

US Senator Tim Wirth, helping us to kick start this programme with a seed support of US \$2.5 million. This support has helped us to leverage three-fold additional support from bilateral donors, notably, the Governments of the Netherlands and Sweden. The countries have also demonstrated their commitment to this initiative by committing matching support to the programme.

The World Summit on Sustainable Development in Johannesburg has given us a fresh impetus and mandate to redouble our effort to achieve the Millennium Goals in water and sanitation. Achieving this target in African cities will require providing safe water and basic sanitation to an additional 200 million citizens in African cities.

According to one estimate, the construction cost alone to achieve this target would be in the region of US \$35 billion – \$12 billion for water and \$23 billion for sanitation. This will require a three-fold increase in the current level of investment. Raising these resources will not be easy. We urgently need to find new and innovative approaches to tap new channels for financing this gap. I ask for your support in mobilizing both public and private sector resources in this common effort.

Soon after Johannesburg, on the World Habitat Day in October 2002, I announced the establishment of a new Water and Sanitation Trust Fund. This Fund will assist developing countries in their effort to achieve the Millennium Development Goal for water and sanitation.

The Fund will have a special focus for Africa where the need is greatest. The Fund will enable us to take the “Water for African Cities Programme” to other countries, and to deepen its impact in the participating countries. The Fund has already been capitalized by advancing one million dollars from the Housing and Human Settlements Foundation. We need an additional US \$25 million over the next five years.

I would like to conclude by making a fervent appeal to join the continuing effort of UN-HABITAT to support what the world leaders alluded to in Johannesburg as “humanity’s best investment to achieve development and sustainability.” I will repeat what was said: “We have the technology and talent. It is achievable. We have to act.”

We must act, and act now.

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# Great Lakes Beneath Their Feet

## Probing North Africa's Oldest Water Treasures

Cairo—Confined deep inside the Earth, the lakes are ancient treasures from another time and place. Bountiful groundwater basins of the Nubian Sandstone Aquifer, dating back millennia, were formed during the Ice Age some 30,000 years ago. Today the lakes lie staggered, tiered, and pooled far beneath the Sahara Desert and oasis settlements in Chad, Egypt, Libya and Sudan.

At strategic points, teams of scientists and engineers probe the underground chambers with 21st century tools, including nuclear-based methods. They are looking for answers that will help bring this old water to new communities, and sustain them for generations to come.

Egypt's Dr. Fatma Abdel Rahman Attia is at the forefront of this scientific detective work. She heads the Groundwater Sector in the Ministry of Water Resources and Irrigation, and has devoted a career to helping manage Egypt's fragile water lifelines.

"Egypt is the Nile," she says, "but there are limits to what we can take from it. We need to encourage people to resettle in new communities away from population centers, and developing our groundwater is more important than ever. Water is an incentive for relocation."

Right now, Egypt's fertile Nile valleys and delta—which account for less than a tenth of the total land area—are among the most crowded in the world. Population density there averages 1,500 inhabitants per square kilometre, and approaches 20,000 in teeming Cairo. Throughout the other 90% of Egypt, the numbers drop to only two people per square kilometre.

### Wellsprings of Hope

Underlying more than two million square kilometres of land—about 20 times the area of North America's Great Lakes—the Nubian aquifer is the world's largest fossil water reserve. Experts estimate it holds up to 150,000 cubic kilometres of water, about 30 times more than the entire world uses today. Only a tiny fraction of Nubian water now is being tapped, while more ambitious plans take shape for supplying expanding cities and new settlements.

Though the aquifer supports dreams of blooming deserts, unrestricted steps to exploit it could lead to nightmares if not taken carefully. The Nubian is considered a closed water system, with no known source of replenishment. Over time, more wells—like so many straws in a single jug—mean less water for everyone, and hasten the day when pumps run dry and deeper wells become too costly to drill.

"Fossil water is simply not renewable," says Dr. Attia. "But this doesn't mean it should be left under the ground. We need to develop and manage it wisely."

### Unlocking Age-old Secrets

While much is known about the Nubian, its multi-layered chambers hold as many secrets as the depths of oceans and seas.

"The Nubian extends beneath more than 60% of our country, and we've studied different parts over a long time," Dr. Attia says. "We think it may hold hundreds of times more water than Egypt now gets from surface waters of the Nile. But as a finite and hard to reach resource, most of the aquifer cannot be tapped."

Egypt's water policy-makers face numerous strategic questions: How much of the Nubian can Egypt and its neighbours really afford to exploit? What are the recharge rates? Where and how deep



Egypt's lifeline, the Nile River in Cairo.  
(Credit: L. Wedekind/IAEA)

should new wells be drilled that are able to sustain new settlements?

Egyptian authorities are spearheading national and regional projects to analyze the Nubian's properties, characteristics, and processes. The data will refine topographical maps and models of the system. Work includes projects supported by the IAEA and partner organizations, such as the Global Environment Facility (GEF), the financial coordinating body that supports sustainable development issues with trans-boundary dimensions.

### The Desert's Nuclear Detectives

IAEA and Egyptian scientists are engaged in one project initiated in 2001 to assess Nubian basins in the Bahariya and Farafra regions of Egypt's western desert. The regions constitute about 150,000 square kilometres of sandy lowlands—about a tenth of Egypt's total land area. Oases born decades ago are home to thousands of farming families, and wells have been drilled for irrigation, residential, and commercial needs, including bottled drinking water from Nubian lakes.

Water is the bedrock of national policies calling for expanded development of new communities. Conventional hydrogeological studies have yielded important but limited information about the Bahariya and Farafra aquifer systems. Sensitive isotope techniques now enable scientists to analyze underground water molecules they cannot see but can draw to the surface and sample. Because the isotopic description is within the hydrogen-oxygen water molecule itself, samples can be "fingerprinted" to understand the mix, flow, origins, and recharge processes of deep aquifers.

With support from GEF, Egypt is preparing a proposal for a regional project whose studies will support improved management of Nubian resources. In the Nubian, explains Prof. Aly Islam Metwally Aly, Vice-Chairman of the Egyptian Atomic Energy Authority, more water samples need to be collected for chemical and isotope analyses from different parts of the system.

The pressures of development and population growth are formidable in Egypt. Meeting them will demand conserving water already at hand, while great lakes are carefully tapped beneath the sands.

—This report, by Lothar Wedekind, IAEA Division of Public Information, first appeared on the IAEA web site at: [http://www.iaea.org/worldatom/Press/Booklets/Ssp/great\\_lakes.html](http://www.iaea.org/worldatom/Press/Booklets/Ssp/great_lakes.html)