



Sanitation and Groundwater Protection — a UNEP Perspective

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A Global Crisis with many faces

- In 2003 the world's first Water Development Report opened with the following statement:
 - "We are in the midst of a crisis that has many faces. Whether concerning issues of health or **sanitation**, environment or cities, food, industry or energy production, the 21st century is the century in which **the overriding problem is one of water quality and management**".
- Sanitation is a major global problem that impacts groundwater quality, human health and the environment.



A Global Crisis with many faces

- The gap has widened in most developing countries and more so in Africa between the delivery rate for clean water and basic sanitation services and the 2015 MDG targets. It is now five years later and the need for action now is even more urgent.



UNEP efforts at protection of groundwater and increasing sanitation

- In August 2002, the World Summit on Sustainable Development (WSSD) in Johannesburg placed a priority on water on ensuring water supply and sanitation;
- Since then UNEP has made efforts to raise awareness within the African Minister's Council on Water (AMCOW) on the strategic importance and vulnerability of groundwater resources throughout Africa.
- The aim has been to gain the AMCOW support for African countries towards a situation where

***“Groundwater resources are valued
and utilized sustainably
by empowered stakeholders”***

The challenges

- Since 1970, the African urban population has tripled with 35 cities with >0.5 Million inhabitants
- These are facing massive challenges of provision of water and sanitation
- It is noted that Urban aquifers are a major source of water supply in many cities.
- Groundwater is also the only realistic supply option for dispersed rural communities (where there is 80% of supply backlog)
- The health and socio-economic implications of the groundwater supply backlog are enormous in terms of morbidity, mortality and sickness from water and sanitation-related diseases such as cholera, children kept out of school and women deprived of time for productive pursuits;

Assessment of the Pollution Status and Vulnerability of Water Supply Aquifers in 11 Africa Cities

- A project was carried out 2001-2006 by UNEP and UNESCO/IHP in selected 6 cities and increased to 11 cities of the following African countries.
- West Africa: - Senegal (Dakar), Burkina Faso (Ouagadougou), Mali (Bamako), Cote d'Ivoire (Abidjan), Ghana (Keta), Benin (Cotonou), Niger (Niamey)
- Eastern Africa:- Ethiopia (Addis Ababa), Kenya (Mombasa)
- Southern Africa:- Zambia (Lusaka), South Africa (Cape Town)

Eleven countries in the project



Groundwater protection strategies should be linked to sanitation initiatives

- The project's findings strongly identified **poor sanitation** and **informal sewerage disposal** as major contributors to groundwater quality degradation.
- The project showed that groundwater quality was only prioritized when supply was sufficient and when alternatives were available.
- There is **need for new sanitation and water supply initiatives** in urban centers in developing countries and Africa's case is acute.

Africa's Groundwater Protection Situation

- Despite groundwater's strategic role, poor understanding and mismanagement has remained the norm rather than the exception
- There are examples of vital supply sources and even whole aquifers being abandoned due to pollution and of polluted groundwater served to communities, leading to typhoid outbreaks and national repercussions
- The UNEP/UNESCO cities project has shown that pollution of vital underlying groundwater sources mainly from pit-latrines and broken septic tanks has reached critical levels
- This is the situation, not only for major cities, but also for small towns and rural communities

This has become a clear threat to a sustainable water service delivery and to meeting the MDGs.

A few recurring aspects are common throughout the African continent

- Rapid urban development has resulted in many informal settlements
- Groundwater from shallow wells is widely used
- Lack of formal domestic waste disposal, sanitation and sewerage/effluent systems is the major problem
- Pit latrines and other sources are often close to wells and seldom designed to minimize groundwater impacts.
- High nitrates and bacterial contamination are common



Examples of common results

- The result is that nitrate (values in excess of 1000 mg/l recorded) and bacteriological contamination (values in excess of 10^6 total bacterial counts in certain wells and 10^6 faecal coli forms in surface waters) are the most pervasive parameters giving rise to poor groundwater quality.
- The health effects of this contamination appear to be significant based on data provided by several case studies (e.g. Mombasa, Lusaka and Addis Ababa etc)

Waste disposal in Mombasa



The pit for the VIP and the well, Lusaka



South African Informal settlements



Conclusion

- Several studies conclude that:
- The level of protection at the wellhead strongly influences the quality of the well water. This is a vital aspect in protecting groundwater quality. Sanitation must not be delinked from Groundwater Protection.
 - Maintaining quality groundwater supply is key to ensuring good health for all and in the process ensuring that a big portion of the population have access to sanitation.
- Recharge from multiple sources influences groundwater microbial and chemical water quality.
- The magnitude of contamination is also strongly affected by the population density and socio-economic setting.
- Groundwater pollution and vulnerability issues are affecting all developing countries with increasing urbanization.

Required Actions

- Increase capacity of developing countries to monitor and manage groundwater
- Provide vital data to influence policies and apply groundwater protection strategies
- Policy level approach armed with ground data and information

The establishment of the AGWC

- After the conclusion of the UNEP –UNESCO/IHP lead project (2001-2006) these two organisations with the help of partners – have made efforts to bring to the attention of the world the plight of Groundwater in developing countries and especially so in Africa, through several forums, e.g. WWF in Mexico –April 2006, AMCOW’s 6th Session May 2007, where key groundwater resolutions were adopted, resulting in the set-up of an Interim secretariat. Follow up has been done in sub-sequent AMCOW meetings, and the publication of “Indicative Roadmap for the Africa Groundwater Commission.
- Actions are expected with the selection of the Chair of the AGWC at a ministerial level and follow-up meeting to deliberate on the mode of operation and initiation of activities in 2009.

THANK YOU