

Africa's aquifers aren't being protected as they should

By [Gaathier Mahed](#)

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NGOs often [punt](#) the digging of wells as the solution to the long distances women in rural areas travel to collect water. These wells do improve the [quality of life](#), but care needs to be taken in digging them as they could lead to the over-exploitation of aquifers.



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It is true that wells have been advocated because they are easy to use, and because of the perception that groundwater is omnipresent. Also, the cost of sinking a well in comparison to other water supply infrastructure is [minimal](#).

But the [International Institute for Environment and Development](#) has said that up to US\$360 million has been spent on rural water supply schemes which are now [dysfunctional](#). This equates to approximately 50,000 water points or pieces of infrastructure that have been installed and no longer [work](#).

In Bangladesh, for example, NGOs have pushed for wells to be dug. But recent [research](#) suggests that human alteration to the landscape, the construction of ponds, and the adoption of irrigated agriculture are responsible for a pattern of increased arsenic concentration underground.

Added to this is the problem of unsustainable extraction. This takes place through a myriad of ways. The consequences can be devastating.

Sadly this is the only water people in the region have. They are forced to drink it and suffer from callouses on their hands and feet [caused by](#) the arsenic.

A similar situation occurred in a small South African town a few years ago. Studies completed in the area noticed a decline in groundwater levels by as much as 25 metres over a period of 20 years due to unsustainable [extraction](#). The situation was so dire that calls were made for people passing through to transport water into the town.

The Cinderella of water resources

Aquifers across Africa are critical for potable water supply and help contribute as much as 70% of the total water supply in some [countries](#). The management of these is critical.

For example, groundwater supplies the majority of small towns in South Africa, yet almost none of the municipalities employ a hydrogeologist on a full-time [basis](#). This has led to the mismanagement of the subsurface water reserve and, in certain instances, the deterioration of groundwater quality and mining of aquifers.

A number of technical factors need to be taken into account on a site by site basis to make sure that groundwater is extracted sustainably.

It is a common misconception that when we drill, we tap into a river [underground](#). This is not the case.

Ground water moves slowly through, or is stored in, permeable rocks called aquifers. An aquifer may be a layer of almost any kind of gravel, sand or rock that has spaces between the pores able to hold moisture. The connectivity of these pores and the size of the pore, or cavity, will determine the ability to extract water from the subsurface.

There is a case to be made for and against using underground water. But monitoring is critical. The problem is that monitoring stations are regularly closed down and less data is available to manage the [resource](#).

The situation becomes critical when emergency supplies are needed and the groundwater reserves are able to replenish the already depleted surface water reserves. When the need arises, the automatic response is to pump groundwater to supplement surface water, but without the necessary management and monitoring systems in place.

Working together for water

A decentralised approach to managing the resource has been taken in certain African countries. For example, in West Africa, money is collected regularly from the users of a supply well in a village to help finance the maintenance of the well.

This approach doesn't always work. The International Institute for Environment and Development has shown that nepotism is rife and the mismanagement of finances on such a small scale is [common](#).

In essence, a more co-ordinated effort is required which involves government, NGOs, academia and the private sector to sustainably develop and manage groundwater. This means that [licensing](#), as exists in South African legislation, is needed prior to sinking a well or borehole for water supply or irrigation purposes.

ABOUT THE AUTHOR

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