

WATER MANAGEMENT

Share and share alike

Algeria, Libya and Tunisia are showing how cooperation on resource sharing can meet both social and environmental demands

EMILIE FILOU

in Tunis

They say that out of sight is out of mind. This could not be more true of groundwater resources. Africa has a long tradition of looking after its surface waters – many lakes and rivers such as the Nile are managed by regional authorities – but groundwater has remained conspicuously out of the equation. Invisible and seemingly endless, there has been little incentive to regulate or explore water supplies – until they showed signs of running out.

In arid or semi-arid areas such as the Sahel, groundwater provides the bulk of water resources. Most aquifers do not follow boundaries. Their use is not regulated, and countries have therefore exploited them, oblivious of their neighbours' practices or the impact of theirs.

With growing needs, demand for groundwater resources has shot up dramatically: annual withdrawals from the North-Western Sahara Aquifer System (NWSAS), a 1 million km² system shared by Algeria, Tunisia and Libya, increased six-fold between 1950 and 2000. Such demand has had serious consequences: groundwater springs have started drying up and salinity levels have increased. Authorities realise that indiscriminate use of aquifers is no longer an option.



Countries in the Maghreb are now focused on managing water sources

COURTESY GE

But it was not until 1999 that a formal project involving all three countries took shape in the Observatoire du Sahara et du Sahel (OSS). OSS's mandate is to prevent and fight desertification by promoting cooperation.

Ousmane Diallo, water programme coordinator at OSS, says the embryonic work on NWSAS provided an ideal starting point. "Our premise was simple," he says, "if you don't know your resource, you cannot manage it."

With the support of UNESCO's International Hydrological Programme, OSS set out to provide Algeria, Tunisia and Libya with the tools to monitor and manage the NWSAS, including a comprehensive and common database documenting the aquifer. OSS embarked on a data-gathering crusade to build better models. "It was very laborious at first," explains Djamel Latrech, NWSAS project director. "No one wanted to share their data, so we had to gain their trust." The project started off with a minimum of information – whatever countries were prepared to hand over. OSS prepared a first database and more data followed.

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The number of trans-boundary aquifers in Africa, most of which do not have joint management systems

The next step was to act on results from the database. Again, the OSS encountered resistance. "Decision makers don't like to hear that they have to change, so we had to show them it was in their interest and that suspicions about who takes what were counter-productive," says Latrech. OSS ran scenarios based on different levels of withdrawals, from 'business as usual' to significant reductions. "The real trigger was when we looked at environmental and socioeconomic impacts," he explains. "Problems such as the increased salinity of soils were very tangible: you couldn't see the water but you could definitely see the salt, and it was on their territory."

With countries on board, OSS started work on a consultation mechanism. The project would be financed by member countries in charge of managing the database and monitoring risks across NWSAS. In 2007, such a mechanism was established, one of the first of its kind.

Few other aquifer systems have achieved such results. Egypt and Libya set up a basin authority for the Nubian Sandstone Aquifer

fer System in 1992 (Sudan and Chad joined at a later stage), but the project never took off because of a lack of political will.

OSS's participative approach and diplomatic skills were instrumental to its success. Its approach was replicated on another Sahel aquifer. In June of this year, the water ministers of Mali, Niger and Nigeria, which share the resources of the Iullemeden Aquifer System (IAS), signed a memorandum of understanding for the creation of a consultation mechanism by 2011.

OSS had to overcome the same initial reluctance to share information and cooperate as did NWSAS. "To bring ministers to turn an invisible resource into a visible issue was difficult," says Abdelkader Dodo, IAS project director. But as with NWSAS, what started as scientific and technical cooperation eventually gathered political momentum.

OSS is also in the early stages of a project with the Inter-Governmental Authority on Development (IGAD), a drought-control organisation involving Djibouti,

Eritrea, Ethiopia, Kenya, Uganda, Somalia and Sudan. Here, the co-operation mechanism exists but there is virtually no knowledge of groundwater resources. "There is a strong security element regarding water in that area, and we must ensure it is an opportunity for peace, not a potential source of conflict," says the OSS's Diallo. National surveys have been completed and the region's database should be ready in 2010.

The next two years will be crucial for the NWSAS. Countries must find ways of reducing, or at least maintaining, levels of withdrawals. They face tough but fundamental questions about their use of water resources, particularly with regard to agriculture (which makes up 80% of demand). Implementing water-saving measures such as drip irrigation or switching crops is one option, but questions about how much food production should be replaced by imports or other activities are also on the cards.

LIBYA'S GREAT MAN-MADE RIVER



GELIE YVES/GAMMA/EYEDea

IN THE 1950s, oil exploration in southern Libya revealed an unexpected but almost as valuable find: fresh water. Libya has no natural waterways, little rainfall and is 90% desert, so the find was significant. The vast resources are part of the Nubian Sandstone Aquifer System, the world's largest fossil-water reserve, which spreads over 2 million km² across Libya, Egypt, Sudan and Chad – the lion's share of which is in Libya.

The idea of the Great Man-Made River (GMMR), mooted by Muammar Qadhafi in the 1960s and 1970s, was to transfer groundwater from southern Libya to coastal regions where 94% of the country's population lives. The GMMR was planned in five phases: work began in 1984 and the first two phases, the Tazerbo-Benghazi and Hassouna-Tripoli links, were completed in 1991 and 1996, respectively. Phases three and four are still under construction. The entire GMMR project is scheduled to be complete in 2020 and will supply 6m cubic metres of water per day.

The total cost of the project is estimated at \$27bn but is hard to verify. Even harder to measure is the environmental impact of such a large-scale transfer. There are many concerns about its sustainability, both environmentally and economically, and the project is thought to have a life expectancy of only 50 years. Groundwater withdrawals in the Nubian Sandstone System have grown exponentially and the GMMR alone will not quench Libya's thirst. National leaders claim to be determined to improve water-usage policies, but much political negotiating will be required for a change of course. ●

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GOOD NEIGHBOURS

Ultimately, what donors like UNESCO are hoping for is a change in national legislation. "Our aim is that surface and groundwater be managed together, with specific regulation on groundwater," says Holger Treidel, assistant programme specialist at UNESCO IHP. "It's obviously not the kind of thing that can be achieved in three or four years; you have to start with the basics."

Much remains to be done, but the continent is ahead of the game. Last December, the UN adopted the Law of Transboundary Aquifers. The resolution encourages countries "to make appropriate bilateral or regional arrangement for the proper management of transboundary aquifers", a point that vindicates the recent work at the NWSAS, IAS and IGAD.

There are nearly 40 major transboundary aquifers in Africa. Not all are overexploited, but their sustainable management is the only guarantee they will not reach that point. ●