

►►► the same in some of the small hydro projects that are being examined downstream from the Bujagali Dam. Bujagali will provide 250MW of power once finished, and the Ugandan government is also building its transmission lines.

When projects do not have these three bases of support – multilateral banks, governments and the private sector – nothing happens, especially for renewable energy plants which are generally more expensive to build. The dream project for Africa – the rehabilitation

and extension of the Inga Dam in the Democratic Republic of Congo (DRC) – has stalled due to a lack of coordination and ensuing disputes. The companies involved are launching a new study to determine the scale of commitment to buying electricity from the countries surrounding the DRC and from actors in the mining sector.

Other large-scale projects are more likely to succeed. The Desertec syndicate of European banks and technology companies such as Deutsche Bank, Siemens, E.ON and ABB

40GW

Potential electricity production from the Inga Dam project in the DRC

seems set on developing a large collection of concentrated solar-power projects across the Maghreb and Sahara Desert. With an investment of \$570bn and plans to generate 550GW over the next 40 years, the mega-project would earn North African countries \$90bn a year in electricity exports through high-voltage lines laid across the Mediterranean.

As the unit cost of solar panels drops over the coming decades, Africa can expect many similar projects to emerge in the future. ● N.N.

WATER Desalination projects for a thirsty continent

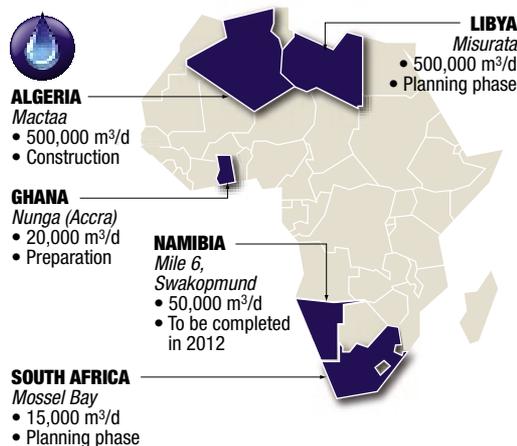
Local companies look for ways to bring expertise to water-purification efforts, still dominated by the international sector, as half the continent faces water scarcity by 2025

In May, the level of the Wolwedans Dam in South Africa's Western Cape dropped below 25% of its total capacity, a record low and another crisis for the municipality of Mossel Bay. As water restrictions were tightened and consumers urged to be frugal, officials were no doubt relieved that the municipality had decided on desalination in 2009 to mitigate future drought risks. Plant construction was scheduled to start this June.

Mossel Bay is not the only South African municipality to have opted for desalination – the process of turning salt water into fresh water. Growing populations, economic development and unpredictable rainfall have left many countries struggling to close the gap between supply and demand.

Rashid Khan, Western Cape director of water affairs at the Department of Water Affairs and Forestry (DWAF), says that South Africa has no choice but to embrace desalination, despite its

PROJECTS IN THE PIPELINE



7%

South Africa's target for desalinated water as a percentage of total supply by 2040

costs. "The constraints in South Africa are not technology or willingness but affordability. Where we have the means to do it, we will use desalination," he says.

Last year, the government published the Framework on Water for Growth and Development 2009, a long-term strategy that suggests that desalination will make up 7% of South Africa's water resources by 2040.

The policy also recommended that the government commission feasibility studies for desalination projects in every major coastal city.

Desalination is a well-established but expensive technology. In its strategy document, the DWAF calculated the average incremental cost of various interventions. Desalination was the second-most expensive, at R6.75/m³ (\$0.88/m³). Water-loss control measures came in at R1.06/m³. At issue is who will pay for the increased cost of water. In much of Africa many consumers and governments cannot afford a hike in water tariffs.

LIQUID ASSETS

One exception is Algeria which has used revenue from its immense hydrocarbon reserves to finance much of the country's infrastructure. The government prioritised water supplies and launched a 2.2m cubic metres-per-day desalination programme in 2005. Eleven large-scale ►►►

►►► desalination plants were commissioned along the coast and seven are now operating with the remaining four scheduled to start by 2011.

South Africa, by contrast, is a much smaller market. Its municipalities do not have the financial resources of Algeria's and are therefore experimenting

with capacities of 1,000-5,000m³ per day. The plant in Mossel Bay will be the biggest in South Africa, until Nelson Mandela Bay municipality completes its own 20,000m³-per-day plant.

Alan Sarkis, sales director at the South African engineering company Keyplan, says these are small projects for the European

and Asian companies battling it out in North Africa (see box).

That is good news for local companies. "International experience is great, but those close to the market will know what's best for that environment," he says. Keyplan has just finished Southern Africa's largest desalination plant, a 54,000m³-per-day plant near Swakopmund in Namibia, for UraMin. The company is following developments in the municipal markets with interest and Sarkis says that there is much potential. "Large cities such as Cape Town or Durban will need a large-scale desalination plant at some stage," he says.

WORTH THEIR SALT: DESALINATION'S MAIN PLAYERS



The desalination plant at Hamma, Algiers, built by GE

FAROUK BATICHE/NEW PRESS

THE DESALINATION MARKET IN NORTH AFRICA has been dominated by Spanish firms: Befesa, Inima, Aqualia and Acciona won seven of the 11 contracts up for grabs in Algeria. The latest project to be awarded in Tunisia, the 50,000m³-per-day plant in Djerba, was also contested by the four firms. French companies are also well-established: Veolia and Degrémont (part of the Suez group) have expressed interest in constructing desalination plants in Agadir and Jorf Lasfar in Morocco. Veolia is also present in Libya through its Sidem subsidiary.

A Singaporean company won the contract to build the region's crown jewel: the 500,000m³-per-day plant at Mactaa, Algeria, the biggest of its kind in the world. Hyflux's aggressive offer left its competitors scrambling for their calculators. The award was a coup for the Singaporean firm, which is a relatively new player on the market.

Hyflux is now pursuing opportunities in Tunisia, Morocco and Libya, but deputy CEO Sam Ong says the company is not ready to venture further afield in Africa. "What we want to see before we invest is a mature public-private partnership platform, with the ability to issue credible tenders, mitigate risks and offer guarantees to oftakers. We feel that sub-Saharan Africa hasn't reached that stage yet," he says. One alternative could be for Hyflux to participate as technology provider in a consortium with other developers. Hyflux has a number of Chinese clients, many of which have their sights set on Africa.

This leaves ample space for local operators to grow: South African engineering firm SSI Engineers won the contract for the Mossel Bay project, while Grahamek, another South African firm, built an emergency desalination plant in Sedgfield in December 2009. Keyplan has traditionally built desalination plants for the mining industry but now hopes to grab opportunities in the municipal market, including those at Swartkops (20,000m³ per day, Nelson Mandela Bay municipality) or Bitou (2,000m³ per day, Knysna municipality). ● E.F.

EARLY ADOPTERS

Desalination is now being adopted across the continent. After Algeria, Tunisia is the most advanced, with a large 250,000m³-per-day seawater desalination programme under way, whilst Morocco, Ghana and Namibia are commissioning their first municipal plants. Libya is also planning to address years of under-investment in water by increasing its desalination capacity by 2.5m cubic metres per day in the next 10 years.

It is still early days and plants in Nungua (Ghana), Agadir (Morocco) and Mile 6, Swakopmund (Namibia) have been beset by months of delays as municipalities struggle with financing and procurement strategies. Another major limitation is infrastructure. Desalination is energy intensive and needs a reliable source of power.

Whatever the obstacles, Africa will need more desalination projects: the UN predicts that half the population of Africa will face water stress or scarcity by 2025. Senegal and Nigeria have already expressed interest in adopting the technology. South Africa is working on a low-cost ultra-filtration technology and Morocco is building a pilot plant which will use renewable energy. The prize for the right innovation could be the opening of a whole new market. ● EMILIE FILOU