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CORPORATE BROCHURE

The desalination option

Dr Vaino Shivute, CEO of Namibia's water utility NamWater, explains how the company is rising to the challenge of nearly doubling its water supply to meet the needs of the country's rapidly expanding uranium mining industry. Gay Sutton reports

No matter where in the world you live, water is essential for life. But for those living in the desert regions of Africa, the value of this precious commodity is even more deeply appreciated. Covering an area of some 824,000 square kilometres, Namibia is one of Southern Africa's driest countries, supporting a small population of just 2.1 million people, many of them scattered in isolated rural communities. To the east lies the Kalahari Desert while the arid Namib Desert, one of the oldest deserts on earth, stretches from north to south along the coastline.

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"Our rainfall is so low that we have no perennial rivers that originate from and flow through our country," explains Dr Vaino Shivute, CEO of the Namibian water utility NamWater. Only rivers that arise elsewhere, and touch Namibia's borders, flow throughout the year. The Orange River, which originates from the Lesotho Highlands and flows through South Africa, forms part of the country's southern border; the Okavango, which travels along its north-east border, originates in Angola and terminates in Botswana; the Kunene River in the north-west is shared with Angola; and the Zambezi river flows along Namibia's borders for a short distance and forms the border between Zambia, Zimbabwe and Botswana. "Inside Namibia we have what we call ephemeral rivers, which flow only after we've had rain, but then they dry up."

Rain in Namibia, though, is a rare occurrence, and largely occurs during the months of February and March. In the south-west it amounts to 0mm to 10mm per annum but increases in quantity towards the east and north. At the capital Windhoek, for example, it averages around 300mm per annum, and it is highest in the north-east, where between 600mm and 700mm is expected each year.

Management of these precious water resources is complex. The country has 11 dams on its ephemeral rivers, which capture the rare rainwater and store it. Water is then purified and distributed through the inhabited interior areas. There are some 18 water treatment plants located on the perennial rivers and next to the dams inland. These plants are linked to a pipe network which supplies clean water to towns and rural communities. Finally, there are boreholes drilled into various aquifers—a water source that is finite and therefore is strictly monitored and managed to ensure that the rate of extraction does not exceed replenishment.

Until 1997, water was supplied free of charge in some parts of rural areas and heavily subsidised in urban areas by the Namibian government. But following a resolution to charge for this scarce commodity, the government formed NamWater and tasked it with supplying water in bulk to all those who needed it, at cost. The company took over the existing bulk water supply infrastructure and began operating in 1998, supplying water for domestic consumption, industry, livestock

production and several irrigation projects. Initially there was financial backing from government, but today the company is financially self-sustaining.

"Since 2000, we have seen very little growth in domestic demand for water," Shivute says. "In fact, we have noticed that where people are now billed for their water they are less wasteful, and this has had a dampening effect on demand. We currently supply between 65 million and 70 million cubic metres per annum."

However, all that is likely to change. Following the huge increase in the price of uranium in 2007 and 2008, there has been a marked increase in exploration in Namibia's central coastal desert

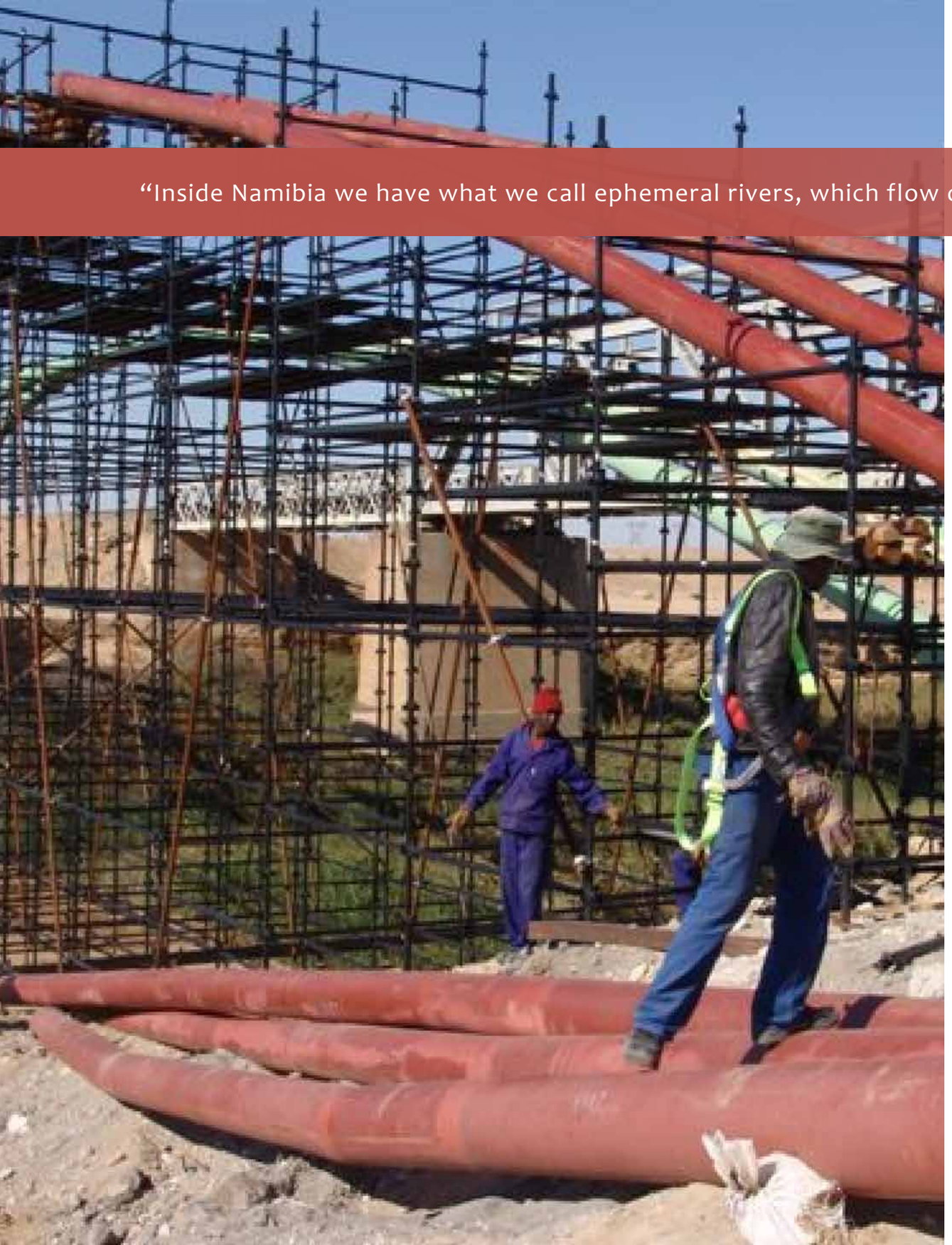
region, and of course mining operations are heavily water dependent. “We currently have two mines in operation in this region and both of these are expanding their production. However, we have a further 10 at different stages of exploration and development, five of which have already approached us to supply their water,” Shivute says. “Our projections indicate that demand for water is likely to rise by between 40 million and 60 million cubic metres per annum in this area alone, almost doubling our national output.”

The problem for NamWater is that the central coastal region relies on extraction from the underground aquifers. “And we have already reached the limit for sustainable water extraction in this area,” he continues. “We are therefore looking at setting up a desalination plant to supply the needs of the mines.”

Desalination is certainly not a cheap option. Two-and-a-half years ago the cost of such a project was quoted in the region of N$1.5 billion - N$2 billion, but prices have continued to rise. In the long term, the mines will cover the cost of construction, maintenance and supply. But if NamWater is to fulfil its mandate to supply water where and when required, it will need to source the financing and construct the plant before mining commences.

Environmental studies have already been completed, and NamWater is the central authority in a government taskforce set up to deliver and manage the business plan for the project. “We aim to produce the first report in mid-December this year which will argue the business case for the desalination plant,” reveals Shivute. “Next year we will examine the funding and management options, and we expect to award the contracts at the end of next year. Then if things go according to plan, construction will commence in early 2012, continuing for around 24 months.”

The intention is to install plant and equipment capable of producing around 25 million cubic metres of water per annum initially. However, NamWater does not expect to see the demand for uranium abating any time soon. The estimates it is working on indicate that there are more than 300 new nuclear power stations



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around the world at various stage of development, all of which will need nuclear fuel at some point in the future. Therefore, the company aims to future-proof its construction work. Structures such as the seawater intake, storage facilities, pipelines and power supply will all be large enough to accommodate future expansion of the plant. The desalination plant can be expanded in modular fashion.

NamWater already has a considerable experience to draw upon. Not only has it been refurbishing the old water supply infrastructure that it inherited, but also constructing new reservoirs and pipelines to supply the remote villages. In the census of 1992 only 45 to 50 per cent of people living in rural areas had access to clean drinking water. But after 18 years of investment and construction, that figure is estimated to be 90 per cent.

"We are very proud of this achievement if you consider the nature of the country, that our population is scattered over a large area, and that we do not have much water. And we are hoping to be able to maintain and improve on this figure into the future. But of course," Shivute says, "providing water to this last 10 per cent of the population is likely to be really difficult, because they live in some of the most inaccessible regions of the country." In spite of this realism about the cost and feasibility of achieving a clean water supply for all, he remains both upbeat and undaunted. www.namwater.com.na

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