

SOUTH AFRICAN Power & Energy

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Online

Outdated infrastructure is threatening the nascent coal rush, writes **Simon Mundy**



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Light source: Eskom may well have a struggle on its hands to keep the bulbs blazing during the coming years, despite plans to increase supply capacity and recommission mothballed power stations. See report on Page 2

Marc Shoul

Region needs to draw private investors

South Africa's state electricity company is the main supplier to neighbouring nations, but better distribution networks are needed to aid economic development, reports **Simon Mundy**

When an electricity supply crisis hit South Africa in early 2008, the shockwaves went far beyond the country's borders. Through a network of bilateral agreements Eskom, the state electricity company, provided a large share of the supply used by other members of the Southern African Development Community (SADC), which suffered too, as "load shedding" entered the national and regional lexicon.

This was a wake-up call for the whole region. Eskom's generating capacity is nearly four times the com-

combined total of the other 11 countries in the SADC. Yet, as it battled to cope with domestic demand, Eskom was forced to cut back on its supplies to neighbouring states: net exports now stand at just 1 per cent of production.

The situation is likely to become more difficult in the next few years. Eskom's reserve margin recovered, as electricity demand fell in the South African recession, which began in late 2008, and the crisis pushed energy-intensive industries to curb their usage.

Yet the load on the grid is growing, as the economy recovers and many

experts expect a wave of power cuts next year or in 2012. Eskom is continuing with plans for two 4,800 megawatt coal-fired power plants, but the first will only come online in late 2012 and the second not before 2014.

"As domestic demand increases in South Africa, countries that rely on Eskom will feel the pinch once again," says Michelle Karavias of Business Monitor International.

The need to lessen reliance on Eskom has pushed neighbouring countries to prioritise building new capacity. Botswana hopes to build a 1,200MW coal plant at Mmamabula;

Namibia, Zambia and Mozambique plan hydroelectric plants. But the region may find itself trapped in a vicious circle, analysts say.

It is true greater provision of electricity would give a vital boost to the prospects of some of the world's poorest people. Only 5 per cent of Mozambique's population has access to energy supplies, as do a similar proportion in Malawi, Lesotho and the Democratic Republic of Congo. And most southern African countries have seen penetration levels fall in the past four decades due to underinvestment and mismanagement in the sector.

But the lack of distribution infrastructure has deterred investment, because companies have sought supply deals before committing to building power stations.

"You'd have to have guaranteed off-take agreements," says Marc Goldstein of Frost and Sullivan, a consultancy. "The catch-22 is that you have all these people without power and they need it to develop, but they can't yet afford to pay for it."

Hopes that Eskom would guarantee to take most of the power from

Continued on Page 3

Doubts hang over push to grow biofuels

Crop diversity

Many countries are seeing foreign investment in 'green energy', says **Simon Mundy**

Under a burning midday sun in the Choma district of southern Zambia, Chisco Simweena proudly shows off the field where he will soon gather the seeds of his 500 jatropha plants for conversion into biodiesel.

He is one of 8,000 Zambian farmers who have been given seedlings and support by Southern Biopower, a German-controlled biofuels company.

"They're empowering the people," he says, adding that jatropha will bring in several times the income he could have expected from alternative crops such as sunflowers or groundnuts.

"It can't be eaten by animals because it's poisonous. Once it's planted, you don't need fertiliser and you're assured of a harvest every year, even if there's no rain. And the yield will get bigger every year."

Zambia is far from the only southern African country to witness substantial investment in biofuels.

Malawi, Mozambique and the Democratic Republic of Congo have all been targeted by foreign companies eager for a slice of an emerging boom market.

Africa could produce up to 347 exajoules of bioenergy a year by 2050, says Jeremy Woods of Imperial College, compared with current global production of less than 500EJ.

Yet Mr Simweena is at the centre of one of the world's most controversial industries. A World Bank report published in September named rising demand for biofuels as a factor in large-scale foreign purchases of African land that led to the eviction of

"vulnerable groups [from] land on which they have legitimate, if not formally recognised claims".

Riots swept Madagascar in 2009 after Daewoo Logistics of South Korea started negotiations in an attempt to lease large tracts of the country's arable land, in part for bioenergy production.

Environmental groups say biofuels threaten food security in Africa by diverting agricultural land from food production.

"Local communities are facing increasing hunger and food insecurity, just so rich countries can fuel their cars," says Adrian Bebb of Friends of the Earth.

Rising food costs are a tense subject in southern Africa, after the region was badly affected by the 2008 price rises. Fourteen people died in Mozambique in September in an uprising against a 30 per cent bread price increase.

The country's government, with others in the region, has been keen to encourage investment in



Growing pains: opinion is divided over jatropha

Dreamstime

biofuels, however. Mozambique's biofuels strategy, launched last year, aims to ensure bioethanol makes up 10 per cent of the nation's petrol by 2015 in an attempt to mitigate the effects of oil price volatility.

"Alternative, renewable sources of energy and low-cost technologies will ensure more people have access to energy, and will cut dependence on oil," Salvador Namburete, energy minister, said in May.

Zambia has also moved to spur development in biofuels, signing agreements of co-operation with Brazil, the world's biggest producer, during a visit in July by President Lula da Silva.

"It's still a brand-new industry in Zambia," says Martina Bergschneider, managing director of Southern Biopower.

Ms Bergschneider rebuts claims of a threat to food production by pointing to her company's use of jatropha, an inedible plant that can grow in soils unsuitable for food crops. "Farmers are cleverer than politicians think; they test jatropha carefully so that they can grow it in combination with food crops."

Mr Simweena confirms that his move into jatropha farming is still at the "experimental" stage and he still devotes four of his five hectares to maize. "But this plant is much more profitable," he says. "If the experiment goes well, there would be no need to grow so much maize."

Having begun the project in 2007, Southern Biopower is yet to begin commercial production of jatropha oil

and analysts warn that full-scale cultivation of the crop in southern Africa is too recent to know whether it can be commercially viable.

"We're quite sceptical about jatropha," says Harry Boyle of Bloomberg New Energy Finance, a consultancy. "It's not as hardy as people say. You can't get the promised yield without a lot of fertiliser and water that could have been used on other crops. So jatropha will come into direct competition with food crops on a resources front."

Despite the doubts about jatropha, the potential to produce biodiesel from foodstuffs is well established in the region.

Malawi began producing ethanol from sugar cane in 1982 and now has two ethanol plants with a combined capacity of 30m litres a year. But some potential investors have been put off by worries about undeveloped infrastructure and security of land tenure.

Such fears are less prominent in South Africa, yet the regional powerhouse has held back investment through a ban on the use of maize in biofuels so as to keep down food prices.

The policy's actual effect, however, is opposite to the one intended, argues Emile van Zyl of the University of Stellenbosch.

He says: "We overproduce maize in South Africa, which gives us great vulnerability. If the price drops, some farmers will go out of business. If farmers had access to an alternative market it would stabilise their income streams and consolidate food supply."

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South African Power & Energy

Utility's goal is to keep the lights burning

Eskom

The electricity generator may struggle to maintain supply before 2013, says William MacNamara

Inside Megawatt Park, the Johannesburg headquarters of South Africa's power utility, planning has taken on the scope and urgency of wartime preparations. Eskom, the state power provider, is moving its initiatives from the drawing-board to the field. They can be seen from Johannesburg's pools and bathtubs, where solar panels now heat the water, to the countryside of Limpopo and Mpumalanga provinces, where mammoth power stations are under construction.

All these efforts are being made to meet a simple goal: keeping the lights on. But, for the next three years, this could be a real problem. Steve Lennon, an Eskom executive director, thinks "2012 could be very tight" and adds that the stability of the electricity grid will depend on South Africans having learnt to use power more efficiently.

"Whether we have enough power to allow full economic growth is not a hypothetical question," he says. "We think about it all the time. We need more."

South Africa's power grid has been strained since the last days of 2007, when its exhaustion and near-collapse was felt across southern Africa. Since then, the supply base has more or less remained the same. But it must supply enough energy until the end of 2013, when the first of the big new power plants comes on line.

Mr Lennon views the construction of Medupi, the 4,800 megawatt coal-fired power plant rising in Limpopo at a cost of R99bn (\$14bn), on a laptop in his office. He points out a boiler the size of an office block. With its first 720MW due in 2013, Medupi is hailed almost as a saviour. But Mr Lennon denies anything so grand. "It's more like a step on the road towards 2030."

The reality is that no single project will be enough to meet the challenge. It is estimated that the economy will grow by 2.5 per cent in 2010, 3.7 per cent in 2011 and 4 per cent the following year, according to government forecasts.

This outstrips the growth in the power supply base, which nonetheless is rising marginally after much re-investment in the past few years. The Camden power station, a 1960s warhorse mothballed in the 1990s, was reopened in October to great fanfare. Camden and other de-mothballed stations are expected to add more than 1,000MW during 2013.

Despite this "there is a gap", Mr Lennon says, referring to the shortfall of supply below an adequate reserve margin. "The gap is 3 gigawatts (3,000MW) now. That could rise to 6GW-9GW by 2012. What are we going to do about it? The only way to deal with it is demand management."

"Demand-side management" has become more than an Eskom buzzword in the three years since rolling blackouts afflicted the country. In its programmes to limit demand Eskom's zeal for planning – aided by a range of government departments – is on full display.

Since 2007, Eskom says, 43m fluorescent light bulbs have been installed in homes, part of one energy conservation programme. A push for solar-powered water heaters in homes is gaining momentum, nudged by punitive power prices that are rising 25 per cent a year on average.

One middle-class suburbanite in Johannesburg says his energy bill rose during the winter from R2,000 a month to R6,000. The cause was underfloor heating, a highveld winter luxury. He no longer heats the floor.

Eskom is also piloting a scheme to install energy usage monitors in homes to prevent such surprises. People will be shown how much power they are using and a limit of suggested usage. If the limit is exceeded for a length of time, the house will be cut off in a targeted blackout. Power can be restored, but only after a minor hassle.

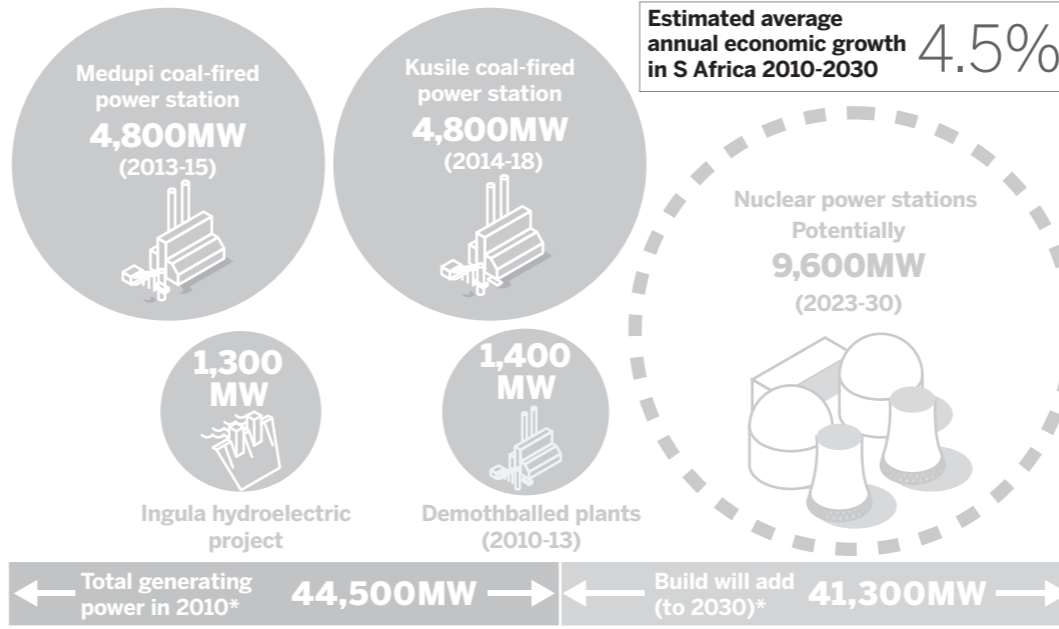
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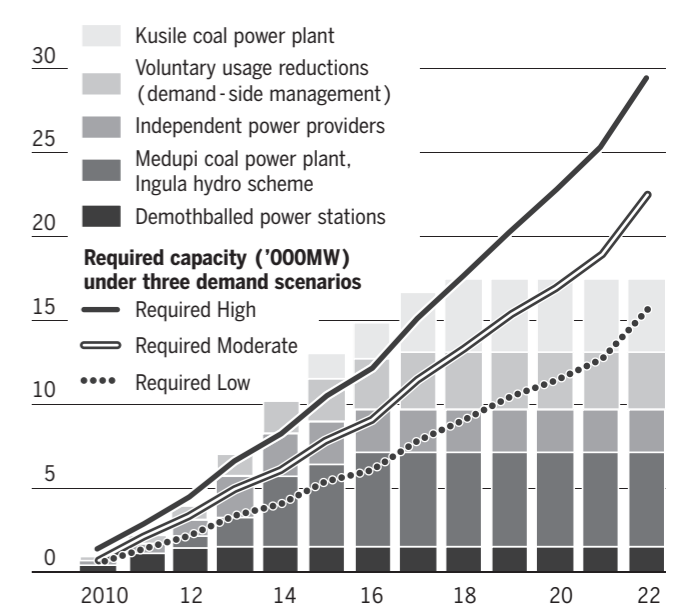
The demothballed Camden power station in Mpumalanga

Potential generating power of new South African energy projects



Power system supply and demand

Required capacity ('000MW)



buffered by a plan for big industrial users such as mining and manufacturing companies. Industrial users will be incentivised to free 500MW of power that Eskom can draw on whenever it wants. This appears feasible after changes to the power pricing structure.

But the business community has reacted to Eskom's plans with deep scepticism. This is less to do with Eskom, whose refocused management under Brian Dames, chief executive, is praised, and more to do with pessimism about the bureaucracy.

In 1997 the government published a white paper warning of a power shortage that would materialise by about 2007. Eskom and the Department of Public Enterprises say they saw it coming and the lights went out in

December 2007. Eskom's plans are set within a wider policy framework, the integrated resource plan, created by the Department of Energy and published in October, which details how South Africa will use renewable and non-renewable energy to ensure a reliable power supply to 2030.

Eskom is overseen both by the Department of Energy and the Department of Public Enterprises, its shareholder. Power prices, which influence Eskom's revenues, are set by the National Energy Regulator of South Africa. Its enormous capital expenditure programme depends on the Treasury. Some of its policies may contradict another policy framework, the New Growth Path, published by the Department of Economic Development this month.

An executive at one of South Africa's largest industrial companies, says: "The issue is that Eskom may need to say 'we have run out of power again' before there is the political will to get these kinds of policies sorted." He was referring to the need to clarify incentive schemes for private power generation quickly, so companies can

start investing. "Because without things hitting a brick wall, there is often no focus."

There is a tendency to look at the goals of the government departments and Eskom as so many pilot schemes and pieces of paper, but without any assurance that private and public enterprise will come together.

Long-standing pessimism also surrounds Eskom's financing. It is spending R440bn to build power stations, resuscitate old ones and lay transmission lines, one of the costliest building programmes on earth.

But in the second half of 2010, Eskom looks more financially secure than at any time since the power crisis. It received a R28bn loan from the World Bank, R21bn from the African Development Bank and the government has proposed a further R20bn cash injection this month.

Its funding for Medupi and Kusile, the other coal-fired power plant entering service between 2014-2017, is secured. The government in November extended R174bn in guarantees on its debt, taking total guarantees to R350bn. This allows it to plug its

remaining funding gap by borrowing in the international markets as if it is the South African government.

Concern remains, however, that the new plants will run over budget and behind schedule. "Over the next three years I see a R100bn funding gap for Eskom," says a Johannesburg banker. "The government borrows \$1.5bn a year. How will Eskom by itself get a couple of billion dollars more?"

In its interim results this month, Eskom noted that R140bn of its R440bn programme is not yet allocated because it is long-term funding beyond the construction of Kusile.

Mr Lennon says the financing of the building programme is "more or less sorted" and adds that Eskom will not resort to the rolling blackouts that hit the country in 2008. There is a "hierarchy of contingencies", he says, to prevent it from happening.

"We are not anticipating a dark 2012, with the contingency plans we have in place," Mr Lennon says. "We should be able to meet demand. But we will be sweating. We will be sweating, but South Africa will still be thriving."

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4 March	Members' Meeting	EAA Kampala
9 March	Members' Lunch Meeting	EAA Nairobi
20 April	Members' Lunch Meeting	EAA Nairobi
8 June	Members' Breakfast Meeting	EAA Kigali
9 June	Members' Meeting	EAA Kampala
10 June	Members' Meeting	EAA Dar-es-Salaam
10 June	Members' Meeting	EAA Dar-es-Salaam
14 June	AGM	London
27 July	Members' Lunch Meeting	EAA Nairobi
26 August	Members' Meeting	EAA Dar-es-Salaam
2 September	Members' Meeting	EAA Kampala
14 September	Members' Breakfast Meeting	EAA Nairobi
18 October	Members' Meeting	EAA Addis Ababa
21 October	Members' Meeting	EAA Kigali
26 October	Regional Meeting	EAA Nairobi
4 November	Members' Meeting	EAA Dar-es-Salaam
7 December	Members' Lunch Meeting	EAA Nairobi
26 January 2011*	VIP Briefing with HE Mr Omer Piankali, Ambassador, Embassy of the Gabonese Republic	Venue *
22 Feb 2011 *	VIP Brief on Nigeria by Peter Stephenson, Director of Trade & Industry, BHC Lagos	Venue: Old Trafford Stadium, Manchester.
15 December	BCA UK Annual Christmas Review with Patrick Smith, Editor of Africa Confidential	Stephenson Harwood LLP, One St Paul's Churchyard London, To Register: www.eventelephant.com/review

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Industry and state co-operation is a crucial factor in supply mix

Private sector

Business has a vital role, says William MacNamara

A possible solution to the problems of Eskom, South Africa's state electricity utility, lies in private hands and in places such as the Northern Cape, the arid and sunny province bordering Botswana.

Anglo American, South Africa's largest miner, operates the Sishen iron ore mine there. It is considering building a solar power facility to create up to 100 megawatts of electricity, more than the roughly 60MW used by Sishen.

"It is likely to happen; it is starting to make sense," says an Anglo executive. And for good reason. A 2009 report on the concentrated solar power (CSP) industry names the Northern Cape as one of the two best places in the world to generate CSP. The region provides almost 3,000 kilowatt hours per square meter of potential solar power, according to the report.

South Africa has offered attractive incentives to

build such a facility. Under the Renewable Energy Feed-in Tariff (Refit), rolled out after the 2007 power crisis, providers of CSP can qualify to sell energy back to Eskom for R3.14 per kWh. That compares to R0.42/kWh, the average cost of electricity today.

"We would not be using the solar farm to power Sishen," says the Anglo executive. "What we have here is the [Northern Cape] real estate. We would be taking advantage of the Refit and selling the power back."

The intelligent design of Refit, which also offers special tariffs for independently produced wind, biomass and hydroelectric power, could lessen the nation's reliance on coal and create a reserve of extra power by incentivising businesses to build.

Yet, 13 months after the tariffs were approved, no Refit contracts have been awarded. Refit is a case study in the best intentions of the state as well as the bureaucratic drag that holds many solutions back.

One of Refit's problems seems to be its popularity. People close to Eskom and the procurement process say pending applications represent between 5,000MW and 8,000MW of power. But Refit calls for only 1,025MW of renewable power, which has slowed the applications review process.

The decision to approve Refit projects was originally in the hands of Eskom. It had stated it was ready to pre-qualify bidders in October, but in September it was removed from the process.

The Department of Energy and the Development Bank of South Africa, with input from the Treasury and a special independent-power-provider unit, took over procurement.

Even if a Refit project was approved this year, it would not be likely to enter service in the critical two years to 2013. "The govern-

ment, electricity sector and users each have an idea of what to do to solve the situation, and they each have a big role to play," says Adam Kendall, principal at McKinsey and head of its sub-Saharan Africa power practice. "There is some collaboration between the three groups, but it is insufficient. Unless we see more collaboration, 2012 is likely to be problematic."

Private enterprise has, however, still made big efforts in the past year to create its own power.

Anglo has moved its CSP project to the pre-feasibility study stage. It is also looking at building a 450MW power plant using discard coal – a mining by-product – to help power its mines.

Miner Xstrata has plans

Mike Roussouw: "The 500MW saving should not be a problem"

for a 600MW plant to help power its South African ferrochrome business. International Ferro Metals, a smaller ferrochrome producer, has opened a cogeneration plant recycling emissions into energy that provides 10MW. Sappi and Sasol, the paper and fuels companies, operate larger cogeneration plants and Eskom buys 277MW from cogeneration contracts.

These projects all have different goals. Some may feed the generator's own operations. Others aim to produce power at a remote location and ship it back to their plants via the transmission network. Others may be capitalising on feed-in tariffs to sell energy to Eskom for double or triple the market price.

But they all show that industrial users of power in South Africa are considering becoming independent power producers, a term

usually applied to energy companies. By doing so, big business is finding ways to buffer its operations against rising power prices and a worsening power deficit, as well as to profit from any excess power it generates.

Eskom and the government already depend on the private sector. One of Eskom's contingency plans for the next three years involves a package of 500MW of power savings from big industrial users, to be bought by Eskom for a fee.

Mike Roussouw, chairman of the Energy Intensive Users Group, a collection of the country's biggest users, says: "The 500MW should not be a problem, there being a willing buyer and a willing seller."

There is potential for a total of 2,000MW by using "demand market participation" power, he says. "But 1,500MW is constrained because of timing, policy, financing. The national buyer can only put so many funds on the line that are approved [to buy the power]."

The value of saving power is already clear. At the Johannesburg headquarters of Anglo Platinum, one of the country's biggest energy users, a room has been set up to monitor precise power usage across its operations. When Eskom comes calling, the company can zero in on which energy is convenient to free up.

Despite this co-operation, problems lie ahead. "Eskom has the money for two power plants, but where will the money come from for nuclear?" asks Michael Spicer, head of Business Leadership South Africa.

"There is no scenario under which the taxpayer can afford all this. That is why it is clear, amid the choice being fudged at the moment between private participation and state direction, that private participation is the way forward."

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Nuclear industry set to gain from increase in capacity

Integrated resources

Developing the sector could have benefits for wider job creation, writes **Michael Bleby**

Rob Adam sounds pleased. Well he might, because under plans to increase nuclear power generation in an effort to reduce South Africa's long-term dependence on coal, the nuclear industry, of which his company is a key part, stands to get its biggest boost in years.

"It's very significant," says Mr Adam, chief executive of the South African Nuclear Energy Corporation. State-owned Necs, the world's biggest producer of medical isotopes used in scans to detect conditions such as cancer and heart disease, will bene-

fit from an ambition that would see the country build between three and four nuclear power stations.

The spin-offs from the nuclear industry coming out of South Africa's attempt to reduce carbon emissions and secure electricity supplies will give welcome support to a sector that suffered a recent body blow.

In September, the government closed down its Pebble-Bed Modular Reactor, a high-temperature, gas-cooled project, after 10 years and R9.2bn (\$1.3bn) of investment. Necs ran four out-sourced fuel laboratories for the PBMR. About 600 staff have already been lost from the project, which played a key role in keeping alive the skills built up in South Africa's apartheid-era nuclear industry, but which ultimately failed to commercialise its fourth-generation nuclear technology.

There is hope for the industry again, however. "If the [resource plan] is accepted and adopted and the money is found to go ahead with the expansion, then what we will gain from that is far more than what we've lost as a result of PBMR's closure," Mr Adam says.

An integrated resource plan, due to be confirmed by government in coming months, envisages that by 2030 a further 9,600 megawatts a quarter of South Africa's new generation capacity and 14 per cent of its so-called baseload capacity – the equipment needed to supply energy round the clock – will come from nuclear, but from older generation technology than the pebble-bed project.

The country already has Koeberg, an 1,800MW nuclear plant outside Cape Town.

One opportunity the government sees from the construction

of nuclear power stations is the restarting of the uranium enrichment capability, closed down after South Africa dismantled its nuclear weapons programme ahead of the 1994 democratic elections.

Keen to use its own uranium resources, the world's 11th-biggest producer sees a benefit in enriching the heavy metal for domestic and export use.

There is a political as well as economic element to this. South Africa could create a niche supplying fuel to countries such as Iran and North Korea – "countries the US would get nervous about", as Peet du Plooy, a programme manager in sustainable growth at Trade and Industrial Policy Strategies, a Pretoria-based think-tank, puts it.

"A role South Africa can play, I think, is as a safe and trusted guarantor of nuclear fuel, using its own fuel and resources from

elsewhere to manufacture fuel and to supply Iran, North Korea... with whom South Africa has built up a trusting relationship," Mr Du Plooy says.

This view may win support following last month's revelations that the Pyongyang government had built an extensive

enrichment facility, apparently without the west's knowledge.

Mr Adam plays enrichment down, saying bigger opportunities could come from developing the capability to manufacture specialised products such as valves and control rods. "The strategy," he says, "would be to

get into the international supply chain. We would like to go to the US, French, Russian [companies] and say: 'Can we manufacture this particular valve in your reactors? We would like to be the sole supplier for this valve wherever you build power stations.'"

South Africans would start off with little ability but build up their expertise over time, Mr Adam says, citing South Korea as an example. "The first plant built in Korea had almost no Korean input. But after 35 years, they can build their own plants. They're even selling them abroad. That's a copybook of how to do it."

Developing the skills in South Africa for such a role will require technology transfer, or localisation, as the government calls it. Whichever foreign supplier or suppliers are contracted to build the planned power sta-

tions – following a tender process that will have to be under way by the end of next year if the resource plan's deadlines are to be met – will be under pressure to pass on skills to locals. Any proposed investment will be scrutinised for compliance with government's industrial development objectives.

"When you train somebody to do welding on a nuclear power station, they could do that in the petroleum or aircraft industry," says Eskom, which will oversee the nuclear construction programme.

The projects could also see the return of much of the country's nuclear talent working overseas, Mr Adam says.

But with no new stations due to come online until 2023 and no committed funding in place, the realisation of South Africa's nuclear future may be left to the next generation to put in place.



Peet du Plooy: 'A role South Africa can play is as a safe and trusted guarantor of nuclear fuel'

Neighbours eye the potential of DRC's Inga rapids

Hydroelectric power

A planned scheme could supply electricity to 500m people but allegations of indifference and corruption hang over its future, says **Simon Mundy**

More than a decade after the death of its autocratic leader Mobutu Sese Seko, the Democratic Republic of Congo's 100 franc note still bears the image of one of his pet projects.

The Inga II hydroelectric dam, a once cutting-edge development that lies on the Congo river 140 miles south-west of Kinshasa, is severely dilapidated after years of neglect.

Yet governments across southern Africa and beyond have been eyeing the Inga falls, a nine-mile wide group of rapids, as a potential home to the world's biggest hydropower station.

Grand Inga, as the still notional project has been dubbed, would generate up to 40,000 megawatts. This is nearly double the capacity of China's Three Gorges Dam and more than a third of present output in the whole of Africa. The plant could supply electricity to 500m people, according to a World Bank study.

Several southern African countries, notably South Africa, have expressed strong interest in importing electricity from the mooted station, while the more ambitious projections have it sending power as far as Europe. Despite the costs of transmitting the electricity more than 3,000 miles, the station could undercut present tariffs in Italy, according to the World Energy Council (WEC).

While pre-feasibility studies on the project, commissioned as early as 1993, concluded it was viable, progress has been sluggish. Doubt has been cast on its chances of success by the state of Inga's two existing stations.

"The record for hydropower in the DRC isn't great," says Peet du Plooy

of Trade and Industrial Policy Strategies, a think-tank. Inga I, built in 1972, and the larger Inga II, completed 10 years later, generate a fraction of their full capacity because of blockages and poor maintenance.

A further issue is the price tag. With costs estimated at up to \$80bn construction would require support from neighbouring states, development agencies and the private sector.

The Congolese government does not appear to see securing this funding as a priority, however, says Latsoucabe Fall, Africa manager for the WEC. "There is no firm commitment from the government – nothing has been moving for the past two or three years, and I'm not confident of what will happen in the next few years. They're in no hurry to develop it... perhaps for political reasons to do with elections next year."

The state has also alienated potential partners in the region by excluding them from the smaller Inga III scheme, widely seen as a test run for Grand Inga. The Western Power Corridor (Westcor) was established in 2003 as a partnership between utilities from the DRC, South Africa, Namibia, Botswana and Angola. Long discussions resulted in plans for a \$7bn, 4,500MW hydroelectric plant that would supply each of the participating countries.

But the plan collapsed in February, after Congo decided to bring in BHP Billiton as an anchor customer. It had been discussing the project with the mining group for five years, fuelling suggestions of duplicity in its dealings with Westcor. "It became clear that the project could not go ahead in its current form," says a source at Eskom, the South African electricity company that was the biggest player in the partnership. "I suppose they might have got a better deal from BHP."

Westcor has since been dissolved, in what was seen as a backwards step for regional power co-operation.

Yengo Massambu, chief executive of the DRC's National Electricity Society, acknowledged that the move was a "big decision", adding: "Each country needs to look at how it can



Water power: the Inga I dam. The Inga falls have the potential to become home to the world's biggest hydropower station

develop itself." The new plan envisages a smaller station with a capacity of about 3,000MW, which will take at least a decade to complete.

Under provisional discussions, and unlike the Westcor proposal, the DRC will be under no obligation to supply its neighbours with any power produced. About half the station's electricity would go to a BHP Billiton aluminium smelter. "The remainder would be available for domestic and regional consumption," says BHP.

Yet there is little sign the approach will improve electricity penetration in the DRC. Only 6 per cent of the population has access and limited transmission infrastructure means any increase in generating capacity will be irrelevant for most Congolese.

"There's been very little discussion of how to improve the distribution of power across the country," says Terri Hathaway of International Rivers, a non-governmental organisation. "There's a massive energy divide between the haves and have-nots."

BHP Billiton is optimistic about the prospects for Inga III – although it will take at least 10 years to complete – but the continuing instability in the DRC means that the far larger Grand Inga project is unlikely to get under way in the foreseeable future.

Inga is far from the violence in the country's east, the continuation of a conflict that has claimed more than 5m lives since 1998. Yet investors have been perturbed by the country's reputation for sleaze. The DRC is one of the world's most corrupt nations, according to Transparency International, and the state's controversial management of mining and oil licences has added to concerns.

Meanwhile the country is struggling

to raise funds to ensure that national elections next year run smoothly.

"If this was China or somewhere in Europe [Grand Inga] would be built as a matter of priority. No one would

blink an eye," Mr Du Plooy says. "But until the DRC is stabilised, and there's a real international effort spearheaded by African partners, it isn't going to get off the ground."

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Region needs to draw private investors

Continued from Page 1

new stations in neighbouring countries, with the remainder serving domestic demand, have been placed on ice while it deliberates an integrated resource plan (IRP) that will lay out its long-term strategy.

CIC Energy, the Canadian developer of Botswana's Mmamabula project, had hoped to sell three-quarters of its output to Eskom, but progress on the plant has stalled because of delays in drafting the IRP. Eskom, says: "We must consider the market for 200m people [in the region], not just look at South Africa. The first thing is to stimulate the transmission grid and the power will come."

The limited electricity consumption of southern African countries has restricted power station investment, but a better integrated regional market could spur interest from private electricity companies. That is the reasoning behind the Southern African Power Pool (SAPP), an international power-sharing

mechanism formed under the aegis of the SADC.

Yet SAPP's development has been slow. Mr Goldstein says the regional shortage of electricity has made countries opt to arrange long-term guarantees of supply, rather than procure power through a short-term market system. He says: "Until there's a big surplus of electricity in any of the countries, SAPP won't be a practical reality."

The fragility of regional co-operation was highlighted this year, when the Western Power Corridor, a consortium including several regional power companies, abandoned plans for a 4,300MW hydroelectric plant at the Inga Dam in DRC. BHP Billiton, the Anglo-Australian mining company, later offered to fund construction of a smaller station at the site to power a planned aluminium smelter nearby.

Companies such as Australia's Riversdale also plan an active role in building generating capacity in Tete, northern Mozambique, a large coal find. The Tete

"coal rush", driven by strong demand from industry in China and India, has seen its population almost treble in the past decade.

This reflects a hunger for the region's fossil fuels. Angola's oil industry will see its economy grow by 6.7 per cent this year as it continues to flout Opec quotas.

DRC hopes to exploit an

'We must consider the market for 200m people [in the region], not just look at South Africa'

estimated 2bn barrels of oil under Lake Albert. Namibia is courting investment in what it says are some of Africa's biggest offshore oil deposits. US company Anadarko made two big gas discoveries this year off Mozambique's coast. And Botswana has attracted interest from South African and Chinese miners. Regional biofuels produc-

tion is also growing, as foreign companies are drawn by low land costs.

Huge investment will be needed in infrastructure for large-scale exports from Tete through the port at Matola. Mozambique's transport limitations and the inability of South Africa's rail system to meet the capacity of the coal export terminal at Richards Bay bode ill for the nascent coal industry in landlocked Botswana.

Concerns about corruption and security of tenure are also widespread, while the biofuels industry has been criticised for threatening food security and undermining good governance.

Yet despite the criticism, southern African countries have created an investment environment that looks increasingly attractive to commodity producers.

Ms Karavias at Business Monitor International says a regulatory overhaul coupled with a more integrated market could draw private investment to fund the electricity capacity the region badly needs.

We are building



Over the next five years, we will be spending in excess of R400 billion on electricity infrastructure. Some 12 000MW is already under construction (Medupi, Kusile, Ingula and the return-to-service stations). Since 2005 we have built two new gas turbine stations and 2825 km of high-voltage transmission lines.