The World Bank and Eskom:

Banking on Climate Destruction

groundWork

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Banking on Climate Destruction!

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Cover Credit:
Front Cover: An Eskom power station adjacent to homes without electricity
Photo by Paul Weinberg
Back Cover: Destruction of land in the Vaal Triangle adjacent to the
Eskom Lethabo plant. Photo by groundWork courtesy of the Bateleurs

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Foreword

Bobby Peek
Director, groundWork, Friends of the Earth South Africa

A year ago the South African public heard the news that the World Bank was going to loan Eskom, our embattled energy utility, 5 billion US dollars. This is todate the largest World Bank loan in Africa. This shocked people considering the legacy of structural adjustment programmes that came with other Wrold Bank loans to African states. The announcement on the loan came a day after Eskom's credit ratings where downgraded in late 2008. They were desperate for cash. Since then, very little information has come out regarding the loan.

Fast forward to November 2009 and not much clarity has been gained. Reports said the loan was off, and then on again and then it was only for 2 billion US dollars. As this report was going to print, various public statements were once again made. In mid November the public heard that the loan was back on for 3.75 billion US dollars and by the end of November it was back to 5 billion US dollars, with a decision to be made in early 2010. At the same time the African Development Bank has committed 2.7 billion US dollars to Eskom.

This all comes after Eskom's woes have deepened. South Africa has just witnessed a bruising battle for the leadership of Eskom with the result that both the Chairperson of the Board, the ex-Anglo American boss, Bobby Godsell, and the Chief Executive Office, Jacob Maroga have resigned or have been fired, one does not know as pubic information on this issue is managed or mismanaged.

South Africa is in the midst of an energy crisis unparalleled in its history. Eskom, the South African state energy utility is desperate as it seeks to find cash to get it out of a crisis that has been created through years of mismanagement, political interference and horrendous bureaucracy. South Africa is dependent on dirty energy from coal. It markets itself as a destination for energy intensive industries in its export led development paradigm. Energy from coal was the backbone of the apartheid state, which was adopted by the African National Congress in the new dispensation.

While some news reports suggest that the loan is needed to ensure universal access to electricity in South Africa, the shocking record of World Bank oil loans to Africa tells another story. 80% of projects that the World Bank invested in between 1992 and 2003 were designed to export oil to Western Europe, Canada, the U.S., Australia, New Zealand and Japan. Couple this with South Africa's export led economy and one has to ask whether the loan is really going to be used for ensuring that all people in South Africa will have access to affordable energy, or is it going to be used to protect South Africa's exported led, energy and carbon intensive development considering that around 80% of our energy is used by industry and commerce.

With the ever changing woes in Eskom and promises by banks, this research could be never ending as it seeks to get to the 'real' figures. But what is finally clear is that the World Bank and the South African government are committed to fossils.

Banks funding fossil fuel development is not a new debate. Organisations have been challenging this for more than a decade now. During this period of intense and urgent negotiations on a new 'climate deal' loans such this that favour the present carbon intensive development paradigm for corporate profit are a clear indication to the public that the World Bank and governments of the world in general are not honest in their attempts to deal with the real global crisis, our dependence on fossil fuels.

Contents

Fossil's white knight

The World Bank is negotiating with South Africa to lend up to $5-billion – around SAR50-billion – for state-owned power utility Eskom's 'new build' programme. Globally, the Bank has claimed it is one of those in the forefront when it comes to funding sustainable development and addressing climate change in particular. Among other things, it manages the Global Environment Facility (GEF) in partnership with the United Nations Environment Programme (UNEP) and the UN Development Programme (UNDP). It is also a key player in developing the global carbon market.

The loan package to South Africa is still under discussion but its purpose, as described by Bank officials, is to help Eskom and the electricity sector "achieve financial stability, increase generation capacity and efficiency, and adopt a low-carbon trajectory"[1]. This fits in with the Bank's view of sustainable development and the image it seeks to cultivate – and sustain – as the world's leading broker of climate funding. The use to which the loan will be put also fits in with the Bank's actual practice, which is starkly at odds with the propaganda.

There is nothing 'low carbon' about Eskom's new build. Nor does 'financial stability' seem likely, except perhaps at the cost of the country's stability.

Eskom's new build is based on carbon intensive coal-fired power – projects currently under construction include two new giant coal-fired power stations. The overall construction programme is slated for completion over the next eight years and will expand generating capacity by nearly 150%. The capital spend during the next five years is put at R385-billion and key contracts have been signed, but Eskom is struggling to raise the money.

So far, the major source of funding is Eskom's sole 'shareholder' – the South African government. In February 2008, Finance Minister Trevor Manuel announced a R60-billion ($6-billion) 'subordinated' loan to Eskom from the South African Treasury. That is, a loan that won't be repaid until Eskom has paid off its other debtors; the Treasury will be last in line. Industry commentators regard the loan as an injection of equity, implying that they do not expect it to be repaid. In 2009, the loan was supplemented by Treasury guarantees for a further R176-billion of Eskom debt. This would cover the World Bank loan as well as commercial loans. The only money that government is not standing surety for is a $500-million (R5-billion) loan from the African Development Bank (AfDB) signed off in November 2008.

Impressive as these figures are, the funding gap remains huge. Eskom plans to spend R87-billion in this financial year (2009/10) and is R27-billion short. During the next five years it is short

[1] Personal communication with Sarwat Hussain, senior communications officer, Africa Region External Affairs, The World Bank, June 2, 2009.

R130-billion – assuming that the World Bank deal is concluded and other investors take up the remainder of the Treasury's guarantees.

The actual size of the World Bank loan is still to be finalised. The Bank is not commenting, but an amount in the region of $2- to $5-billion appears to be under discussion. If $5-billion, the loan would be more than double the Bank's global lending for renewable energy; $2 billion would represent the largest single loan ever made by the Bank to any African country.

Staging the deal

Initially, it seemed the deal would be struck between Eskom and the International Finance Corporation (IFC), the World Bank's commercial arm, which lends to corporate businesses. News of the deal was leaked on August 13, 2008. Earlier that year, Wall Street credit ratings agencies had put Eskom on 'negative watch'. They were looking for a steep increase in the price of electricity, which is set by the National Energy Regulator (Nersa), to support funding for the expansion. Eskom applied to Nersa for a 60% hike, but was granted 27%. Ratings agency Moody's then downgraded Eskom's credit rating by four notches so raising the cost of capital on international finance markets. News that the utility was negotiating with the World Bank was fed to the media the next day with the Bank cast as saviour.

In December, Treasury officials confirmed that the IFC had offered $5-billion and that the deal was on. The terms were still under negotiation, the loan would have to be guaranteed by government and the final deal approved by the Bank's board. In February 2009, Bank president Robert Zoellick told the African Union that the Bank was "preparing a $2-billion IBRD loan to South Africa to support its power-sector reform program"[2]. The International Bank for Reconstruction and Development (IBRD) lends to governments at concessionary rates, but generally with conditions that effectively dictate national policy choices.

Zoellick said nothing about the $5-billion International Finance Corporation loan, but it appeared that Treasury and the IBRD were now the primary negotiators while the loan had been scaled down. Zoellick used the loan as an example of increased assistance to African countries affected by the financial crisis. This was part of the Bank's efforts to reposition itself as the friend-in-need of Southern countries that had long suffered under the yoke of structural adjustment programmes imposed by the Bank under the 'Washington consensus'. Despite voluntarily adopting the policies of the Washington consensus, the South African government has hitherto avoided major World Bank loans for fear of having those same policies imposed on it. In mentioning the loan, Zoellick was thus signalling that the Bank's political credibility was restored.

Responding to enquiries in March 2009, Treasury officials suggested that the ball was in the Bank's court[3]. All options were still on the table, including the amount of $5-billion. They were awaiting the Bank's proposals on three options: a 'policy development' loan to Treasury; a project loan directly to Eskom backed by Treasury guarantees; or loan guarantees. By June, however, it appeared that Treasury was treading water on the deal, possibly awaiting political direction from the new-look executive installed following South Africa's April elections[4]. Discussions are continuing, but the parties are making nothing public.

[2] Robert Zoellick, President of the World Bank Group, in a speech to the 12th Ordinary Session of the Assembly of the African Union, Addis Ababa, Ethiopia, February 9, 2009.

[3] Personal communications, March 2 and March 4, 2009

[4] The ANC retained its large majority, but a power struggle within the ruling party has led to a government makeover. Portfolios and departments have been reorganised. Thus, Minerals and Energy have been separated and Environmental Affairs split from Tourism and located with Water. This paper refers to the former departments as they took the actions described.

Meanwhile, in the absence of steep tariff increases, the ratings agencies were looking for "unconditional timely guarantees" from government before reconsidering Eskom's ratings[5]. It appears that the guarantees given in February 2009 may have partly met this condition. In June, Ficht's revised its long-term rating from 'negative' to 'stable', although other rating categories remain negative. The country itself, however, has been on 'negative watch' with Standard and Poor's since November 2008. The primary reason for this is that South Africa's weak balance of payments and big borrowing needs leave it exposed to the withdrawal of foreign capital should the global recession deepen[6]. National exposure to the swings of global capital certainly goes beyond the new build, but the transfer of risk from Eskom to the State contributes substantially.

The rating agencies are, of course, the servants of global capital. Their public credibility was revealed as threadbare when the AAA-rated derivatives of the Wall Street banks proved worthless. Those ratings were, however, given out at the bidding of capital and the agencies share in the discredit of capital as a whole. The managers of capital, however, still hold the purse and the agencies still have power to coordinate capital's political responses. At bottom, the issue is who can be made to pay how much to sustain profits. Should the Treasury be downgraded, capital will withdraw, the value of the Rand will fall sharply and the cost of paying Dollar or Euro debts will multiply.

Who pays the costs, including the environmental costs, and who gets the benefits of Eskom's new build are thus urgent and contested questions.

The Bank in South Africa

Eskom is a state-owned enterprise. Established in 1923, it was corporatised from the start, being set up to run on business principles and to deliver cheap and abundant electricity primarily to mining and industry. It's a key constituent of the minerals and energy complex that has shaped the development of the South African economy, but it has always played the subordinate role of handmaiden to the mining houses.

This role was evidently approved by the World Bank in the 1950s when it lent Eskom money for a round of power plant building. After 1966, says the Bank, it did not lend money to South Africa until the political transition of the 1990s was under way. Instead, the World Bank drove investment in the Lesotho Highlands Project in the 1980s. Officially, the loan was to Lesotho. In real terms, the project was negotiated behind the scenes with South Africa. Its primary purpose was to secure clean water for industrial expansion in the economic heartland around Johannesburg. The water was needed not only because there was not enough: mining and industry had fouled local water sources to the point where it was unusable even in industrial processes.

In early the 1980s, Eskom embarked on another round of building new generators. With commodity prices booming on the back of the 'oil shocks', the utility forecast a rapid expansion in demand. In 1982, as the world was driven into recession, demand collapsed, but Eskom kept building. It was left with massive over-capacity. Some plants were 'mothballed' while Eskom worked desperately to expand its market by offering the cheapest electricity in the world to big industrial energy consumers.

It also engaged with its anti-apartheid critics to initiate an electrification programme to connect black people hitherto excluded from the service. Electrification brought political dividends, but the anticipated economic returns did not materialise. Newly electrified households consumed less than expected and so did not generate the scale of returns needed to cover infrastructure costs.

[5] Creamer, Terence: "Package will determine Eskom's credit rating", Engineering News, December 12, 2008.
[6] Creamer, Terence: "Beware a 'night frost'", Engineering News, June 5, 2009. Negative watch puts a country on notice that its rating may be downgraded.

The World Bank was involved here too, albeit indirectly. The oil shocks were really the symptom of a crisis in the global order of capitalism presided over by the US, but added to the crisis both by stoking inflation and by producing a glut of 'petrodollars'. This was partly managed by laying the surplus money off onto the Third World. Bankers, led by the World Bank, rushed to sell cheap loans to Third World governments only too eager to accept them. The money was spent on arms and prestige mega-projects which recycled the money back into profits for First World corporations. Local elites took their cuts and prospered but the majority of people saw scant benefits and many were dispossessed to make way for projects such as large dams.

Like other Third World economies dependent on resource commodities, South Africa was caught in the recession used by the US to re-assert its political and economic dominance. The US drove up interest rates, escalating the costs of the debt taken on when the oil shocks made petrodollars cheap, while simultaneously collapsing international commodity prices, including those for oil, coal, steel and even gold. Countries that had banked on paying debt with high-priced exports were driven into recession even as their debt compounded itself. The International Monetary Fund (IMF) and World Bank were sent out to impose structural adjustment programmes based on the neo-liberal policy agenda known as the 'Washington consensus'. The programmes enforced the Bank's priority of payment of debt charges. The costs were passed down to people as public services degenerated for want of funds, or were dismantled in favour of privatised provision.

On US instructions, the World Bank also started investing in oil, coal and gas extraction to expand the supply to Northern markets and undermine OPEC's control of prices. It has never jettisoned this agenda. In 2000, it initiated the Extractive Industries Review in response to mounting criticism from civil society organisations that its lending to oil, gas and mining projects contradicted its stated mission of alleviating poverty. The Review came back with the wrong answer. It found that poverty alleviation was neither the goal nor the outcome of the Bank's lending and recommended phasing out funding for oil and coal and focusing on sustainable energy. The Bank ignored the review and increased lending. In 2008, according to Janet Redman's analysis, "the Bank's funding for oil, gas, and coal projects is up 94% … over 2007, reaching $3-billion".[7]

While funding infrastructure for exports, neo-liberal policies deterred investment in local infrastructure. The apartheid government started adopting these policies in the late 1980s as its access to credit was squeezed. With political transition, successive World Bank missions offered copious advice to the incoming government. In 1996, the new government adopted the patently neo-liberal economic policy known as Gear[8]. Several World Bank staff members were on the Gear development team. Ironically, government justified it as necessary to avoid a debt trap and the consequent dictation of policy by the IMF and World Bank. And it did indeed avoid borrowing, regarding the Bank in the Bank's own words as an "unwelcome suitor"[9].

Privatisation was part of the Gear agenda. Energy policy developed in 1998 proposed that Eskom be broken up and sold off. It also predicted that new power plants would be needed by 2007 and said building them should be left to the private investors. But this contradicted the cheap energy regime. With no price escalation in prospect, investors were not interested. At the same time, government deterred Eskom from planning new plants.

[7] Redman, Janet: Dirty is the New Clean: A Critique of the World Bank's Strategic Framework for Development and Climate Change, report for Friends of the Earth, OilChange International, Campagna per la Riforma della Banca Mondiale and Institute for Policy Studies, October 2008. p.2.
[8] GEAR stands for 'Growth, Employment and Redistribution'. Growth was negligible, formal employment shrank and redistribution was from poor to rich.
[9] World Bank (IBRD, IFC and MIGA): "Country Partnership Strategy for the Republic of South Africa for the period 2008 – 2012", December 12, 2007. p.44.

Gear shifts

Although Gear was designed to attract foreign direct investment, investors weren't much interested in any fixed investment in South Africa. Following the precepts of the 'Washington consensus', capital markets were opened up, but this attracted only portfolio investments – 'hot money' that could be instantly withdrawn. South Africa soon became dependent on this flighty capital to balance its trade account. Consequently, the Rand sank as capital flew out when the dot.com bubble burst in 2002. It recovered with the resource boom and sank again as the financial crisis took hold. The Economist now sees South Africa's economy as one of the most vulnerable in the world[10].

At the same time, South African capital was made available for investment in the rest of the world. In the late 1990s, the big corporations at the heart of the minerals and energy complex were allowed to list off-shore in the global financial capitals. This represented a huge disinvestment – appropriating resources produced in South Africa to finance the corporations' global ambitions. Ben Fine observes that the process was facilitated by government. Treasury effectively lined the corporations into a queue to receive permission to list in London and New York. The intention was to prevent too much money leaving the country at once as this would have devalued the rand and hence the value given to the corporations' global listings by the market. Fine believes this also prevented Eskom from investing in new generating capacity. That had to wait until the last of the big corporations had listed off-shore so that the costs of capital imports would not add to the exodus of cash[11].

Gear was hotly opposed by unions and social movements. On its own terms, it failed to attract the private fixed investment that was supposed to create jobs. The 'economic fundamentals' required by the 'Washington consensus' were in place, but the development story did not go according to the script. Which was beginning to change. The World Bank backed off some of its more extreme free market positions and allowed an economic role for the state beyond macro-economic rectitude. In 2000, it made "a strong plea" for South Africa to get its 'micro-fundamentals' right[12]. This was a green light for more active state intervention in the economy – but for the purpose of extending the logic of the market into the day to day working of the state and into the fabric of social life.

In 2004, government adopted the rhetoric of the developmental state. It put privatisation 'on hold' and said that 'strategic' state-owned enterprises would act as a conduit for pumping up investment in the economy. Eskom would lead the way with an R87-billion investment in power plants and lines. The move found retrospective endorsement from the Bank and the IMF. As the commodities boom gathered momentum, long-neglected electricity systems blacked out in a number of African countries. There was not enough power to extract the minerals and coal and not enough transport to get it out to the ports and on to 'the market'. In June 2007 the IMF complained, with no hint of irony, that Africa had under-invested in infrastructure and lost between 20% and 30% of industrial output and GDP growth for want of power[13]. Across the world in 'the market', the glamour funds operated by major US finance houses were revealed as dust just one month later.

Power trip

In 2006, electricity in the Western Cape blacked out following poor maintenance at the Koeberg nuclear power station. This crisis was passed off as a localised problem but signalled the growing instability of the system. In January 2008, the lights went out across the country. Panic ensued.

[10] The Economist: "Where could emerging-market contagion spread next?", February 26, 2009.
[11] Fine, Ben: Engaging the MEC, paper for workshop on the minerals and energy complex, School of Development Studies, University of KwaZulu-Natal, June 2008.
[12] South African Labour Bulletin: "The dti's Integrated Manufacturing Strategy: Is it all packaging?", Vol.26, No. 3, June 2002.
[13] Creamer's Engineering News: "Africa energy sector needs reform funds, IMF says", June 1, 2007.

Eskom imposed a 10% cut in supply to big industrial users – principally the mines and smelters. On the back of the crisis, and with government support, it demanded a massive 60% hike in electricity prices from the National Energy Regulator to compensate for escalating fuel prices and to fund its expansion programme. This was met with a storm of protest from all sectors.

Industry claimed large losses from both the outages and the rationing, and threatened redundancies, while labour rallied in defence of jobs. Nersa subsequently estimated that the economy had lost R50-billion[14]. Neva Makgetla, a former union economist in the Presidency, attributed a decline in GDP growth from 5% to 2.1% in the first quarter of 2008 directly to the power cuts. "For most of its history," she argued, "South Africa has benefited from the tendency of precious metals prices to rise when the world economy faces a crisis." The power crisis undermined this benefit. She recommended that residential and commercial users conserve electricity in favour of the mines to restore "hopes for renewed growth"[15].

That was in July. In October, the commodity boom turned to bust. Although the gold price has held up, by the end of 2008 some 22,000 jobs were lost across the economy with mining (including gold) and metal industries leading the losses. It seems that casualised workers have been the first to go and it is doubtful that they are properly represented in these figures. Industry now says it is working to protect 'permanent' jobs but massive job cuts are being planned in all sectors including services. Mining giant Anglo American alone plans to cut 19,000 jobs. Meanwhile, government's infrastructure programme is now represented as a 'countercyclical' stimulus to the economy. The construction industry is the immediate beneficiary of the programme, yet even here corporations are getting rid of workers. Murray and Roberts retrenched 3,385 workers despite rising profits.

While privatisation was put on hold in 2004, the accompanying policy of cost recovery – insistently promoted by the World Bank – was not. The Electricity Pricing Policy published in the same year kept 'cost reflective pricing' as a core principle and aimed to strip out all subsidies. Thus, although the electrification programme has connected many millions of people to the grid, many cannot afford the electricity. By 2002, about 10-million people had experienced periodic electricity cut-offs[16]. New connections now come with pre-paid meters and it is no longer possible to get statistics on how many people are forced to disconnect themselves for want of money to feed the meter. In poor areas, local research shows that most people run out of electricity every month[17].

Alleviating energy poverty

A 'free basic supply' of 50kW per month per household was introduced in 2000 following widespread protests. This is quickly used up, particularly in large households, and the price rises steeply thereafter. Poor people then end up paying more for a unit of electricity than the residents of rich areas and pay more than three times what industry pays!

'Cost reflective pricing' does not work evenly. The price of electricity to newly electrified households is calculated to reflect the costs of new infrastructure to connect them. Mining and industry, on the other hand, consume the bulk of electricity as shown in *Table 1*. The new build programme is

[14] This estimate was based on the assumed cost of 'unserved' energy and not on any direct evidence. See Nersa, Inquiry into the national electricity supply shortage and load shedding, May 12, 2008, p.8

[15] Makgetla, Neva: "SA can't afford to neglect energy needs of mines", Business Day, June 25, 2008.

[16] McDonald, David: The bell tolls for thee: cost-recovery, cut-offs and the affordability of municipal services in South Africa. HSRC, 2002. Note that the use of pre-paid meters has the consequence of removing people from statistics on cut-offs.

[17] Dugard, Jackie: "Power to the people? A rights based analysis of South Africa's electricity services", in Electric Capitalism (ed, David McDonald), Earthscan. 2008.

required to meet their demand, not household demand. *The cost of the new build, however, is to be shared between all customers.* At least, that is the impression given to the public. But Eskom sells to energy intensive industries such as metal smelters under long-term supply contracts at cut rates. In one economist's view, a third of Eskom's supply is sold below the cost of production[18]. Environmental group Earthlife Africa believes that these customers may be exempt from the price rises but, since the contracts are secret, there is no way of verifying this.

Table 1: Electricity demand in 2002.

Mining and Industry	62.7%
Transport	3.3%
Residential	16.4%
Agriculture	2.5%
Commerce	10%
Other	5.1%

Source: *The Digest of South African Energy Statistics 2005.*

The World Bank pretends to address energy poverty in a 2002 paper put out for the World Summit on Sustainable Development and titled "A brighter future? Energy in Africa's development". 'Access to modern energy' is key to the Bank's core mission of 'fighting poverty' because it would liberate African people from subsistence chores and relieve women in particular of the burden of gathering wood or carrying water. Private investment is, in the Bank's view, the answer. Small investors could, for example, develop village-based energy systems using renewable technologies. Public private partnerships, if not outright privatisation of utilities, would take care of larger investments. In either case, energy access must be on a commercial basis to "improve sector creditworthiness and hence possibilities for more private investment". To that end, "private investment sharpens cost-consciousness and enforces payment discipline"[19]. Consistent with the Bank's practice, the paper gets around the problem of how people without money will pay market rates by ignoring it.

Not surprisingly, hardly any investment in local energy supplies, let alone renewables, has taken place. The Bank's real agenda remains getting the energy out to the imperial heartlands at least cost. In South Africa, it is the energy embodied in commodities such as aluminium that is exported.

[18] Schussler, Mike: The economics of the SA electricity crisis. www.economists.co.za
[19] Not paginated.

Eskom's New Build

Eskom CEO Jacob Maroga gave an update on the new build in January 2009 as shown in *Table 2*. Those already initiated projects would add 18,540MW of capacity by 2017. This is what the World Bank loan will support.

Table 2: The new build: Eskom's current projects

	Technology	Name and location	Megawatts (MW)
Peaking Plant	OCGT	Ankerlig, Atlantis, Cape Town.	2,080
		Gourikwa, Mossel Bay, Western Cape.	
	Pumped storage	Ingula, Van Reenen, KZN / Free State.	1,352
		Tubatse, Limpopo / Mpumalanga.	1,500
	Wind	Sere	100
Total			**5,032**
Coal fired base plant	Expansion	Arnot	300
	Return to service of mothballed plant	Camden, Ermelo, Mpumalanga	1,520
		Grootvlei, Balfour, Mpumalanga	1,170
		Komati, Middelburg / Bethal, Mpumalanga	955
	New coal	Medupi, Lephalale, Limpopo	4,764
		Kusile, Witbank, Mpumalanga	4,800
Total			**13,509**

Source: *Eskom CEO Jacob Maroga: Presentation to the Media, 23 January 2009*.

Some 5,000MW of this is peaking plant – either diesel-fired open cycle gas turbines (OCGT) or pumped storage. The Tubatse pumped storage has since been postponed as Eskom sees the economic recession reducing peak power demand. The Sere wind farm is in fact not a peaking plant but presumably put there because it's too insignificant to be given a separate category. Eskom has not made an announcement but it seems that this too has been shelved to shave a sliver off funding requirements.[20]

[20]Engineering News: "Eskom plans to use economic downturn to reduce capital costs", June 5, 2009.

The rest of the new build is a base-load plant and all 13,500MW is coal fired. The two new plants, Kusile and Medupi, are already under construction and will be the third and fourth largest power plants in the world. Eskom says it needs to decide this year on whether to build a third giant coal plant.

Eskom's existing capacity is around 40,000MW. At present, 94% of base-load is from coal with most of the rest from the 1,800MW nuclear plant at Koeberg in Cape Town. A very small proportion is produced from hydroelectric plants. The new build will increase the proportion of coal fired base-load to about 95%.

Beyond the new build

In addition to the projects already initiated, Eskom has a pipeline project stretching through to 2025. In March 2008 it said it would double generation capacity to 80,000MW by 2025 at a total cost of some R1.3-trillion[21]. While the capacity figure looked heroic[22], the cost figure looked like a gross under-estimate. The corporation's justification for the programme was based on the assumption that government's economic growth target of 6% would be met and would require an annual 4% growth in electricity demand. In view of what it calls the 'economic slowdown', Eskom now sees little demand growth before 2011. In consequence, it anticipates that between 60,000MW and 70,000MW capacity will be needed in 2025[23].

Nuclear power was central to these plans. In 2007, government ministers were talking up extravagant plans for 20,000MW to 27,000MW of new nuclear capacity by 2030. The bulk of this was to come from conventional pressurised water reactors (PWRs), while 25% was to come from pebble bed modular reactors (PBMR). Eskom had already invited bids from Areva and Westinghouse to build the first PWR – a very large 3,500MW plant dubbed *Nuclear 1* – and was initiating environmental impact assessments at a number of sites. However, as the bids for *Nuclear 1* came in, Eskom balked at the cost and shelved the project. It has not revealed the price tag on the bids from Areva and Westinghouse, but it seems that it must have been substantially more than the R100- to R120-billion Eskom had estimated.

Government has assured everyone the shelving is temporary. It has every intention of pressing ahead with nuclear power and developing the nuclear supply chain industry from uranium mining through to fuel fabrication, it says. Instead of inviting bids for individual PWR stations, it is now inviting the nuclear corporations to bid for the role of 'strategic partners' in its overall nuclear programme – which includes a 'fleet' of PWRs.

Government has already sunk several billion into developing the PBMR, an as-yet-untested 'fourth generation' nuclear technology in which South Africa fancies itself a world leader. But the PBMR corporation is also running out of cash and looking for new investments. It is largely owned by the State[24] and likely to be adding to calls on government's budgets.

Government touts nuclear power as the means to reduce the extraordinary carbon intensity of South Africa's economy. Given its ambition to establish a full supply chain, the nuclear industry as a whole

[21]Eskom New Build News, no.5 and 2008 Annual Report, p.18.
[22]The Long Term Mitigation Scenarios put generating capacity at just less than 60,000MW in 2026.
[23]Creamer, Terence: "Eskom pushes ahead with third coal-station plan, despite demand respite", Engineering News, January 20, 2009.
[24]It is 85% owned by government directly and through Eskom and the Industrial Development Corporation. Westinghouse holds the remaining 15% of shares.

would have scarcely mitigated emissions. Be that as it may, current plans rely almost entirely on coal supplemented by very a thirsty diesel-fired OCGT peaking plant[25].

From 2025, Eskom will have to start decommissioning existing coal-fired stations as they reach the end of their life-span. Assuming economic growth, new plants will then have to replace old plants as well as providing for expanded energy demand.

Coal and carbon

South Africa is one of the most carbon intensive economies in the world. CO2 emissions for 2004 were estimated at 440-million tonnes with Eskom accounting for more than 40% of that.

In the year to March 2008, Eskom burnt in excess of 125-million tonnes (mt) of coal and emitted 223.6mt of carbon according to its 2008 Annual Report. The coal and carbon figures have increased with rising production as Eskom has run its plant harder to keep up with demand. Coal use and carbon emissions per unit of production are also markedly up, as *Table 3* indicates. Emissions are in fact higher than shown, as the figures do not include emissions from the diesel peaking power plants. These plants were run exceptionally hard in 2006 to compensate for the loss of base-load capacity during the Western Cape power crisis, and again in 2008 during the national power crisis. Further, Eskom does not report methane emissions – and is reckoned to emit 2,267 tonnes (49,874 CO2e) or close to 60% of national methane emissions[26].

Table 3: Production, coal and carbon

	2008	2004	2000
Production (GWh)	224,366	206,799	178,193
Coal consumed (tonnes)	125,300,000	109,600,000	92,500,000
Carbon dioxide (tonnes)	223,600,000	197,700,000	161,200,000

Adapted from Eskom Annual Report 2008

If coal consumption increases in line with capacity, Eskom will burn around 218-million tonnes when the current projects listed above are operational and emit 390-million tonnes of carbon dioxide (CO2). But Eskom itself is talking about a possible demand of 374-million tonnes a year by 2018 if a third new coal-fired plant is built[27]. That is close to tripling present consumption and implies about 670-million tonnes of CO2.

Greenhouse gases aside, Eskom is a major league polluter of more local environments. *Table 4* shows that its emissions of sulphur dioxide (SO2) and nitrogen oxides have also increased in line with production. Only particulate emissions have been in any way mitigated, and only at some plants.

Table 4: Eskom's sulphur, nitrogen and particulate emissions.

	2008	2004	2000
Sulphur dioxide (tonnes)	1,950,000	1,779,000	1,505,000
Nitrogen oxides (tonnes)	984,000	797,000	674,000
Particulates (tonnes)	50,840	59,170	66,080

Adapted from Eskom Annual Report 2008

[25]Pumped storage in fact uses more power than it produces and relies on surplus base-load at night to pump water up hill in readiness for peak demand.
[26]Worthington, Richard: "Cheap at half the cost: Coal and electricity in South Africa", in Electric Capitalism, (ed: David McDonald), Earthscan. 2008.
[27]Creamer, Martin: "Decision on another new coal power station needed this year – Eskom", Engineering News, February 5, 2009.

Eskom has not installed sulphur scrubbers on any of its power stations. The new Medupi was planned without scrubbers on the rationale that there is a "relative lack of pollution" in the Lephalale area as compared with Emalahleni (formerly Witbank) where Kusile is being built[28]. The Department of Environmental Affairs and Tourism (DEAT) in fact found that ambient SO2 standards are already being exceeded in the Lephalale area. Eskom's existing Matimba power station is the main source of emissions. The DEAT also found that people's health in nearby Marapong village – which houses miners and power workers – will be affected. Nevertheless, in 2007, it granted Eskom permission to go ahead with its plan to build Medupi without scrubbers.

In January 2009, Eskom said it would put scrubbers on three of the six units, but did not say what had led to this decision. Kusile is planned as the first South African power station with a full set of scrubbers. Pollution in Emalahleni, which the DEAT has declared an air quality 'priority area', is apparently adequate to justify the additional expense.

Mining

Eskom is fed by cheap low-grade coal dug from the earth by poorly paid miners. Its expansion requires a massive expansion in coal mining. Eskom consultant Ras Myburg says R100 billion must be invested in coal mining, including opening 35 new mines devoted to supplying Eskom.

Exxaro's Grootgeluk Mine on the Waterberg coal field near Lephalale currently supplies 14.6-million tonnes a year to the Matimba power station. It is now being expanded to supply another 14.6mt/y for Medupi under a long-term contract with Eskom. Sasol is also eyeing the area for a new coal-to-liquid plant. The coal field straddles the border with Botswana, where Canadian corporation CIC is planning another power plant intended to export electricity to South Africa.

Emalahleni (formerly Witbank) on the Mpumalanga highveld has been at the centre of the coal industry since the late 19th Century when it supplied fuel for the gold mines and, later, for power stations. Eskom has contracted Anglo Coal to supply the Kusile plant with 17mt/y. Some coal will come from existing mines but the bulk will come from Anglo's New Largo project, described as a 'greenfield' development. Emalahleni's designation as an air quality priority area – or pollution hot-spot – is well-deserved. The mines add to the pollution from the cluster of power stations in the area. Apart from emissions from heavy equipment, mine tailings and old works are prone to spontaneous combustion. In some places, fires have smouldered underground for over half a century.

The pollution of water is even more intense. The streams and rivers downstream of Emalahleni are ruined by acid mine drainage.[29] Sulphate salts are so thick on the water of the Brugspruit where it flows through the heavily populated township of Maguqa that the stream looks as if it is covered by snow! Anglo and BHP Billiton recently constructed a R300-million plant to treat contaminated water from four of their mines in the area. Hundreds of other active mines in the area do not treat their water. In addition, mines long since abandoned by owners are still producing acid mine drainage.

Eskom's mothballed plants are also located on the Mpumalanga highveld. Bringing them back into operation requires new mining development. The most convenient, and previously undeveloped, coal resource lies in the Mpumalanga Lake District at the source of three major river catchments –

[28] Eskom CEO Jacob Maroga quoted by Engineering News, July 27, 2007. The comment echoes the notorious internal memo circulated by World Bank official Lawrence Summers in which he argued that poor countries were under-polluted and "the economic logic behind dumping a load of toxic waste in the lowest-wage country is impeccable …"

[29] Mine workings expose mineral rocks to oxygen, which reacts with chemical elements in the rocks. Chemical and mineral salts then leach into water, which seeps through mine workings. This contaminated water is known as 'acid mine drainage'.

the Vaal, the Olifants and the Komati. A rash of mining applications have been waved through by the Department of Minerals and Energy (DME) and some corporations have not waited even for the DME's rubber stamp. Most of the coal deposits are small and will be worked out in as little as five years. Acid mine drainage lags behind mine development by five to 10 years. As the mines close, the rivers will be poisoned at the source.

Eskom's climate strategy

If it continues with business-as-usual, Eskom calculates it will emit more than 450mt of carbon dioxide in 2025[30]. That is about twice its current emissions. It has developed a climate strategy which it claims will reduce this to just over 350mt – a mere 1.5 times present emissions. The strategy has six elements:

1. Diversification of the generation mix to lower carbon-emitting technologies
2. Energy efficiency measures to reduce demand and greenhouse gas and other emissions
3. Adaptation to the negative impacts of climate change
4. Innovation through research, demonstration and development
5. Investment through carbon market mechanisms
6. Progress through advocacy, partnerships and collaboration

Diversification

The 2008 Annual Report sees generating capacity doubling to 80,000MW by 2026 and identifies the new investments as an opportunity for diversification.

All of 1,600MW – or 2% of capacity – will be generated from renewables by 2026. This certainly represents massive growth over the 3MW renewables installed so far in a pilot wind farm, but it is not very convincing evidence that Eskom has abandoned its traditional antipathy to renewables. In addition to the Sere wind farm, Eskom reported its participation in a feasibility study for a 100MW solar tower plant to be developed as a pilot research project. Announced with much fanfare, the project has been "quietly dropped" according to the Ethical Corporation newsletter[31].

Eskom is rather more excited by 'clean coal' technologies and says these are already being applied to Medupi and Kusile. Medupi, for example, will be a supercritical steam generator and this is expected to improve the energy conversion efficiency from 35% to around 40%.[32] In fact, Eskom has been researching most of these technologies for well over a decade and long before it felt constrained to recognise climate change, let alone to develop a 'climate strategy'.[33] For the most part these are simply the latest coal burn technologies given a green spin. Some are mature technologies being applied in South Africa for the first time. Others have yet to be proved internationally. For example, Eskom has

[30] This section is based on Eskom's 2008 Annual Report. The figures do not correlate with later figures given in 'coal and carbon' above. This may reflect dramatically changed assumptions, for example on nuclear construction and coal consumption, or it may be about the way figures are massaged for different audiences.
[31] Reichardt, Markus: "Dirty Power", Ethical Corporation, April 2009.
[32] This means that the electric energy produced by the new power stations will amount to 40% of the primary energy embodied in the coal.
[33] Eskom got around to developing a climate strategy in 2005.

a long running research and development programme on underground coal gasification (UCG). The original motivation was to access energy from coal in situations where it could not be economically mined. It is thus primarily a way of expanding the usable coal resource.[34] Any environmental benefits are incidental to that objective. But the environmental benefits are claimed relative to the impacts of mining. Given that UCG is intended for use where mining is not viable, the claim is not valid.

Carbon capture and sequestration is the one technology that responds specifically to climate change. This is essentially a technical fix aimed at getting coal off the climate hook. Because South Africa's energy intensive economy is largely fuelled by coal, government, Eskom and other big corporations have grasped at it. Having already given permission for Medupi and Kusile, the environment minister has declared that no further coal-fired power stations will be allowed unless they are 'CCS ready'.

The idea of CCS comes from 'enhanced oil recovery' technologies: CO2 is regularly injected into oil wells to increase the pressure in the well and so get more oil out. CCS assumes the carbon can be injected into the ground and will stay there. There are at least four major problems with this concept:

1) It has not been shown that either capture or storage will work at the scale required anywhere in the world.
2) It is very expensive both to build and to operate. And even if separation plants are built, there's no guarantee that utilities looking to cut costs will not switch them off when no one is looking.
3) Separating CO2 will consume around 30% of the energy produced by the power station and thus substantially reduce its efficiency.
4) Underground carbon storage requires very particular geological formations. Globally, very few such formations are located near industrial areas that produce the bulk of emissions. The CCS infrastructure must therefore include lengthy pipelines and it is thought the cost will become prohibitive beyond 300 km. The prospects of South Africa finding an appropriate location for storage within that range are remote. Nevertheless, a 'CO2 Storage Atlas' is now being prepared at the behest of government and Eskom among others and the potential hyped.

The favoured option for 'low carbon' generation was always nuclear power. For the generator, nuclear is indeed a low carbon technology since carbon emissions associated with nuclear are in construction, mining uranium, fabricating fuel, disposing nuclear waste and, finally, in decommissioning the plant. Most of these emissions will be appear on someone else's carbon account. Eskom's 2008 Annual Report shows nuclear saving about 70mt of CO2 in 2025.[35] With Nuclear 1 now put on hold[36] and government now talking of 6,000MW instead of 20,000MW of nuclear capacity by 2025 there is evidently a large hole in its climate strategy.

Ultimately, a credible climate policy would need to confront the power of the 'minerals and energy complex' that has dominated South Africa's economy since the 19th Century. There is little evidence that the State, which is itself deeply invested in that complex, is prepared to do this and South African officials routinely repeat that coal will be central to the economy for the foreseeable future.

[34] Eskom's interest in UCG originates with poor planning for its Majuba plant. Majuba was designed as a pithead power station, but a fault in the coal seam made the proposed mine unviable. Coal is now trucked in by rail at considerable economic and environmental cost. Gasification would enable Eskom to use the original coal resource to fuel the plant. UCG involves controlled burning of the coal in situ in a low oxygen environment – much the same technique as is used to produce charcoal. It replaces the entire mining operation and is being considered for other areas where coal is difficult or expensive to extract, including deep deposits on the Waterberg. Long term environmental costs, including the possibility of uncontrolled underground fires, are uncertain.

[35] Carbon savings are represented on a graph [p. 70] which cannot be precisely read.

[36] Eskom is going ahead with EIAs and other planning permissions so that it can move fast when it judges that the time is right. In February, then Minerals and Energy Minister Buyelwa Sonjica (now at Water and Environmental Affairs) said the first nuclear plant will be producing power in 2019, instead of 2017 as originally planned. It is not clear what the basis is for this assertion.

Energy efficiency

Eskom's 'Energy Efficiency and Demand Side Management Programme Overview 2008' says it has aimed for savings of 3,000MW by 2011 and 8,000MW by 2025. Until 2006, however, the demand side management programme was largely invisible. In 2006, when Koeberg broke down, Eskom suddenly found its voice on energy conservation in the Western Cape. This proved the dress rehearsal for the national power crisis as the lights went out around the country in January 2008. Eskom then asked for 10% cuts in consumption from intensive energy users – the mines and smelters. It also proclaimed its commitment to long-term conservation to moderate the demand for expensive new generating capacity. Meanwhile, sales of back-up diesel generators boomed and, in the Western Cape, Eskom subsidised industry's use of generators. The objective was more to save Eskom's power than to conserve energy.

Conservation goes against the grain given Eskom's history of aggressive marketing to expand electricity sales. Even Engineering News, which is seldom provoked to a critical comment, observed the irony of Eskom "having to champion efforts to curb consumption" and suggested that its newfound devotion to conservation might not survive once the new build programme had restored a comfortable margin of surplus capacity over demand.[37]

Following its over-investment in the 1980s, Eskom operated with a massive surplus capacity. In the 1990s, it did deals with intensive energy users to soak up as much electricity as possible. Most notably, its offer of the cheapest electricity in the world was taken up by BHP Billiton, which sited two new aluminium smelters in the region. Following the national outages in 2008, the profligate use of electricity by the smelter came in for widespread public criticism. Billiton's own banker, Standard, questioned the value of aluminium smelting to the South African economy. Billiton responded by threatening to withdraw its accounts from Standard. and its chairman, Vincent Maphai, commented, "The fact that several years ago BHP Billiton initiated highly capital-intensive aluminium projects in the region to use capacity for which Eskom did not have immediate use now seems to be ignored, even by those who ought to know better," said Billiton chairman Vincent Maphai.[38] Standard backed down.

Eskom's business strategy has followed from policy. Government established Eskom with a mandate to provide "cheap and abundant" power to industry – and to the mines in particular. Cheap power has remained at the core of industrial policy ever since irrespective of who holds political power. In the post-apartheid period, the 1998 White Paper on Energy reaffirmed that cheap power was a source of 'competitive advantage' for South Africa's industrial exports. The policy did pay lip service to energy efficiency but an Energy Efficiency Strategy was only published in 2005 and promptly ignored. Subsidised by cheap energy, mining and industry consume around 62% of electricity – and do so very inefficiently – as against household consumption of about 18%. The increase in demand up to 2008 was driven almost entirely by the commodities boom and demand has fallen off largely because of the slump in prices in the second half of the year.

The 2004 Climate Change Response Strategy argued for the priority for development over environment in terms of global equity and suggested that the "the relocation of energy intensive industries from Annex1 [developed] to Non-Annex1 [developing] countries should be promoted" although this "may give rise to negative environmental impacts" and "do little to alleviate the

[37] Creamer, Terence: "Powering down", Creamer's Engineering News, September 7-13, 2007. In common with other utilities, Eskom aims to establish a 'spinning margin' of 15% above peak demand.
[38] Business Report: "Ire over smelter power remark", March 29, 2008.

problem of unemployment". It also argued that South Africa's export coal markets should be expanded and protected. "Annex1 parties," it said, "should initially concentrate on domestic actions that will not negatively impact on the market for fossil fuels from developing countries".[39]

Government has indeed courted energy intensive industries. In 2007, it offered heavy subsidies in tax breaks and electricity costs[40] to secure Rio Tinto Alcan's investment in a 1,600MW capacity aluminium smelter at the Coega Industrial Development Zone (IDZ). The 2008 outages, which resulted in the closure of a pot-line at one of BHP Billiton's three smelters, led Rio Tinto to announce that the project would be delayed until the power supply was assured. With the collapse of aluminium prices, the project appears to have gone into the deep freeze.

Alongside Eskom's new build programme, the infrastructure expansion programme announced in 2004 prioritised expanding rail and port facilities to export coal. With the sudden collapse of the commodities boom in the second half of 2008, the infrastructure investments are now proclaimed as a 'countercyclical preparation' for the next boom.

Whatever the case, South Africa's determination to profit from coal and cheap energy has scarcely faltered. Since 2004, South Africa has worked assiduously to become a leading voice at international negotiations on climate change. Domestically, it commissioned the Long Term Mitigation Scenarios – a research process looking at potential mitigation options. This is now being used as a basis for formulating national policy. It starts with an over-riding assumption: economic growth remains the foundation of policy. Energy efficiency makes for a major wedge of carbon savings relative to business as usual, but results in slower growth in demand and carbon emissions, not a reduction. In conditions of capitalist growth, energy efficiency in fact facilitates an overall expansion of energy demand and so cancels out the carbon savings. As with Eskom, government's record suggests that getting a return on its infrastructure investments will trump conservation as soon as an expanded power supply is secured and irrespective of any rhetorical devotion to climate mitigation.

Adaptation

Eskom says in its 2008 Annual Report it accepts that "global initiatives to reduce CO2 emissions will take many decades". It does not mention that its own interests in coal-fired power, and the investments it is now making, are part of the problem. Given that a degree of climate change is inevitable, it aims to secure its infrastructure against extreme weather events.

Research and innovation

Included in the R&D projects exemplary of Eskom's response to climate change are:
- underground coal gasification;
- the 100 MW solar tower plant; and
- the pebble bed modular reactor pilot plant project.

With the exception of the solar plant, these projects predate Eskom expressing any concern about climate change and were undertaken for completely different reasons. They, and anything else for which some reduction in carbon can be claimed, have simply been hitched to the climate wagon. The intention is to justify long-term projects and investments rather than to seriously confront climate change.

[39] DEAT, 2004: A National Climate Change Response Strategy.
[40] The smelter was to be 'the first beneficiary' of the Developmental Electricity Pricing Programme (DEPP). To my knowledge, no other DEPP beneficiaries have been named.

Using the carbon market

Eskom supports carbon trading and calls for 'policy certainty' post 2012. Carbon trading was one of the most contentious issues agreed under the Kyoto Protocol, and for good reason. It does not work to reduce carbon. Instead it creates a new centre of accumulation of capital and, indeed, World Bank influence. Eskom is thus calling for the entrenchment of that which made Kyoto dysfunctional. In doing so, it is repeating government's position as stated at the Bali climate negotiations in 2007.

Carbon trading and CDM.
The United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol were negotiated under the aegis of the 'Washington consensus'. Kyoto is based on a proposal put forward by the USA. It establishes mandatory emissions targets for Annex1 (developed) countries and sets up emissions trading. Having imposed its preferred system, the USA refused to ratify Kyoto and so exempted itself from the obligation to reduce emissions.

On the principle of 'common but differentiated responsibilities', non-Annex1 countries do not have to commit to reducing carbon emissions. The idea is to secure developmental equity between North and South, recognising that Northern countries are responsible for the bulk of carbon emissions, that they got rich in the process and are now better resourced to implement the agreement, and that Southern countries have a priority for development. Following on from this, the Convention then emphasises "sustainable economic development" within an "open international economic system". This system is, of course, anything but equitable.

Three 'flexible mechanisms' for carbon trading are at the heart of the Kyoto agreement:

1) Emissions trading allows Annex1 countries that exceed their reduction targets to trade their surplus allocation with those that do not meet the targets.
2) Joint implementation (JI) projects enable investors in one Annex1 country to invest in projects that produce less emissions than a business-as-usual project in another Annex1 country and to claim 'carbon credits' for the reductions.
3) The clean development mechanism (CDM), which works in the same way as the JI, except that the investors must be from Annex1 countries and CDM projects must be located in non-Annex1 (Southern) countries.

The stated objective of CDM was to support sustainable development in Southern countries while reducing the costs to Annex1 countries of meeting their reduction targets. In this way, Northern polluters could invest in 'clean development' projects in the South and claim carbon credits known as 'certified emissions reductions' (CERs). Alternatively, they could buy CERs produced from CDM projects.

The reasoning was, first, that Northern economies could not afford to meet their targets and, second, that reductions would be cheaper in the South. The idea is therefore founded on 'unequal development' – a polite phrase for economic, social and environmental injustice.

The effects of trading are predictably dismal. There is no link between the price of carbon and the costs of climate change or the costs of emissions reduction required to seriously mitigate climate change. There is no necessary link between the number of CERs in circulation and an overall reduction in greenhouse gas emissions. There is not even a credible guarantee that a CER represents anything more than a convenient fiction.

Wolfgang Sachs [2005] observes that climate negotiators "were charged with protecting economic growth and not the climate". To this end Kyoto embodies three strategies: Northern obligations are

transferred to the South and East; obligations are discharged through sinks;[41] and negotiations are framed to focus on the economic tailpipe and exclude discussion of driving interests in the engine room.

The political classes now appear genuinely alarmed at the prospects of climate change but nothing indicates that there is a different agenda for negotiating the 'second commitment period'. Rather, they are entrenching a trading system which has little to do with reducing actual emissions but is already creating a flow of real money for finance capital.

Meanwhile, adhering to principle of 'common but differentiated responsibilities' as a basis for refusing any significant commitments, Southern countries have merely signed over to the North the power to define global response to climate change in its own interests. In particular, the trading system is being developed in the North and the price of carbon – like the price of most commodities – is set on Northern financial markets. For Southern countries, CDM has less to do with the climate than with the competition for foreign direct investment.

Trading imposes no costs on Eskom for its increasing carbon emissions because, as a Southern country, South Africa has no obligation to reduce emissions. Instead, it is seeking carbon credits – for sale to Northern polluters – for anything which it can claim reduces emissions under the 'clean development mechanism' (CDM). 'Reduce' here does not mean an actual reduction in emissions. It means a lower rate of increase in emissions when compared with a 'business-as-usual' project. Eskom must be able to claim that the project is 'additional', meaning that it replaces a cheaper and dirtier business-as-usual option, and is made viable only because of the additional finance available through carbon trading.

Eskom is now applying for 'programmatic CDM' for the whole of its demand side management programme. It has in fact been running a DSM programme for more than a decade. On this ground, it fails the test of 'additionality' – it was doing it anyway. On the other hand, Eskom might argue with some justification that, while it said it was doing DSM, it wasn't really. In this case, the programme would be additional. However, Eskom got serious about DSM when the lights went out. This is what every other utility in the same position has done. It is the business-as-usual response to a power crisis. The CDM rules must therefore be bent if Eskom is to get credits for DSM.

As the critics of CDM predicted, the rules have proved extremely 'flexible'. CDM is a malleable instrument managed with a wink and a nod. So it is quite possible that Eskom will get away with it.

Eskom also uses a 'shadow price' of carbon when choosing between different technologies. This, it says, allows it to take into account the cost of carbon emissions when deciding what to build. In mid-2008, carbon credits were going for more than €30 (over R300) in the European trading system. Following the collapse of commodity prices – including the price of coal – carbon credits dropped to under €12 just six months later. At €30 wind probably looked like a good investment, particularly since the price of coal was also escalating. At €12 – and with coal prices hitting the rocks – coal looks like the better prospect.[42]

[41] Sinks such as forests, land, oceans and ice absorb carbon and so prevent it entering the atmosphere. CDM sink projects are focused on tree plantations, begging two questions: Whose land will be taken to create the sink? What confidence can there be that the carbon will stay sunk?

[42] Nersa has since approved a feed-in tariff for several renewable energy technologies. No thanks to Eskom, this off-sets the effective subsidy to coal, but it seems likely to make renewables the province of privatised production.

Carbon traders say this is exactly how the system is supposed to work. There are three problems with this claim, however:

1) The coal-fired stations now being built will last 40 to 60 years. The volatility of market prices makes nonsense of long-term (or, indeed, short term) investment decisions.
2) Market pricing has no relationship whatever to the geophysical processes that drive climate change: the slump in the carbon price does not mean that the threat of climate change has been reduced.
3) The global economic meltdown has revealed some of the many scams the global financial markets have relied on to maintain profits.

Innumerable scams have likewise been revealed in CDM projects. Carbon trading is where these scams meet and are now amplified through carbon derivatives.[43]

Advocacy, partnerships and collaboration

Eskom says it supports government's actions in response to climate change and that it is an active member of the National Committee on Climate Change (NCCC). Indeed, it was one of the original members of the NCCC when it was established in 1996. Its participation, however, was more about protecting its interests in fossil fuels than dealing with climate change – and it could count on the support of the government departments as well as industry and mining stakeholders participating in the committee. All shared a common interest in cheap power.

Internationally, Eskom participates in the World Business Council for Sustainable Development (WBCSD), the International Emissions Trading Association (IETA), the Carbon Sequestration Leadership Forum (CSLF), the Coal Industry Advisory Board (CIAB) and the Electric Power Research Institute (EPRI) among others. Such organisations have played a crucial role in establishing capital's influence over the international climate agenda, or are outgrowths of that influence. While the mandate of government negotiators at the UNFCCC was to save the economy, not the climate, the WBCSD helped define that agenda. In particular, it opposed compulsory regulation and trumpeted the virtues of the self-regulating market, and of self-regulating corporations acting within that market, with the fervency of a Wall Street bank. Not surprisingly, it played an active role in promoting carbon trading at Kyoto. In this, it had an ally in the World Bank.

[43] See Hildyard, Nicholas: A (Crumbling) Wall of Money: Financial bricolage, derivatives and power, The Corner House, October 2008, and Hallowes, David: Capital melt down, Kyoto and civil society, SECCP, 2008, available at www.earthlife.org.za

The money

Cartoon by Zapiro: A satirical view of the energy price increase in 2003

In 2004, the minister for Public Enterprises announced the new build programme and put Eskom's five year capital expansion programme to 2010 at R87-billion. In 2005, this was raised to R150 billion. In July 2007, CEO Jacob Maroga said the corporation had approved power generation worth R204-billion, transmission projects worth R15,5-billion and distribution projects worth R25-billion, but did not give timeframes. By August 2007, Eskom said it had spent R20-billion and was running R4-billion over budget because of rising costs in the global market for electric plants. The price tags on Medupi and Kusile were put at R78.6-billion and R84.4-billion respectively. The R6-billion difference between them was largely put down to the absence of sulphur scrubbers on Medupi.

In January 2009, CEO Maroga reported a further startling escalation in the cost. Medupi would now cost R100-billion and Kusile R110-billion. This, he said, was mainly due to the difference between price estimates and actual contracted prices – but also included the additional costs for scrubbers on three of Medupi's six units. The five year capital programme – to 2014 and therefore not including the full costs for Kusile which is to be completed in 2016 – has similarly been inflated to around R385 billion,[44] or just short of half of the R787-billion total infrastructure spend projected by the Treasury.

[44] This is the figure generally attributed to Eskom sources. Manuel put it at a marginally more modest R356-billion in the 2009 Budget speech.

The price, it seems, just keeps rising. In part this reflected the general escalation of prices (in steel, cement et cetera) in the period when Eskom was contracting. It was a 'seller's market' in which utilities globally were competing for construction projects. Eskom hopes it's now in a buyer's market and some prices may come down. However, most of the capital equipment is to be imported and the import bill is as much as 60% of the cost. The value of the rand is thus likely to be more significant than any price reductions. It scarcely bears mentioning the rand is notoriously volatile.[45] In conventional terms, this is because South Africa imports more than it exports, and so runs a substantial current account deficit largely funded through speculative investments in equities. This is very much the Achilles heel of the South African economy.

According to the then Finance Minister, Trevor Manuel:

> Lower consumer demand and the softer real exchange rate will dampen import demand in 2009, but infrastructure investment will continue to draw in capital goods. This will continue to generate a sizeable current account deficit, expected to average 6.7 per cent a year over the period ahead.[46]

Eskom's own demand for dollars to pay for the imports will thus put considerable pressure on the currency.

In early 2008, Wall Street credit agencies put Eskom on their watch list. They were looking for a major increase in the price of electricity to pay for the new build. In 2007, Eskom requested a price increase of 18.7%, but Nersa awarded 14.2% effective from April 2008. In March 2008, following the blackouts, Eskom demanded that this be reviewed. With vocal support from government, it asked for an above inflation hike of 53% (60% including inflation) effective from April to be followed by a further above inflation hike of 43% in 2009. It first said that the new build projects would be delayed – effectively threatening further blackouts – if the increase was not awarded. It subsequently downplayed the new build and emphasised the run up in coal and diesel prices, arguing for a full pass-through of fuel prices, and the cost of its DSM programme.

The application provoked a storm of protest. During the blackouts, industry and labour had both called for the new build programme to be expedited. They also found common cause in opposing Eskom's pricing application – which, they said, would retard economic growth and threaten jobs. The ANC (as party, not as government) joined Cosatu in denouncing the proposed price rise and calling on government to ensure that no job losses would ensue from the energy crisis. Cosatu further demanded that the new build be financed directly by government – effectively a call for the continuation of subsidies to the minerals and energy complex. Business requested a review of Eskom's funding and specifically raised the possibility of a World Bank loan.[47]

Environmental and other organisations in civil society protested that the increase would be used to fund coal-fired power stations largely to supply energy intensive industries such as the aluminium smelters. They also questioned the distribution of the increase between industry and households and noted that poor households would not be able to pay even if, as Eskom proposed, they were

[45] In 2002/03, the rand plunged to around R13 to the dollar. It then recovered on rising commodity prices, particularly for gold and platinum, to 'stabilise' at around R6 – so creating a punishing environment for manufacturing exports. In 2006/07, it fell to between R7 and R8. In 2008, as the economic crisis deepened, it dropped to just short of R11 and has recently bounced back to R8 or R9 largely on dollar weakness. Any benefit to exports is off-set by declining demand in the Northern markets and extreme volatility.

[46] Budget speech 2009.

[47] Enslin-Payne, Samantha: "Eskom's request for massive tariff hikes sparks audit call", Business Report, March 20, 2008.

subjected to a lower rate of increase. Eskom, however, insisted that Nersa should not disclose 'business sensitive' information, including the price that the smelters and other intensive users would pay.[48] In short, South Africans were not to know how much they were paying to subsidise mining and smelting.

Nersa's 2008 decision was thus taken in a highly charged political context. It raised the 14% increase already given to Eskom to 27.5% and indicated that similar hikes could be expected in subsequent years. It also called on the Treasury to 'front-load' (issue the money earlier rather than later) the R60-billion government loan promised in the 2008 budget speech to help pre-empt downgrading by the credit rating agencies. Treasury obliged, but Moody's dropped Eskom's rating anyway. This effectively scuppered Eskom's plan to raise capital at reasonable interest rates on the global market and, in October, it cancelled a major international bond issue.

In the 2009 budget, Manuel finally acknowledged the severity of the economic crisis and recast the infrastructure programme as 'countercyclical spending' to stimulate growth. In addition to expanding infrastructure spending, the budget makes provision for R176-billion of loan guarantees for Eskom. This covers R26-billion of money already lent and R150-billion of new lending. The World Bank loan falls into the latter category. So too does a €530-million (R6-billion) loan backed by the German export credit agency (ECA) in a deal concluded in May 2009. The loan is from a consortium of European banks and contributes funding for Medupi's boilers which are to be manufactured by Hitachi Europe.[49]

The Treasury guarantees also underwrite Eskom debt to private capital. In response, the credit rating agency Standard and Poor's said it would only reconsider Eskom's rating once it had scrutinised the terms of the guarantees to ensure that they were "unconditional and irrevocable"[50]. Ficht appears to have concluded that they are.

The 2009 round is now in process. Eskom's opening gambits emphasised that the price of electricity is below production costs and makes no provision for investment. It also pushed, as in 2008, for a rushed decision. It submitted its price application in May, three months late and a full month after Nersa was supposed to decide on it. And instead of applying for the scheduled 'multi-year price determination' (MYPD), covering 2009/10 to 2011/12, it applied for an 'interim price increase' of 34%. It claimed that it could not submit an MYPD application until it had clarified its funding model for the new build in talks with government "and other stakeholders" – one of which is no doubt the World Bank. The interim application therefore excluded the costs of the new build. It also assumed that it could recover additional costs, above 34%, for its DSM programme and its expensively over-worked OCGTs. Environmental externalities are ignored, perhaps on the not unreasonable assumption that the major economic actors – government, business and the unions – will be indifferent to the omission while environmental organisations can be ignored.

The document is thin on evidence to support its very tenuous arguments. It claims that 34% is in line with Nersa's 2008 price projections. But those projections did not exclude the costs of the new build and were aimed at 'smoothing out' the impact on tariffs. Moreover, Eskom's arguments that 34% is necessary to cover current costs are not convincing. With the MYPD application still to come, Eskom seems to have its eye on a double tariff increase. The scale of what it wants is indicated by

[48] Olivier, Mariaan: "Power utility defends confidentiality request", Engineering News, April 9, 2008.
[49] Northern country ECAs guarantee debt to secure contracts for their home industries. They eliminate the risk to banks, effectively taking over unpaid debts, but not to the recipient country. They now hold a substantial proportion of Southern debt.
[50] Creamer, Terence: "S&P's scrutinises Eskom guarantee detail before making ratings call", Engineering News, February 13, 2009.

reports that it originally intended asking for an 88% tariff increase before being persuaded to go with the more modest 34%.[51] This tallies with a comment from Nersa that Eskom would need a 90% rise to cover the missing R27-billion in its capital requirements for this year (2009/10).

As in 2008, the application has met with opposition across the board both for the late submission and the scale of the increase. Cosatu has threatened strike action if the application is granted. With the economy in recession, the country could not afford a massive increase. Their view that it would retard recovery and threaten jobs was echoed by industry associations. The mines and big industry, however, appear to accept that Eskom must recover costs. From whom, remains the question. Whether those with long-term supply contracts will be affected by the increase has yet to be clarified.

Eskom anticipated the universal concern at the impact of a price rise on the poor. It submitted that "mechanisms must be developed to address affordability" but deferred this to the MYPD application. Presumably the interim application will have an interim impact on the poor. Beyond this, such mechanisms are likely to be located within government's approach of means-tested relief for 'indigents'. Those not identified and registered as indigent will then pay full whack. Earthlife Africa anticipates that increasing numbers of South Africans will be cut off and that this will increase indoor air pollution, with severe consequences for people's health, from coal and paraffin sources.[52]

Despite the government make-over following the elections, the executive reiterated its support for Eskom, arguing that the new build could stall if it was not granted 34%. This appeared to contradict Eskom's exclusion of capital costs. It may also reflect the tenor of negotiations with the World Bank and other investors. In the Bank's view, "effective pricing and cost recovery are key for achieving financial sustainability for [South Africa's] electricity sector".[53] It may be presumed that this is a critical aspect of the loan negotiations.

Pricing is also a condition for private capital investment in power stations. South African policy is that 30% of new generating capacity should be private. While there are some technical issues, the main block to private entry is price. Production costs from Eskom's new coal plants will be far higher than from existing plants largely because of the costs of paying off the debt. New private plants will similarly need to pay off the capital and, in addition, return a profit to the investors. Negotiations between so-called 'independent power producers' (IPPs) and Eskom, as the 'single buyer' of their electricity, have mostly foundered on the question of price. Given that the Bank is a proponent of privatisation, the reference to the 'electricity sector' indicates its interest in creating the conditions that big transnational power corporations will find agreeable.

Price is, of course, capitalism's basic approach to demand side management. Recession, however, has proved rather more effective. In response to Cosatu's comment that reduced demand had relieved pressure on Eskom's 'spinning' margin, CEO Jacob Maroga said that the margin in 2008 was 11.5%, well below the desired 15%. Since South Africa went into recession in the fourth quarter of 2008, it seems probable that the margin has widened. Be that as it may, Eskom's application sees a decrease in sales as a critical risk. It 'forecasts' a 3.6% drop in sales in 2008/09 (the past financial year), which rather contradicts its response to Cosatu, followed by 2.3% increase for 2009/10. However, the failure of economic recovery could result in a further drop in sales and, the document implies, shrinking revenues would further destabilise operations. This clearly points to the corporation's dependence on expanding volumes and to the limits of its conception of DSM. It also highlights the

[51] Donnelly, Lynley: "Eskom creates a perfect storm", Mail & Guardian, June 12, 2009.
[52] Earthlife Africa submission to Nersa.
[53] Personal communication, June 2, 2009.

other side of 'effective pricing'. If the price increase retards economic recovery, then Eskom is cutting its own revenue base. This raises the possibility that cost recovery and expanding sales have become incompatible.

Terminal logic

This incompatibility will be exacerbated into the future. The major economic actors have focused on who pays, but not on what they are paying for. They do not question either the need for the new build nor its base in coal. Rising coal prices are central to Eskom's argument for a higher tariff – despite the dramatic fall in prices from their high in mid-2008. For the longer term, it argues that "the true economic cost" includes "the cost of increasingly scarce primary energy and the cost of shifting to cleaner and renewable electricity generation technologies".

There is, as noted above, no indication of a shift to renewables through to 2025. Instead, the new build ties power production to coal for the next 40 to 60 years. The limits of the global capacity to expand oil production are now obscured by the recessionary collapse in demand. Even in the absence of economic recovery, it is doubtful supply will meet demand much beyond 2012. Coal will then once more follow oil prices up even if the coal supplies can be expanded. The moment of peak oil – when global production goes into decline – marks a terminal point in the logic of the regime of capitalist accumulation.

A second terminal point is visible in the economic crisis. Eskom calls it a 'downturn' while government has reluctantly been forced to acknowledge that South Africa is in 'recession'. Neither word is adequate to the moment. The world is now entering a major depression. In contrast to the recession of the 1980s, which was induced to restore the political power of the US, the managers of global capital have lost control. Investors run from pillar to post to find a safe haven – now into US bonds, now into emerging markets, now into commodities. The result is increased economic volatility. Peak oil plays into the crisis. At the first sign of 'green shoots', the oil price spikes as investors rush in, only to strangle the shoots. There may be more booms and even bigger busts to come, but the global political and economic order will not survive the next few decades.

Increasing the spinning margin is no doubt essential. Building two, and possibly three, R100-billion power stations in anticipation of supplying yet another aluminium smelter with cut price power is hardly a sensible way of doing it in the present context. In taking on the debt, the Treasury is making a double bet: that future economic growth, and the continuous expansion of the energy system, will more than cover repayments; and that the rand will hold its value. Otherwise the debt becomes a trap as it did for many Southern economies in the 1980s.

The Bank has had a good crisis thus far. Government has reversed its position on taking its money because other sources of funding have dried up and because, according to Treasury officials, it is substantially cheaper than commercial borrowing. The political price of the loan, however, is intrinsic to the negotiation and, should the Treasury's bets not pay off, the Bank may yet find itself imposing involuntary structural adjustment on South Africa to secure repayment. The costs will be imposed on all citizens.

The third terminal point is the ecological crisis. The costs are now escalating at all scales from the local consequences of pollution and the destruction of 'ecological services' to the global consequences of climate change. The regime of accumulation founded on growth is not compatible with addressing climate change. While the global managers have thrown stupendous sums of money at saving the economy, losing it now presents the best prospect of inadvertently saving the climate.

Avoiding runaway climate change requires a 6.5% annual reduction in industrial carbon emissions after 2015 according to a paper prepared for the Tyndall Centre for Climate Change Research. The authors note that the economic collapse of the former Soviet Union resulted in only a 5% reduction in emissions. They come to the reluctant conclusion that a "planned economic recession" would be necessary to avoid catastrophic climate change.[54]

The World Bank, deeply involved in climate negotiations and financing as it is, is not the institution to support the drastic change in direction that's required. And the South African government's own assumptions are not in fact very different from the Bank's. The new build is, after all, a home-grown idea. It was nurtured in an economy that is based on cheap labour and cheap energy. For big industrial users, but not for people, it provides the cheapest power in the world. This is the competitive advantage that has made the country one of the world's most carbon intensive economies. The new build is pushing up prices but, as Eskom Chair Bobby Godsell quipped, cheap power is not much use if there is none in stock. Besides, South Africa has some leeway on price with most of its heavy minerals competitors and the managers of SA Inc are determined to retain the advantage. In doing so, they are recreating the logic of an economy that is internally subordinated to the interests of the minerals and energy complex and externally subordinated to the imperial market. This is the economic model that the Bank sets out to save with its loan offer.

[54] Anderson, Kevin and Bows, Alice: Reframing the climate change challenge in light of post-2000 emission trends, Philosophical Transactions of the Royal Society. 2008.

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