

Above and beyond South Africa's minerals-energy complex¹

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INTRODUCTION

The South African minerals-energy complex is now widely understood as a barrier to the society's balanced development and also a threat of great magnitude to the local and global environment. By early 2011, with a New Growth Path (NGP) document stressing a green economy, a Green Paper on climate, and a new national energy plan under debate, and following the March 2011 meltdown of a Japanese nuclear power plant, a great many potential routes opened up for sensible policy changes. However, the inherited legacies of apartheid-era and post-apartheid 'developmental state' projects have made a U-turn extremely difficult.

Dating back to the discovery of Kimberley diamonds in the 1860s and Witwatersrand gold in the 1880s, a handful of corporations gained power over South Africa's development policy. At one point, Anglo American and De Beers – run mainly by the Oppenheimer family dynasty – controlled almost half the country's gold and platinum, a quarter of its coal, and virtually all its diamonds, and held critical stakes in banking, steel, auto, electronics, agriculture and many other industries. The Truth and Reconciliation Commission determined after the 1996 hearings that the South African mining industry's 'direct involvement with the state in the formulation of oppressive

policies or practices that resulted in low labour costs (or otherwise boosted profits) can be described as first-order involvement [in apartheid] ... The shameful history of subhuman compound [hostel] conditions, brutal suppression of striking workers, racist practices and meagre wages is central to understanding the origins and nature of apartheid' (TRC, 1998: 34).

By the 1980s, however, South Africa's internal accumulation crisis – brought on by social resistance as well as internal contradictions in the capitalist system (Bond, 2006) – began to compel both political and economic changes. As the chairman of Anglo, Harry Oppenheimer, stated, in 1985: 'Nationalist policies have made it impossible to make proper use of black labour' (cited in Sharife, 2010c). The result, from 1994, was a 'liberated' nation accurately described by Ali Mazrui in a speech in Cape Town where he stated of the thriving legacy: 'You were the crown, we'll keep the jewels', referring to black political domination – the crown of the state – and white control of intellectual, economic and other 'jewels' (Mazrui, 1998).

Could South Africa's economic jewels be snatched back by the masses and refashioned into something more socially and environmentally appropriate? Minister of Economic Development Ebrahim Patel's keynote address at the May 2010 Green Economy Summit acknowledged: 'There is now broad acceptance that 150 years of industrialisation that started in Europe, based mainly on fossil driven energy, has impacted on the climate and environment in very profound ways.' The future could be different, he predicted, for if South Africa was able to capture two per cent of the estimated global green economy in the next five years, 'we can expect to create up to 400 000 jobs in energy, manufacturing, agriculture, mining and services.' But how serious is Pretoria about the needed shift from a minerals-energy complex to a genuinely sustainable economy?

GREEN ECONOMY OPPORTUNITIES FOR A U-TURN?

At the Green Economy Summit, the government undertook to define a green economy path by integrating a 'supportive regulatory framework' (South African Planning Institute, 2010) to develop green industries through instruments such as sector action plans and market instruments to incentivise the use and production of cleaner and low carbon products. Other focuses included: a) greater localisation of manufacturing of materials (solar, nuclear, wind, hydro power and electronics industries); b) the expansion of green jobs employment opportunities through the public works programmes; and c) acceleration of programmes supported by the Clean Technology Fund (\$500 million from the World Bank) to meet renewable energy targets. Led by the Department of Environmental affairs, other Pretoria agencies meant to support the Green Economy included the Departments of Economic Development, Science and Technology, Trade and Industry, Energy, and Public Works as well as the Department of Agriculture, Forestry and Fisheries (Green Economy Summit, 2010). (It is notable that the role of the Department of Water Affairs was insignificant.)

The DTI had already begun implementing potential 'green' industry growth in various job-intensive sectors such as organic produce, solar water heating and manufacturing. South Africa's manufacturing industry, currently operating below 2005 levels, was hard hit by liberalisation, by China's expanding footprint and, more recently, by the global economic meltdown. The DTI's Industrial Policy Action Plan 2 (IPAP 2), described by the minister of Trade and Industry, Rob Davies, as a living document that would be realised in 'bite size chunks', will allegedly generate 2.5 million indirect jobs and over 825 000 direct jobs in several strategic areas, including agro-processing, green economy and energy jobs. For example, the tax incentive programme known as a '12i' will see government forego R5.6 billion in much needed taxes, in the hope of motivating corporations to engage in energy efficiency, expansions and upgrades, cleaner production technology, and skills training, designed to have a positive impact on upstream and downstream industries. 'One of our key criteria is energy efficiency through technologies geared for more efficient processes. It would be easier for new companies than those that are upgrading existing businesses,' according to Moeketsi Marumo (2011), head of the 12i tax incentive programme.

Yet a genuine turn to green economic activity has not yet been made. To illustrate: the domestic solar industry currently produces a mere 35 000 units per annum worth R220 million. The most appropriate technology, solar water heating, is a relatively labour-intensive form of energy generation with more than half the workers involved in installation, yet currently only 400 employees work as installers, 200 in manufacturing and the remainder in administration. The domestic market is perceived as potentially huge, with 11 million households, although only a small fraction can afford the capital costs (around R10 000 per unit), and the majority of black South Africans are still not consuming electricity at the level required to achieve savings from switching from geysers (which most do not have) to solar water heating. Still, if the DTI has its way, domestic solar water heating promotion will increase investments in local manufacture and skills development. Employment could be created rapidly, as it takes a mere six months to train an employee in installation services. Targeted increases in installations would increase to 250 000 units annually, and manufacture would rise to 200 000 units each year. Given the huge potential, a much more rapid and expansive rollout should be possible if subsidies are made available and building codes changed, so that staged conversion can be started on all existing and new houses.

The Industrial Development Corporation has allegedly earmarked a budget of R11.7 billion for green industries over a five-year period, including R33 million on feasibility studies for wind farms, solar and thermal electricity generation and R800 million on resource and waste management (Patel, 2010). However, many such 'green initiatives' are dubious, including the R800 million approved for bio-ethanol, which will transform South Africa's limited water resources and arable land into fuel-utilising, expensive (and ecologically destructive) inputs.² The bio-ethanol project has a potential budget of R20 billion, almost a quarter of the total 'green budget'. Patel's NGP promises to cut unemployment from twenty-five to fifteen per cent by generating five million jobs in manufacturing,

infrastructure, agriculture, tourism and mining. In addition to the establishment of a sovereign wealth fund, the NGP proposes capped salaries for those earning over R45 000 a month, and the creation of a state-owned bank and mining company to ensure that 'the developmental state is not simply hostage to market forces and vested interests' (ibid.).

While Cosatu has claimed that the NGP does not go far enough, for Investec analyst Annabel Bishop, the NGP U-turns the South African economy: 'The NGP aims to increase labour intensity, weaken the rand and cap wages for high income earners. But it shifts even more of the burden of employment onto government and the cost onto the private sector, of which the business sector is a major contributor to tax revenue, which is used to pay for the increased employment in the government sector' (Bishop, 2011). In contrast, Riaz Tayob of the Southern and Eastern African Trade Information and Negotiations Institute maintains that: 'Job creation in the NGP is essentially about leaving things to the market. When the private sector is doing its job, it should really be left alone, but the market has given us decades of jobless growth, if evidence is to count for anything. The NGP largely remains a fiscal austerity policy reminiscent of the old strategy, Gear, pro-cyclical at precisely the wrong time' (Tayob, 2011).

CLIMATE CHANGE AND CARBON MARKETS

Another potential site of U-turning would be through the national climate change response Green Paper. The potential for a new climate policy is vast as a result of South Africa's November-December 2011 hosting of the Kyoto Protocol's Conference of the Parties (the Durban 'COP 17'). But the legacies of the minerals-energy complex's power are formidable, as witnessed by the 2010–2011 multi-billion rand financing decisions on Eskom coal-fired mega power plants (with more price increases), the conclusion of the Energy ministry's multi-decade integrated resource planning exercise – run by a committee dominated by electricity-guzzling corporations – and Pretoria's contributions to four global climate debates in 2010–2011. These four debates are: President Jacob Zuma's co-chairing of a UN sustainable development commission; Planning Minister Trevor Manuel's role within the UN Advisory Group on Climate Finance seeking \$100 billion a year in North-South flows; the G8-G20 meetings in France, and the COP 17 preparatory committee meetings.

Unlike his predecessor, Zuma had no obvious capacity to wax eloquent on sustainable development, so his appointment to chair a UN committee could be seen as tokenistic – or as a chance to make a mark on the world if he so desired. Not only did Manuel win a co-chair of the team designing the Green Climate Fund in April 2011, he was also a candidate in June for the post of managing director of the International Monetary Fund (IMF), so his ability to weigh in on climate financing could have been decisive. But the IMF post was predetermined by the G8's power structure in the wake of the demise of the misogynist Dominique Strauss-Kahn, and while Europe faced a quadruple sovereign financing crisis (Greece, Ireland, Portugal and Spain) it was evident that a European would

keep the top job. Finally, all indications at Bangkok in April 2011 and at Bonn in June 2011 were that the overall emissions reduction targets at Durban would not be ambitious, yet huge decisions on climate finance would be made. Instead of paying reparations for 'climate debt', the new fund would aim to codify existing power structures. Instead of raising revenue from major polluters in the North to deter their emissions, Manuel supported the notion that fifty per cent of the climate fund would come from carbon trading.

The Green Paper revealed the narratives that Pretoria would deploy at the COP 17. Primary authors included the Department of Environmental Affairs official, Joanne Yawitch, from a struggle-era background in land reform NGOs, and once dedicated to far-reaching social change. But Yawitch moved to the National Business Initiative in 2011, confirming the state-capital revolving door through which so many other politicians and bureaucrats have tread since 1994. At the Copenhagen COP in December 2009, the lead G77 negotiator, Lumumba Di-Aping, accused Yawitch of having 'actively sought to disrupt the unity of the Africa bloc', a charge for which she forced him to publicly apologise, even though within days Zuma proved it true by signing the Copenhagen Accord (whose implications for much of Africa include a seven-degree centigrade rise in temperature this century).

The Green Paper's initial premise is not incorrect: 'South Africa is both a contributor to, and potential victim of, global climate change given that it has an energy-intensive, fossil-fuel powered economy and is also highly vulnerable to the impacts of climate variability and change.' But this allows an all too predictable Pretoria formula: talking left, so as to more rapidly walk right. Thus: 'South Africa, as a responsible global citizen, is committed to reducing its own greenhouse gas emissions in order to successfully facilitate the agreement and implementation of an effective and binding global agreement' (National Climate Change Response Green Paper). The reality, however, could be retyped as: South Africa, as an irresponsible global citizen, is committed to rapidly increasing its own greenhouse gas emissions by building the third- and fourth-largest coal-fired power plants in the world (Kusile and Medupi) mainly for the benefit of BHP Billiton and Anglo American which get the world's cheapest electricity thanks to apartheid-era, forty-year discount deals, and to successfully facilitate the agreement and implementation of an ineffective and non-binding global agreement – the Copenhagen Accord – which is receiving support from other countries only because of coercion, bullying and bribery by the US State Department, as WikiLeaks has revealed.

The Green Paper claims that South Africa will achieve an 'emissions peak in 2020 to 2025 at thirty-four per cent and forty-two per cent respectively below a business as usual baseline'. But Earthlife Africa's Tristen Taylor had reminded Yawitch in 2009 that the 'baseline' was actually called 'Growth Without Constraints' (GWC) in an earlier climate policy paper: 'GWC is fantasy, essentially an academic exercise to see how much carbon South Africa would produce given unlimited resources and cheap energy prices' (Earthlife Africa: 2009a). Officials had already conceded that GWC was 'neither robust nor plausible' in 2007, leading Taylor to conclude that 'the SA government has pulled a public relations stunt' (*ibid.*).

The Green Paper admits that, 'economic risks emerge from, among others, the impacts of climate change regulation, the application of trade barriers, a shift in consumer preferences, and a shift in investor priorities.' Already, Europe's 'directive on aviation and moves to bring maritime emissions into an international emissions reduction regime could significantly impact' on South African tourism, air freight and shipping. If this analysis were to be taken seriously, a city like Durban would have to fundamentally rethink its massively subsidised economic development strategies reliant upon revived beach tourism; mega-sports events to fill the Moses Mabhida stadium (one of several white elephants); port widening and a new dug-out harbour at the old airport site (along with more auto manufacturing); a competing Dube trade port next to the King Shaka Airport; new long-distance air routes; expansion of south Durban's dangerous petrochemical complex; and a massive new Durban-Johannesburg oil pipeline (and hence doubled refinery capacity). Yet the Green Paper passes the buck downwards to the officials currently engaged in business-as-usual planning: 'Most of our climate adaptation and much of the mitigation efforts will take place at provincial and municipal levels.'

Another danger, so poignant after the March 2011 meltdown of the Fukushima Daiichi nuclear reactor, is the Green Paper's commitment to 'a nuclear power station fleet with a potential of up to 10 GWh by 2035 with the first reactors being commissioned from 2022' and, just as dangerously, a convoluted waste incineration strategy that aims to 'facilitate energy recovery' through 'negotiation of appropriate carbon-offset funding'. Indeed, the Green Paper repeatedly endorses 'market-based policy measures', including carbon trading and offsets, at a time when Europe's Emissions Trading Scheme had collapsed owing to fraud, hacking and an extremely volatile carbon price, and the main US carbon market in Chicago had all but died. The Green Paper claims that attempting to 'kickstart and stimulate the renewable energy industry' requires Clean Development Mechanism (CDM) projects. Yet the minuscule R14 per tonne being paid in 2011 by investors for the Durban methane-electricity conversion at three local landfills shows the futility of that mechanism, not to mention the historic injustice of keeping the Bissasar Road dump open in spite of residents' objections to environmental racism.

This strategy suggests a more general problem, because carbon trading is strongly endorsed by corporations of the minerals-energy complex. Eskom and Sasol have been most active in trying to continue fossil-fuel investments, such as the Medupi coal-fired power plant and the Mozambique gas pipeline, with CDM funds. The UN advisory group on finance states that carbon trading is expected to provide as much as fifty per cent of the funds available from the North (US\$100 billion a year by 2020) to mitigate climate change globally, even though as much as ninety per cent of emissions traded by some European countries in the EU's emission trading system are considered to be fraudulent (Europol, 2009). By 2008, the world emissions trading market was valued at US\$130 billion, and while the economic recession undercut the market's growth, it was projected to increase to US\$3 trillion by 2020, provided the US came on board (Bond, 2010).

Given the global and South African power relations, it should come as no surprise that the 'privatisation of the air' is considered a solution to pollution. Carbon trading, largely

developed by multinational corporations like Goldman Sachs, threatens to create another manipulated, gamed 'derivatives' market. For the Third World, the current 'under-exploitation' of the atmospheric commons is the source of profits and ongoing emissions licences for industrialised countries and multinational corporations. These Annex 1 countries³ pledged at the Copenhagen COP 15 to reduce greenhouse gas (GHG) emissions to between twelve and eighteen per cent of 1990 levels by 2020. But instead of making cuts at home, the carbon markets and offsets allow allegedly equivalent GHG sequestration or mitigation in the Third World. This is an open door for gaming the system using CDMs. A 2009 paper by Benjamin Sovacool and Marilyn Brown revealed a 4.7 billion scam to make apparent cuts in trifluoromethane (HFC-23), a GHG used as a refrigerant (Sovacool and Brown, 2009). More than seventy per cent of CDM projects in 2009 were based on HFC-23, which was deliberately produced in excess by corporations that then claimed to 'offset' it in order to receive financial benefits through certified emissions reductions credits. A moratorium was only placed on this technique in February 2011.

How does such CDM gaming play out in South Africa, especially in the context of the Green Economy Summit's proposed move to support the idea that 'transition to a low-carbon and sustainable economy can create large numbers of green jobs across many sectors of the economy, and indeed can become an engine of development'?⁴

GREENWASHING ENVIRONMENTAL RACISM

The example of Durban's Bisasar Road dump is instructive, in part because the landfill, located in the black residential area of Clare Estate, is Africa's largest. One of three fully permitted landfill sites in Durban, Bisasar was opened for business in 1980 by the apartheid regime. The Group Areas Act, a crucial pillar of the apartheid government's segregation agenda, meant that Bisasar Road would 'import' waste from privileged white areas to impoverished and working-class black areas deprived of basic human rights. Bisasar was emblematic of the 4 000 disposal dumps created across the country (of which, the government claimed, only 200 met minimum environmental standards).

Residents of Clare Estate – classified as an 'Indian' and 'coloured' area but with a large African shack settlement from the mid-1980s – lacked access to political, economic and legal recourse. Their attempts at mobilising dissent against the regime were ignored, although the African National Congress pledged in 1994 that the new democratic municipal government would close the racist dump. Despite ongoing opposition to the dump from residents, and promises by the government to close and rehabilitate the dump, Durban Solid Waste supported the continued use of the dump, as two other sites – in wealthy Umhlanga and impoverished Umlazi township – were shut instead. Described by the municipality as 'favourably placed with respect to central Durban, close to a major artery connecting the city to the west, north and south' (Durban Municipality, 2011), the dump processes 3 000 to 5 000 tonnes of waste daily, including hazardous waste

such as sewage sludge and healthcare risk waste. In spite of vehement calls for closure, of the dump's significant leachate and of respiratory problems in the community, the national Department of Water Affairs and Forestry extended the landfill's life cycle in 1996.⁵ Although the permit issued was for general waste only, a meeting between the municipality and national water officials in 1995 resulted in the site's operators being 'granted a permit without a buffer zone' even though (as Condition 5.7 of the permit put it), 'the permit holder shall accept obnoxious sewage sludge'. Hosting nineteen million cubic metres of waste, the dump was described by Carl Albrecht, research director of the Cancer Association of South Africa, as a toxic 'cancer hotspot' where residents 'are like animals involved in a biological experiment' (Bond and Dada, 2005). Bisasar holds a further four million 'available' cubic metres of fully permitted landfill space before critical mass is reached, hence there is potentially another decade and a half of dumping in the black neighbourhood.

Given this potential, in 2002, Ken Newcombe of the World Bank – later a managing director of carbon at Goldman Sachs – promised his institution's prototype carbon fund would provide R100 million for keeping the dump 'open for business', rather than resorting to closure and rehabilitation. The reason was that the methane coming from the vast landfill could be collected, flared and used to run a set of small electricity turbines, hence generating 3.1 million Certified Emissions Reductions (CERs). In spite of its environmentally racist past and present, Newcombe declared Bisasar to be 'operated and maintained on a world-class level' (groundWork, 2010). Replied Sajida Khan, the activist who was instrumental in bringing the issue of the dump to the city's and the world's attention – for example, on the front page of the *Washington Post* in February 2005 – 'Unlike me, he does not live across the road from Bisasar' (ibid.). As Khan argued, 'The community would not have: marched and demonstrated; blocked the entrance to the site; handed a petition with 600 signatures to the mayor; written press articles and voiced our dismay on national television if we had accepted the Bisasar dumpsite' (ibid.). The World Bank was apparently intimidated, and it pulled out of the Bisasar Road project, although two other much smaller methane-electricity CDM projects were funded at the same time. But by July 2007, having been twice struck by the cancer she believed came from particulates that floated across the road into her life-long home, Khan had died.

The municipality then went to the markets, without the World Bank. As said by the Durban city manager, Mike Sutcliffe, 'Landfill gas offers a viable renewable energy source only when linked to carbon finance or CDM' (Sutcliffe, 2010). By March 2009 the municipality registered the initiative on the United Nations list of CDM projects as active until 2014 at least. The French Development Bank assisted with a US\$8 million loan, and municipal officials soon constructed the full system of extracting methane, burning and flaring it (with associated incineration hazards given the GHGs and heavy metals that coexist with the methane, including CO₂, nitrogen oxide, lead, cadmium and other toxics), powering the turbines, and connecting the generated electricity back into the municipal grid. John Parkin, deputy head of engineering at the city's waste department stated, 'What makes it worthwhile is the revenue that can be earned from carbon

credits' (*Financial Mail*, quoted in Schneider, 2008), and as of April 2010, this monthly revenue totalled US\$600 000 (*Impumelelo*, 2010). The CDM financing justifies utilisation of the remaining landfill space, a toxic site based in a residential area under the guise of environmental protection against climate change.

The chequered history of Bisasar Road, South Africa's most important CDM pilot, corresponds to the externalisation of pollution so typical of free market economics. When economists do attempt to internalise such externalities, as did John Dales (Dales, 1968) they inevitably turn not to regulation but to a market for pollution rights and trading. The transferable property rights were an allowable quota of pollution emissions that could be bought and sold, and this conceptual apparatus would be used to justify the privatisation and propertisation, by financiers, of natural resources and ecosystems. As Lawrence Summers so evocatively put it in 1991: 'I think the economic logic behind dumping a load of toxic waste in the lowest-wage countries is impeccable and we should face up to that' (Summers, 1991). It is this trajectory – the commodification of everything – that logically takes the South African government from its own minerals-energy complex past through to another form of environmental racism – carbon trading. The next ecological crisis associated with the minerals-energy complex is being handled with similar sensitivity to planet and people: acid mine drainage.

WITWATERSRAND WATER CATASTROPHE

After climate change, acid mine drainage (AMD) has been described as the single most dangerous threat to South Africa's environment. Gold mining acted as primary pillar of South Africa's emergence as a 'resource colony' capable of supplying cheapened labour and cheap resources. The Witwatersrand region, mined since the mid-1880s, is the world's largest gold and uranium mining basin, yielding an estimated 43 500 tons of gold and 73 000 tons of uranium (Earthlife Africa, 2009b). The externalities of this legacy include a mine tailings dam composed of waste material, measuring 400 square kilometres next to six billion tons of iron sulphide, 'one of the substances, which, when exposed to air and water, produces acid mine water' (ibid.). Already, the Cradle of Humankind has been affected by as much as 40 million litres of AMD, according to Anthony Turton (2011), a leading water resources management expert: 'Johannesburg is the world's largest city that is *not* on a river, a lake or a seafront. It is a city on a watershed, both literally and figuratively ... a city on a major continental divide, because flowing from a massive dolomite aquifer system underneath Johannesburg are the headwaters of the tributaries of the Limpopo and Orange River basins ... seen in this way, Johannesburg can be described in one sentence as being a city that has grown out of the chaos of the gold rush, sitting on top of one of the largest karstic aquifer systems in the world, underlain by the one of the largest non-alluvial gold deposits in the world.'

Like the porous dolomite aquifer, acting as a sponge, the multinationals of the minerals-energy complex sponge off economies, peoples and ecologies. The Western

Basin began decanting in 2002, near Black Reef Incline, at fifteen million gallons a day, and unless it is addressed immediately the Central Basin will begin decanting in two and a half years at sixty million gallons a day, and the Eastern Basin (currently maintained by Pamodzi Gold) will decant eighty-two million gallons per day in three years unless water-pumping operations continue (Western Utilities Corporation, 2010). Even partial treatment costing R11 million per month, financed by the mines, was considered an exorbitant internalisation of externalities.

But the cost of AMD will be far higher; it is incalculable. Some of the worst pollution is generated by coal mines which are located, ironically, on South Africa's best agricultural land (*BusinessLive*, 2011). These mines could be 'inherited' by the government if nationalisation of the type proposed by the ANC Youth League takes place. But in its climate Green Paper, the government proposed the policy of 'polluter pays', stipulating that 'costs of remedying pollution, environmental degradation and consequent adverse health effects, and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment (Department of Environmental Affairs, 2010).

These lofty sentiments are, however, unlikely to be realised, given that historically and currently AMD remains the direct consequence of free-riding by multinationals. The expense for mitigating AMD has been projected at R360 billion (Aeon, 2010), mainly for specialised water treatment plants, over the next fifteen years. Although South Africa's agricultural sector utilised ten times the volume of water used by mining houses, the latter represent the most lethal, mobile (able to relocate should government not appease demands) and systemically powerful polluter.

In fact, these very multinationals have been seeking 'closure certificates' exonerating them from environmental reparations and liabilities. Through a reverse listing on the AIM board of the London Stock Exchange under the name of Watermark Global PLC via the Western Utilities Corporation (WUC), it seems that this exit route has become possible. The main WUC owners are the mines eagerly vying for closure certificates, asserts Turton (2011). 'The WUC deal will give all the mine owners their closure certificates, and because of the way that government has fumbled the ball, it will also give them a guaranteed sixteen per cent return on investment (much larger than many operating mines enjoy), so that not only will the mines evade the legal requirement of the 'polluter pays principle' enshrined in our internationally acclaimed water law, but they will actually profit from that evasion and, what is more, that profit is all but guaranteed because it will be underwritten by the state in the form of a mooted public-private partnership,' he argues.

The public-private partnership involves a sixty per cent mandatory deal, said Turton (who, because of his critical assessment, was suspended from the Council for Scientific and Industrial Research (CSIR) in 2008). The WUC would hold forty per cent of the remaining equity. The core of the company's business, with a capital value of R3.5 billion with no tendering process, will be treating hazardous waste, thereafter sold to Rand Water and its eleven million users.

So far, WUC has raised £1.5 million in working capital, and is awaiting the South African government's decision on the project (Balashov, 2011).

André Botha, spokesman of Agriculture South Africa (AgriSA), an agricultural trade association representing 70 000 large- and small-scale farmers, argues:

My problem with this is that there is legislation in South Africa that requires mines to ensure to rehabilitate water, to prevent or mitigate any contamination. We know that South Africa is a water-scarce land and if we allow for contamination of our ground water resources, we are heading for serious trouble (Botha, 2011).

Botha claimed that part of the problem included intimate ties between the ANC (directly or indirectly) and mine ownership. He cited the case (dismissed in May 2011) of the nearly submerged Grootvlei gold mine, managed by Aurora Empowerment Systems. The company, headed by President Jacob Zuma's nephew Khulubuse Zuma, is also known as 'Mandela's mine' for its connection to former president Nelson Mandela's grandson, Zondwa. Botha said that contamination of agricultural land 'is already occurring in the Krugersdorp-Boksburg stretch. They stopped pumping the water at the Grootvlei mine, which then seeps through, contaminating the ground water. This is the same water used by vegetable farmers for irrigation' (ibid.). Grootvlei's Shaft 3 mine alone seeped ninety megalitres of water each day, equivalent to 2 000 Olympic sized swimming pools, during the first four months of 2010 alone.

According to Stephanie de Villiers, co-author of the Africa Earth Observatory Network report 'H₂O-CO₂ Energy Equations for SA':

The proposals by corporations such as WUC to step in with their proposed solutions have apparently been shot down, because they wanted to sell the cleaned water back to Rand Water, making a profit in the process. I'm not sure why mining houses are allowed to pollute while making a profit, and corporations who want to clean up are apparently expected to do so without the benefit of making a profit. What I find even more confusing is why the government is not using this as an opportunity to set up a state-owned enterprise that actually will have the potential to make some money that can be ploughed back into state coffers. This is one aspect of the country's water crisis that appears to be totally bogged down by politics (De Villiers, 2011).

Such costs of mitigation, budgeted by the South African government at a cost of R1.2 billion should be classified as 'ecological reparations' when contextualising the activities of major mining companies (chiefly entities like Anglo-American) over a period of 120 years, notably during apartheid. Recent studies by respected scholars such as Chris Hartnady, a former geology professor at the University of Cape Town, revealed that pollution and environmental degradation far outweigh the value of remaining resources (such as gold, which is ninety-five per cent exhausted):

Given the energy and environmental problems associated with ongoing ground water control, water-resource contamination by acid mine drainage and the possibility of widespread mercury and other factors of pollution caused by illicit underground ore-processing by the *zama-zamas* (illegal miners), the glory days of South African gold mining appear to have arrived finally at an ignominious end (Hartnady, 2009).

The United States Geological Survey cites existing South African gold reserves at just 6 000 tonnes, some 30 000 tonnes less than South Africa's own estimates, which would be forty per cent of the global total (Umvoto Africa, 2009). Much like the potentially over-inflated estimates of gold, the justification behind Eskom's R400 billion expansion plan, largely structured around coal, operates on the premise that coal reserves, estimated at 30 billion tonnes (downsized by the Department of Minerals and Energy during 2003–2004 from 50 billion tonnes) will last for 200 years, vindicating the initiative's drastic expense on the public purse (*Mail & Guardian*, 2010). A report published in the *SA Journal of Science*, (Hartnady, 2009) estimates that coal, currently generating as much as ninety per cent of South Africa's electricity, may in fact be capped at 15 billion tonnes and would become increasingly difficult to excavate four decades from now, with coal production peaking at 285 million tonnes in 2020.

The financial burden of AMD mitigation, extending far into the future, is similar to that of Eskom's new coal expansion plan, which will generate yet more AMD and place severe strains on crucial catchment systems. Bobby Peek of groundWork (the leading anti-pollution NGO) stated: 'The environmental and social cost of this development will impact on all South Africans as three major water catchments, the Limpopo, Vaal and Senque (Orange) Rivers are all going to have their water diverted for Medupi and future power stations' (groundWork and Earthlife Africa, 2010).

Pretoria's Department of Water Affairs has identified AMD as the biggest threat to South Africa's limited water resources. South Africa is, after all, one of the world's most water-scarce nations, with over ninety-eight per cent of the country, representing four per cent of Africa's overall land mass, classified as arid or semi-arid. As with most nations, water resources are 100 per cent allocated. Yet even in the context of Africa, the driest of the world's seven continents, the country receives just 40 millimetres in annual run-off, compared to the continent's annual run-off of 114 millimetres, against a global average of 266 millimetres. In Africa, over eight per cent of rainfall precipitation is lost to evaporation; in South Africa, the figure is ninety per cent, with under ten per cent converted to river run-offs.

The government estimates that future water shortages will be in the range of between two and thirteen per cent of available water resources in South Africa. But De Villiers argues that water demand will exceed availability by thirty-three per cent in 2025, because government's projected water shortages deliberately or incidentally fail to factor in reduced availability from pollution and climate change. 'If you look at the water management areas in which the new coal power plants will be established,' argues De Villiers, 'and

where the coal mining will take place, you'd see that these water management areas are already "red" zones, areas where water demand already exceeds availability' (De Villiers, 2011). De Villiers states that the water that will be used by power plants will come at the expense of existing water users: 'It is just a matter of time before groundwater pumps across Limpopo province start to dry up.'

The government's 2010 Green Paper emphasises the importance of water and water-use, such as accelerating the 'development and/or capacity of effective and accountable catchment management agencies; water-use pricing schedules including effluent charges'; and investments in waste-water treatment capacity so as 'to safeguard public health, river health and ecological services and to minimize environmental disasters and treatment costs'. But the realities of minerals-energy complex residual power and pollution are potentially debilitating negations of this fine rhetoric, as Eskom proves with its expansion plans.

ESKOM'S COAL-FIRED ELECTRICITY EXPANSION

South Africa's current capacity, inclusive of industry and consumers, is 36 000 MW (Eskom, 2008). In the context of the extreme historical damage by the minerals-energy complex to South African air and water quality, Eskom's dramatic expansion of coal-fired electricity generation in coming years is breathtaking. Globally, coal is the preferred source of electricity-generating fuel, supplying forty per cent of energy. A recent study by Paul Epstein of Harvard Medical School's Center for Health and the Global Environment revealed that the public health and economic burdens of coal are US\$500 billion annually, including mercury and greenhouse gas emissions, toxic spills, land and agricultural damage, and respiratory diseases (Schwartz, 2011). It is sometimes claimed that the emissions damage of coal-fired plants can be mitigated by carbon capture and storage (CCS) systems and, moreover, the World Bank claims that Eskom's Medupi plant will be the first power station in Africa to use supercritical clean coal technology, reducing emissions by five per cent. Paradoxically, Eskom's managing director, Steve Lennon, confirming the utilisation of use of CCS technology, disclosed that 'one of the plants we are building is CCS ready ... [but] to be quite frank no one really knows what that is at the moment' (Earthlife Africa 2009c). CCS technology could reduce Medupi's real output to a capacity of 3600 MW (groundWork 2010). Moreover, despite the supercritical cooling system, approximately ten per cent of the cost of Medupi will come from water transfers for traditional cooling.

The cooling of Eskom's coal-fired stations, especially in Mpumalanga, makes the power company South Africa's single largest water customer. Projections for future coal-cooling water requirements suggest that new dams will be needed more rapidly within the Lesotho Water Highlands Project (LWHP), Africa's largest dam network and the world's second largest water transfer scheme. Formulated by the apartheid regime and the World Bank, and characterised by notorious corruption, socio-environmental

impacts and sanctions busting, the LHWP's collaborators included the compliant regime in Lesotho installed by Pretoria during the 1980s, as well as a number of multinationals that would later be prosecuted for corruption and bribery. While LWHP was opposed by the African National Congress during the apartheid era, it was subsequently endorsed by Kader Asmal, the first post-apartheid water minister.

The planned power plants will continue providing the world's cheapest electricity to the world's largest mining and metals houses, for some of Africa's most capital-intensive and export-oriented smelters. Medupi will be the world's fourth largest coal plant, and is pegged to generate 4 800 MW of electricity after it begins operations in 2012. Emissions of around 30 million tonnes of carbon dioxide per year will put this plant ahead of the annual emissions of 115 countries. There are thirteen other coal-fired stations in South Africa, and the next one, Kusile, will be even larger. The government's struggle to finance the R125 billion Medupi project is ironic, given that the government's Upington solar project, valued at R150 billion, is seeking funds largely from private investors, and when built is anticipated to supply 5 000 MW of electricity (National Public Radio, 2010).

Eskom plans to invest R440 billion in new plants over the next seven years, for which funding has begun to flow from international institutions. Emblematic was a US\$3.75 billion loan from the World Bank in April 2010, and in an opinion editorial published by the *Washington Post*, just prior to the Bank shareholders' vote on Medupi, the South African minister of Finance, Pravin Gordhan, justified the expansion based on 'strong new demand for electricity from millions of previously marginalised South Africans ... now on the grid' (Gordhan, 2010). He did not mention that paying for Medupi will require a 127 per cent real price increase from 2007 to 2012 for South African household electricity consumers. With prices soaring, many more residents were being disconnected, and of Eskom's four million customers, one third registered zero electricity consumption. Many had reconnected illegally and, as Eskom and the municipality clamped down, the result was more social strife in a country with what is probably the world's highest rate of community protest over a five-year period.

As noted, the source areas of the coal for Medupi are highly contaminated by mercury and acid-mine drainage, with air, land, vegetables, animals and people's health at much greater risk. Forty new coal mines in impoverished areas of Limpopo and Mpumalanga provinces will be opened to provide inputs to Medupi and its successor, Kusile. This will create a few coal sector jobs (hence receiving endorsement from the National Union of Mineworkers), but a great many jobs in agriculture and tourism will be lost as a result of the invasive mining activity and downstream degradation. Medupi itself will be built in a water-scarce area where communities are already confronting extreme mining pollution and, even though an air-cooled model (Africa's first) was chosen, the cost of supplying an additional water-cooling supply amounted to hundreds of millions of dollars, given the long transport and pumping costs.

Once the coal is burned and electricity generated, the winners and losers become even more divergent. Medupi's main beneficiaries will be the world's largest metals and mining corporations, especially BHP Billiton (Melbourne based) and various Anglo-

American subsidiaries (most reporting to London), which already receive the world's cheapest electricity thanks to multi-decade deals. Anger soon grew about the huge discounts made when secret, forty-year 'special pricing agreements' were offered by Eskom during late apartheid, when the firm had a third too much excess capacity owing to the long South African economic decline. These agreements were finally leaked in March 2010, and disclosed that BHP Billiton and Anglo were receiving the world's cheapest electricity, at less than \$0.02/kWh (whereas the overall corporate price was around \$0.05/kWh, still the world's cheapest, and the consumer price was around \$0.10/kWh). In early April, just before the World Bank decision, Eskom announced that a small modification was made to BHP Billiton's contract price but it was reportedly to the firm's 'advantage'. Finally, however, the Australian-based mining house was sufficiently intimidated by the glare of publicity that, in October 2010, Deutsche Bank mining analysts predicted BHP would dispose of Richards Bay assets. *Business Day* believed that: 'The reason for selling the aluminium smelters would be the scrutiny under which BHP's electricity contracts have come amid demands for resource companies to use less power' (*Business Day*, 2010b).

An additional problem with BHP and Anglo as beneficiaries is the outflow of profits to Melbourne and London, at a time when South Africa's current account deficit made it the world's most risky middle-income country, claimed *The Economist* (25 February 2009). Moreover, South Africa had an existing US\$75 billion foreign debt, which would escalate by five per cent with the World Bank loan. The 1994 foreign debt was just US\$25 billion, and First National Bank projected that the ratio of foreign debt to GDP would by 2011 rise to the same level as was reached in 1985, when a debt crisis compelled a default (on US\$13 billion), a signal that business and banking were finally breaking ranks with the apartheid regime.

Another controversial aspect of the loan was the World Bank's articulation of the privatisation agenda. The confirmation that Eskom would offer private generating capacity to independent power producers was established in loan documentation, in relation to the renewable component, advancing Eskom's desire to privatise thirty per cent of generating capacity (including a forty-nine per cent private share in Kusile, although no private interest had been expressed for Medupi). This component attracted explicit opposition from trade unions – especially the National Union of Metalworkers of South Africa (Numsa) – and consumers.

Corruption was another feature that generated criticisms of the World Bank by South African opposition political parties (especially the centre-left Independent Democrats and the liberal Democratic Alliance, which subsequently merged) and the influential liberal *Business Day* newspaper. These organisations opposed the loan because, contrary to supposed World Bank anti-corruption policies, it will directly fund African National Congress (ANC) ruling party coffers. Medupi will be built with Hitachi boilers that in turn kick back between \$10 and \$100 million (the amount is still unclear) thanks to an ANC investment in Hitachi. As the Eskom-Hitachi deal was signed, Eskom chairperson Valli Moosa was also a member of the ANC's finance committee. A government investigation

released in March 2010 found his conduct in this conflict of interest to be ‘improper’. The ANC promised to sell the investment stake, but this dragged on for several months. Finally, in May 2010, Chancellor House managing director Mamatho Netsianda relayed by text message to the media: ‘The official position is that Chancellor House Holdings is not selling its stake in Hitachi Power Africa ... (SAPA, 2010). Ironically, in February 2010, the World Bank had issued a major statement at the same time as its annual African Development Indicators, entitled ‘Quiet Corruption’, in which it blamed African teachers and healthcare workers for moonlighting (a result of World Bank structural adjustment policies).

As in the case of the Bisasar Road CDM, the matter of historic racial injustice should not be ignored. The World Bank’s financing of apartheid began just three years after the 1948 election of the Afrikaners’ National Party, lasting until 1967, and including \$100 million for Eskom. During that period, the Bank financed the supply of electricity to no black households (which only began receiving electricity in 1980), and instead empowered only white businesses and residences (Bond, 2003).

Curiously, Gordhan has argued that ‘South Africa, in sixteen years of democracy, never has had to take any loans from the World Bank ... This is an opportunity for the World Bank to build a relationship with South Africa’ (Gordhan, 2010), yet the Bank’s 1999 and 2008 Country Assistance Strategy documents show conclusively that Medupi is the fifteenth credit since 1994. As for ‘building a relationship’, Gordhan also neglected to mention that the Bank co-authored the 1996 Growth, Employment and Redistribution (homegrown structural adjustment) programme, whose orthodox strategies failed and which led South Africa to overtake Brazil as the world’s most unequal major country, as black incomes fell below 1994 levels and white incomes grew by twenty-four per cent within fifteen years, as was claimed by official statistics.

Still, the World Bank was the obvious financing choice for Medupi, because even though it has embedded itself deeply within the climate-change discourse, over eighty per cent of the Bank’s oil-related Third World projects are geared for export to the North. Since Kyoto, the Bank has invested in more than 128 fossil-fuel projects, with an increase of 256 per cent for coal and coal-related project during 2007–2008 alone. Nor do the industrialised economies whose governments run the Bank, and which are on the receiving end of cheap benefits from foreign-owned multinationals, care to consider socio-economic and environmental externalities. The Bank’s role in climate-change financing has been aggressively promoted by its president, Robert Zoellick, whose track record on financing, environment and the US military-industrial complex is, simply, shocking (Bond and Dorsey, 2010).

Each year, the world’s governments (mainly in the North) supply over \$700 billion in fossil-fuel subsidies, including through the World Bank, the African Development Bank and others of their ilk. In contrast, by 2009, almost two decades after the non-binding United Nations Framework Convention on Climate Change was adopted at the Rio Earth Summit, Northern governments channelled a mere \$3 billion in climate mitigation and adaptation funding to the Third World. The fossil-fuel subsidies that do trickle

down into Southern elite pockets are often siphoned out to offshore financial centres. Since the early 1960s, Nigeria's political and military elites have engaged in over \$400 billion of capital flight (UNODC, 2011). Overall, more than sixty per cent of Africa's illicit capital flight is siphoned by multinationals through corporate mispricing, much of which is related to oil, gas and other mineral resources (Sharife, 2010b). Ironically, more than half of the small islands on the frontline of climate change are economies 'outsourced' as tax havens (Sharife, 2010c). In South Africa, meanwhile, capital flight has been estimated in 2007 as high as twenty-three per cent of GDP, amounting to R450 billion in 2007 (*Business Day*, 2010a).

This is a continuation of capital flight during the apartheid era, which has been projected at seven per cent of national GDP, smaller in part because of a more 'patriotic' minerals-energy complex elite and the existence of exchange controls from 1985 to 1995. For South Africa, then as now, exploitation of resources therefore constitutes a double-edged form of economic theft. And it raises the question of how to gain compensation for the enormous damage done by the minerals-energy complex, beyond even the extreme crisis presented by acid mine drainage.

CONCLUSION

The minerals-energy complex has had a devastating impact on South Africa's society and environment. Its continual renewal through new waves of crony-capitalist tycoons is remarkable: first there was Cecil Rhodes and his allies who accumulated wealth in the Kimberley diamond mines through taking over (or forcibly evicting) competitors. They were followed by the randlords of the era from the 1890s to the 1910s, and especially the Oppenheimers, who ensured consolidation of white English mining capital from the 1920s to the 1990s (by 2001, most had successfully externalised their cash and sold off their worst assets via Black Economic Empowerment schemes). They were followed in turn by Afrikaners who, from the 1960s were allowed entry via cheap purchase of Gencor (later to become BHP Billiton, when the last apartheid finance minister, Derek Keys, relaxed exchange controls for the very purpose of Gencor's asset externalisation). And they were followed first by those deemed suitable for accumulation by the Mandela-Mbeki governments (Patrice Motsepe, Mzi Khumalo, Bridget Radebe, Cyril Ramaphosa and Tokyo Sexwale) in the 1990s–2000s, and finally by the Zuma regime (including the latter's family and their allies in the Gupta family).

The revolving door between state and capital has been impressive, with leading politicians and bureaucrats such as Keys (BHP Billiton chief executive after 1994), Mick Davis (formerly Eskom treasurer when early 1990s' special pricing agreements were made and then Billiton chief operating officer), Xolani Mkhwanazi (first post-apartheid chief executive of the National Electricity Regulator of SA, then chair of BHP Billiton Southern Africa), and Vincent Maphai (leading state research official in the Mbeki camp, then chair of BHP Billiton Southern Africa).

The antidote to the continuation of the minerals-energy complex, short of Tunisia/Egypt-style bottom-up democracy, is louder civil society demands for genuine solutions not found in the Green Paper or other state initiatives:

- turning off BHP Billiton's aluminium smelters (and saving around ten per cent of electricity) so as to forego more coal-fired plants;
- direct regulation on the biggest point emitters, starting with Sasol and Eskom, compelling annual declines until SA cuts emissions by fifty per cent (from 1990 levels) by 2020;
- strengthening the Air Quality Act to name greenhouse gases as dangerous pollutants (as even the US Environmental Protection Agency now does); and
- dramatic, urgent increases in investments for public transport, renewable technology and retrofitting of buildings to lower the emissions and to create a million genuine green jobs, such as in solar hot water heater construction and installation.

These are the obvious solutions, but there is only one way to achieve them: grassroots activism. Such activism exists in isolated, fragmented forms, such as the myriad township battles with municipalities and Eskom over electricity access and pricing; or labour struggles against asbestosis and silicosis (successful in a March 2011 Constitutional Court judgment against Anglo); campaigns to close the south Durban petrochemical complex and Bisasar Road dump (both still under way); or struggles against multinational corporations' plans for resource extraction in the platinum fields of Limpopo and North West, the titanium sands of the Wild Coast, and the gas-fracked Karoo, to mention a few examples.

A fully connected civil society project to link demands for renewable energy, household electricity, climate change mitigation and adaptation, anti-pollution, protection of the Witwatersrand water table, occupational safety and health, reparations for climate damage, return of capital flight, and an end to crony-capitalist political-corporate corruption, and the need to leave minerals in the soil (especially coal in the hole), is yet to catalyse. If South Africa is to overcome the vast economic, social and environmental problems associated with the minerals-energy complex, this kind of multi-issue front had better emerge above and beyond the society's gaping cracks, and very quickly indeed.

NOTES

- 1 We are grateful for financial support for this research from the Research Council of Norway.
- 2 See Africa Centre for Biosafety (<http://www.biosafetyafrica.net/>) for more information.
- 3 Annex 1 countries are the developed countries constituting the biggest greenhouse gas polluters.
- 4 Green Economic Summit 18–20 May 2010. This appeared to be copied verbatim from the UNEP's website (cached): 'A global transition to a low carbon and sustainable economy can create large numbers of green jobs across many sectors of the economy, and indeed can become an engine of development. Current green job creation is taking place in both the rich countries and in some of the major developing economies.' <http://www.unep.org/greeneconomy/LinkClick.aspx?link=1377&tabid=1350&language=en-US>.
- 5 Bisasar Permit. <http://www.sawic.org.za/sawis-license/documents/download/57> (accessed 21 February 2011).

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