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Position paper on Climate and Energy Justice

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1 Introduction

Capitalism is not compatible with addressing climate change. It requires never ending economic growth for its survival. Growth has brought unprecedented wealth to the owners of capital, prosperity to the world's middle classes and untold misery to the majority of people, particularly in the global South. Capitalism plunders the resources of the earth and of the people. It is the driving force behind ecological disruption on all scales from the local to the global. Climate change is the ultimate symptom of this renting of the earth system.

The nation states brought into being by capitalism and imperialism find their legitimacy in their management of growth. They have therefore proposed a series of false solutions that protect the economy but not the climate. These false solutions, rooted in the logic of capitalist markets, have been made the subject of negotiation in the United Nations Framework Convention on Climate Change. The world's people can no longer have faith in this process. Unless the people drive a process of rapid change in the economic and political system, they face escalating damages as the earth is rendered uninhabitable. It is necessary to engage with this process for two reasons only: to monitor what is done in the name of the world's people and to expose and block bad deals.

2 Targets

Global temperature rise is now about 0.85˚ Celsius above pre-industrial levels. Carbon emissions to date mean that the world is already committed to a further rise in temperature of at least 0.6˚C. By 2020, global temperature rise will have exceeded 1˚C.

Much of the increased warmth has been absorbed by the oceans, moderating the effects of temperature rise on land but locking in the increased temperature for the next millennium or so. There is no return. We are stuck with the temperature at 'stabilisation'.[1]

There is no 'safe' level for rising temperatures or carbon concentrations. Impacts are already ahead of schedule with several natural positive feedbacks kicking in, such as the loss of the albedo effect from arctic sea ice, accelerating rates of methane release from permafrost peat bogs and ocean methane hydrates, the reversal of land carbon sinks to carbon sources documented for some areas, as well as the saturation of ocean sinks.

0.8˚C is already catastrophic for millions of people around the world. In 2010, millions of people lost their homes to the floods in Pakistan and China while fires induced by an unprecedented heat wave swept across large areas of Russia. 2011 opened with unprecedented flooding in Australia and Brazil.

1 Solomon, S., G-K. Plattner, R. Knuttic and P. Friedlingstein. 2009. *Irreversible Climate Change Due to Carbon Dioxide Emissions*. Proceedings of the National Academy of Sciences available at www.pnas.org.

In much of Africa the temperature rises at 1.5 times the global average and already exceeds 1˚C. In Niger, several years of drought were followed by unusually severe flooding in August 2010. People already vulnerable to malnutrition saw their crops destroyed and 200,000 people were flooded out of their homes. The 'international community' barely registered this disaster and emergency aid has not been forthcoming. In the southern Cape, the drought of 2010 was preceded by successive years of heavy flooding while the normally dry northern Cape was inundated with flood waters in early 2011. This was followed by winter floods in summer rainfall areas.

Extreme weather events are no longer merely 'consistent' with climate change. First, researchers have documented the increased incidence of extreme weather and second, scientists are now showing that the severity of particular weather events can be attributed to climate change.[2]

The international target of stabilising temperatures at 2˚C is, in climate scientist James Hansen's words, a recipe for disaster.[3] The risk of runaway climate change – the point at which natural feedback becomes more significant than anthropogenic emissions – is already evident and becomes a near certainty at two degrees. It is therefore imperative to keep warming as little above 1˚C as is now physically possible. That probably means 1.5˚C as demanded by small island states, which face the prospect of being wiped off the map in the next few decades, and African countries which face the prospect of unprecedented famines.

1.5˚C is not a 'safe' target. It is what the global elite has brought us to. Moreover, the lowest temperature rise physically possible is a moving target. It will be forced higher and higher by default – that is, by the usual business of policy making in support of market expansion and the consequent refusal to seriously address climate change. The 2010 People's Conference on Climate Change meeting in Cochabamba called for a 1˚C target. This was perhaps the lowest that was physically feasible in 1992 when the UNFCCC was agreed. It creates a symbolic and moral standard against which to measure the irresponsible collusion of governments with corporate capital. But it should not be used in a way that misleads people to believe it is possible.

As with temperature, 'safe' CO_2 concentrations in the atmosphere are already exceeded. Pre-industrial levels were 280 parts per million (ppm) and ice-age levels were around 180. 2010 concentrations were just short of 390, well outside earth's normal operating range. The rate of increase is around 2 ppm a year and was higher than that in the boom years before the 2008 economic meltdown.

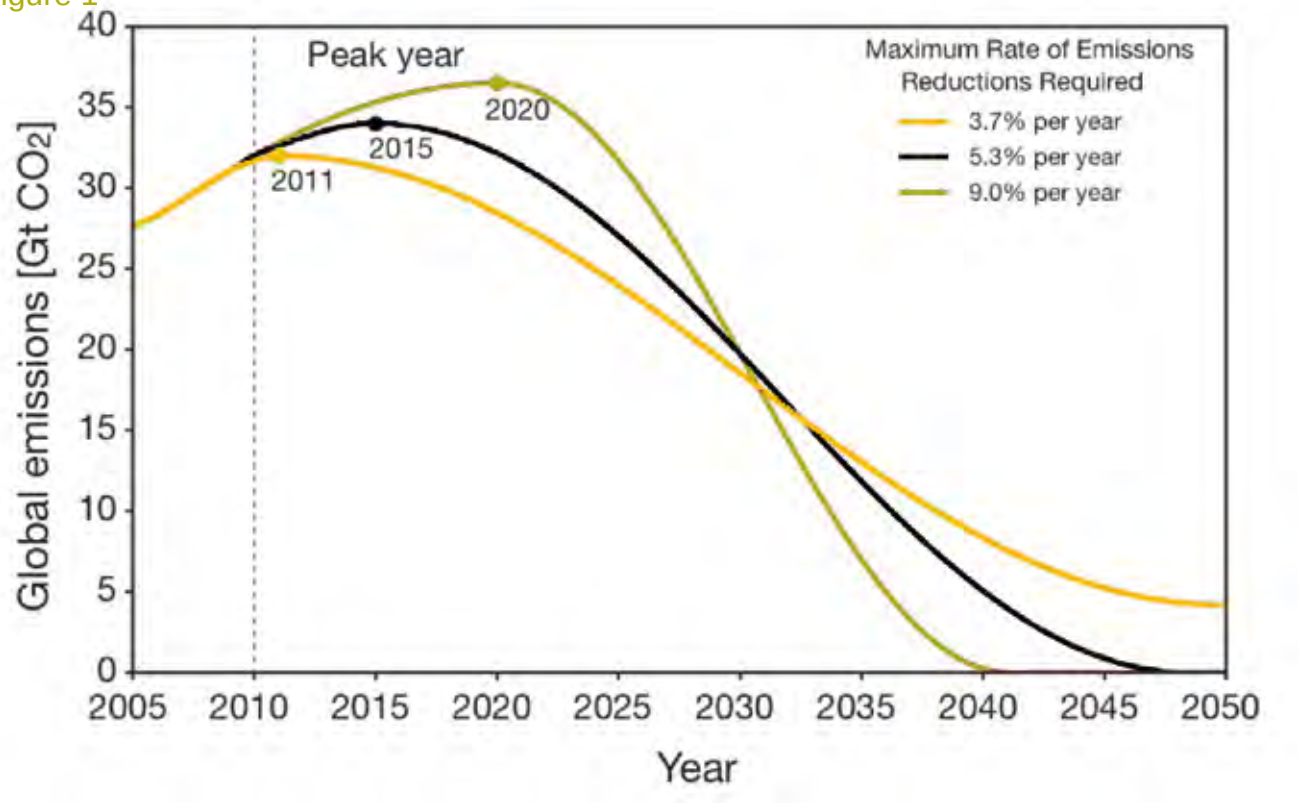
Global leaders talk of 'stabilisation' of all greenhouse gasses at 450 CO_2e (carbon dioxide equivalents) ppm. This equates to around 395 CO_2 ppm. It does not correlate even with the dangerous two degree target but puts us on the path to three degrees and, with feedbacks, to four degrees and upward. Nor have global leaders taken any credible action to achieve stabilisation at 450. Present concentrations are around 440 and 450 will be exceeded in the next few years.[4]

2 John Carey, *Storm Warnings: Extreme Weather Is a Product of Climate Change*, Scientific American, June 28, 2011.

3 See Hansen et al, 2008, *Target Atmospheric CO_2: Where Should Humanity Aim?* Submitted at arXiv.org, April 7, 2008 and revised June 18, 2008 (ref: arXiv:0804.1126v2).

4 There seem to be three ways of talking about GHGs which are seldom distinguished. The 440 figure refers to GHGs recognised under Kyoto. Counting all long-lived GHGs, IPCC AR4 gives the total CO_2e concentration of 455 in 2005. It would now be closer to 475. However, some industrial emissions such as sulphur aerosols have a cooling effect which more or less cancels the effects of non-carbon GHGs. For this reason, the Hansen paper cited above considers only CO_2. In the 21st Century, however, Arora et al argue that the warming effect of non-carbon GHGs will become more significant than the cooling effect of aerosols.

Figure 1



Source: WBGU.[5]

Unlike temperature, it is physically possible to reverse CO_2 concentrations. It is urgently necessary to do so. According to Hansen 350 CO_2 is the maximum 'safe' target for stabilisation and this figure itself should be taken under review. The Cochabamba People's Conference demanded a return to pre-industrial concentrations.

There is no 'carbon space' left. Meeting any credible target requires a radical programme for reducing carbon emissions in absolute terms, starting now. Any delay in reducing emissions creates the need for ever sharper reductions in the future. This is because cumulative emissions are more critical than final emission targets. Because CO_2 stays in the atmosphere for centuries, the total quantity pumped into the atmosphere over time determines the concentration in the atmosphere. Thus, a total emission 'budget' can be calculated relative to target concentrations. Peaking later and higher consumes much more of the budget and so requires impossibly steep reductions following peak.

Assuming a 2ºC target, recent research indicates that one third of the budget for the period 2000 to 2050 was already used up by 2009.[6] Further, stabilisation at 450 CO_2e will be physically impossible unless emissions peak by 2015 and global energy and industrial process CO_2 emissions are then reduced by 6 to 8% a year. A 2020 peak could not result in stabilisation at less than 550 ppm and then only if followed by annual reductions of 9%.[7] Reduction paths for 2ºC are

5 German Advisory Council on Global Change (WBGU). 2009. *Solving the Climate Dilemma: The Carbon Budget Approach.* Berlin: WBGU. Note that carbon reductions following a 2015 peak are less demanding that that calculated by Anderson & Bowes.

6 Meinshausen et al, 30th April 2009. *Greenhouse-gas emission targets for limiting global warming to 2 °C*. Nature 458, April 2009,

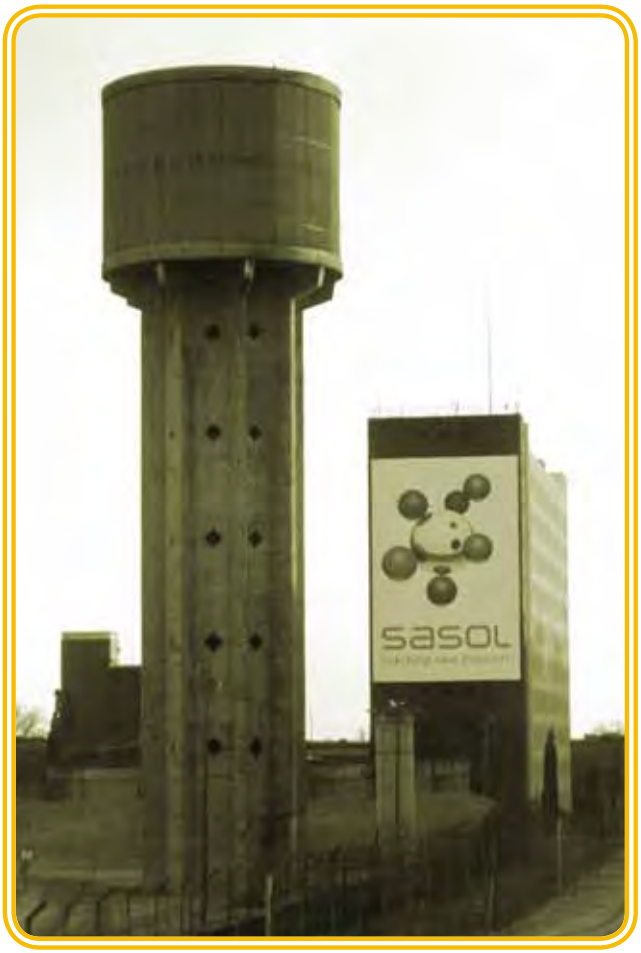
7 Anderson, K. and A. Bows, 2008. *Reframing the climate change challenge in light of post-2000 emission trends*, Philosophical Transactions of the Royal Society. doi:10.1098/rsta.2008.0138, Published online. The authors intentionally made optimistic assumptions about reduced

illustrated in Figure 1. 1.5ºC and 350 CO_2 require a far tighter carbon budget, earlier peaking and a steeper descent. The very latest research makes even this look optimistic as it suggests that the 2ºC carbon budget for 1850 to 2100 is already used up "so emissions must ramp down to zero immediately" and go negative after 2050.[8]

Calculations of the long term carbon budget through to 2500 indicate that only 60% of existing fossil fuel reserves – the stuff that is already found and available for extraction at current prices – can be burnt in the next 500 years. There are two evident implications: first, all exploration should stop now; and second, unconventional resources (tar sands, deep water, shale gas, coal-to-liquids, etc) must be abandoned.[9]

The trend of declining carbon intensity relative to GDP was reversed around 2000 and actual emissions rose steeply in the boom years to 2008. The bust produced a small decline (1.3%) in global emissions, with sharper declines in Northern emissions, in 2009. This will fortuitously enable some Annex 1 countries to meet their Kyoto obligations for emission reductions. It also provided a narrow chance to make good on an early peak.

Carbon intensity, however, is still increasing. Even without the economy firing on all cylinders, the International Energy Agency (EIA) put 2010 emissions 5% higher than the 2008 peak. Full economic recovery in 2011, as was predicted by establishment economists, would push emissions much higher and the 2009 recessionary dip would make little difference to the carbon budget. It seems more likely, however, that 2011 will mark a deepening of the economic crisis.



Sasol is one of the biggest emitters of CO_2 in the world. Their Secunda plant is reputed to be the largest single source of green house gases.
Photo: groundWork

deforestation and reductions in greenhouse gasses other than carbon dioxide. If these assumptions failed, neither 450 nor 550 would be possible.

8 Arora, V., J. Scinocca, G. Boer, J. Christian, K. Denman, G. Flato, V. Kharin, W. Lee, and W. Merryfield, 2011. *Carbon emission limits required to satisfy future representative concentration pathways of greenhouse gases*, Geophysical research letters, Vol. 38, published 10 march 2011.

9 Allen et al, *The exit strategy*, published in Nature, 30th April 2009, cited by George Monbiot, *Not Even Wrong*, The Guardian (London), August 31, 2009.

3 World in crisis

Climate change is but one aspect of global environmental change threatening economies and people's livelihoods. The ruin of land, fresh water and the oceans makes people and their environments more vulnerable to climate change. Environmental 'services' are now in jeopardy in many areas, including in South Africa. Engineered responses will become increasingly expensive and infeasible.

Further, the environmental crisis is paralleled by two other crises:

- the global depletion of fossil fuels and oil in particular.
- increasing political and economic turbulence associated with a declining US hegemony;

This makes for a triple crisis for the current system of capitalist development. The interaction of these three dimensions of crisis will be complex and contradictory. Thus, global economic depression now presents the best hope for achieving a credible reduction in carbon emissions. This is a stark indicator that the present development regime is unsustainable. Poverty is also an indicator of unsustainable development. The poor live in crisis and this crisis is also the creation of the system.

Peak oil and escalating energy costs add a further recessionary dynamic. In itself, however, peak oil creates incentives for greater carbon intensity as much as for a turn to low carbon energies. This is one reason for the reversal of the long term trend to reduced energy and carbon intensity as more energy is required to produce energy. The carbon intensity of all economies, north and south, is now increasing.[10] Production is also dirtier and more hazardous. Low quality crude oil and tar sands are being used to compensate for the decline of 'easy oil' and big oil is chasing resources in ever more remote and difficult environments. The blow out on BP's deep water rig in the Gulf of Mexico is a symptom of this.

The global financial meltdown revealed that the world's governments are driven by an absolute and unconditional priority for capital. To save the banks, they instantly conjured up US$ trillions in bailouts, free loans and guarantees. To save the planet, to save the children, to save the flood victims of Niger, they quibble over costs and conditions or make photo call pledges which they will not honour.

The depression is now entering its second phase as costs of saving the banks are displaced onto national states for transfer to the people in the form of austerity programmes or raised taxes. This has created new opportunities for bank profiteering through vulture raids on vulnerable countries and renewed speculation in commodities at the expense of people.

The roots of the economic crisis must be understood. From around 1980, finance capital unmoored from production because the latter could not provide the return on capital necessary for growth. Consequently central bankers, led by the US Fed, blew up one bubble after another to absorb surplus capital, pump up Northern (and Southern elite) consumption, and sustain the bullish sentiment on stock markets. The banks clamoured for deregulation and the rules of prudent banking were abandoned. As one financier declared, "What used to be a conflict

10 Raupach, M., G. Marland, P. Ciais, C. Le Quéré, J. Canadell, G. Klepper and C. Field, 2007. *Global and regional drivers of accelerating CO_2 emissions*, Proceedings of the National Academy of Sciences available at www.pnas.org.

of interest is now a synergy."[11] In short, global finance capital turned itself into a giant Ponzi (or pyramid) scheme.

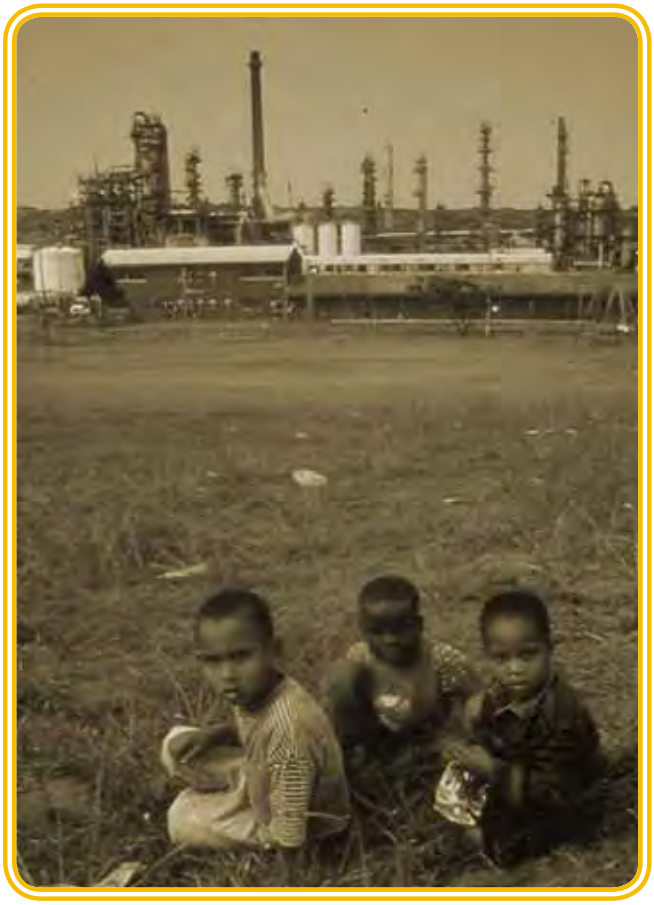
This strategy for sustaining growth was complimented by intensified dispossession, aggressively transferring wealth from poor to rich, on a global scale. Northern transnational corporations relocated production to low cost Southern countries which competed for this foreign direct investment by lowering labour and environmental standards in a 'race for the bottom'. Economic growth was thus accompanied by growing inequality of incomes globally and in most countries (North and South), intensified pollution and carbon emissions and large scale dispossession of those who stood in the way of 'development'.

While accelerated growth is justified as pulling people out of poverty, the poor got just $0.60 from every $100.00 worth of economic growth in the 1990s.[12] What they lost in health, land and public services was worth far more than the 60 cents. In the boom years to 2008, the crisis of poverty intensified. Growth is making poverty, not alleviating poverty.

It is capital that requires growth. As Walden Bello of Focus on the Global South puts it,

> Growthmania … is a cultivated ideological predisposition that serves as a protective shield for global capitalism. Capitalism is an expansive mode of production, and it can only reproduce itself by continually transforming living nature into dead commodities. … This is why ever-increasing consumption is so central to the engine of profitability that drives capitalism.[13]

But never-ending growth is not compatible with a credible response to climate change. Considering that carbon emissions must be cut by 6-9% per year, climate scientists Anderson and Bows conclude that "it is difficult to envisage anything other than a planned economic recession being compatible with stabilisation at below 650 ppm CO_2e". This implies "an unprecedented step change in the global economic model".[14] In other words, it implies ditching capitalism.



While not benefiting from the capitalist system, the poor often pay a price through ill-health. This picture shows children on the fence-line of the Engen industrial complex in south Durban.
Photo: groundWork

11 Jack Grubman, Citigroup executive, quoted in Brenner 2003. 'Towards the precipice'. London Review of Books, Vol. 25, No. 3.

12 Andrew Simms, Victoria Johnson and Peter Chowla, 2010. Growth isn't Possible, New Economics Foundation, p. 18.

13 Walden Bello, *The Anti-Climate Summit*, posted at truthout, July 15, 2008.

14 Anderson, K. and A. Bows, 2008. Reframing the climate change challenge in light of post-2000 emission trends, Philosophical Transactions of the Royal Society. doi:10.1098/rsta.2008.0138, p. 18 & 15.

4 Negotiating the climate away

The international climate process is dead. The annual round of negotiations will continue as a ghostly charade, something that no-one can believe in as a response to climate change. This charade is made necessary because the world's leaders cannot announce their failure nor admit the futility of a process that refuses to address the central issue: the capitalist economy over which they preside cannot be reconciled with a credible response to climate change. As Via Campesina leader Josie Riffaud put it, "Money and market solutions will not resolve the current crisis. We need instead a radical change in the way we produce and we consume, and this is what was not discussed in Copenhagen." He concludes that any way forward lies with people's movements. [15]

From the beginning, the negotiations have been subordinated to market imperatives. The United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol were negotiated under the sign of the Washington consensus. They make governments responsible for implementation while private sector corporations are made the agents of implementation. This agency, however, is voluntary and supposedly driven by the carbon market brought into being by states.

The Convention recognises that developed and developing countries have 'common but differentiated responsibilities'. This principle is meant to secure developmental equity between North and South recognising that:

- Northern (or Annex 1) countries are responsible for the bulk of emissions to date and are better resourced to implement the agreement; and
- Southern (or non-Annex 1) countries have a priority for development.

It then emphasises "sustainable economic development" within an "open international economic system" and allows that all countries will define sustainable development in line with their own development priorities. Sustainable development is thus encoded within the orders of imperial capitalism.

Kyoto

The UNFCCC initially relied on voluntary reduction targets for Annex I countries. No-one volunteered. A binding agreement was therefore called for. Kyoto is based on a proposal put forward in 1997 by the US and sets up emissions trading. This followed an earlier Brazilian proposal, rejected out of hand by the US, that targets be based on historical responsibility. Countries exceeding their allowance should pay a fine into a common pot which could then be used to finance projects in Southern countries. The US proposal also displaced European proposals for a carbon tax.

Kyoto is essentially a cap-and-trade scheme and was adopted not because anyone really believed it would work but because it appeared that trading was a pre-condition for US agreement. Having imposed its preferred system, however, the US exempted itself from abiding by it. The Clinton administration avoided putting it to Congress for ratification and Bush actively rejected Kyoto claiming that it was unfair for Northern countries to take commitments if Southern countries did not.

15 La Via Campesina press release, *Traders failed in Copenhagen: The future lies in people's hands*, Copenhagen, December 19, 2009.

The US knew Southern countries would not accept this. From the start, they have refused commitments until the North demonstrates real reductions. They argue that Northern countries developed on the back of high emissions and still produce the majority of emissions. They also suspected, with some justification, that the North was using the climate negotiations to lock in economic dominance by blocking economic development in the South.

Kyoto set mandatory emission reduction targets – the would-be cap – to be achieved in the 'first commitment period' (2008 to 2012). It specified targets for each Annex 1 country which added up to a 5% reduction in Annex 1 emissions as compared with what they emitted in 1990. This target was woefully inadequate but it was argued that it would be ratcheted up in successive five year commitment periods. Thus, in the 'second commitment period' beginning in 2012, it was expected that Annex 1 countries would take on tougher targets while 'non-Annex 1' countries would also take mandatory reduction targets.

The targets themselves, however, were founded on the deeply inequitable principle of 'grandfathering': those countries with the highest emissions in 1990 would have the largest rights to future emissions. The targets thus enshrined historic inequalities and projected them into the future. The logic of grandfathering extends to all levels of the economy and individual corporations by validating business-as-usual as the baseline against which carbon savings are measured. Thus, the trading mechanisms are supposed to reward increments in carbon efficiency but without challenging industries which are inherently incompatible with emissions criteria derived from the carbon budget.

Forest Stewardship Council certified timber plantation on former grassland in Mpumalanga, South Africa
Photo: Timberwatch

Kyoto set up carbon trading through three 'flexible mechanisms': Emissions trading allows Annex I countries and corporations that exceed their reduction targets to trade their surplus allocation with other Annex 1 countries that do not meet the targets; Joint Implementation (JI) projects enable investors in one Annex I country to invest in projects that produce less emissions than a business-as-usual project in another Annex I country and to claim 'carbon credits' for the reductions; the Clean Development Mechanism (CDM) works in the same way except that the investors must be from Annex I countries and CDM projects must be located in non-Annex I countries.

The stated objective of CDM was to support sustainable development in Southern countries while reducing the costs to Annex I countries of meeting their reduction targets. Thus, 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 on the market. The explicit reasoning behind this was first that the costs of meeting targets would be unaffordable to Northern economies and second that reductions would be cheaper in the South. It is thus founded on unequal development – that is, on economic, social and environmental injustice – and so negates the rationale of 'common but differentiated responsibility'.

Wolfgang Sachs concluded that negotiators "were charged with protecting economic growth and not the climate" to which end Kyoto embodies three strategies: Northern obligations are transferred to the South and East – through CDMs and JIs; obligations are discharged through sinks – that is, through forest 'off-set' projects mainly located in the South and again funded through CDM; and negotiations are framed to focus on the economic tailpipe and exclude discussion of driving interests in the engine room.[16]

Trading

The effects of trading on carbon emissions are predictably dismal. The EU set up its own internal emissions trading scheme (ETS). The ETS has delivered profits to polluters and traders without reducing emissions. This followed the over-allocation of give away emission rights to big corporations, notably the power utilities, effectively lifting the cap right off the corporate heads and leading to a collapse in the carbon price.

The crash in commodity prices similarly crashed the carbon price. European industry slumped, energy consumption shrivelled, corporate revenues dwindled and the creditors came knocking at their doors. What they had in surplus was carbon credits which were sold off to plug the holes in their balance sheets. Got for free, they produced pure profit at whatever price. The carbon price did not recover with commodities in 2010/11 and the market was wracked by a series of scandals.

CDM has an equally inglorious record. It invites players to 'game the system' and they have embraced the invitation. But even if the rules are followed, the carbon accounting is based on a series of fictions and false assumptions, particularly in respect forest off-sets.[17] For Southern countries, CDM has simply created a new arena of competition for foreign direct investment. Real or not, the carbon credits are subtracted from the Northern country's total

16 Sachs, W. 2005. *Equity in the Greenhouse. How just is the Kyoto Protocol?* in Vermeersch, E. (ed), Reading the Kyoto Protocol: Ethical aspects of the Convention on Climate Change, Delft, Eburon.

17 CDM chicanery is amplified through the conflation of the natural above ground carbon cycle with carbon released by burning fossil fuels. For a short critique, see World Rainforest Movement, *From REDD to HEDD*, November 2008.

carbon count and must logically be added to the Southern country's count. This is fudged. Thus, Sasol includes its CDM projects in its strategy for reducing its greenhouse gas emissions. So it takes the money from selling CERs but still reports the carbon reductions which are simultaneously claimed by the buyers.

Northern countries, meanwhile, bank on trading to meet impressive sounding targets with minimal cuts in real emissions. Thus, the UK's 2008 climate policy requires that the country's CO_2 emissions are cut by 60% by 2050. Journalist George Monbiot observed that this was at odds with the UK's energy plans. The contradiction was resolved by deleting a clause limiting the use of internationally traded credits in meeting the 60% target: "In other words we could buy the entire cut from other countries."[18] Limits may be restored but the political intention of Northern countries is clear.

Copenhagen & Cancun

Copenhagen terminated whatever credibility remained to the international negotiations. The people on the streets of Copenhagen chanted, "Change the system, not the climate." But the purpose of all 'major' parties, North and South, was to defend their respective interests in the global accumulation of capital. In their vision, this is what is meant by 'development'.

The US under Obama no longer gave credence to climate denial but otherwise continued with the wrecking tactics of his predecessors. It refused binding targets and Europe then moved to abandon negotiations for binding reductions for the 'second commitment period' under Kyoto. Southern negotiators then rallied to 'save Kyoto' as they saw the North wriggling out of binding commitments while shifting the burden of emission reduction onto the South.

There is an evident incoherence in these stratagems. Since the 1980s, the North has presided over a global restructuring of industry, relocating energy intensive manufacturing to the South through foreign direct investments controlled by Northern corporations. In line with the Washington consensus, these industries are mostly geared for export and the goods are consumed primarily in the North. The major Southern countries themselves compete vigorously for Northern corporate investments as industries move South looking for the cheapest energy, labour and environmental regimes while the North rigs the rules to keep profits, cheap goods and strategic resources flowing North.

The North, and the US in particular, thus calls for carbon savings in developing countries while depending on them to produce carbon intensive goods on the cheap for the home market. Since 1990, the increase in carbon embedded in traded goods heading North exceeds the reductions promised under Kyoto.[19] The Southern countries meanwhile defend carbon intensive production in order to produce those goods while calling on developed countries to reduce consumption. They claim that their right to 'carbon space' is necessary for development that will alleviate poverty. India's climate justice movement called this "hiding behind the poor" because the benefits of development are appropriated by the elite while the poor are dispossessed.[20]

18 George Monbiot, *Traded Away*, The Guardian (London), July 24, 2008.

19 Peters, G., J. Minx, C. Weber, and O. Edenhofer, 2011. Growth in emission transfers via international trade from 1990 to 2008, Proceedings of the National Academy of Sciences of the USA,

20 Memorandum to the Government of India on the UNFCCC's 15th Conference of the Parties at Copenhagen, signed by the National Alliance of People's Movements and 18 other organisations, November 24, 2009.

The FoEI flood demonstration at the COP15 in Copenhagen, December 2009
Photo: groundWork

Beneath the heated conflicts between North and South lies a deep seated collusion. Their respective interests in capital accumulation are best served by a dysfunctional climate regime. This allows each to use the other as an alibi for inaction or failure while rallying the home crowd in support.

The Copenhagen Accord was negotiated in back rooms, first between the US and the BASIC countries (Brazil, South Africa, India and China) and then with a still restricted group including Europe. The attempt to gavel it through at plenary, before many countries had even had a chance to read it, was resisted particularly by the ALBA countries (Venezuela, Bolivia, Cuba and Nicaragua) and the Accord was merely noted. In terms of substance (or lack of it), the Accord provoked a rare moment of unanimity from across the spectrum of civil society opinion. It was met with derision.

Bolivia subsequently hosted the Cochabamba People's Conference and it appeared that there might be the beginning of a shift in power with nation states realigning themselves with the people's movements. Following a year of diplomatic bribery and coercion, however, the Accord was effectively written into the official agreement at Cancun to the cheers of delegates and civil society insiders. Bolivia tried to honour Cochabamba in Cancun. On the inside, it was abandoned by the rest of ALBA, isolated in the CoP and ignored when it objected to the agreement. On the outside, it emphasised its association with the people's movements. In the words of Pablo Solon, its chief negotiator,

> " … we did not feel alone [because] we received thousands of messages of support from the women, men, and young people of the social movements that have stood by us and have helped inform our position."[21]

The Cancun agreement[22] adopts the voluntary 'pledges' made under the Copenhagen Accord.

If each country actually meets its pledge, it will result in a 4˚C rise in average global temperatures from emissions alone – climate feedbacks will push it higher. The agreed 2˚C target is thus meaningless. Cancun even agreed to open discussion on a 1.5˚C target and we can expect this to be fiercely debated in the process to Durban. We may endorse that target but, in the context of the multilateral negotiations, it too will be meaningless. The real issue remains that the continued economic growth required by capitalism is incompatible with reducing carbon emissions.

Carbon trading saturates the text but is no longer supported even by the fraudulent logic of Kyoto: the cap is thrown out and, even in neo-liberal theory, trade without a universal cap contributes nothing to carbon reductions. Kyoto, of course, never achieved a universal cap and, pieties aside, Cancun implicitly abandoned it. If there is a second commitment period, it will merely aggregate Annex 1 pledges. Kyoto is an empty shell but may serve to agree on what technical frauds are required for carbon trading.

Pledges are accompanied by review – hence, the new climate regime is dubbed 'pledge & review'. Review entails heavy bureaucracy and the opportunity for mutual recrimination. It is otherwise without purpose. Third World Network sees the review system imposing added obligations on the South and the first step in a Northern strategy leading to the requirement of mitigation schedules similar to WTO tariff schedules.[23] If so, what seems to emerge is an overlay of the development aid and WTO regimes: Southern countries are subject to international verification for anything done with international support. Northern country reporting is subject to international 'assessment' but not 'verification'.

Financial and technology transfers were high on the Southern agenda at Copenhagen and Cancun. The establishment of the 'Green Climate Fund' under UN control provided the one glimmer of light at Cancun – but it was immediately snuffed out by putting the fund under World Bank management. The AU has since decided to channel all Green Climate Fund money through the African Development Bank which is, in effect, the WB's branch in Africa. However that may be, the bag marked $100 billion remains as empty as when Hilary Clinton held it up for the cameras at Copenhagen. Even the 'fast-track' $30 billion for 2010 to 2012 has evaporated. Cancun copies the Accord verbatim: Funds may "come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources of finance." No obligations for the North there.

Promises of technology transfer are also empty. The critical issue concerns intellectual property

21 Pablo Solon, *Why Bolivia stood alone in opposing the Cancun climate agreement*, The Guardian (London), December 21, 2010.

22 Bali agreed to a 'two track' negotiation process: The Long-term Cooperative Agreement (LCA) track and the Kyoto Protocol (KP) track. The latter reached a dead end in Cancun and the Kyoto regime was effectively replaced by the LCA regime. After many years of defending Kyoto because there was no other game in town and there was no time to negotiate a binding treaty from scratch, NGOs must now face the fact that a new, but non-binding, treaty has been negotiated. They should also note that, on the way to Copenhagen, Canada demonstrated that Kyoto was not in fact binding.

23 Martin Khor, *Strange outcome of Cancun climate conference*, TWN Cancun News Update 20, 14 December 2010.

rights under the WTO. At the insistence of the US, and over Bolivian protests, Cancun avoids mentioning them. At the same time, carbon capture and storage (CCS) is adopted as a recognised mitigation technology and so eligible for carbon credits within the trading regime.

The adaptation section is composed largely of pieties while REDD is a charter for corporate land grabbing whether by conservation or agribusiness.[24]

For Durban, the South African government is talking of a 'balance' of ambition and realism. The history of realism shows a steady regression: Kyoto was lousy; Bali was terrible; Copenhagen was disastrous; Cancun was catastrophic. Civil society has followed that regression. Climate NGOs hated Kyoto but, two years later in Bonn, they accepted it because it introduced targets. They were then caught in the logic of trying to make the trading mechanisms work 'properly' but have been pushed back at every turn. The rules have been loosened in response to corporate and

groundWork activist, Siziwe Khanyile, with Bongani Mthembu from SDCEA, protesting at the COP 16 in Cancun, Mexico.
Photo: groundWork

24 For detailed comment on REDD in Cancun, see Oscar Reyes, *Two pluses don't make a positive; REDD and agriculture*,; and Tamra Gilbertson, *Outcomes of REDD+ in Cancun: a flawed plan for the world's remaining forests*, both posted at Carbon Trade Watch, January 20, 2011.

state interests, not tightened in response to civil society demands. The recognition of CCS is but the latest example and it must be questioned if nuclear will not follow. There is reason to think that South Africa would support a French initiative to that end.

Corporates at the table

The World Business Council for Sustainable Development (WBCSD) was formed for the purpose of participating in the Rio Earth Summit (UNCED) under the slogan that 'business is part of the solution'. Together with the World Bank, it represented the vanguard of ecological modernisation and so appeared different from eco vandals like ExxonMobil. Yet they shared much the same agenda for deregulation – or rather, market regulation – and the associated hostility to enforceable laws. Being part of the solution – or not – must be voluntary.

This divide in business has its analogue in the difference between the Clinton and Bush administrations and also between cap-and-trade and pledge-and-review. Both camps represent the neo-liberal moment. While ExxonMobil pretended that it wasn't funding climate denial by 'independent scientists', WBCSD could make the business case for responsible corporate behaviour (a backhanded way of saying that responsible behaviour can be justified only if it adds to the bottom line) to claim a positive role in global or national governance. It's a kind of good cop, bad cop act.

Corporate capital thus had a seat – or rather many seats – at the UNFCCC table from the beginning. They are present on most national delegations and their participation is coordinated internationally through organisations such as WBCSD. Moreover, they are able to use their privileged participation in other processes, notably WTO, and at different scales to strategic effect.

As an example, European business called on the EU to back off on more ambitious reductions unless the US makes comparable commitments. At least eight big European transnational corporations then funded US Senate candidates who either said climate change isn't happening or that they would block climate legislation. They include some of South Africa's favourite transnationals: BP, ArcelorMittal, Bayer and Lafarge.[25]

South Africa took a large delegation to Cancun. It included no less than five Eskom people as well as someone from the Central Energy Fund. The delegation for the 2011 inter-sessionals[26] includes people from both Eskom and Sasol. Former DEA official Joanne Yawitch has meanwhile passed through the revolving door to the National Business Initiative (NBI), linked with WBCSD, and will maintain her position, and probably her influence, in the delegation.

On occasion, business is credited with writing specific policy positions. Thus, it is said that Eskom wrote the position on sectoral carbon trading. Sectoral trading expands CDM and is linked with 'programmatic CDM'. It allows credits for initiatives taken at sectoral level rather than project level. Eskom would be a major beneficiary of power sector trading. South Africa then took the position prepared by Eskom into the Africa group. Eskom's position may therefore become Africa's position.

BASIC and South Africa

On the road from Bali (2007) to Copenhagen, South Africa joined Brazil, China and India in what came to be called the BASIC group. This

25 CAN Europe, *Think globally, sabotage locally: How and why European companies are funding climate change deniers and anti-climate legislation voices in the 2010 US Senate race*, October 2010.

26 Inter-sessionals are meetings of the parties between the CoP sessions.

It is possible that Eskom, South Africa's power provider, will set Africa's position on sectoral carbon trading. An Eskom power station is pictured here.
Photo: Paul Weinberg

group is increasingly formal and its emergence is one symptom of the fragmentation of the G77+China group that has hitherto represented the interests of the South. Prior to Bali, G77 was in effect led by India and represented the priority for 'development'.

BASIC represents the interests of the 'major' Southern economies in defending 'carbon space'. It has its economic counterpart in the BRIC grouping (Brazil, Russia, India and China) which South Africa lobbied hard to join. They have an absolute priority for rapid economic growth and the defence of 'sovereignty', articulated most explicitly by China.

At the other end of the scale are the small island states which will be wiped off the world's map by sea level rise. Together with some African voices, they saw the BASIC carbon agenda as their death knell. At a side event in Copenhagen, G77 chair Lumumba di'Apping criticised South Africa for abandoning the rest of Africa. South Africa demanded a retraction.

The anti-imperialist ALBA states of Latin America, grouped around Venezuela and Bolivia, form a third grouping and aligned themselves with social movements – or sought to align the movements to themselves – at Copenhagen and then at Cochabamba.

BASIC played a significant if lamentable role at Copenhagen, negotiating the text of the Copenhagen Accord in a back room with the US. The Copenhagen Accord itself was the product of the US strategy to undermine the UN process in favour of negotiations between major economies. Following the uproar in the final session at Copenhagen, the BASIC countries backtracked, making their Copenhagen offers conditional on

agreement within the UN process – obtained at Cancun.

Following Cancun, some insiders commented that the BASIC countries foresaw escalating pressure to take on binding reduction commitments and supported the Cancun agreement to forestall it. This implies that, despite their protestations, they are happy to ditch Kyoto and so take binding commitments off the table altogether. At the 2011 Bangkok inter-sessional, however, the G77 again rallied to recuperate something of what the South gave away in Cancun. South Africa then said it does not want Kyoto to die in Durban.[27] And in August 2011, BASIC ministers jointly insisted that agreement "on the second commitment period is the central priority for Durban" and Kyoto was necessary both to prevent Northern countries ducking their obligations and to secure the future of trading and CDM in particular.[28]

It thus seems that BASIC wavers between the narrow interests of its members and a wider political interest in retaining a kind of shared hegemony within G77. 'BASIC plus' now includes the current G77 chair. At the same time, G77 itself wavers between acquiescence to Northern demands (or bribes) and the assertion of Southern interests.

Whatever the political manoeuvring between pledge-and-review and cap-and-trade, it is notable that Southern country Copenhagen pledges for 2020 add up to more than Northern country pledges as compared with their respective 'business as usual' 2020 baseline emissions.[29] And while the US has made much of China's increasing emissions, China has taken more determined action, for example, building far more renewable plants (as well as more fossil plants) than the US. This shows up Northern hypocrisy but it should also be remembered that 'business as usual' was always there to make economic growth axiomatic.

Road to Durban

South Africa has committed to learn from the Mexican management of COP 16. The lessons, however, appear wholly negative. Khor observes the Mexican recourse to WTO style negotiating practices with many documents having their origin in obscure meeting rooms and appearing, as if from no-where, without attribution.[30]

The South African government has variously stated that Durban will be a 'people's COP' and an 'African COP'. The people's COP rhetoric has since faded while the African COP has been emphasised. This reacts to constant complaints, notably Di'Aping's Copenhagen accusation, that South Africa undermines strong African positions. Civil Society insiders to the negotiations remark that South Africa tends to adopt European positions, sometimes word for word, and so carries a Northern agenda into the African forum. That includes punting for 2˚C even as African countries call for 1.5˚C.

At the same time, South Africa is sometimes accused of betraying Africa when it is speaking for African positions. There is, for example, no evidence of African governmental resistance to carbon markets. On the contrary, the African complaint has been that CDM has passed it by. South Africa does not betray the Africa group when it articulates this position as it did at the

27 Extending Kyoto Protocol critical – Molewa, Engineering News, April 20, 2011

28 Joint Statement Issued At the Conclusion of the Eighth Basic Ministerial Meeting On Climate Change, August 28, 2011.

29 Kartha, S., and P. Erickson, 2011. Comparison of Annex 1 and non-Annex 1 pledges under the Cancun Agreements, Stockholm Environment Institute, Working Paper WP-US-1107, June 2011.

30 Martin Khor, Complex implications of the Cancun Climate Conference, Economic and Political Weekly, December 25, 2010, Vol.xlv, No.52.

Nairobi COP in 2006. Whether it betrays the African people is another matter.

There must be sympathy for African negotiators who are hopelessly out-gunned by the huge delegations brought to the negotiations by the imperial powers. Nevertheless, Africa remained almost entirely quiescent throughout the negotiating process until the run up to Copenhagen. And even then, it appeared that the tougher stand was calculated to up the price of being bought off. No African countries joined the ALBA protest that gave some dignity to the final proceedings in Copenhagen. And there was no surprise when they left Bolivia to stand alone in Cancun.

Bolivia is one of the poorest countries in the world and, for all the mother earth rhetoric, it is no paragon of environmental or anti-capitalist virtue. There are fierce struggles going on within the country as people resist a government drive to push through destructive developments. At the Cochabamba conference, the dissident 'Table 18' spotlighted the contradiction between Bolivia's international stance and its record on environmental justice at home. Nevertheless, Bolivia showed that all countries – poor and rich – make a political choice about the manner of their participation in the negotiations. It showed that a country can break from the logic that has hitherto determined engagement within the UNFCCC. And it showed that the different logic is produced through an alliance with people's movements in preference to the business-as-usual representation of capital. We need more Bolivias!

That Bolivia took a stand on principle is of course the result of a particular history and reflects the present strength of social movements in Latin America. This shows us the task of organisations and movements everywhere. The logic of saving capital and not the climate will prevail unless people's movements force governments to change the logic of their participation in the UNFCCC. Clearly this is a long term project with Durban just one of the staging posts. It gives the climate justice movement in South Africa an opportunity for mobilisation but the challenge is to sustain that beyond Durban.

Death of Kyoto?

Insiders to the negotiations believe that defending Kyoto is a necessary tactic to block the US drive for pledge and review and so retain the principle of a legally binding 'top-down' science based agreement.[31] The defence of Kyoto has also been justified on the grounds that it is too late to negotiate a new treaty.

Two points seem evident:

1. the US has successfully pushed the negotiation of a new treaty – substituting pledge and review for cap and trade but keeping trade;

2. the climate justice defenders of Kyoto were in effect aiming for a new treaty – keeping the cap while stripping out trade.

However, if Kyoto is saved, it will be by state parties who hope to revive the wilting carbon markets and CDM in particular. Defending Kyoto as an inside blocking tactic against pledge and review therefore relies on the defence not succeeding in itself, but succeeding in stalling negotiations. The logic of this is that nothing good can come out of the negotiations in Durban. It is a dead space. A climate justice defence of Kyoto may build on particular elements of Kyoto but must go beyond it. Defending Kyoto in its present state is not a message for building movements. Rather, we should call for what we want:

- As little above one degree as possible;

31 That means an agreement based on a credible global carbon budget which is then allocated per country or per person according to the principles of climate justice.

- agreement on a global carbon budget that yields a high probability of meeting that target;
- allocation of that budget on the basis of climate justice;[32]
- legally binding mechanisms for enforcing compliance, penalising those over quota and rewarding those under quota.

Carbon Finance

Hitherto, under Kyoto, carbon finance for mitigation was mostly through CDM and a levy on CDM was used to fund the adaptation programme. The flow of climate finance to the South was thus taxed to fund adaptation in the South.

Various efforts are underway to revive trade in the absence of the cap although it is not clear how a market value can be assigned unless there is a cap to create scarcity. One possibility is the creation of regional markets (emulating the ETS) or single-country markets (as proposed by Australia). Such markets might then permit outside trading through CDMs etc. as happens now. Obviously this undermines the scarcity and hence the price within each market. That is what it is meant to do but only up to a certain point. The market has to be manipulated to keep prices within a range before it can be made to appear 'natural'.

Whatever the logical incoherence, the EU and the World Bank are the primary proponents of expanding carbon markets. The Bank has thus said it will provide some sort of guarantee for CDM trades after 2012 when the first commitment period ends. At the same time, the Bank's Carbon Finance Unit is convening a new 'partnership for market readiness'. This seems to be a sort of faux multilateral treaty body, being set up with an 'assembly of participants' rather than the usual 'conference of the parties'. The objective seems to be to commit countries to the use of market mechanisms. Meanwhile, it is rumoured that the EU may ride to the rescue of Kyoto in Durban in order to save CDM but on condition that Kyoto expire in 2018 in favour of a single LCA climate regime. It seems that this might be done to buy time to figure out how to keep the market afloat without a cap.[33]

The World Bank is also leveraging its trusteeship of the GCF put forward by the IFC (the Bank's private sector lending arm) as a model for 'mobilising' private sector investment in climate funding. In fact, it is a model for lending to business through a 'private sector borrowing window' on the assumption that businesses will then invest more. Critics point out that the IFC track record does not point to developmental outcomes that address poverty, reduce inequality or reduce environmental degradation. The more likely result is that private funding will be substituted for public, as is clearly intended by the Northern powers, and will not be available unless there's a profit at the end of it.

'Innovative funding' from carbon trading or private sources is cover for the absence of climate finance from Northern country coffers. Insofar as climate funding has come from public sources, it is mostly rebranded development aid or comes in the form of loan guarantees.

In contrast, climate justice organisations call for grant funding from public sources, in real money that is additional to existing development aid. They also call for lots of it. The $100 billion, even if it materialises, is not close to the funding needed to transform developing country economies – revamping infrastructure and production etc – to provide for adaptation or even to respond

32 Equal per capita entitlement for all the world's people plus recognition of the climate debt between countries, North and South, and within all countries North and South.

33 Ben Garside, *EU may propose plan to extend Kyoto: sources*, Reuters, 22 August 2011.

to the damage of extreme weather events. The Cochabamba conference saw 6% of Northern GDP – about $1.2 trillion and equivalent to Northern military spending – as a reasonable figure.

This may be taken as a kind of proxy for repayment of the climate debt which is part of the larger ecological debt owed by rich to poor globally and in all countries. The debt can be calculated in terms of:

- adaptation – the costs of avoiding harm as well as the costs of actual harm; and
- emissions – the rich world's overuse of the carbon budget calculated per capita over the period of historical industrialisation (1900 to 2050 is a common timeframe).

In contrast, grandfathering uses historical overuse to justify high future emissions. Northern carbon pledges amount to a claim to use double their share of the per capita 2010-2050 carbon budget – implying that the poor must make do with less and/or that the carbon budget will be ignored.

Countries in the South will increasingly feel the impacts of climate change in the form of floods and droughts. Funds will be needed for both adaptation and to respond to the damage caused by extreme weather events. This picture shows damage done by a flood in south Durban.
Photo: SDCEA

An additional debt is added for foregone opportunities: because Northern countries have over used their share, Southern countries cannot follow the same path of development to raise their populations out of poverty. In our view, this mistakes the problem in two ways: First, it assumes a story of development which is false. Northern countries got rich by plundering the colonies, the Third World, the South. Fossil fuelled industrialisation may have helped them do that but it occurred in the context created by imperial and capitalist expansion. Hence, the developmental relationship of North and South is not sequential but structural. Second, being the child of imperial capitalism, fossil fuel development will not lift the world's poor out of poverty. To the contrary, poverty and inequality is growing in all countries and the demand for developmental carbon space is about competition between national elites who care about the poor only in so far as they fear them.

5 South Africa negotiating positions

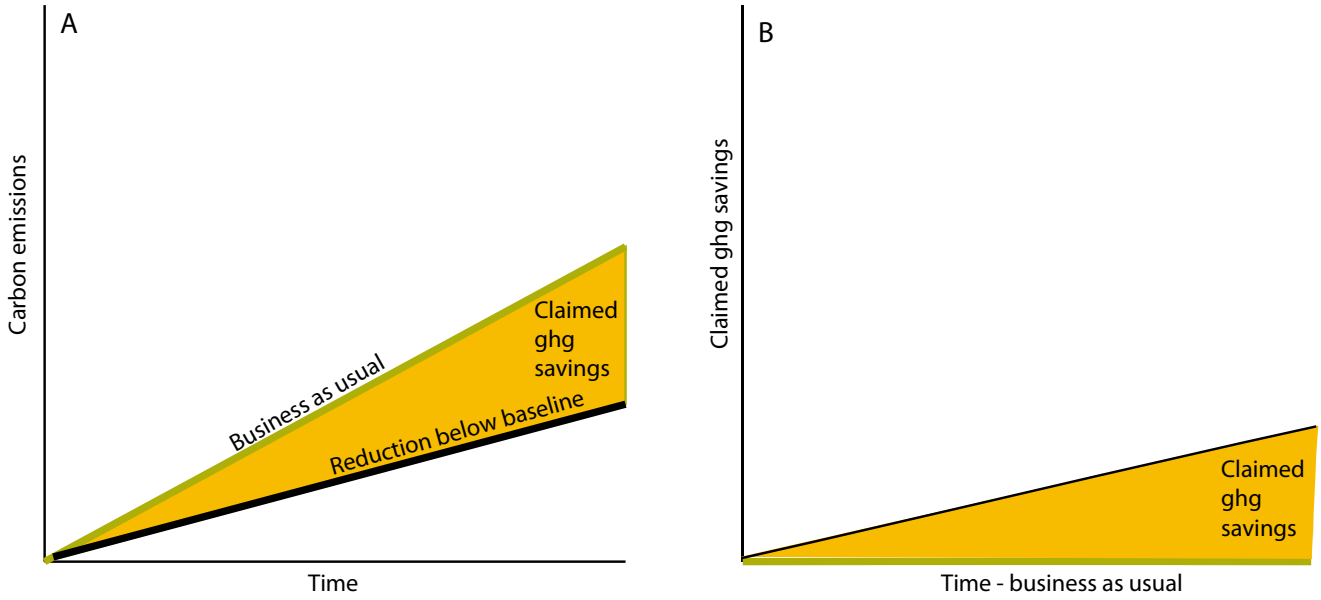
Copenhagen offer

At Copenhagen, South Africa made an offer to reduce greenhouse gas emissions by a 34% "deviation" below baseline by 2020 and 42% below baseline by 2025. The baseline represents the projected increase in emissions assuming 'business as usual' so these cuts are to slow the rate of growth of emissions. From 2025, emissions are to level off into a decade long plateau to 2035 and are then to be reduced from that level.

The offer "is conditional on an ambitious, fair, effective and binding multilateral agreement under the UNFCCC and its Kyoto Protocol" being finalised at Mexico in December 2010. 'Fair' includes "financial, technology and capacity building support from the international community".[34] That means: no money, no deal.

This offer was said to be based on the Long Term Mitigation Scenarios, a research document commissioned by the Department of Environmental Affairs in 2007. The LTMS constructed two scenarios: Growth without Constraints (GWC), which is used as the baseline for the Copenhagen offer; and Required by Science (RBS), which shows the emissions path necessary for South Africa's contribution to avoid warming of more than 2˚C. These two scenarios produce top and bottom lines for emissions through to 2050 with 2003 as the starting year, as shown in figure 3.

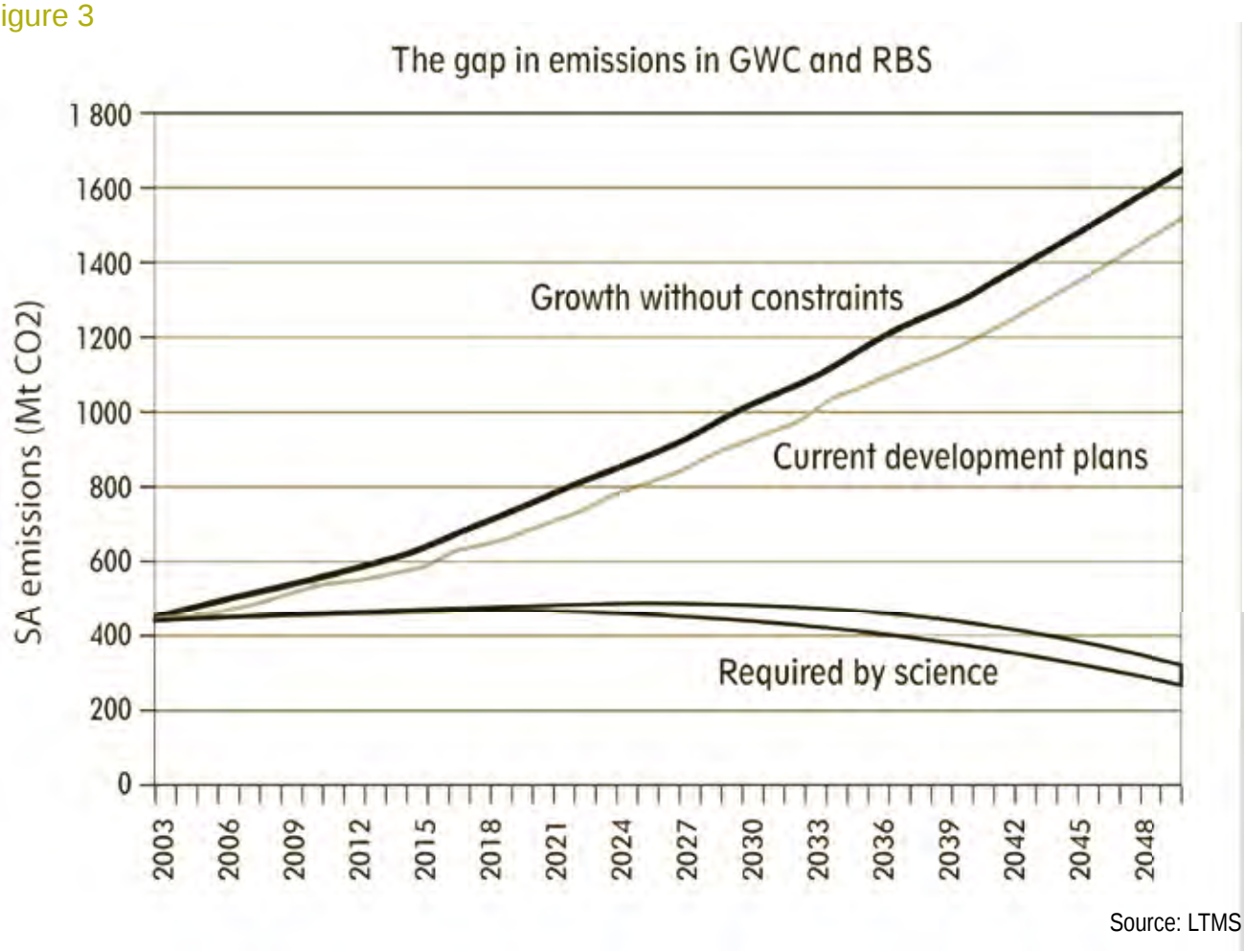
Figure 2



Representations of greenhouse gas savings can be misleading. Graph A shows a projection of rising emissions from 'business as usual' while emissions rise less steeply in 'reduction below baseline'. Graph B turns this upside down so that 'business as usual' becomes the horizontal axis and ghg savings appear to rise over time. Particular mitigation measures are then said to produce a 'wedge' of ghg savings.

34 For the official text of the offer see 'Letter to UNFCCC Executive Secretary from Alf Wills on behalf of the South African Focal Point, January 29, 2010.'

Figure 3



Source: LTMS

GWC extrapolates from present trends. It assumes no action to mitigate climate change and sees greenhouse gas emissions rising four-fold from 440 million tonnes (mt) in 2003 to 1,600 mt by 2050. It shows emissions of about 750 mt of CO_2e per year in 2020 and 870 mt in 2025. This is the baseline for South Africa's offer and implies emissions targets of 495 mt in 2020 and 504 in 2025. This depends, however, on how government rigs the numbers. Civil society demands for clarity were initially met with silence but, in March 2011, DEA officials finally presented an unusually candid take on the numbers and suggested 'a new expression of our objectives' to take account of an assumed 'error range' in the GWC projection.[35]

The original did not give an error range, so this is an invention of DEA. The 2020 target could then be put at between 418 and 571 mt and the 2025 target at between 412 and 599.[36]

The DEA also confirmed that current emissions are around 542 mt CO_2 per year – as forecast with little error in GWC. Power sector expansion plans will push that up by 80 to 90 mt or so by 2018. So excluding all other emissions growth from transport and industry, emissions will rise up to 630 mt. Given this, it is clear that it is the higher numbers produced by the error range that count. The lower numbers merely create mathematical symmetry and an illusion of objectivity. The exercise was patently designed to increase permissible emissions under the Copenhagen

35 DEA, *South Africa's desired greenhouse gas mitigation outcomes – to define or not to define,* presentation to Nedlac National Climate Change Response Green Paper task team, 25 March 2011.

36 DEA numbers do not compute (Slide 20). It seems that the baseline numbers are understated.

Table 01: South African emissions and promises

	Actual		LTMS (GWC)			LTMS (RBS)		Copenhagen offer		Copenhagen 'revised' (Mar)		Copenhagen 'revised' (Aug)	
Dates	2004	2011	2011	2020	2025	2020	2025	2020	2025	2020	2025	2020	2025
CO_2 mt	440	542	545	750	870	460	453	495	505	418-571	412-599	398-583	398-614

NB: In the Copenhagen 'revised' figures, it is the upper limit that counts.

offer but evidently did not increase them by enough. The figures were then further modified in an 'explanatory note' circulated in August 2011.[37] An enlarged error range raises the upper limit on the 2020 target to 583 mt and on the 2025 target to 614 mt. The August figures have now been adopted in the draft White Paper on climate change, published in November.[38] Table 01 lays out the numbers.

The GWC scenario reflects the assumptions that have shaped actual policy – before those assumptions tripped out on the 2008 national power outage and the global depression. In GWC industrial policy remains focused on energy intensive industries while coal and nuclear electricity generation and coal-to-liquids fuel production all expand dramatically. GWC assumes that South Africa achieves the 6% growth target, that climate change does no damage, and that oil, water and other resources are available to meet ever expanding demand. This, as the LTMS notes, is not realistic. So the reductions on offer are measured against a projection of future growth that will not be achieved under any circumstances.

RBS shows South Africa's emissions peaking in 2020 and then declining [LTMS SD: 10]. By 2050, the country emits between 30 and 40% less than in 2003. The LTMS Technical Report shows that whether 30% or 40% is achieved depends on the date and level of peak emissions as shown in Table 02

Table 02: RBS parameters for peak emissions

Peak year	Peak level Mt CO_2e	2050 / 2003 reduction
2016	463	40%
2020	473	35%
2026	483	30%

Adapted from LTMS TR [117]

Emissions rise before the peak but the rate of increase, starting from 2003, is considerably slower than in the GWC scenario. Since 2003, actual emissions have increased more or less in line with GWC, only slightly moderated by recession. With 2011 emissions well above even the 2026 peaking figure, RBS is already blown. Getting back to it would require an early peak followed by a much steeper decline in emissions than the scenario envisaged. The Copenhagen offer doesn't come close and that too is already blown. The DEA's proposed revision gives more 'carbon space' but, with additional emissions just from Eskom's 'new build', both the top 2020 and 2025 figures (583 and 614 mt) will be exceeded by 2018.

37 DEA, Defining South Africa's Peak, Plateau and Decline Greenhouse Gas Emission Trajectory, Revision 3.0 (24/08/2011), Draft for discussion only. This document eliminated errors made in March.

38 groundWork's formal submission on the White Paper is available at www.groundwork.org.za

The DEA has given no argument on the science to justify expanding the carbon space beyond RBS. It must be presumed that the principle of science-based decision making has been abandoned.

The next question is whether RBS itself is adequate. First off, it accepts the global target of a 2˚C rise in temperatures. This is a recipe for disaster [see section 1]. Next, the 2050 target is calculated on the assumption that the world must reduce emissions by 50% by 2050 and that Northern countries make reductions of 80%, so allowing more modest reductions in Southern countries. However, the 50% global reduction is at the bottom end of the range of the 50 – 85% reductions which the IPCC says is necessary to keep temperature rise within the 2ºC to 2.4ºC range. Similarly, the LTMS says that global emissions must peak in 2015 whereas the IPCC says emissions must peak between 2000 and 2015.[39] Finally, by bundling South Africa with the South in general, the LTMS gives it a free ride on the really low emissions from least developed countries.

The get-out clause in South Africa's Copenhagen offer seems fool-proof. Cancun did produce an agreement under the UNFCCC but it was hardly ambitious, fair and effective and anything but binding. Effectively, government can invoke the get-out at any time convenient or as a justification after the fact for missed targets. As environment minister Edna Molewa puts it, "The extent to which this commitment [34% below baseline by 2020] is achieved depends on the provision of finance, technology and capacity building support by developed countries, and through the UN climate change regime."[40]

Business calls the targets unrealistic and is pushing government to be more precise about the conditions under which it would revoke them, presumably by putting measures on financial and technology support. Civil society has called for tighter targets and needs to hit back at the business agenda.

A related question concerns what government may be considering in terms of financial and technology transfer. It wants to build a fleet of nuclear power stations along with a nuclear supply industry but it can't afford them. Might it be thinking of using climate change to get the North to fund them and to 'transfer' the relevant technology? At present, nuclear technology is not approved as an option for reducing carbon emissions under the UNFCCC. DEA officials have denied it, but it seems likely that South Africa has joined a backroom lobby for its inclusion led by France. South Africa's power plans are examined in the next section.

39 See Table SPM.5 in AR4 Working Group III report on mitigation, p.23. Note that the IPCC's 2007 calculations were conservative at the time and have since been superseded by more stringent requirements.

40 Quoted in Legalbrief Environmental, Issue no. 0224, August 9, 2011.

6 Energy & carbon

South Africa's economy is dominated by the 'minerals-energy complex'. This has made for a highly concentrated economy – one in which wealth and the power to direct development is held by a very few large corporations. This has led to one of the most energy- and carbon-intensive economies in the world. Policy relied on cheap power for mining and industry to promote international competitiveness. It came at the cost of coal miners' lives, of the health of power plant workers and neighbours and of the environment.

In 2004, 73% of all energy came from coal. It is used in three ways: it is converted into electricity by Eskom; it is converted into liquid fuels and chemicals by Sasol; or it is used directly as 'final energy' in industrial processes. The best quality coal is exported. Imported crude oil is the next largest source of primary energy, at 14% in 2004, and South Africa's largest import item. Rising oil prices will have pushed up coal's share in the energy mix. Mining and industry consume 43% of all energy followed by transport at 26%.

South Africa produces around 540 million tonnes of greenhouse gases a year, according to DEA estimates put out in March 2011.[41] This is up from 440 mt in 2003 given in the LTMS. It is the largest emitter in Africa and ranks 11th or 12th in the world[42] – up from 15th in the mid-1990s. This compares with its global economic ranking in 28th place. The table below gives some comparisons for energy sector CO_2 emissions. It is obviously dated but IEA figures for 2008 are much the same. If the 542 mt for all greenhouse gases (CO_2e) is correct, then South Africa's per capita emissions are at the level of OECD emissions (close to 11 tonnes per person). Energy emissions dominate South Africa's profile so it is likely that South Africa's emissions were either under-counted or have risen sharply.

Table 03: Energy sector carbon dioxide emission intensity in 2002.

	CO_2/cap	CO_2 /GDP	Cumulative energy CO_2 emissions from 1950 to 2000	
	t/capita	kg/1995 US$	Mt CO_2	Proportion of world total
South Africa	6.65	1.65	10,165	1.29%
Africa	0.89	1.16	13,867	1.75%
Non-OECD	1.65	1.33	318,117	40.23%
OECD	10.96	0.44	472,635	59.77%
World	3.89	0.68	790,753	100%

Source: Winkler [2005].
Notes: CO_2 includes emissions from fossil fuel use and cement manufacture but excludes industrial process emissions.

41 DEA: 'South Africa's Desired Greenhouse Gas Mitigation Outcomes – To define or not to define' Presentation to Nedlac, 25 March 2011.

42 11th according to Joanne Yawich, DEAT, Energy Summit September 2007; 12th according to the Treasury paper on carbon taxes.

The per capita carbon intensity is misleading, first because of the unequal access to domestic energy and second because of the intensity of industrial energy use. In effect, South Africa exports energy and carbon embedded in minerals to the benefit of capital but at the cost of the majority of people. The carbon intensity per unit of production signifies South Africa's structural location within the global economic order. It is not about a phase of development through which the country will pass to higher value production and reduced carbon intensity.

South Africa is a semi-arid country and highly vulnerable to climate change: water resources will be increasingly stressed through reduced rainfall and increased evaporation, desertification, droughts and flood events; rangelands will become drier and produce less food while crop pests and diseases increase; biodiversity will be dramatically diminished; human diseases such as malaria will increase.

Hitherto, policy makers have been more concerned with the impact of mitigation measures, fearing that coal and carbon intensive products could in future be penalised. Massive infrastructure spending inaugurated in 2005 aimed to expand the supply to energy intensive industries and to increase capacity for coal exports.

Key issues:

- Confronting the power of the MEC.
- Energy sovereignty: Creating a people's economy in the place of the corporate economy.

Power policy

South Africa's policy has always centred on cheap power for energy intensive mining and industry as a source of international competitiveness. This fostered extravagant energy use and a disregard for energy efficiency, which state-owned power utility Eskom encouraged to expand sales. Mining and industry uses over 60% of electricity and the 36 members of the energy-intensive users group consume 40%. All but six of the group are in mining and mineral processing or fuels and chemicals. BHP Billiton's three aluminium smelters consume over 10% of Eskom's production for which Billiton paid as little as half the costs of production in 2008.

The cost of electricity to energy-intensive industries is the lowest in the world. The cost to households is relatively high and higher still for poor people on 'pre-paid' systems. Access to domestic energy and electricity is highly unequal. Households use 16% of all electricity[43] but most of this is used by the richest 40% of households. A large proportion of the population are 'energy poor', 20% do not have access to electricity and many who do can afford electricity only for lights, TV and radio. Many people are cut off every month when they run out of money to feed pre-paid meters.

Embedded within the minerals-energy complex (MEC), Eskom developed a highly centralised and secretive corporate culture. Historically it dominated policy and its influence remains disproportionate. Its bias for large-scale coal and nuclear base-load plants, and hostility to renewables, reflects its culture and is driven by demand from the energy intensity of industry.

In 1998, government declared that Eskom would be privatised and blocked it from building new plant. Government put privatisation of Eskom on hold in 2004. It directed the utility to initiate the 'new build' but also said 30% of new capacity would be built by private IPPs. In 2007, the tightening 'spinning margin' – the excess of capacity over demand – exposed Eskom's managerial weaknesses and the nation blacked

43 The residential share is statistically inflated.

Table 04: Eskom's new build

	Technology	Name and location	MWatts
Peaking and Renewable Plant	OCGT	Ankerlig, Atlantis, Cape Town.	2,080
		Gourikwa, Mossel Bay, Western Cape.	
	Pumped storage	Ingula, Van Reenen, KZN / Free State.	1,352
	Wind	Sere	100
Total			**3,532**
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**

out. The corporation then started to implement its dormant Demand Side Management programme.

An integrated resource plan (IRP) is supposed to guide electricity sector development over the next two decades. IRP 2010 was developed ahead of a broader Energy Resource Plan of which it is supposedly a subordinate part. It also precedes climate policy which will then either contradict power plans or be made to fit with them. The IRP 2010 process confirms the alignment of policy with corporate interests. Detailed planning was supervised by the minerals-energy complex (MEC) A-list – including Eskom, Anglo American, BHP Billiton, Sasol, Xstrata and the Chamber of Mines – while civil society participation was marginalised. The IRP thus presents the MEC vision of the future.

The plan has two components: the IRP itself covers the period to 2030 while a Medium-Term Risk Mitigation Plan (MTRM) focuses in on the immediate future. The IRP was slightly modified following public hearings but retains its

essential character: whereas integrated resource planning is supposed to shift planning from a one-dimensional focus on supply, IRP 2010 is a traditional power expansion plan justified by an exaggerated projection of future demand, mostly for metals processing, and a very wide 30% spinning margin.[44] It says capacity must more than double to 89,500 MW in 2030.

This simply extends Eskom's earlier projections of 80,000 MW by 2025 which, it said, would cost some R1.3 trillion.[45] This capacity figure compares with the LTMS projection of 60,000 MW to meet 'growth without constraints' demand in 2026. To reach its figure, Eskom assumed that government's economic growth target of 6% would be achieved and would require an annual 4% growth in electricity demand. The growth target has not been met to date and is scarcely credible going forward. If the capacity figure looks heroic, the cost figure looks like a gross under-estimate given the escalating costs of the new build.

Key issues:

- Phasing out aluminium smelters
- Decentralising & dispersing power production.
- Shifting public ownership from centre to local and from state to people.

Eskom's New Build and IPP coal

In 2004, government said Eskom must build 70% of all new generating capacity with the other 30% reserved for IPPs. IPPs did not respond largely because the electricity price would not yield a profit on new plant. Table 04 shows Eskom's 'new build'. All plants except the Sere wind plant are either completed or under construction.

Eskom's new build adds 17,000 MW to its original capacity of about 37,000 MW. It is based almost entirely on coal supplemented by diesel-fired peaking plant. It centres on two new plants, Medupi and Kusile, which will be the fifth and fourth largest power plants in the world if completed, supplemented by the return to service of three mothballed plants. Medupi is due for completion in 2015 and Kusile in 2018. Eskom planned to build a third such plant – known as Coal 3 – by 2018 but has cancelled it for want of funding. It nevertheless said that the plant was necessary and that independent power producers (IPPs) must build the equivalent capacity. Coal 4 was to follow later in the decade.

IRP 2010 says that another 6,300 MW of new coal must be built, whether by Eskom or IPPs, by 2030. This implies that coal fired power survives to at least 2090. In addition, several major corporations are building plants to supply their own power by 2016. This is to close the gap created by MTRM's very high forecast for demand growth. Sasol was first up, expanding its steam and power plant at Secunda from 320 to 600 MW to supply about half its power demand. No electricity will go to the grid but Eskom will pay Sasol above tariff rates and sell back at tariff rates. Anglo American and Xstrata are looking to build plants fired by the coal wastes heaped at their mines on similar terms.[46] Xstrata's project is specifically intended to power a new ferrochrome smelter. By these means, the corporates hope to insulate themselves from future power shortages.

From 2021, Eskom will have to start decommissioning existing coal fired stations as they reach the end of their life-span. IRP shows just over 10,000 MW decommissioned by 2030.

44 This final version, the 'policy adjusted IRP', was approved by Cabinet in March 2011. IRP figures cited below are from this version.

45 Eskom New Build News, no.5 and 2008 Annual Report p.18.

46 . Terence Creamer, 'Secunda to Produce 800 MW of Own Power, Sell 200 MW to Eskom', *Engineering News*, 21 October 2010.

Nukes

Nuclear power is central to IRP 2010 although earlier fantasies have been reined in somewhat. In 2007, government ministers talked up extravagant plans for 20,000 to 27,000 MW of new nuclear capacity by 2030. Eskom invited Areva and Westinghouse to bid to build 'Nuclear 1' – the first very large 3,500 MW pressurised water reactor (PWR) – but when the bids came in, it balked at the cost and shelved the project.

Ministers nevertheless insisted that a 'fleet' of PWRs would be built.[47] IRP 2010 follows the script and plans for 9,600 MW to come on line between 2023 and 2030. Government also said it would develop the nuclear supply chain industry from uranium mining through to fuel fabrication and invited the nuclear corporations to bid for the role of 'strategic partners' in its overall nuclear programme. The DTI's Industrial Policy Action Plan (IPAP2) observes that, "A future nuclear programme will cost in excess of R1 trillion. This will place enormous strain on the balance of payment and without an effective localisation programme will have severe consequences for the South African economy".[48] Localisation in turn requires "construction of one new reactor every 18 to 24 months" to create viable businesses.

If they pull it off, the conventional nuclear programme will displace the Pebble Bed Nuclear Reactor (PBMR) as government's largest

Nuclear power stations like this one are touted as a means to reduce carbon emissions.

47 Esmarie Swanepoel, *SA could have new nuclear power station by 2020 – Peters*, Engineering News, November 20, 2009.

48 DTI, Industrial Policy Action Plan, February 2010, p.88. The wording is repeated in the 2011 IPAP, p. 169. The 2010 version indicates another 10,000 MW capacity by 2035 but this is not repeated in 2011 which sticks with the IRP timeframe.

and most secretive industrial development programme. Government sank about R12 billion into developing this 'fourth generation' nuclear technology in which South Africa fancied itself a world leader. With nothing to show for it, the programme was finally abandoned in 2010. Even the skills necessary for localisation of the conventional programme have melted away.[49] Had the money been spent on renewables, there would be an industry by now.

Government touts nuclear power as the means to reduce the extraordinary carbon intensity of South Africa's economy while providing baseload for energy intensive industry. Given its ambition to establish a full supply chain, the nuclear industry as a whole will scarcely mitigate emissions. Be that as it may, government probably believes that it can get financial transfers on the back of climate change to pay for what it patently cannot afford.

Renewables

In 2003, Government set a very modest target of 4% electricity production from renewables by 2013 but did nothing to achieve it ahead of the power crash and the global depression. It now sees a niche role for renewables both to create jobs and to reduce the carbon intensity of the economy. IRP 2010 sets a target of 17,800 MW by 2030. Eskom plans to build a 100 MW wind farm and a 100 MW concentrated solar plant but, for the most part, renewables are seen as the business of private IPPs.

In 2008, following a broad consultative process, Nersa set renewable energy feed in tariffs (REFIT) – which pay a higher rate for each kWh produced – for several technologies. Eskom is the sole buyer but did not agree to buy because it would make a loss on the difference between the REFIT and the lower selling price. Nersa's 2010 multi-year price determination (MYPD2) for Eskom specifically provided for the purchase of renewable energy power.

In 2011, the Department of Energy abruptly cancelled the REFIT, claiming that it was anti-competitive and therefore illegal. Without consultation, DoE announced its replacement with a 'competitive' tender bidding process now dubbed 'REBID'. Rather than receiving a fixed tariff, price will be part of the bid put forward by firms wanting to build renewable energy plant. The documentation is said to be sound but it is subject to strict confidentiality. The intention, comments Chris Yelland, "is clearly to prevent wider access to documents by stakeholders, the media and the public, and to restrict access to a tight circle within government, and to bidders with significant vested commercial interests."[50] Given widespread corruption around tendering, this is not encouraging.

Government and Eskom similarly ignored the obvious benefits of solar water heaters (SWH) until the power crashed. According to IPAP2, 35,000 units a year were installed. In 2010, Eskom offered a substantial SWH subsidy and said that 60,000 were installed. SWH prices rose steeply to match the subsidy partly, it seems, because of Eskom's technical requirements and associated administrative costs. The subsidy has since been reduced but the rising electricity price creates an incentive for those who can afford to install SWH. Industrial policy aims to increase installations to 250,000 per year and production from about 20,000 to 200,000 units a year.

49 . Keith Campbell, 'SA Squanders Lead Just as Nuclear Sector Begins to Grow Globally', *Engineering News*, 26 March 2010.

50 At http://dailymaverick.co.za/article/2011-08-31-renewable-energy-a-disquieting-move-from-transparent-to-opaque.

2030 power mix

Government emphasises that 42% of new capacity will be renewables with 23% nuclear and 16% coal. However, this excludes the present 'new build'. If it is included, the ratios for new capacity look very different: 34% coal, 31% renewable and 16.6% nuclear. The shares of total capacity in 2030 will be: coal 46%, nuclear 13% and renewables 21%.

The real issue, however, is the share of energy production. In 2030, coal produces 65% of the power supply, nuclear 20% and renewables 9%. The rest is supplied by peaking plant, a little gas and imports. Demand-side management displaces only 3 420 MW capacity, less than half Eskom's original target of 8 000 MW by 2025, equivalent to just 4% of the supply.

2,267 tonnes (49,874 CO_2e) or close to 60% of national methane emissions.[51]

Eskom planners put the utility's demand at 180 to 200 million tonnes coal, implying 320 to 358 million tonnes CO_2 by 2018. They project national coal demand, largely driven by the power sector expansion, increasing from 240 to 374 million tonnes a year.[52] This implies national emissions of about 670 million tonnes of CO_2 from coal alone.

Greenhouse gases aside, Eskom is a major league polluter of more local environments. Table 06 shows that its emissions of sulphur dioxide and nitrogen oxides have also increased in line with production. To 2008, only particulate emissions were in any way mitigated and that only at some plants. 2011 figures show that these gains have since been lost. The slightly better sulphur figure results from burning a slightly better grade of coal.

Table 05: Production, coal and carbon

	2011	2008	2004	2000
Production (GWh sold)	224,446	224,366	206,799	178,193
Coal consumed (tonnes)	124,700,000	125,300,000	109,600,000	92,500,000
Carbon dioxide (tonnes)	230,300,000	223,600,000	197,700,000	161,200,000

Adapted from Eskom Annual Reports 2011 and 2008

Power pollution

South Africa's carbon dioxide emissions for 2004 are estimated at 440 million tonnes with Eskom accounting for around 45% of it. In the year to March 2008, Eskom burnt over 125 million tonnes (mt) of coal and emitted 223.6 mt of carbon dioxide according to its 2008 Annual Report. Table 05 shows rising coal use and carbon intensity as Eskom ran its plant harder to keep up with demand. Demand and production dipped in 2009 and 2010 and recovered to 2008 levels in the year to March 2011. The carbon intensity is markedly up. Further, Eskom is reckoned to emit

The pollution of water is even more intense. The streams and rivers downstream of Emalahleni (Witbank) are already ruined by acid mine drainage. New mines are being opened in the Mpumalanga Lake District at the source of three major river catchments – the Vaal, the Olifants and

51 Richard Worthington, 2009. *Cheap at half the cost: Coal and electricity in South Africa*, in David McDonald (ed) Electric Capitalism, Earthscan.

52 Martin Creamer, *Decision on another new coal power station needed this year – Eskom*, Engineering News, February 5, 2009; Chanel Pringle, *Electricity expansion decision needed in the next year – Eskom*, Engineering News, September 7, 2009; Carla Thomaz, *Coal production insufficient to meet energy demand*, Mining Weekly, March 12-18, 2010.

Table 06: Eskom's sulphur, nitrogen and particulate emissions.

	2011	2008	2004	2000
Sulphur dioxide (tonnes)	1,810,000	1,950,000	1,779,000	1,505,000
Nitrogen oxides (tonnes)	977,000	984,000	797,000	674,000
Particulates (tonnes)	75,840	50,840	59,170	66,080

Adapted from Eskom Annual Report 2008

the Komati – many without proper authorisations. Nationally, over 100 mines (not only coal) are operating without water permits.

The coal fields of the Vaal and eastern Highveld are now being depleted and the Waterberg, said to hold 50% of remaining reserves, is the new frontier. Medupi is the first of a number of projects planned or mooted for the area in this decade. They include three or four further power plants – whether built by Eskom or an IPP – and Sasol's Mafutha CTL project as well as the associated mines and coal export ventures. The Department of Water Affairs (DWA) projects water demand rising more than ten fold to around 140 mm^3 a year.[53]

As always, South Africa goes upstream both for more water and for clean water to replace what it has polluted. The governments of South Africa and Lesotho have recently approved Phase 2 of the Lesotho Highlands Water Scheme – the construction of the Mashai Dam and water transfer infrastructure. This will be the third major dam to be built and, like the others, will flood local people's best valley lands. The existing dams have already severely affected the downstream ecology of the rivers. The Mashai will add to the impact as Lesotho's rivers are drained dry.[54]

The combination of projects lining up for investment in the Waterberg thus represents a 'spatial fix' on a grand scale.[55] It involves not just the fixing of investment to remake the Waterberg itself but the massive infrastructure necessary to make those investments viable and to realise profits from them.

Money

The costs of Eskom's new build have escalated alarmingly – from the 2005 estimate of what was then a staggering R84 billion to R645 billion for the decade to 2015. The big 'six packs' were at the heart of the escalation, with the 2005 estimate of R30 billion apiece rising to R125 billion for Medupi and R140 billion for Kusile. It is unlikely that these will be the final prices.

Government stumped up R60 billion and issued guarantees for loans of another R176 billion. The World Bank controversially funded Medupi with a R30 billion loan which was further supplemented by African Development Bank money as well as German and French export credits. Kusile remained largely unfunded until government doubled its loan guarantees to R350 billion so that Eskom could raise the money on the international markets.

To pay for these staggering sums, Eskom wrung massive electricity price hikes from the National Energy Regulator (Nersa), amounting to a real

53 Mokolo and Crocodile Water Augmentation Project: Presentation to the Waterberg Forum Meeting, November 23, 2009.

54 Transformation Resource Centre, *Too many dams, too little water – Lesotho's rivers could become 'waste water drains'*, posted at International Rivers Network, October 31, 2000.

55 The idea of a special fix comes from David Harvey, 2005. The New Imperialism, Oxford University Press.

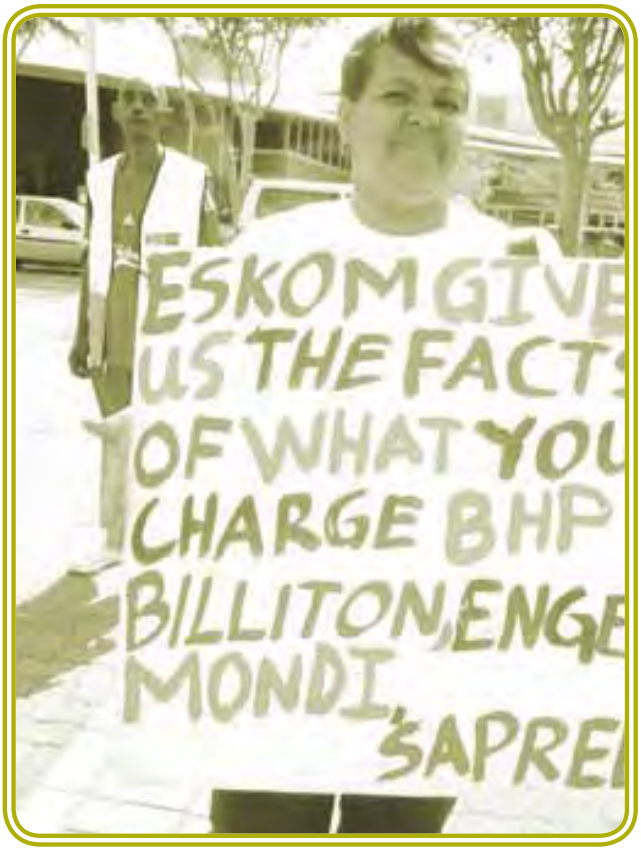
increase of 137% over the five years to 2013. Community groups across the country protested that this was simply unaffordable to the majority of households. The new build would exacerbate and not alleviate poverty. Moreover, it is designed and engineered to supply South Africa's energy intensive industries rather than people and should therefore be put to their account.

Much of the debt for Eskom's new build will be paid in hard currencies. The volatility of the Rand is regarded as the Achilles heel of the South African economy. It has crashed repeatedly since 1994 and the high cost of foreign loans will put new pressure on its value. In sanctioning the loans, Government is making a double bet: that future economic growth, and the continuous expansion of the energy system, will more than cover repayments – suggesting economic pressures to abandon Demand Side Management as soon as the spinning margin is restored; and that the Rand will hold its value. Otherwise the debt becomes a trap as it did for many Southern economies in the 1980s.

Given the economic impacts of climate change, the constraint on economic growth of peak oil and the economic depression, this looks like a bad bet. The cost of debt will be imposed on the whole society, including those who have had no benefit.

Tariff pricing

Government and the World Bank claim the new build is necessary to alleviate poverty and energy poverty in particular. The imposition of pre-paid metering on poor people has two effects: they are regularly cut off when they run out of money for the meter; they pay the highest rates per unit. A free basic electricity supply was introduced in 2000 but is enough for only about one week in the month. Social movements therefore called for an expanded free supply within a system of rising block tariffs on the principle that those who consume more pay higher rates.



Despite public pressure to make the information available, prices to big users of energy remain secret.
Photo: SDCEA

Nersa responded to this demand in 2010 to mitigate the effect of Eskom's increases. The distribution of the blocks is questionable however. Low consumption households will still face a sharp and unaffordable increase in electricity costs and it is not clear how the scheme will be extended to those on pre-paid meters since the system is not compatible with differential tariff bands. With only four blocks, the top block captures most suburban and many township households and adds no extra penalty for truly heroic consumers.

The principle of high prices for high consumption is reversed for industry: the biggest users pay least per unit. Most industry tariffs will rise by the same percentage as household tariffs but off a very much lower base. The absolute increase is therefore about half the residential increase. Long term 'special pricing agreements' with BHP Billiton and Anglo American were exempt from the increase. The deals are secret, supposedly

because they contain competitive information but more likely because public knowledge is not in the corporate interest. Eskom and Billiton are now negotiating to revise the contracts. They claim the new deal will be in the interests of both parties and of the public. The public, however, is unlikely to get an insight into its putative benefit as the new deal will remain 'confidential'.

Liquid fuels

Refining capacity was dramatically expanded through the 90s from 510,000 to 733,000 barrels a day. Nevertheless, demand overtook the local capacity during the boom years leading to fuel imports. Fuel demand is mostly from transport. Car-making gets large subsidies through the Motor Industry Development Plan; the neglect of rail has pushed freight onto the roads and, near the Durban port, into people's neighbourhoods; the expansion of trade has led to a dramatic expansion of maritime carbon emissions and is supported by port expansions and the plans for a new dug-out port on the old airport land in south Durban.

Demand was further boosted by the power crisis both because Eskom over-used diesel fired peaking plant and corporations installed back-up generators. The Department of Minerals and Energy's 2007 Energy Security Master Plan explicitly refers both to peak oil and climate change. However, "South Africa cannot sacrifice its development at the altar of the environment" in the short term.

Security of supply is addressed through two new pipelines: a large multi-fuel pipeline from Durban to Gauteng – the Durban end was purposely routed through poor areas; and a private Maputo-Gauteng line.

Government is also promoting new production capacity. State-owned PetroSA plans to build the very large 400,000 barrel a day Mthombo refinery at Coega. It claims it will refine low quality crudes to high quality fuels but has not said anything about managing the consequent high waste levels. Mthombo has been delayed apparently for want of finance. Sasol is expanding its Secunda CTL plants by 20% to 180,000 barrels a day. With government encouragement, it is also doing feasibility studies for an all new CTL plant – Project Mafutha – in the Waterberg. The project is now on hold because of market uncertainties.

South Africa is also pushing upstream exploration. It recently awarded blocks off the west coast to BHP Billiton, Sasol and PetroSA and has opened new blocks on the east coast off Durban. Under the Nepad banner, South African corporations have joined the African oil rush. PetroSA has acquired exploration and/or production licenses in Gabon, Nigeria, Equatorial Guinea and Egypt and signed an exploration agreement with Sudan's state owned corporation. Sasol started producing gas from Mozambique to supply its South African plants in 2004. It is exploring for off-shore oil in Gabon and Nigeria and developing a gas-to-liquids project with ChevronTexaco at Escravos in the Niger Delta.

Gas

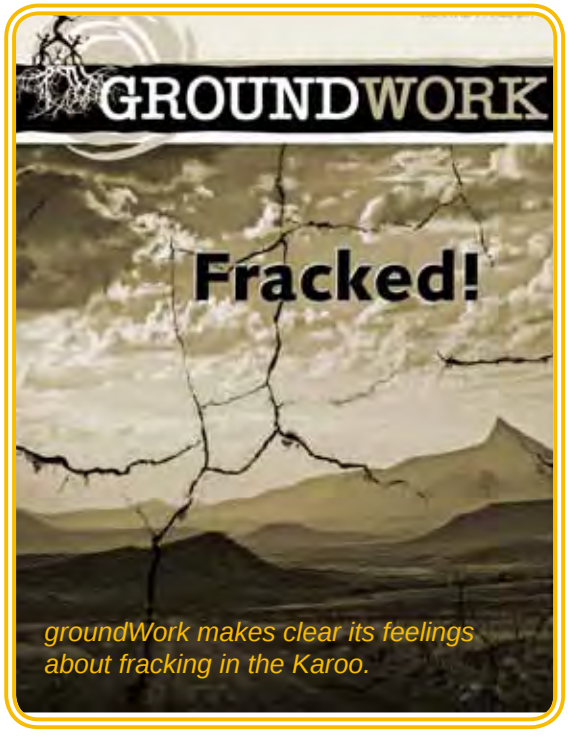
Gas is less carbon intensive than either oil or coal, although this does not account for leaks along the production pipeline. South Africa has no natural gas and Sasol currently imports gas from Mozambique and hopes to do so from Namibia. Following the 2002 peaking of natural gas production in North America, US energy corporations found a new source in shale gas.

Government has now given shale gas exploration licences to three consortia headed by Shell, Anglo American and Sasol. Shell got the prime area covering much of the Karoo, AngloAmerican was next in line with much of the Northern Cape and Sasol got an area encircling Lesotho to the west and south with much of the Free State and

the Drakensberg mountains in Eastern Cape and KZN.

Extraction of shale gas is considerably more energy intensive than extraction of natural gas. The carbon benefit therefore evaporates. It makes use of a technique known as 'fracking' which involves injecting a cocktail of toxic chemicals into the shale formation at high pressure. Extensive groundwater pollution by fracking chemicals is now evident in the US.

In April 2011, government declared a moratorium on exploration (now extended to March 2012) while it does some homework. This appeared to respond to intense opposition to Shell's exploration EIA. It may, however, have as much to do with who will get rights to the resource. In March 2011, the regulator – the Petroleum Agency South Africa (Pasa) – said it would organise a series of licencing rounds in place of the first-come first-served process that obtained till then.[56]



groundWork makes clear its feelings about fracking in the Karoo.

56 Karoo shale gas licencing this year, Business Day, March 10, 2011; Cabinet backs Karoo natural-gas drilling moratorium, Mining Weekly, April 21, 2011; More technical work needed to define SA's shale gas framework, Mining Weekly, September 6, 2011. Now KZN faces threat of fracking, The Mercury, June 15, 2011.

7 Mitigation actions

The Long Term Mitigation Scenarios (LTMS) identified and modelled a number of ways of 'saving carbon'. These measures were also called 'wedges'. Each wedge describes potential carbon savings from existing activities relative to business as usual. They therefore retard the growth in CO_2 emissions but do not reduce emissions from present levels.

The wedges were largely based on consultations with the industries concerned. As a result, they do not challenge the basic interests vested in those industries or ask whether what they do is necessary for all people to live a good life. Some wedges are also based on questionable assumptions.

Government has started to act on several wedges although the immediate spur to action is usually something other than mitigating climate change – such as energy security. The official view that mitigation and security actions are mutually reinforcing is not tenable.

Formal policy emphasises: demand management and energy efficiency; diversification of production; technology innovation; CDM carbon financing; and economic measures (either carbon taxes or an internal carbon market).

Managing demand

For the LTMS, reduced energy demand depends entirely on efficiency and all efficiency wedges save the economy money. Industry dominates energy demand, has neglected efficiency and is responsible for a high proportion of emissions. Industrial energy efficiency therefore makes for the biggest LTMS wedge on the demand side as boilers, fans and pumps etc. are made more

efficient. Government and Eskom are currently promoting industrial energy efficiency primarily because of the power supply crisis. If Eskom's generating capacity gets ahead of the demand curve, it may well revert to pushing demand to pay off the costs of new capacity. This is what has happened in other countries that have recovered from an energy crisis.

Policy for transport efficiency starts with private cars – Treasury has introduced a very modest carbon tax on new vehicles. A longer term 'modal shift' to public transport has little traction while remaking cities for cycling and walking is not seriously contemplated.

Energy efficiency seems self-evident. But things are not so simple. Neither the LTMS nor government take account of the 'Jevons paradox' that energy efficiency leads to an overall increase in energy use. For capitalism, increased energy efficiency is another form of increased productivity. It increases the work done by energy but the benefit is taken in profit and economic growth rather than a reduction of overall energy use. Put differently, the priority is the efficiency of capital, not energy, and the additional returns to capital must then be reinvested in further economic activity which requires more energy.

Thus, unless there is a limit to the supply of energy, energy efficiency is ultimately counter productive. Such a limit, however, is not compatible with economic expansion and is not admissible for government. If the quantity of energy is fixed then growing use for some can only be had at a loss to others. Assuming peak oil and a diminishing supply of energy, the equation becomes even more acute. The choice is then what – or whose – energy use to cut.

For South Africa, there is one immediately obvious choice: The aluminium smelters are supplied electricity at below production costs and are an overall drain on the economy since Billiton takes its profits at the global level. They should be phased out. Concrete plans should be made for a 'just transition', so as to provide alternative, well-paid 'green jobs' – e.g. in subsidised thermal-solar geysers for every house – to those workers who are employed at the smelters.

Energy supply

Coal

Eskom claims a life-span of 60 years or more for its new power plants so present decisions are 'locking in' carbon dependency to 2090 and beyond – from IPPs as well as from Eskom. Government, Eskom and the World Bank claim that 'clean coal' technologies can resolve the issue. For the most part they 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.

Medupi and Kusile are to be supercritical steam generators and this is expected to improve the energy conversion efficiency from 35% to around 40% – so 40% of the energy in coal will be converted into electricity. There is thus a marginal reduction in carbon intensity which will in no way mitigate climate change. IPPs will most certainly opt for the cheaper sub-critical plants.

Eskom has a long-running research and development programme on underground coal gasification. 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.[57]

57 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

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 and the environment minister has declared that no further coal-fired power stations will be allowed unless they are 'CCS ready'. That means little more than leaving space for a CCS plant next to the power plant. The idea of CCS comes from 'enhanced oil recovery' technologies: CO_2 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 several major problems:

- It has not been shown that either capture or storage will work at the scale required anywhere in the world.
- It is very expensive both to build and to operate – requiring a global infrastructure on the scale of the oil industry. Even if separation plants are built, there can be little faith that utilities looking to cut costs will not switch them off when no-one is looking. Meanwhile, the money spent on CCS is not available for more convincing responses.
- Separating CO_2 will consume around 30% of the energy produced by the power station and thus substantially reduce their efficiency.
- 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 at more than 300 km. In South Africa, a 'CO_2 Storage Atlas', prepared at the behest of government and Eskom amongst others, shows the best prospects are off-shore. The CCS potential is nevertheless being talked up.

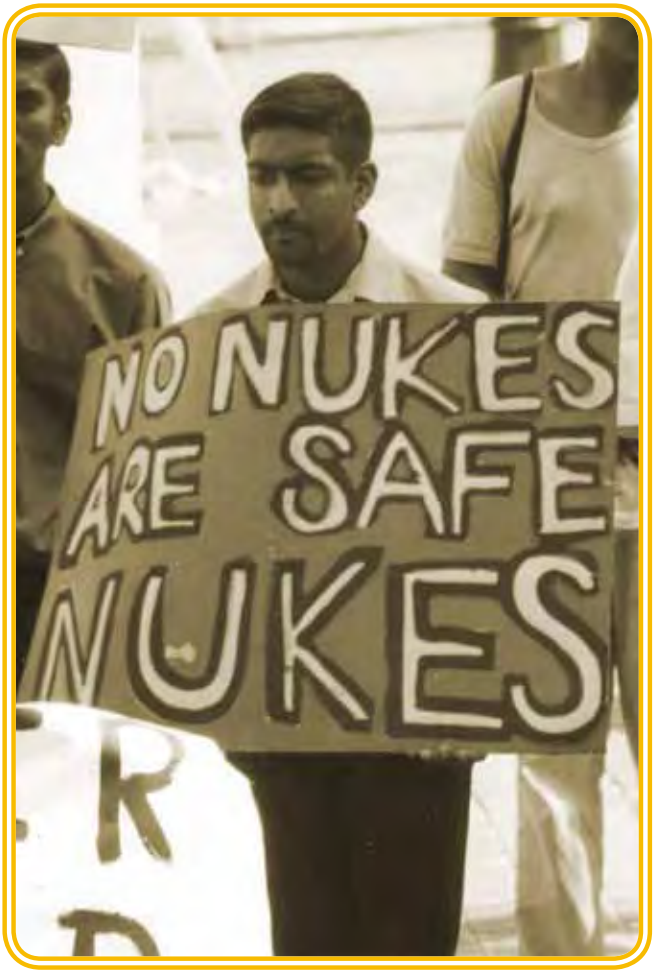
Sasol also pins its hopes on CCS. It has one advantage in that the CTL process allows for a relatively cheap separation of a portion of its carbon emissions. On Sasol's own account, CCS would at best reduce its emissions to the level of those emitted in producing fuel from conventional crude oil – which is what got us into this mess in the first place.

Nukes

The LTMS sees a 'zero carbon' grid possible by 2050 with 50% renewables and 50% nuclear. In reality, government favours nukes to compliment coal because it wants big base-load for South Africa's energy intensive industries. But nuclear energy is only carbon free at the point of generation. Uranium mining, nuclear fuel fabrication and waste disposal are energy intensive processes incurring high carbon costs. These costs rise if low grade uranium ore is mined. This is a running certainty because higher grade ore is mined first, leaving lower grades for the future.[58]

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 thus 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.

58 The zero carbon claim rests on the assumption that nuclear fuel continues to be imported – so carbon costs are exported – and does not appear to take account of disposal. The full life cycle carbon costs of nuclear energy are calculated by the Eco-Institute in Darmstadt, Germany. See www.



Despite long-term protest against nuclear power, it is likely that this will be part of our energy future.
Photo: groundWork

The massive scaling up of nuclear will be accompanied by escalating radio-active contamination all along the production chain. South Africa already has serious legacy issues from mining and from the old apartheid uranium processing and fuel fabrication plants. Little of this has been cleaned up. Present policies also exhibit extraordinary complaisance in regard to nuclear waste disposal.

Nuclear power also comes at a cost to democracy. It requires high level security both for safety and because enriched uranium is used to make bombs. Secrecy is intrinsic to the industry and allows it to decide what the public should or should not know. It is a powerful weapon for public relations used in the interests of the industry and not in the public interest.

Finally, the costs are potentially ruinous. This is why we suspect government is angling to get nukes on the back of climate funding and technology transfer. Nor can a secure and affordable supply of nuclear fuel be assumed. Production is already stretched and, if other countries pursue the nuclear option, will fall short of demand. Even government is now concerned that, "By the time we build this nuclear power plant we will not be able to afford enriched uranium."[59]

The final version of IRP 2010 was published just after the Fukushima nuclear meltdown following a major earthquake in Japan. Government initially ignored protests over the proposed nuclear expansion but then decided to review it. Five months later, the minister concluded in favour of nukes but no review documents have been made public. Assuming cabinet agrees, the bidding process will begin next year (2012).

Review documents have not been made public. For those who protested the decision, the risk of earthquakes in South Africa is not the central issue. Assuming a 50 year life, the new plants will operate through to 2080 or so. During that time, risk is likely to expand dramatically. Sea level rise of four metres is a distinct possibility while unprecedented storm surges and flooding are likely. The risk of attacks targeting nuclear facilities will also rise in an increasingly volatile world.

Renewables

Unlike coal and nuclear power, fuel for renewables is and will remain free. High capital costs are

precaution.org/lib/nuke_ghg_emissions.060224.pdf

59 Energy minister Dipuo Peters quoted in *SA looks to nuclear future*, Mail & Guardian online, Sep 29, 2010.

therefore off-set over the full life cycle and the benefits will be compounded in the context of peak oil. South Africa has very good renewable resources, particularly for solar energy, which have hitherto been ignored. Moreover, the development of a renewables industry is within the scope of South Africa's capacities and government itself now recognises that it will create more jobs than conventional fossil energy. In contrast, nuclear leads to an overall loss of jobs according to the LTMS.

Several other advantages are identified with renewables,[60] including:

- Many technologies are composed of many small scale units which can be built relatively quickly in response to actual demand. Large scale conventional and nuclear plants, in contrast, have very long lead times and are built in response to long term demand projections. This was the case when Eskom over-invested in the 1980s. It was then left with 'stranded assets' and had to moth-ball several power stations.
- They are widely distributed, rather than centralised, and so reduce transmission costs as well as the risk of grid failures. The risk of plant failure is also minimised. In contrast, the failure of one large plant can throw the whole system into crisis as was shown when the bolt hit the fan at Koeberg and again during the national crisis.
- Most are simply not in the same league as coal or nuclear plants when it comes to local or global pollution.
- On Nersa's figures, power from renewable technologies will be cheaper than coal by 2030 – one third of the way through the life of Medupi. If peak oil's impact on fuel prices is taken into account, that date would be much earlier.[61]

There is, however, a wide variety of renewable technologies and not all share these advantages. Large-scale hydro (big dams), for example, has the same characteristics as conventional plant and imposes heavy environmental and social costs as well as high investment risks and long lead times. Under centralised corporate management – state or private – other technologies, which are now small scale, may acquire similar characteristics as investment scales up.

Further, renewables may be able to supply power adequate to the needs of people but will not supply adequate power to sustain capitalist accumulation. Economic intentions are critical to future energy choices in the context of climate change. The key choice is for democratic or corporate control. Present policy relies heavily on IPPs to develop renewables and so privatises the sector.

Smart grid

Smart grids are being developed in Europe to manage variable supply from renewables and accommodate household micro generators with two way metering. Eskom's ripple control – enabling it to switch off domestic geysers – has been installed in some municipalities for some time. The multi-billion Rand expansion of the grid is part of the new build but does not expand smart grid applications.

60 See D. Holm et al, 2008. *Renewable energy briefing paper: Potential of renewable energy to contribute to national electricity emergency response and sustainable development*, prepared for Trade and Industry Policy Studies (TIPS).

61 Cited in Earthlife Africa submission to Nersa on Eskom's MYPD2 price application, November 30, 2009.

In a smart grid, individual homes, equipped with wind generators or solar panels, would be able to feed excess power into the grid, and draw back when unable to generate power.

Photo: groundWork

Economic measures

The LTMS tested putting a price on carbon. It modelled a carbon tax rather than carbon trading because a tax is easier to model, easier to administer and produces a more certain result. The logic is to address 'market failure' by internalising the environmental costs of emissions. Internalising costs has been formal policy since 1998 but entirely ignored in favour of cheap energy and not therefore part of real policy.

The LTMS found that a carbon tax produced the largest saving from the business as usual base-line providing that the tax is high enough.[62] This imposes high costs on the economy but these costs may be off-set by government recycling the revenues through the economy. The tax has a potentially heavy impact on poor people and the LTMS argues that the revenues should be recycled to the overall benefit of the poor.[63] The climate White Paper says "measures will be taken ... to offset the burden ... on poor households …" This, however, is a political decision and the distribution of benefits will be contested by corporate interests. Car makers are already contesting the rather modest carbon tax on new cars – even as they enjoy the very substantial subsidies offered through the MIDP.

Treasury has recently produced a paper on carbon taxing and imposed miniscule taxes on power and

62 It modelled taxes starting at R100 a tonne and rising to R750 a tonne in the 2030s.

63 Modelling assumed recycling through food subsidies leading to growth in farm and food industry employment. On this basis, it found that the welfare effect on poor households is neutral while richer households lose.

new cars. Government emphasises that mitigation will not be at the expense of economic growth or business. As environment minister Buyelwa Sonjica put it, "We can't take an extreme view of environmental conservation at the expense of development."[64] The prospect of an effective carbon tax is remote.

The deeper issue relates to grandfathering: is the logic of the carbon tax transformational or does it merely encourage increments in carbon efficiency from inherently unsustainable industries such as coal-to-liquids?

While policy seems to favour carbon taxes over a trading system, the White Paper says "trading schemes will be investigated" for the medium- to long-term. This is additional to the continued support for CDM within the international regime and its promotion domestically.

Under grandfathering schemes, big polluters like Sasol will be allowed to remain big polluters.
Photo: groundWork

64 Engineering News, 15 February 2010.

8 Beyond the logic of capital

The LTMS shows that an adequate response to climate change cannot be made within the confines of current planning models. The assumption that informs these models is that economic growth constitutes the central organising principle of development. This is not because growth is needed to alleviate poverty but because it is needed to reproduce capital. This is what determines the bounds of realism in planning and it is this realism that has produced the crisis of climate change, the crisis of peak oil and the political and economic crisis gripping global capital.

Thus, the LTMS energy modelling assumed ever-increasing demand but could not reconcile this with even the inadequate carbon reductions of its 'required by science' scenario. Government policy, from which the LTMS drew its mandate, is founded on an absolute commitment to growth. To address climate change and meet the needs of people, there must be a radical redefinition of what is meant by development and who defines it.

First, the central organising principle should be sustainable development founded on economic, social and environmental justice. This means a commitment to growing human solidarity and equality as well as a relationship to the environment which enhances rather than degrades the functioning of eco-systems both for their intrinsic value and for the eco 'services' they provide. The Constitutional justification of such a redefinition is found in the Environment Right. This does not imply that economy and production are unimportant, but that the economy must serve people rather than people serving the economy.

Second, peak oil implies a compelled shift to economic localisation. Climate change does not

in itself compel such a shift but it is essential to any serious programme of mitigation. This means that national resources should be focused on supporting people's capacities to direct local development.

Third, another energy future is necessary if we are to address climate change. The Abuja Declaration, made by member organisations of Friends of the Earth from 51 countries in 2006, calls for people's energy sovereignty founded on democratic control. It observes that people's struggles for economic, social and environmental justice are linked through their common resistance to environmental degradation, the destruction of local livelihoods, and the abuse of people associated with corporate control. In South Africa, IRP 2010 reflects the power of the corporations at the heart of the minerals-energy complex to shape development in their own interests as they have done for the last century. And it confirms that government and corporate capital are committed to a high energy and high carbon future. A different energy future is possible only if people confront and dismantle that power. This is a struggle that begins in resistance to the new build programme and the focus on supplying energy intensive industries. It is also a struggle to create a new energy system under people's common control and using technologies compatible with such control and with a radical reduction in carbon and other pollutants.

Fourth, the transition to a different energy and development order will require energy inputs from the declining fossil fuel system. If these investments go into the declining system, they will represent a permanent loss. What remains of the carbon budget should therefore be used to build the new system.

Fifth, food is the most basic form of energy for people and the food system must be thoroughly transformed to enable people to define and take control of production and consumption and hence of their own futures. In the words of the Nyeleni Declaration on food sovereignty, this transformation should be based on people's right "to healthy and culturally appropriate food produced through ecologically sound and sustainable methods …" This implies a determined shift to organic production and sustained programmes for agrarian reform and urban agriculture.

Finally, this is an open-ended process of transition to a society in which people are actively and consciously making the decisions that shape their collective future. It will not be a smooth process nor is the outcome certain. How things take shape will depend on what emerges from struggles, how people learn from struggle and from doing, and where they decide to take things from there. groundWork hopes to contribute to people's debates in their organisations, through their networks and in the places where they live and work but believes that it is the conclusions and decisions for action that people come to that are important.

Formed in 1999, groundWork is recognised as the leading South African Environmental Justice NGO. For the past twelve years groundWork has worked mainly on industrial pollution issues with its focus being on providing support to communities faced with environmental threats, building community and supporting solidarity between communities. It supports communities by providing or brokering strategic and technical advice and information. It builds the community voice by facilitating links between communities faced with similar environmental problems, supporting community campaigns including negotiations with industry, access to government decision makers and officials, access to the media, linking communities with national and international campaigns, and assisting in community organisational development.

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