

Other Energy-Related Developments

In 1998, the South African Department of Minerals and Energy released the long-awaited White Paper on Energy Policy (DME 1998), which contained a broad set of policy objectives, organised under five main themes: increased access to affordable energy service, improving energy governance, stimulating economic development, managing energy-related environmental impacts, and securing supply through diversity. In this section we review progress in 2001 toward meeting government's stated objectives.

Increasing access

The electrification programme has been a continued success, with 70% of households electrified at the end of 2000 and more than 3.1 million connections since 1994 (NER 2000). The off-grid electrification programme, which will target 350 000 homes for solar home systems, has stalled as negotiations among government, Eskom, and the concessionaires have dragged. In 2002, DME agreed to the subsidy level (Kotze 2001), so as soon as Eskom's role in the programme is clarified, roll out should commence in 2002. The ANC announced during the late 2000 local elections that they would provide free electricity and water to poor communities, and this is being implemented in pilot sites (Chalmers 2001). So far this programme is only being piloted in early 2002, although the Cape Town city council (controlled by the political opposition) has already instituted a free electricity scheme. The full costs and impacts of the proposed Electricity Basic Services Support Tariff are not known, but estimated are that it will cost the public sector more than 500 million Rands (Xundu & Chalmers 2001). An evaluation of the proposed 'poverty tariff' is also currently underway (UCT 2002).

Government removed the value added tax from paraffin in April 2001 in an effort to reduce the cost of the energy source most widely used by poor urban households. Because of significant increases in oil prices and the fact that the paraffin distribution chain includes many resellers and small shops that do not pay VAT in any case, however, it is not clear that this has had any impact on consumer prices – although it is a loss of government revenue.

Guidelines for improving the thermal efficiency of low cost housing have been published by the Department of Housing, but these are not mandatory, and so are not used by contractors in new low housing projects. No significant programmes are underway on improved biomass stoves or management of woodlands although the Department of Water Affairs and Forestry (DWA) has introduced a Working for Water programme which has seen the commercial supply of wood increase as alien species have been cleared.

Improving energy governance

The passage of the Gas bill in 2001 sets up a Gas Regulator (RSA 2001b), which joins the National Electricity Regulator and the National Nuclear Regulator (established in 1999), will strengthen government's capacity to govern the energy sector. Although government has restructured their petroleum assets, combining Mossgas and Soekor and the former Strategic Fuel Fund into PetroSA (which is wholly owned by the Central Energy Fund)(Mlambo-Ngcuka 2002), there has been no progress on a petroleum sector regulator. A new state owned company called 'iGas' was also formed to be partner in the Mozambique-South Africa gas pipeline and other gas development projects (DME 2001a). Also in the liquid fuels industry, government is phasing out subsidies to Sasol, the coal-to-liquid fuel producer, and removing the requirement of petroleum marketers to buy Sasol liquid fuels, which will reduce the energy intensity of this sector.

The state has restructured electricity assets through passage of the Eskom Conversion Act (RSA 2001a), which is the first step in the restructuring of the electricity supply industry restructuring. The Bill makes Eskom a wholly state owned corporation that will pay tax and

dividends to government – although a tax exemption for 3 years was granted to allow for restructuring expenses within Eskom. The conversion is also widely seen as the first step in privatisation of Eskom, and government has announced that 30% of the company will be sold off by 2006 (Bain 2002). In addition, new independent power producers will increase competition in the sector. The introduction of competition in generation, and future privatisation of Eskom, will have dramatic impacts on the prospects for investment in renewables and efficiency – and many analysts have raised concerns that this impact will be negative without government intervention (Praetorius *et al.* 1998; Barberton 1999; Clark 2000; Clark & Mavhungu 2000). In addition, there are significant concerns about the impact of restructuring on energy provisions for the poor, such as the electrification programme, and the financial viability of municipalities that depends on electricity for revenue in the past.

In 2002, electricity governance will be revised somewhat in with the new Electricity Regulatory Bill, while the amended Petroleum Products Act will change the petrol stations licensing rules to give government more influence and the Petroleum Pipelines Bill is expected to establish pricing and access rules for oil and gas pipelines. These will be the first major changes in petroleum sector regulations in several years [two decades!?!]- and are revisions of regulations rather than full scale deregulation of the oil industry.

Stimulating economic development

Significant progress was made toward government's goal of 25% ownership of the liquid fuels sector by historically disadvantaged communities, with both Shell SA and BP SA announcing they were selling 25% ownership of their local assets to black economics empowerment (BEE) companies. This comes on top of the development a smaller wholly owned BEE companies that have taken a small stake in the market, namely Zenex, Afric Oil and Tepco. Cabinet has also targeted 10% ownership of electricity generation by BEE companies no later than 2004, and Eskom is awarding significant contracts to BEE partners (NER 2001a; Bain 2002). In addition, the previously mentioned gas bill will support increased investment in that subsector, with the Mozambique-SA pipeline costing an estimated \$600 million, excluding the cost of the gas processing facilities in Mozambique.

The restructuring of the electricity distribution industry, which has major implications for retail electricity prices and efficiency of the sector, was held up because of concerns over government plans to deny municipalities the right to distribute electricity, which the Constitution grants to local authorities (NER 2001a). By the end of the year, however, agreement was reached that the current 400 plus distributors will be consolidated into 6 Regional Electricity Distributors (REDs), with implementation commencing in 2002 (NER 2001a). The formulation of a Wholesale Electricity Pricing System, due to be rolled out in 2002, was another significant step in industry reform and opening the way for restructuring.

The special levies to fund regulators and energy agencies mentioned in the White Paper has been implemented in electricity and will soon be used for the gas industry as well. The petroleum sector Equalisation Levy did play this role to some extent in funding the Central Energy Fund, but this has been discontinued. CEF also does not have any regulatory role, since all petroleum regulatory functions are still inside the DME and Minister. The nuclear regulator is also funded from the Ministry of Minerals and Energy budget, rather than a levy on nuclear energy, and remains a contentious issue.

Progress on promoting energy efficiency and appliance labelling has been much slower. Mandatory commercial building standards have been established, but there are no standards for industrial equipment, household appliances, or residential buildings (only the guidelines mentioned above), although the DME was involved an National Energy Efficiency Association. The earlier research on appliance labelling (Marbeck Resource Consultants 1997) has not resulted in a programme.

Managing energy-related environmental impacts

To reduce indoor air pollution, DME launched a low smoke fuel programme, which culminated in a macro-scale experiment with various fuels in a major township in 1997. Subsequently DME commissioned an integrated decision support model to evaluate the most cost effective means of reducing local air pollution, and a study to evaluate how government should intervene in the supply chain for LSFs to get the most benefit (Qase *et al.* 2000). This will be followed in 2002 by a marketing campaign and the design of standards for fuels. A preliminary study on respiratory disorders among children exposed to wood and paraffin smoke has been done by the Medical Research Council and the World Health Organisation and has been presented to DME (Mathee & De Wet 2001).

Studies on paraffin safety have found that poisoning from children ingesting paraffin and the problems of paraffin relate fires and burns continues to be a major problem [Markinor]. These have continued despite electrification and industry, through the Paraffin Safety Association of South Africa, is implementing safety programmes to attempt to address this. Safety standards for paraffin stoves are also outstanding, although an SABS task team is tasked with developing these standards. In terms of reducing fires, the DWAF /Santam 'Ukuvuka' fire prevention programme has seen considerable success, and could provide a model for DME programmes.

DME has commissioned a number of studies on how to utilise coal discards, estimated at 950 million tonnes in 1999 (DME 2001a), but no specific programmes are in place. Similarly, the White Paper proposal to explore an environmental levy on energy has not been pursued.

Securing supply through diversity

South Africa is looking to more Southern African regional resources for energy supply, as opposed to purely domestic resources (Spalding-Fecher *et al.* 2000b). There are strong economic and environmental arguments in favour of using resources within the Southern African Development Community (SADC), which include considerable hydropower and natural gas potential (e.g. Rowlands 1998; Sparrow *et al.* 1999; Graeber & Spalding-Fecher 2000). The region's electricity regulatory authorities have formed a SADC regional regulators association to facilitate trade and greater regional co-operation (NER 2001d). The Southern African Power Pool, composed of the national utilities of all SADC countries, now has a operational control centre in Harare that will facilitate increased electricity trading in the region. Government's vision is for this to become a real time power exchange over time, although now most trade occurs through fixed contracts. Despite some ongoing conflicts over the price of importing electricity, the region's utilities are working on a combined regional power expansion plan, and Eskom has identified more than 9 000 MW potential for regional imports, even without considering the massive potential of the Grand Inga scheme in the Democratic Republic of Congo, which could supply 40 000 MW in the longer term (Eskom 1997). Regional co-operation on energy development is also a major drive within the New Partnership for Africa's Development, for which South Africa's President Mbeki is one of the main drivers (NEPAD 2001).

One of the most important regional energy developments, and one which also impacts the synthetic fuels industry, is the increased investor interest in large off-shore natural gas fields in Namibia and Mozambique, as well as more recent finds off of South Africa [e.g. (DME 2001b)Marrs, 2000 #321; Marrs, 2000 #322]. Sasol, for example, has taken over complete ownership of a gas field in Mozambique and intends to build a pipeline to South Africa, and the governments of South Africa and Mozambique have signed an agreement on the pipeline (Mlambo-Ngcuka 2002). Shell International is investigating building a gas pipeline from Namibia to Cape Town, to bring gas from the offshore Kudu fields to a potential gas-fired power station in Cape Town, as well as anchor industrial customers along the West Coast of South Africa [ibid.; (NER 2001b)]. These investments could promote a significant shift away from coal as a primary energy source, and provide feedstock for high value added chemicals in the synfuels plants. The Petroleum Pipelines Bill will provide the regulatory framework for these investments, while an World Bank-funded study at the

Central Energy Fund is investigating the possibility of also using natural gas for smaller scale commercial and residential uses (World Bank 2001).

The Department of Mineral's and Energy developed a Renewable Energy Strategy paper in 2001, and took public comment – although a decision was made to instead convert this into a White Paper on Renewable Energy, which will be released for public comment in April 2002 (Mlambo-Ngcuka 2002). Existing renewable energy initiatives include a National Solar Water Heating Programme (which will be supported by a Global Environmental Facility Grant), an EU-funded solar cooking programme, and a solar water pumping programme. These are all in the demonstration and piloting phases, as are efforts to promote energy efficient housing (DME 2001a). Larger scale roll out will likely await the release of the White Paper on Renewable Energy. In addition, Eskom recently announced plans to develop 100-200MW renewable electricity demonstration projects using wind and solar thermal power (Lombard 2001). These would be the largest such investments ever in South Africa. The proposed Darling Wind Farm, a 5MW wind facility on the West Coast, was named a National Demonstration Project by the energy minister.

The most controversial development in the South African energy sector, however, is Eskom's plans to build a new generation of 'pocket size' nuclear reactors, for export as well as for domestic power generation. Eskom's is planning for a test site for these 100MW Pebble Bed Modular Reactors, with support from several local and international investors. The energy deputy minister said at an International Atomic Energy Agency that South Africa will expand its nuclear power capacity (Shabangu 2001) Eskom has also stated that , to meet future demand, they may bring back on line three old 'mothballed' coal-fired power stations in the near future.

Table 1. South African energy policy priorities and progress

<i>Objective</i>	<i>Priorities</i>	<i>Progress to date</i>
Increased access to affordable energy services	<ul style="list-style-type: none"> • Electrification policy and implementation • Address off-grid electrification • Facilitate management of woodlands • Promote improved fuel wood stoves • Establish thermal housing guidelines 	<ul style="list-style-type: none"> • Initiate second phase of electrification programme, including renewables for off grid electrification • Zero-rating of VAT on paraffin • Initiate pilots of free electricity programme • no activity • Voluntary guidelines only
Improving energy governance	<ul style="list-style-type: none"> • Promulgate electricity regulatory bill • Manage deregulation of oil industry • Implement new regulation of nuclear • Restructure state energy assets • Restructure DME budget • Establish energy policy advisory board • Establish information systems and research strategy 	<ul style="list-style-type: none"> • Postponed to 2002 • No petroleum regulator; Petroleum Products and Pipelines Bills in 2002 • Nuclear regulator established • Eskom conversion bill passed • PetroleumSA formed • iGas formed • Limited activity
Stimulating economic development	<ul style="list-style-type: none"> • Encourage black economic empowerment in energy sector • Manage electricity distribution industry restructuring • Remove energy trade barriers & facilitate investment in energy sector • Introduce special levies to fund regulators & other energy agencies • Introduce competition in electricity • Establish cost-of-supply approach to electricity pricing • Promote energy efficiency and voluntary appliance labelling programme 	<ul style="list-style-type: none"> • Two multinational oil companies have sold 25% of business to BEE firms • Plan for REDs agreed; implementation in 2002 • Only Gas Bill to encourage investment in natural gas • Implemented in all subsectors except nuclear • Outline of long term plans agreed by cabinet • Cost-of-supply and wholesale electricity tariff piloted • Limited activity outside of commercial building standard

<i>Objective</i>	<i>Priorities</i>	<i>Progress to date</i>
Managing energy related environmental impacts	<ul style="list-style-type: none"> Improve residential air quality 	<ul style="list-style-type: none"> Pilot programmes to improve air quality through low smoke fuels Proposals on ambient air quality standards under debate
	<ul style="list-style-type: none"> Monitor reduction on candle/paraffin fire resulting from electrification 	<ul style="list-style-type: none"> Hazards still very significant
	<ul style="list-style-type: none"> Introduce safety standards for paraffin stoves 	<ul style="list-style-type: none"> Under discussion
	<ul style="list-style-type: none"> Develop policy on nuclear waste management 	<ul style="list-style-type: none"> Under discussion
	<ul style="list-style-type: none"> Investigate options for coal discards 	<ul style="list-style-type: none"> Significant research, but no programme
	<ul style="list-style-type: none"> Investigate environmental levy 	<ul style="list-style-type: none"> Not investigated
	<ul style="list-style-type: none"> Evaluate clean energy technology 	<ul style="list-style-type: none"> Participation in Climate Change debate
Securing supply through diversity	<ul style="list-style-type: none"> Develop Southern African Power Pool 	<ul style="list-style-type: none"> SAPP regional co-ordination centre established and some joint planning
	<ul style="list-style-type: none"> Pursue international and regional co-operation 	<ul style="list-style-type: none"> SADC Regional Regulator's forum and NEPAD
	<ul style="list-style-type: none"> Develop gas markets 	<ul style="list-style-type: none"> Mozambique gas to Sasol, and Namibia also under discussion
	<ul style="list-style-type: none"> Stimulate use of new & renewable energy sources 	<ul style="list-style-type: none"> Piloting several programmes, Renewable Energy White Paper in 2002
	<ul style="list-style-type: none"> Stimulate energy research 	<ul style="list-style-type: none"> Declining research funds