

Equity and efficiency in the restructuring of South Africa's electricity industry

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Acronyms

ANC	African National Congress
AMEU	Association of Municipal Electrical Undertakings
APF	Anti-Privatisation Forum
COSATU	Congress of South African Trade Unions
GEAR	Growth, employment and redistribution: A macroeconomic strategy
LFS	Labour Force Survey
PBMR	Pebble Bed Modular Reactor
NELF	National electricity forum
NFA	National Framework Agreement
RDP	Reconstruction and development programme: A policy framework
REDs	Regional Electricity Distributors
SECC	Soweto Electricity Crises Committee
SOE	State owned enterprise

1 Introduction

The electricity industry in South Africa is undergoing its most comprehensive and significant restructuring since the advent of democracy in South Africa. The restructuring process occurs within the context of South African government attempting to reach two goals. These goals are:

- Maintaining the low cost of electricity in South Africa, as a comparative advantage for business ventures
- Achieving universal access to electricity for all households in South Africa

The improvement of access to the poor is an equity aim, while retaining low cost electricity supply is an efficiency aim. The relationship between these two aims opens the possibility for a complimentary relationship between equity and efficiency. However, as is argued in this paper the restructuring proposals being developed and implemented by the South African government are too focussed on efficiency improvements, and not sufficiently geared towards provide access to electricity for both household and especially productive usage by poorer households. Moreover, industrial linkages with electricity are likely to favour capital intensive, rather than labour intensive economic growth path. The prediction provided in this paper is that restructuring processes will lead to higher levels of access to electricity for the poor, but at significantly higher operating expenses; and that capital intensive industries will be the main winner in the process of restructuring. Sections of business will benefit directly by participation in the electricity industry, and more importantly from a policy regime that will be aimed at reducing the cost of business. Household will however bear the costs of providing business with a comparative advantage, and job creating industries will not benefit unless there is a significant shift in tariff policies. Thus a textured picture of winners and losers are likely to emerge.

The aim of the paper is thus to assess the restructuring changes that have occurred and are being undertaken from the vantage point of the role of electricity in governments attempts to eradicate poverty. This paper assesses the restructuring proposals in the electricity sector and argues that restructuring initiatives being implemented will have significant and differentiated distributional consequences. The paper concludes that the winners in the restructuring process are likely to be large energy users, such as mines and aluminium smelters, and private contractors in the generation sector. At the same time, household electricity prices will increase and that current policy stances do not adequately link electricity pricing to job creation in South Africa.

To this end, the paper starts with a conceptual discussion on restructuring models for electricity advanced by proponents of privatisation, and argues that South Africa is going the route of a ‘managed liberalisation’. Next, a critical assessment of the electricity supply industry and its sub-sectors (viz. generation, transmission and distribution) is

undertaken, together with a summary of the restructuring proposals. This is followed by an assessment of the drivers of restructuring process. Finally, the impacts –both current and future impacts – are discussed.

The arguments developed thus seek to locate electricity restructuring in the wider context of a developmental strategy for South Africa. This is not simply a narrow discussion on ownership and privatisation in the electricity sector, but rather a focussed discussion on the distributional impacts of restructuring in the South African electricity industry. The reason for focussing the discussion in this manner is that the African National Congress (ANC) has indicated that ‘Eskom (*the dominant public utility in the electricity industry*) core activities will not be privatised. (*Business Day*, 11 March 2004). However, as will be shown in the discussion this does not mean that there will be no private sector participation in the industry, but that such participation will occur in the context of the state playing a dominant role. The significant policy question that arises is whether the state emphasises equity, or efficiency, or alternatively seeks a complimentary relationship between the two objectives.

2 Models of electricity restructuring

Electricity restructuring in South Africa occurs in the background of attempts by supporters of privatisation to ‘privatise better’. The discussion on restructuring models traces the development of theory and practice of electricity restructuring, and in particular the shift towards better privatisation, proposed by the World Bank. Following this is a description of three conceptual models that used to guide restructuring. The process of restructuring of electricity has been a complicated one, and for this reason, the current situation and the broad trajectory envisaged by government is summarised. Section 3 explains the restructuring process.

2.1 Restructuring Models in Electricity

Restructuring models in electricity rest on an important distinction between public and private goods. This distinction and its linkage to proposals to unbundled electricity are discussed. Following this, is a description of the models proposed for breaking up vertically integrated electricity industry, as the one that exists in South Africa. Finally, a summary of the current status and the proposed restructuring initiatives are discussed.

2.1.1 Public and private goods

Electricity was an important area for proponents of privatisation, due to its strategic importance and that electricity is a private good. The classic formulation of that governments should focus ‘public goods’. According to Sameulson (1954; 1969) the definition of a public goods is based on two criteria, viz:

- non-rival (consumption by one person does not reduce the supply for others)

- non-excludable (users cannot be prevented from consuming goods)

The implication is that public expenditure should focus on public goods. Pradhan, a contemporary public expenditure theorist thus argues that:

...public expenditures should be concentrated first on goods and services that the private market will not provide or will provide too little, rather than merely substituting for or even marginally improving upon the private market outcome. (1996, 4)

Adopting this approach means that water, electricity, education and health are all seen as private goods, whilst roads, railways and defence are public goods. The implication is that private goods should be excluded from public expenditure, and that markets should be opened for private goods.

There are however significant problems with such a conceptualisation. Most obviously, such a definition assumes that the benefits of public goods are equally shared, when in reality they are not. Roads and railways, for instance may either benefit large corporations seeking to export raw materials, as shown in the literature around dependency theory. Alternatively, roads may serve the purpose of connecting rural communities to goods, services and markets. Thus the formulation is weak, as it does not adequately capture the distributional consequences of defining private and public goods as suggested by Sameulson.

More importantly, it assumes that the private sector markets would be better placed to provide goods which are considered ‘private goods’. Yet, successful experiences in reducing poverty have shown that government investment in areas; such as water, electricity, education and health; is vital for the poor finding exit paths out of poverty (Sen: 1983). Thus, the developmental role of the state is ignored in such definition. This is not surprising given the ideological underpinnings of a ‘night watchmen state’ that guided much of the restructuring.

Nonetheless, despite the inadequacies of definition between private and public services, it has served as the foundation for restructuring proposals in the electricity sector. The argument is that private goods like electricity should not be delivered through public sector, but rather through competitive mechanisms. Box 1 is taken from a World Bank publication called *Infrastructure Delivery: Private Initiative and the Public Good* (1996).

Box 1: Strategies for competition and regulation in electricity sector

Unbundling Activities	Competition	Regulation
Unbundling of generation, transmission and distribution	<ul style="list-style-type: none"> • Direct competition in generation through ‘spot’ markets or long term contracts 	<ul style="list-style-type: none"> • Regulation of access and access pricing to transmission and distribution facilities.

	<ul style="list-style-type: none"> • Competition also in distribution through the right of access to other distributors • Competition from substitute sources of energy 	<ul style="list-style-type: none"> • Safety and environment
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Source: Mody: 1996

The basic argument suggested here is that competition pressures will result in more transparent and possibly cheaper electricity prices. Moreover, that increase access to the poor occurs as companies seek newer markets, and as regulatory apparatus enforces contracts for improved access to the poor.

A different motivation for unbundling has been the underperformance of public sector electricity providers. Electricity provided by the public sector have exhibited significant problems in terms of service delivery. These problems usually relate to underinvestment in the industry, and poor service standards. (Savas: 1987) The underperformance of public service delivery of electricity, especially in terms of investment and infrastructure maintenance in turn has provided the crises needed for the introduction of competition, as a means to improve service levels, and in developing countries the extension of services to the poor. The policy proposals were based on both efficiency and equity basis. Thus it was argued that a virtuous cycle of lower prices and increased access to services for the poor would result in the electricity sector.

2.1.2 Electricity market reforms

The shift from vertically integrated structures to unbundling is a complicated process. Eberhard (2001) indicates that the elements of reforms include:

- The commercialisation and corporatisation of public utilities
- Changing the structure of the industry to increase competition
- Creating a set of electricity market trading mechanisms
- Increasing private sector participation
- Changes in regulatory oversight

Whilst this list of decisions is not exhaustive, it does provide an indication of the scope of changes needed to complete reforms in the electricity sector. Various typologies have been developed to categorise the restructuring models that are proposed (Veerma: 1998, Eberhard: 2001). The standard list of options includes the following:

- **Single-buyer model.** This model creates independent power producers, thus focussing on the generation side. Often, the development of independent producers occurs without a restructuring of the transmission or distribution industry.

Independent power producers do not have direct access to customers or to transmission lines. As such, publicly owned utilities are the only buyers for the power generated by the independent power producers.

- **Wholesale Competition.** In this model, larger consumers are allowed to directly contract with utilities for their energy needs. Usually, the easiest way is to permit independent power producers to contract directly with consumers. The introduction of choice for larger consumers introduces competition both in the generation and transmission markets. Independent generators of electricity in this models, thus compete between themselves and with publicly owned utilities for larger customers.
- **Retail Competition.** Retail competition provides even smaller consumers (e.g. households) a choice of where to buy electricity from. Consumers thus are allowed to contract directly with electricity distributors, who in turn buy power from a competitive generation market. (often retailers pay the cost for transmission)

The list of options argues that the unbundling of vertically integrated industry is administratively and politically feasible.

2.1.3 Better privatisation?

These proposals for unbundling the electricity industry are part of the nucleus of the so-called the Washington Consensus, a term coined by John Williamson (1990). A foundation of this ‘consensus’ was that governments need to allow private markets to operate, which would result in efficiency improvements at a micro-level, and increased investments at a macro-level. Spurred on by the assumption of a smaller state and higher rates of economic growth and investment, privatisation was a central pillar of the Washington Consensus (Gore: 2000) Bolstered by arguments from the World Bank and International Monetary Fund privatisation in various guises became a standard prescription across developing countries.

The theory of increased investment and economic growth arising from privatisation was implemented on a wide scale, but had significant negative social outcomes. In Russia, when privatisation occurred it concentrated ownership amongst a minority and led to increased levels of inequality. (Sachs: 2005, Sapir: 2000) In developing countries, especially on the African continent privatisation of enterprises occurred without the promise of growth or increased levels of investment. (Lukman: 2002; Appiah-Kubi: 2001). Even in developed countries, experiences like the electricity blackout in California showed that privatisation could result not only in blackouts, but that markets often fail even in advanced capitalist economies . (Borenstein: 2002,) Studies showed that privatisation was unfair, hurt the poor and workers, and failed to result in improvements in terms of equity (Birdsall and Nellis: 2002) These experiences and others indicated that the theory of the Washington Consensus was breaking down in practise.

The theory underpinning the Washington Consensus thus faced significant challenges from these experiences, which has resulted in revisions in policy of the World Bank. Most notably, within the establishment critics became increasingly vocal. Joseph Stiglitz, then the Chief Economist at the World Bank argued for a more nuanced approach to

privatisation, arguing that private monopolies and public monopolies are equally bad, and that the state may need to retain its role. (2001) In a remarkable statement the current Chief Economist François Bourguignon, argues that some attempts to privatise undertaken with the World Bank was guided by ‘irrational exuberance’, he however maintained that utilities needed finances from private markets, and private sector participation to maintain and extend services (World Bank: 2004a) . His statements were made at the launch of a book on infrastructure provision and privatisation. The book itself investigates cases where privatisation has gone wrong, and argues that the reasons for failures related to regulations. Tellingly, it argues that telecommunications is an easy area for privatisation, whilst energy and water are more difficult. (World Bank: 2004b). The central argument being made was that privatisation needed to be undertaken in better ways. However, the document itself is indicative that privatisation would not lead to the promise of increased investment and economic growth in and of itself.

Electricity restructuring itself was amongst the horror stories that spurred on a refinement in the way proponents of privatisation which to proceed. The famous case of blackout in California, occurred around the same time as electricity failures in Brazil. The general model however is still dominant. Borenstein thus argues through his analysis of what he calls California electricity disaster that:

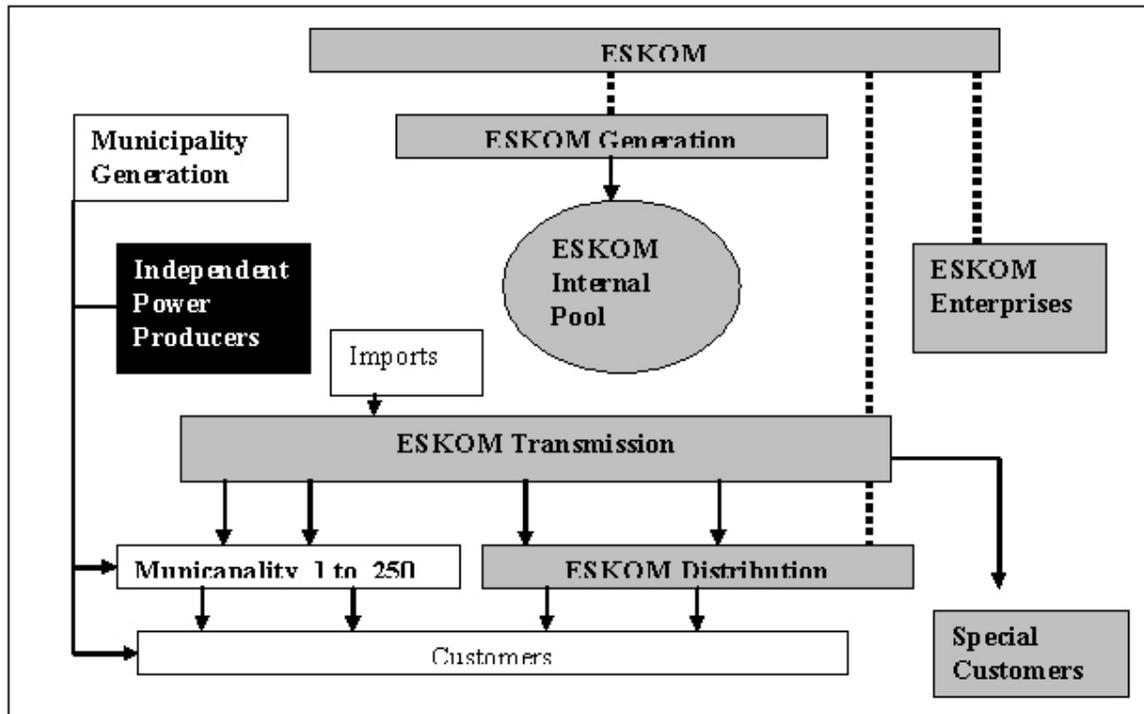
The difficulties with outcomes (*in California*) so far, however, should not be interpreted as a failure of restructuring, but as part of the lurching process toward an electric power industry that is likely to serve customers better than the approaches of the past (2002, 210)

The lesson for those arguing for restructuring is that better services are still possible through the restructuring of the industry, specifically through introducing private competition for and in the market. The difficulty with this line of argument is that deregulation led not to better services, but no service as households experienced blackouts.

2.2 Restructuring proposals

The background in terms of restructuring models and the attempts to privatise better are significant influences on the restructuring models being proposed in South Africa. South Africa’s electricity sector can be justifiably classified as a ‘vertically integrated’. Box 1 depicts the vertically integrated structure.

Diagram 1: Current Structure



Source: Eberhard (2001)

It is necessary to summarise the existing government proposals as there is no single policy document that outlines the restructuring process and timetable. Instead, policy documents provide for broad strategic thrust of restructuring, while implementation (often justified by the mandate of policy documents) continues without a clear map. The restructuring proposals are summarised in terms of the sub-sectors in the electricity industry.

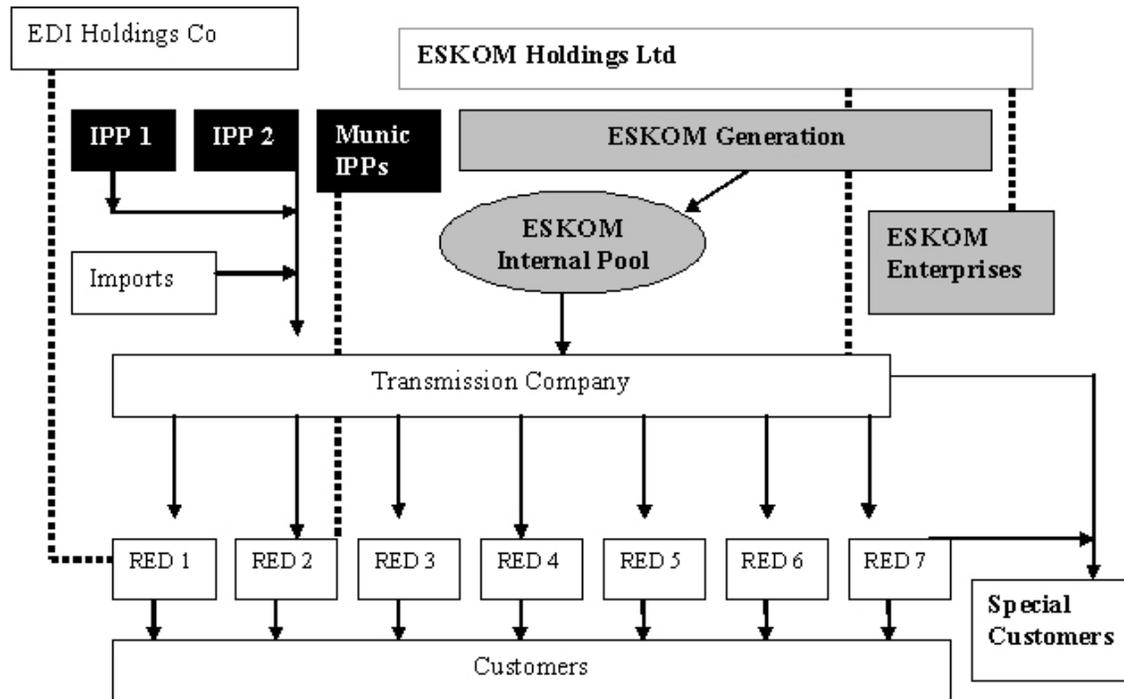
The major proposals are:

- In terms of **generation** the central policy objective is to increase peaking capacity within a five year period through:
 - Introducing Independent Power Producers in two new plants commissioned by government, which will account for around 30% of new generation capacity
 - Municipalities have also introduced Independent Power Producers.
 - Recommissioning three mothballed plants by Eskom (viz. Camden, Komati and Grootvlei)
 - Invest in hydroelectrical generation through initiatives in the Southern African region
 - Build nuclear generation capacity through the Pebble Bed Modular Reactor (PBMR)
- In terms of **transmission**, proposals are that it remains in state hands, although the possibility of a strategic equity partner is mooted in policy documents.

- In terms of **distribution**, the proposals are to consolidate ESKOM and municipalities distribution capacities into seven regional electricity distributors, and to allow the biggest customers with options of supply, while requiring households to be a captive market.

Diagram 2 shows the future structure for the industry.

Diagram 2: Proposed structure



Source: Adapted from Eberhard (2001)

The diagrams provide a vivid indication of the large scale restructuring being proposed. The model –as will be discussed below – provides for both wholesale competition and retail competition for contestable customers.

3 Past, present and futures for the electricity supply industry

The previous section has discussed the broader model being adopted in South Africa for restructuring with reference to the international experiences, and attempts to privatise better. This section seeks to trace the developments in terms of policy, and to locate the changes in electricity in the broader political and economic context. This is followed by a discussion of the sub-sectors in the industry.

Before undertaking this analysis, a short synopsis of history of electricity provides an orientation to the issues being faced today. A brief history of electricity in South Africa is provided by the Development Bank of Southern Africa (1998: 14). In 1906, the Victoria Falls and Transvaal Power Company (VFTPC) was established by the British South Africa Company, the German equipment supplier AEG, and German banks. Electricity demand from the gold mines resulted in rapid growth, and in 1923 the electricity sold by VFTPC to the mines exceeded the combined electricity consumption of London, Sheffield and Birmingham. Eskom (previously the Electricity Supply Commission, or Escom) was established by government in 1922 as a means of supplying electricity at cost. The VFTPC was nationalised in 1948, Eskom expanded its capacity to meet growing electricity demand (e.g. from the development of the Free State goldmines in the 1950s), and municipalities discontinued electricity production as they found it cheaper to purchase electricity from Eskom, leaving Eskom as a virtual monopoly. In 2002, Eskom was converted from a statutory body to a public company (Eskom Holdings Limited) with the South African government as the sole shareholder. (Fedderke, Perkins and Luiz: 2005)

3.1 Political and economic context of SOE restructuring

The apartheid government could hardly be described as a developmental state, but it used state owned enterprises to bolster itself against international sanctions, and was crucial to the industrialisation process in South Africa. State owned enterprises in the electricity, transport, telecommunications, steel and other industries offered the services needed for the apartheid government's attempts at self-sufficiency. The financing of expansion projects in the sectors were done through the International Monetary Fund before it stopped providing loans to South Africa due to its apartheid policies, and also through raising internal debt from the pension funds, and through the use of prescribed assets. In 1987, the Nationalist Government released its proposals for privatisation in its *White Paper on Privatisation*.

The major privatisation deal involved the steel giant ISCOR. Furthermore processes of commercialising state owned enterprises were conducted. In addition, several restructuring processes including the establishment of TRANSNET were undertaken. The rationale of the attempts at privatisation was in part economic, but also political, as the African National Congress still supported a policy of nationalisation. While privatisation continued, the apartheid government increased its national debt, ostensibly to buy off sections of the Indian and Coloured working class through increasing the monetary value of grants, and to protect pensions of civil servants. (African National Congress:1996)

Significantly, the apartheid government's plans for privatisation did not proceed to its logical conclusion, due to the anti-apartheid movement arguing against privatisation of national assets. As Mostert (2002) argues despite the aims of Nationalist Party government sanctions coupled with mass action stopped the process of privatisation.

Within the ANC a significant debate on nationalisation was brewing. Nelson Mandela in his inaugural speech upon being released emphasised that nationalisation was a cornerstone of ANC policy, as described in the Freedom Charter. Significantly, the ANC in its *Ready to Govern* (1992) argued against nationalisation, and instead argued that increasing or decreasing government's role in the public sector would be on a case-by-case basis. The policy on nationalisation was however to be reversed in 1993, with Gumede (2005) providing a succinct and candid review of the nationalisation debate. The ANC position after the internal debate was that the public sector would either be expanded or reduced on a case-by-case basis. It is this formulation that was included in the Reconstruction and Development Programme: A Policy Framework. The democratic government would thus seek to find a role for state owned enterprises on a pragmatic basis.

Early in its first term the ANC hosted a policy conference on state owned enterprises, that informed the first discussion paper developed by the Department of Public Enterprises, under the leadership of Stella Sigcau.. The paper unimagatively titled *Discussion Paper on Restructuring of State Assets* grouped SOEs into three categories:

- State Owned Enterprises (SOE's) that have a clear role in the provision of basic services;
- SOE's that have a public role but cannot be defined as essential;
- SOEs with no public role for meeting basic needs, with these being divided into those that were
- Profitable and those that were not.

The debates on the discussion paper saw several influential players from both the old guard and the newly elected government argues for 'foreign direct investment' and competitiveness to be central to the development of policy on state owned enterprises (National Labour and Economic Development Institute: 1999). Implicit in these arguments were growing support for privatization of certain enterprises. Soon after the presentation of the discussion document the then Deputy President, Thabo Mbeki, announced that government would consider privatization of some of TRANSNET's unit, and the introduction of a strategic equity partner in TELKOM. Unions were alert to the dangers of these announcements, and engaged in actions that culminated in one day work stoppage aimed at getting government to negotiate restructuring. At the end of the 1995, government and trade unions signed the National Framework Agreement (NFA), which provided for negotiations on the restructuring of state owned enterprises.

The announcement of the Growth, Employment and Redistribution Strategy: A Macroeconomic strategy crystallized governments thinking on the economy.. The policy argued that government needed to crowd in private sector investment through the state retreating from several sectors of the economy. Moreover, government sought to use the proceeds of privatization to reduce government's debt, and redirect resources to service delivery.

Between 1995 and 1999, restructuring of several enterprises were completed. The major restructuring initiatives included the commercialization of the state run forestry company (SAFCOL), selling of small airline company Sun Air to a black economic empowerment company and the selling a 30% stake in TELKOM to consortium of Malaysian and American companies. Several other restructuring efforts came to naught. Most notably, TRANSNET showed little signs of improving its sluggish financial performance, despite changes in its leadership. The selling of the Aventura resorts was equally fraught with complications, as the union investment company Kopano ke Matla failed to raise the finances required to finance the deal, with it finally being disposed of in 2002.

With the second democratic elections, and with a new minister, Jeff Radebe, the Department of Public Enterprises developed a strategy called *An accelerated agenda: Towards the restructuring of State Owned Enterprises (1999)*. The focus of the document was on the so-called Big Four. These were enterprises operating in the electricity (ESKOM), telecommunications (TELKOM), defence (DENEL) and transport (TRANSNET).

Minister Radebe argued in proposing this framework that:

In summary, Government's policy with regard to State Owned Enterprises is more properly referred to as a **restructuring** programme, and not in the more simplistic terms of privatisation. The programme was and remains designed to ensure the maximisation of shareholder interests defined in economic, social and development terms. Thus restructuring refers to a matrix of options that include the redesign of business management principles within enterprises, the attraction of strategic equity partnerships, the divestment of equity either in whole or in part where appropriate, and the employment of various immediate, turnaround initiatives. [Emphasis in *original page 4*].

Unions interpreted the policy announcement as advancing a privatisation agenda. Unions adopted a wider definition of privatisation than simply an outright sale, with COSATU listed nine types of arrangements it considered part and parcel of privatisation. Despite efforts to discuss the policy direction of government, unions and government reached no agreement on the substantive issues. COSATU issued a notice to strike on socio-economic grounds as provided for in the Labour Relations Act and undertook the first national strike in 2001, and a second strike in 2002. (Hassen: 2003, assessing the strikes)

A salient feature of the strikes was that COSATU created a broad coalition in support of its demands. The strike action was supported by amongst others the South African Communist Party, Treatment Action Campaign, South African NGO coalition and youth organisations aligned to the Tripartite Alliance. The central message was that privatisation would increase prices, reduce the roll-out of basic services and lead to job losses.

Running in tandem with this is a mixed picture of policy reversal and continuation in the Big Four parastatals. Labour scored a major victory through stopping the concessioning of passenger lines by the state run railway company, Spoornet. von Holdt (2005) argues that the change in government policy was due to unions adopting a wider developmental agenda, and by unions effectively assessing the proposals of government in terms of implications on poor people.

Privatisation however proceeded in the telecommunications sector, as noted early. Similarly the model of shifting from a vertically integrated electricity sector has proceeded according to government’s plans. Whilst the electricity sector restructuring retains a significant role for government, there is a substantive disagreement between unions and government on what the end state model for the electricity sector is.

The restructuring of SOEs in South Africa has been described as ‘unique as it does not really fit any of the models applied elsewhere in the world’ (Jerome: 2004). An important explanation for the uniqueness of the privatisation which has been described as slow, has been societal pressure placed on government to retain a role in the economy. However, government has achieved some of its targets raising about R 35,5 billion, with the National Revenue Fund absorbing R 22,5 billion between 1997 and 2003. (Radebe, 2003) At the same time, unions have learned that staving off privatisation does not necessarily mean that jobs are protected. Table 1 shows the impact on jobs in the Big Four enterprises between 1997 and 2003. The impact has been the loss of 56 000 jobs between 1995 and 2001. This represents a 25% decrease in the number of people employed in the Big Four.

Table 1: Job losses in major SOEs in South Africa

	1995	2001	Difference	% increase/decrease
Transnet	115317	86100	29217	-25.3
Denel	11243	10754	489	-4.3
TELKOM	58793	39767	19026	-32.3
Eskom	39952	32357	7595	-19.0
	225305	168978	56327	-25.0

Source: NALEDI 2001, and Business Map, 2002

3.2 Policy directions since 1994

In May 1993, the Nationalist government established the National Electricity Forum (NELF). The forum consisted of representatives from labour, community, liberation movements and the apartheid government. The NELF undertook significant work, and proposed the establishment of the National Electricity Regulator (NER) to replace the apartheid era Electricity Control Board. One of the initial tasks of the NELF was the development of models for national electrification programme which led to the target of

2.5 million household connections by 1999, with schools and clinics as priorities. These recommendations found policy expression in the RDP.

The *Reconstruction and Development Programme* (RDP) summed up the development challenge by arguing that

Although ESKOM has excess generating capacity, only 36 per cent of South African households have access to electricity, leaving some three million households unelectrified. Furthermore, some 19,000 black schools (86 per cent) and around 4,000 clinics are currently without electricity. Little attention has been paid to utilising sustainable energy sources such as solar power.

It then set out a programme of action, under the title ‘Electricity for All’

An accelerated and sustainable electrification programme must provide access to electricity for an additional 2.5 million households by the year 2000, thereby increasing the level of access to electricity to about 72 per cent of all households (double the present number). Both grid and non-grid power sources (such as solar cells and generators) must be employed. All schools and clinics must be electrified as soon as possible.

However, the RDP was conscious of the role of electricity as an important for businesses and thus argued that:

In addition to meeting basic energy and lighting needs for households, specific attention must be paid to making electricity available to micro, small, medium-sized and agricultural enterprises in both urban and rural areas. The benefits of cheap electricity presently enjoyed by large corporations must be extended to all parts of the economy.

The RDP thus envisaged in the broad sense, and in the words of one of its main messages: linking growth and development.

Patrick Bond and Meshack Khosa (1999) undertook a review of the RDP, and in terms of electricity provision argue that there was significant continuity between the RDP document and the actions of government in terms of rapid roll-out of electricity to households, schools and clinics. However, they correctly argue that RDP commitment to cross-subsidy for poorer households was an area of contestation.

Government finalised its *White Paper on Energy (1998)* after failing to reach consensus with unions on its content. Amongst the disagreements was the question of cross-subsidies with the *White Paper* arguing for cost reflective tariffs. However this disagreement reflected a wider disagreement, with COSATU arguing that

While we support the policy objectives of the White Paper, we reject the assumption and assertion that these objectives can be realised by letting loose the forces of the market and through deregulation.

Indeed the policy objectives of the *White Paper* indicated a strong focus on equity improvements, but reaching these through market mechanisms. The policy objectives of the White Paper were to

- Increasing access to affordable energy services
- Improving energy governance
- Stimulating economic development
- Managing energy-related environmental impacts
- Securing supply through diversity

The *White Paper* argued a case for change in the electricity sector, and ‘government will encourage competition within energy markets. However, government argued that market failures could occur and thus indicated that

Where market failures are identified government will intervene through transparent, regulatory and other carefully defined and time delineated mechanisms, to ensure effective delivery of energy services to consumers.

A cornerstone of government’s encouragement of competition was the introduction of tariffs that were ‘to be as cost-reflective as possible’. However, the White Paper did not abandon cross-subsidies and argued that

The price of energy services to poor households will, necessarily, have to be subsidised at times since the fulfilment of basic needs remains a higher priority for government than the achievement of cost-reflective prices for this market segment.

However, an important caveat was that these subsidies would need to be transparent. Thus an uneasy truce between the need for cross subsidies on the one hand, and governments requirements for cost reflective subsidies on the other hand was declared.

As we will discuss later on, in practice the uneasy truce gave way to disconnection of poor households based on their inability to pay electricity bills, but with increased access.

Electricity reforms have moved slowly, but have gained pace since the beginning of 2004. After the release of the *White Paper* government initiated several processes aimed at restructuring the electricity industry.

Amongst, the most significant overarching reforms was the ESKOM Conversion Bill ESKOM as a company operated under a different set of laws as compared to other companies, as it was incorporated in an act of parliament. ESKOM in terms of its operations provided low cost electricity and was exempt from making a profit, and in turn did not pay taxes. Under the democratic government, ESKOM undertook a large capital outlay for increasing household connections to electricity and in turn was allowed to keep its tax status. However, the Eskom Conversion Act 13 of 2002 changed ESKOM status from a statutory body into a public company in July 2002.

At the same time, ESKOM separated its regulated and non-regulated business, and created ESKOM Holdings Pty Ltd as a company that housed its non-regulated business activities. In addition, Eskom structure included a separation of its transmission, distribution and generation businesses, which is necessary for its continued

The changing status of ESKOM has however more negatives, than positives. The positive feature is that with ESKOM change in status it not only pays taxes, but government has taken up the responsibility to fund the electrification programme. This means that government can play an important planning, and execution role in reaching the poorest rural areas in South Africa.

3.3 Generation

South Africa is a net exporter of electricity due to its high generation capacity, and exports electricity to Botswana, Lesotho, Mozambique, Namibia, Swaziland and Zimbabwe. Table 2 shows data for export and import of electricity between January 2000 June 2005.

Table 2: Total volume exported and imported : 2000 to 2005

Year	Gigawatt – hours		
	Exported	Imported	Differences
2000	4007	4719	-712
2001	6519	7247	-728
2002	6950	7873	-923
2003	10136	6739	3397
2004	12453	8026	4427
2005	6069	4236	1833

Note: 2005 figures only for half year to June 2005

Source: Statistics South Africa (2005)333

The generation of electricity in South Africa is a virtual monopoly with the Electricity Supply Commission (ESKOM). ESKOM generation, is primarily coal fired ((89%) and includes one nuclear power station at Koeberg, near Cape Town, two gas turbine facilities, pumped storage schemes and six conventional hydroelectrical plants. Table 3 shows the breakdown of the different generation systems being employed by ESKOM.

Table 3: Generation types ESKOM (2005) measured by total nominal capacity MW

Coal Fired	37678	89.7
Gas Turbine Stations	342	0.8
Hydroelectrical stations	661	1.6
Pumped storage schemes	1400	3.3
Nuclear Power	1930	4.6
Total	42011	100

Source: Eskom Annual Report (2005)

Eskom currently holds a dominant position in terms of generation capacity. Table x, shows the generation of ESKOM licensed capacity, with that of municipal generation and private generation.

Table 4: Licensed capacity (MW)

	MW	%
ESKOM	39810	92.5
Municipal Generation	1821	4.2
Private Generation	1387	3.2
Total	43018	100

Source: National Electricity Regulator

Local governments, especially the large urban municipalities, have however been active in introducing private participation in the generation sector. The City of Johannesburg sold a power station, called the Kelvin power station to US-based AES in December 2001. The local council however retained a 50% stake, with its shareholding limited to protecting employment of workers for three years. After the three years, AES will own 95% with its local empowerment partner, Global African Power (GAP) owning 5%. The entire output for twenty years would be sold to City Power (a corporatised utility of the Johannesburg local government). AES however sold its 95% stake in the Kelvin facility to CDC Globeleq, who will make an investment of around US \$ 25 million to refurbish the plant. Since the selling of the stake to private sector, there have however been several instances where the Kelvin plant has not functioned effectively.

Government argues that peak capacity will be reached by 2011 based on its simulations. Independent estimates that Business Map (a private sector business consultancy) provides argues that South Africa reaches its peak capacity much sooner in 2007. The differences in the estimates are important from an energy planning perspective, and

especially important given that South Africa enjoys amongst the cheapest electricity in the world.

Government has moved swiftly to ensure that generation supply constraints will be avoided. The steps government has taken can be seen in terms of short, medium and long term strategies. In the short-term, the focus has been on recommissioning plants that were mothballed by ESKOM when it had significant excess capacity.

Another short term measure has been to introduce Independent Power Producers for new generation capacity. The new generation capacity will two oil-fired, open-cycle gas turbine power stations, with a combined capacity of about 1000 Megawatt, operating as peaking plants at sites in the Eastern Cape (Port Elizabeth) and KwaZulu-Natal (Durban). The new plants will be operational in October 2008. Five bidders – which include international power companies and local black economic empowerment companies – have been short listed at the time of writing. The decisions are likely to be imminent.

Government has also supported a longer term shift to nuclear energy through its support for the Pebble Bed Modular Reactor. The establishment of the PBMR (Pty) Ltd's current investors, the South African Government, the electricity utility Eskom, the Industrial Development Corporation (IDC) of South Africa and British Nuclear Fuels (BNFL). Minister of Public Enterprises, Mr Alec Erwin, said the PBMR will place the country at the forefront of energy technology. "The project is now factored into our future energy planning, and we are negotiating a major intention-to-purchase agreement between Eskom and the PBMR company." The first commercial modules are only planned for 2013.

Civil society groupings, especially unions and environmental groups have argued against the proposed shift to nuclear energy. Criticisms are based on its capital intensive nature, as well as environmental impacts.

The challenge of increasing generation capacity has seen government adopt several strategies. The package of initiatives to improve generation capacity is:

- **Increased investment by government:** Government has unveiled an impressive infrastructure investment plan that includes generation capacity. Government has thus indicated that it will raise the budget deficit to 4% of GDP to finance increased expansion in electricity, transport and water. Whilst a welcomed initiative, given the fiscal austerity under the GEAR strategy, it is likely that the costs of financing new electricity generation capacity will be passed on to consumers, as the wholesale price of electricity increases.
- **Recommissioning of mothballed generation plants:** Government has approved a process of bringing the three mothballed power stations back into service at a cost of approximately US \$ 1, 9 billion.

- **Introducing independent power producers:** Further, government has developed policy for private sector concessions for the recommissioning and operation of two new oil fired stations.
- **Shift to nuclear:** The most controversial aspect of governments plans for generation of electricity is its long-term goal of increased reliance on nuclear generation capacity. The pilot project near Cape Town, Civil society groups have opposed this project, and have conducted a successful legal challenge on the project. Should the initial pilot project be successful, ESKOM plans to build 10 PBMR plants to provide power to coastal regions.
- **Exporting hydroelectricity :** The Western Power Corridor Project proposes the construction of 3,500 MW hydropower station at Inga Dam in the Democratic Republic of the Congo. ESKOM and other power utilities will contribute US \$ 100 million each, with the remainder of financing being raised in the open market.

3.4 Transmission

ESKOM currently holds the national transmission license. The license provides for:

- Non-discriminatory access by generators being dispatched centrally
- Offering a transmission service to parties who are in a position to take supply directly off the transmission system (i.e. special customers)
- Central dispatch of power stations participating in the national power pool
- Organising the import and exports of electricity

A private transmission company, Motraco was licensed to provide a specific transmission service to specific supply points in Mozambique and Swaziland. Motraco joint venture between the three electric power utilities of Moçambique, South Africa Swaziland namely; Electricidade de Moçambique (EDM), Eskom Holdings Limited (Eskom) and Swaziland Electricity Board (SEB). Mozal is the biggest and most valued client of Motraco and accounts for about 95% of its revenues. Mozal is an aluminium smelter involving multinationals BHP Billiton and Mitsubishi, South Africa's Industrial Development Cooperation and Mozambique government. The Motraco experience thus reflects government commitment to utilising low-cost energy to boost aluminium smelters which are huge fixed investments, but are both energy-intensive and capital intensive.

There have been no significant policy reforms since 1994 in terms of transmission sector. It is widely accepted that transmission is a natural monopoly, and that it will be retained in state hands. However, the exact nature of the cooperate form that it will take and whether it will remain in the hands of ESKOM is an open policy question. Furthermore, government policy opens the way for strategic equity partner. (DPE: 2000)

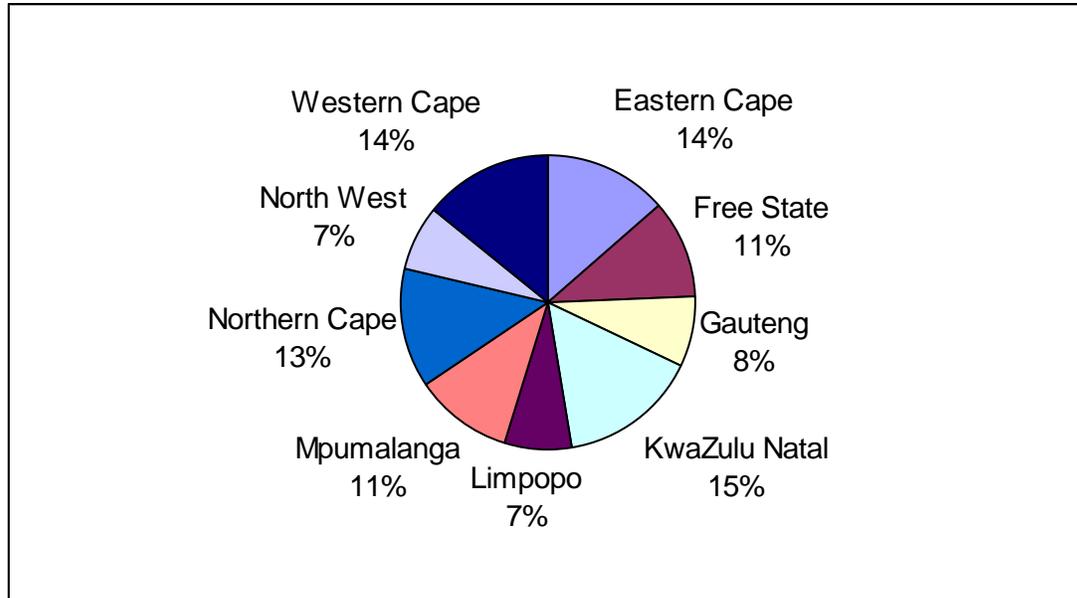
The major implication for restructuring would be the establishment of a national transmission company that would purchase power from ESKOM, independent power producers and import electricity. Whilst there are no clear policy positions on this, it is

more than likely that the transmission license would be held not by ESKOM, but a new transmission company.

3.5 Distribution

South Africa has a 190 licensed electricity distributors in 2003. Graph 1 shows the number of distributors by province.

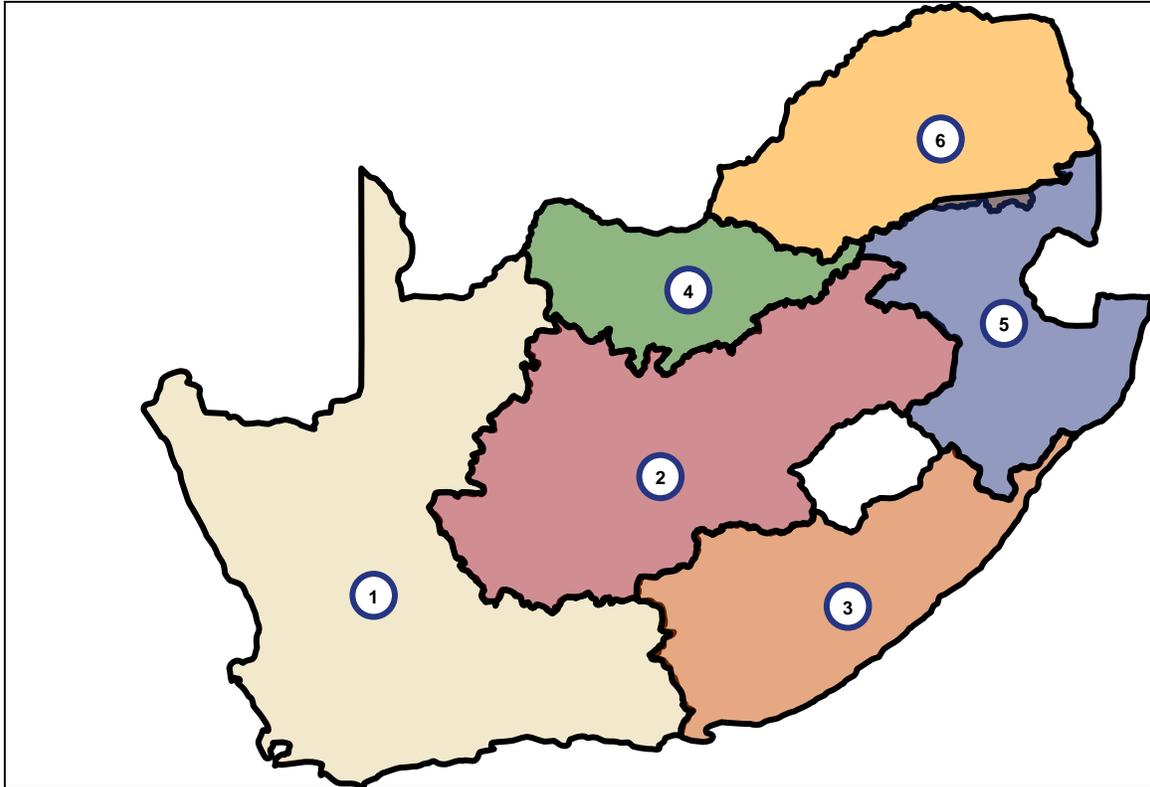
Graph 1: Distributors by province



Source: National Electricity Regulator (2003)

The distributors include ESKOM, local governments and private distributors. Government established a committee called the Electricity Restructuring Interdepartmental Committee (ERIC) which proposed the combination of ESKOM and municipal distribution capabilities into Regional Electricity Distributors (REDS). Government then appointed consultants led by the multinational auditing and consulting firm PriceWaterhouseCoopers to undertake detailed modelling of the proposed creation of REDS. Following from this report several proposals were debated including the number of REDS, and the valuation systems for transferring local government and ESKOM assets to the local government. In May 2001 Government accepted the policy of establishing six REDS. Diagram 3 shows the boundaries of the proposed six REDS

Diagram 3: REDS Boundaries (2001)



The motivation for the establishment of REDS rests on three major factors. First, that consolidating the industry would create economies of scale, and ensure greater reliability of services. This is particularly evident in the running of some of municipal distribution systems which are in a state of disrepair. Second, that rural municipalities lacked the infrastructure and expertise to run effective distribution systems, thus establishing REDS would provide for the development of these areas. Third, the distribution industry had been subjected to several years of underinvestment and consequently distribution systems –particularly in the metropolitan areas – were characterised by service interruptions.

However, more recent Cabinet statement indicates that there has been a significant rethink on the six RED model. In September 2005 Cabinet indicated that:

Cabinet was briefed on a plan to accelerate the implementation of Regional Electricity Distributors (REDS), including the introduction of a Bill on Electricity Distribution Industry Restructuring. In this regard, it was agreed that 6 metro REDS needed to be set up as soon as possible after the local government elections, and that other areas would be covered under separate local REDS or a National RED. Eskom would continue to play a critical role particularly in the National RED. (Cabinet Statement, 14 September 2005)

Details on the reasons for the shift in policy positions or the rationale behind it remain unclear at the time of writing. The implications of a model based on metropolitan areas is however problematic from a developmental perspective. The original model of six REDS deliberately cut across municipal areas for reasons of cross-subsidies between richer and poorer areas. The proposal from Cabinet for seven REDS would need to be assessed around how geographical cross subsidisation would be achieved.

Furthermore, there are different interpretations on the Cabinet decision for seven REDS. The Association of Municipal Electricity Undertakings (2005), the decision on six REDS has not been rescinded, but that more detailed modelling would need to be done to assess the impact of seven REDS. As local government elections, will take place on the 1 March 2006, the decisions around these areas are likely to be deferred till after the election day.

Unions agreed with the logic behind the consolidation of the industry. Thus COSATU argued that the National Distributor ‘would have the power to set up regional and district distributors so as to ensure efficient distribution’ (COSATU, 2001). Thus the end state for the distribution industry was a national distribution company, with regional operating offices. However, governments proposals were for the end state to consist of six independent distributors which would have separate registrations in terms of company law, and compete for contestable customers.

The proposals for government are for a three phase transition for the electricity distribution. Currently distribution of electricity in South Africa is undertaken by Eskom distribution as part of its regulated business and about 190 distributors (mostly local governments) . Box 3 summarises the restructuring phases

Box 2: Restructuring phases for EDI restructuring

Phase One	Phase Two	Phase Three
<ul style="list-style-type: none"> • Eskom distribution division will be separated from Eskom transmission and generation; • Municipalities will realign their activities according to the geographical boundaries of the Regional Electricity Distributors (REDS) • A national Electrical Distribution Industry (EDI) Holding Company will be established. 	<ul style="list-style-type: none"> • Eskom distribution operations and activities, will be merged; and • RED’s will be established as part of subsidiaries of EDI Holding Company 	<ul style="list-style-type: none"> • RED will take over all municipal and Eskom distribution • EDI Holding company will be disbanded, and REDs will have a separate and autonomous legal personality (i.e. through company law)

In terms of the processes since 2001 decisions government has moved quickly with the first phase being completed. The EDI Holding Company was formed in March 2003, and municipalities have taken steps to realign according to the boundaries of the RED. However, as we will discuss there are important constitutional debates on this question. ESKOM distribution has been separated from transmission.

President Thabo Mbeki in his State of Nation Address in 2004 indicated that the first RED would be established by June 2005, with all six REDS operational in 2008. The six REDS would be anchored in the following areas Port Elizabeth, Johannesburg, eThekweni (Durban), Tshwane (Pretoria), Cape Town and Ekurhuleni (East Rand).

With a frantic pace that the first RED was established anchored in Cape Town. The establishment of RED 1 in Cape Town was a landmark event as it indicated the urgency that government would be moving to consolidate the industry. According to media reports the RED 2, based in Ekurhuleni (which is twenty kilometres east of Johannesburg is proceeding well)

The establishment of RED 1 was however not without controversy. EDI Holdings argued that key issues regarding ownership, control and the compensation and transfer of staff and electricity assets had not yet been finalised. (Business Day, 4 July 2005) However, the political directive to act to meet this goal, overrode the delicate negotiations that characterised the restructuring process.

Second, the George Municipality on the picturesque Garden Route chose not to enter into an agreement with RED 1, choosing to remain outside the RED. The opposition Democratic Alliance (DA) dominates the George Local Municipality and thus there decisions could have overtly political undertones. However, the decision taken by George Local Municipality showed that local governments had the option of not participating in the REDS. The reason is that current legislation does not prescribe that local governments participate in the REDS. This is a tricky legal area as the constitution identifies ‘electricity reticulation’ as an exclusive competence of local authorities.

The question of constitutional responsibility for ‘electricity reticulation’ however hides the deeper problem of financial viability of local governments. Users charges for water, electricity, sanitation and a range of other services account for around 40% of all income for municipalities. The current system of creating REDs requires that municipalities would transfer their assets to the RED. Consequently, a great deal of anxiety exists on the possible loss of income. The anxiety is shared by the National Treasury, which has attempted to protect this income stream for local government.

Related to the question of transfer of assets is the valuation of the assets. The report by PriceWaterhouseCoopers suggested two possible valuation methods. The valuation methods in turn either benefit ESKOM or the municipalities, this making the process of restructuring more difficult. Public information does not indicate how this has been

resolved. The South African Local Government Association (SALGA) – the national body of local governments – reached agreement that

Valuation of assets (after ring-fencing) must involve a weighted combination of asset value and income stream derived from assets/ business.

And further argued that

Municipalities must retain the income that they derived in the past from electricity distribution.

The mechanisms proposed by the PWC report to ensure that local governments maintain income included that

- Local governments will receive part of this funding through dividends on its shares, or through debt instruments; and
- Through local governments placing a levy on the sale of electricity.

The levy in the PWC report will be charged to about 50% of all customers, and for about 40% of all electricity sold. The rationale for these percentages, is that it excludes pre-payment residential customers (who probably need to be subsidised). Moreover, customers with an annual consumption of above 100 Gwh would also be exempted from the levy.

The strategy to its credit, seeks to ensure that local governments already precarious financial situation, is not made worse. However, the strategy itself will require a more rigorous assessment. Among the question that needs to be posed is whether the system of levying will compensate for the loss of electricity revenue? Alternatively, will the introduction of the levy lead to a significant increase in electricity prices? Perhaps, the most important question is whether synergies exists between the local government transformation process and restructuring of the electricity industry? These question require a frank and honest answer from government, as the consolidation of democratic local government is a key priority for the country.

The most recent legislative programme called the Electricity Regulation Bill however entrenches municipalities role in reticulation. The bill defines “**reticulation**” means

trading by a municipality and the distribution of electricity by a municipality to the community within its area of jurisdiction, and includes services associated therewith.

The other part of the distribution industry namely ESKOM, has shown more compliance, with ESKOM restructuring its business to conform to the agreed boundaries of the REDS. However, ESKOM has a major challenge in that the REDS are supposed to be ‘municipal entities’ The Municipal Structures Act 32 of 2000 defines a municipal entity as:

1. a company, co-operative, trust, fund, or any other corporate entity established in terms of any national or provincial legislation and which operates under the ownership control of one or more municipalities, that includes in the case of a company any such ownership control, any subsidiary of that company, or
2. a service utility

The act together with other relevant legislation indicates that substantive powers will vest with local government, including the setting of tariffs and regulation. ESKOM as a private company would be a shareholder in the REDS, but the environment would mean that it will to subject its decisions to local government.

4 Drivers of Reform Programme

Restructuring pressures across the globe are related to improvements in efficiency, the need for capital, unlocking economic value or changing incentive structures. These pressures, as Eberhard (2004) correctly states are not strongly felt in South Africa. He argues that:

It is probably true to say that none of these drivers are experienced strongly in South Africa. Most stakeholders believe Eskom operates reasonably efficiently. South Africa has a well functioning bond market and Eskom has had no serious problem financing expansion through private capital. Public finances are well managed and National Treasury does not have a desperate need for privatisation receipts. And the impacts of international trends in power sector reform are not widely appreciated locally.

Yet, the electricity sector continues to experience significant restructuring processes. The central drivers of these reforms relates to the interaction between government, business and labour on the development trajectory in South Africa. Moreover, it relates to the relationship between economic growth and investment.

First, current low prices for electricity stem from three factors.

- ESKOM has reduced its capital expenditure significantly in comparison to the 1980's. Consequently, Eskom has not had to invest significantly in new generation plants, which has reduced its debt to equity ratio from 2.93 (1986) to 0.04 (2005). (Eskom: 2005)
- Cheap coal and the exemptions from paying taxes and dividends has meant that Eskom has had the ability to retain income.
- In real terms the price of electricity has not declined in comparison to the 1950's (Eberhard: 2004). The low cost of electricity is an important comparative

advantage. However, maintaining the low cost of electricity is unlikely to continue.

New peaking capacity is needed as early as 2007 (or 2011) in South Africa. Some analysts argue that this phase has already been reached, as is evident in the blackouts in Johannesburg and Cape Town. At the same time, additional base load capacity is likely to be needed in 2012. New peaking capacity and base load capacity will mean new capital investments, with costs of these investments financed through debt and through raising tariffs. The need for greater generation capacity thus represents one of the major drivers for reform of the electricity industry.

Additionally, the introduction of aluminium smelters in South Africa has represented a major energy guzzling enterprise. In its 1997 Annual Report lists Alusaf as amongst its 10 biggest customers, which ranks it on par with cities such as Johannesburg, Durban and Cape Town in terms of electricity sales. In addition, several other smelters – including one planned at Coega – will see increased demand from capital and energy intensive industry operate. The current Minister of Public Enterprises, Alec Erwin argues in favour of the continuation of energy intensive industries, to be provided with ‘development pricing’. He cites aluminium smelters as an example. However aluminium smelters are not only energy intensive, they are also capital intensive, thus not creating jobs nor finished products. (*Business Report, 11 September 2005a*)

David Fig (2005), a critic of aluminium smelters argues that:

South Africa is not a producer of bauxite ore, the raw material from which aluminium is derived. We consume 253 kilotons (2003), yet we have the capacity to produce three times this per year from smelters at Richard’s Bay owned by BHP Billiton, one of the world’s largest mining companies. What is the reason for our involvement in this industry? Aluminium smelting and production is very energy intensive, and we have one of the cheapest electricity rates in the world, further discounted for bulk users by Eskom. The cost of our electricity is relatively cheap by world standards because we are not including the ‘externalities’ in the price, i.e. the costs to our health and to our environment. Our coal is extremely low quality, resulting pollution is high, and the rates of respiratory disease in South Africa are very prevalent. Because of our burning of coal, we account for between one and two per cent of the contribution to global warming. We should be moving away from industries which are energy intensive, at least until we are substantial producers of renewable energy. If we look at the situation objectively, we are not so much exporting aluminium as cheap electricity, and the

health and environmental costs are being borne, not by Eskom, or BHP Billiton, but by our communities, our health bills and our pollution clean up bills.

What are the impacts of the industry for the country? Firstly, the bulk supply of cheap electricity purely for export helps Eskom to claim an artificial electricity ‘shortage’, which is being used to justify the reinstatement of previously mothballed thermal (coal) power stations as well as further nuclear capacity . Secondly, we need to note that whilst BHP Billiton and other bulk users have their electricity charges subsidised, such subsidies are not granted at the same levels to those who need it most: new users, generally in townships, informal settlements and rural areas. New users pay higher charges than more traditional users, because their charges include the capital costs involved in extending the infrastructure. The new users find it more difficult to afford the high charges, and as a result face debts, cut-offs, and may resort to illegal connections – often with dangerous consequences.

Part of the reason for investment challenges is that economic growth – while still moderate – has been higher than predictions of the National Treasury. Increased economic activity means greater usage of electricity, and the need is growing. Government is attempting an accelerated growth strategy seeking to move the economy towards a 6% growth rate, and possibly 10% within the next five years. Should these predictions on economic growth be reached, we are likely to see significantly more electricity capacity being needed. Whilst projections on what an accelerated growth path would mean for electricity are still being finalised, there is no doubt that greater levels of energy will be needed to sustain and accelerate growth in South Africa.

Second, both labour and business have lobbied government on the effectiveness of state owned enterprises. The motivations for engaging government is however different. On the one hand, labour has defended state owned enterprises against privatisation, and have called for accelerated services to the poor. On the other hand, business has argued that administrative prices needed to be reduced. Whilst the motivations are substantially different, the outcome has been that government has placed significant priority on the improving infrastructure spending in electricity and transport.

Third, whilst Eskom operates fairly efficiently, the majority of SOEs in South Africa operate at significantly low levels of operation, and require significant changes to improve services and ensure that South Africa meets its infrastructural requirements.

Fourth, amongst the drivers is the legitimate goal of black economic empowerment. The recent shortlist of bidders for independent power plants includes the major BEE partners in South Africa.

Finally, local government financial position has great variations. Large metropolitan municipalities have a solid revenue base, and are able to run services fairly effectively. However, smaller rural municipalities experience significant financial problems. The initial proposal for six REDs sort to provide a system of cross subsidisation between metropolitan urban areas and rural areas, and thus was a significant factor in choices for consolidating the distribution industry. As current policy is ambiguous on whether the six REDs remains the end state, it is unclear whether this driver remains as important as it once was.

5 Impacts

The impacts in terms of services, prices, employment and investment are discussed.

5.1 Access to services

Government has run a significant programme of electricity connections. Table 5 provides an overview of the connections between 1995 and 2002, which are the most up-to-date estimates that are available.

Table 5: Improvements in electricity connections

	1995	1996	1997	1998	1999	2000	2001	2002	Totals
Farmworkers	15134	9414	11198	10375	6241	6438	3560	2819	65179
Non-grid	0	0	0	0	0	0	0	1736	1736
Municipalities	150481	137534	213768	136074	144043	139825	127255	124961	1173941
Eskom	313179	307047	273715	280968	293006	250801	206103	209056	2133875
Total	478794	453995	498681	427417	443290	397064	336918	338572	3374731

Source: Lighting up South Africa: 2003 Note: Totals differ from LUSA report as there were addition errors, that are still being verified

The rates of connections are however disputed by social movements and academics who argue that disconnections have reduced the net roll-out significantly. One way to obviate the problems associated with the numbers is to look at data in terms of national census. The data provided below shows that electricity usage for lighting has increased significantly across all provinces. However, electricity usage for cooking has not been much slower.

Table 6: Electricity for cooking and lighting (1996 and 2001)

	Electricity for Lighting	Electricity for cooking
1996	57.7	47.2
2001	69.5	50.6

Increase	11.8	3.4
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Source: CSSR Working Paper 84

The reasons for the significant difference in the usage of electricity for lighting and cooking are attributable to two factors. First, that using electricity as a cooking fuel is much more expensive than other forms of cooking fuel. Table 7 shows the percentage of income spend on electricity. Poorer households spend significantly more of their total income in percentage terms of electricity than other households. Households earning between 0 – 500 rands per month spend 16% of their expenditure on electricity, compared to 2% of income for those spending over R 8001 per month.

Table 7: Expenditure on electricity by income category, 2000

	0-500	501-1000	1001-2500	2501-4500	4501-8000	Over 8001 ^a
% of households	10%	18%	31%	16%	11%	14%
% of income	16%	9%	6%	5%	3%	2%
% of electricity revenues	2%	6%	17%	18%	19%	39%
% of households paying for electricity	38%	49%	57%	71%	85%	90%

Source: Calculated from, Statistics South Africa. 2002. Database on expenditure and income, 2000. CD-ROM. Pretoria. Note: a. average income in this category was around R200 000 a year

Furthermore, households consume just over 100kWh which was significantly lower than the 350kWh that was envisaged at the start of the electrification programme.

Second, connection of electricity has been at low levels, which often means that power supplies are unable to run a stove.

Government has been conscious of these outcomes of policy, and has attempted to support low-income households with a direct subsidy called the ‘Electricity Basic Services Support Tariff (EBSST). According to Statistics SA, 57,3% of all connected households have access to free basic electricity. (Mahlangu: 2005) A study by the University of Cape Town (2002) showed a saving of R 21-00 per person per month since the subsidy was introduced. Amongst the other findings of this research was that 33% of households started using appliances, and 30% had added lights in previously non-electrified rooms. Another study by Thom and Mohlakoana (2001) shows that poor households use between 20 and 30 kWh per month for two lights for three hours each day, one light for 1.5 hours each morning, and one radio for 16 hours each day. The study concludes that consumption levels are constrained by affordability.

Government has also initiated a non-grid electrification programme for poor households far from the grid, and who would thus not be connected soon. Government aims to electrify 50 000 households using off-grid electrification in five years. The system used is to provide private sector companies with concessions in specific areas. (The concessions do not however provide exclusive rights for an area, thus permitting in theory additional competition). Government provides a R 3 500-00 subsidy to the concessionaire, and

households pay a monthly fee of R 58-00 to the company. Five projects have been established running in rural areas of the Eastern Cape and KwaZulu-Natal.

An important feature of the electricity roll-out programme is that the costs of connections have come down significantly for grid electrification as shown in Table 8, representing a 21 decrease in the cost of connections. This is an important efficiency improvement as government seeks to provide universal access to electricity.

Table 8: Connection costs for electricity

1994	3400
1995	2949
1996	3245
1997	2356
1998	2889
1999	2676
2000	2586
2001	2699
2002	2655
% change 1994 to 2002	-21.9118

Source: Lighting up South Africa: 2003

Capital spending by ESKOM and municipalities has however decreased during the same period by about 39% if one compares expenditure in 1994 and 2002.

Table 9: Capital spending by Eskom and municipalities

1994	1487.57
1995	1411.88
1996	1473.21
1997	1176.38
1998	1234.83
1999	1186.24
2000	1011.45
2001	909.44
2002	899.07
Total	10790.07
% change 1994 to 2002	-39.5612

Source: Lighting up South Africa: 2003

National government has however assumed responsibility for the funding of connection costs and supporting the subsidy for free basic electricity. The current projections indicate that under the revised Municipal Infrastructure Grant, spending on electrification is likely to increase above inflation rates, at around 7-9%.

Service protests on disconnections have occurred, particularly in Soweto. The Soweto Electricity Crises Committee (SECC) an emerging social movement adopt a more defiant strategy, challenging government and the laws, to make their case against the disconnection of electricity. The strategies and tactics of the SECC are controversial, and often pit them against the law. The SECC is part of the Anti-Privatisation Forum (APF) The APF consists of several community-based organisations that have challenged disconnections by Eskom. In a landmark victory, the APF waged a successful battle against continued cut-offs. The APF’s view of the victory offers an insight into the workings of new social movements in South Africa. The APF argued that:

The Anti-Privatisation Forum celebrates the recent short-term victory the Soweto Electricity Crisis Committee (SECC) has won over Eskom. Last week, the electricity utility suspended its brutal and often cruel programme of power cuts in the Vaal, East Rand and Soweto. This concession follows a year of concerted community resistance to the cut-offs that witnessed the shooting of Soweto youth by Eskom security personnel, systemic corruption of service providers, the SECC’s campaign of illegally reconnecting residents, Operation Khanyisa, and a declared boycott of electricity payments. Eskom’s credit (mis)management cannot continue forcing residents to pay their bills while community organisations resist.
(<http://www.apf.org.za>)

5.2 *Employment in electricity*

The impact of restructuring has seen a significant decline in the number of jobs at ESKOM, and a significant increase in productivity. Graph One shows the decline in jobs at ESKOM between 1995 and 2005.

Table 10: Employment in Eskom (1995 to 2004)

	Employees	% change	GWh sold per employee	% change
1995	39952		3843	
1996	39857	-0.24	4149	8.0
1997	39241	-1.55	4397	6.0
1998	37311	-4.92	4595	4.5
1999	34027	-8.80	5096	10.9
2000	32832	-3.51	5427	6.5
2001	29696	-9.55	6054	11.6
2002	29359	-1.13	6402	5.7
2003	28938	-1.43	6807	6.3
2004	28396	-1.87	7238	6.3

Source: ESKOM: 2005

Note: Data for 2005 not included as it covers a 15 month period, which makes comparisons difficult

The decrease in the number of jobs is significant and represents a 28% decrease in the number of jobs. Data for local government on jobs in the electricity sector is not available. However, the bi-annual labour Labour Force Survey which has run since 2000 allows analysts to breakdown data by sector. According to the LFS there has been an increase in employment in the electricity sector has increase by 22 000 jobs between 2000 and 2004. Table 11 summarises the results from LFS.

Table 11: Employment trends in electricity, 2000-2004

	2000			2004		
	Formal	Informal	Total	Formal	Informal	Total
Electricity	86	2	88	107	4	110
Total	6601	1661	8338	7796	1660	9489
Electricity as % of total employment	1.30	0.12	1.06	1.37	0.24	1.16
Electricity jobs % increase 2000 to 2004				24.42	100.00	25.00

Source: Budget review: 2005, page 41

Given that employment levels have decreased at ESKOM, the increase in employment in the electricity sector can be attributed to local government increases, or private sector (e.g. electricians) increasing employment.

5.3 Tariffs

Tariff systems in South Africa are complicated, given that each distributor sets tariffs – although tariff prices are regulated by the NER. This section explores the electricity increases in terms of ESKOM prices, and then turns attention to the average prices for different consumers.

Table 12 shows the average ESKOM tariff increases between 1989 and 2003.

Table 12: Eskom tariff increases (1989 to 2003)

Year	Average price (c/KWh)	Announced Price Increase (%)	Effective Price Increase (%)	Consumer Price Inflation (%)
1989	6.9	10.00	9.52	14.51
1990	7.88	14.00	14.25	14.29
1991	8.46	8.00	7.24	15.57
1992	9.16	9.00	8.31	13.67
1993	9.59	8.00	4.74	9.87
1994	10.32	7.00	7.55	8.82

1995	11.15	4.00	8.04	8.71
1996	11.30	4.00	1.38	7.32
1997	11.85	5.00	4.87	8.62
1998	12.29	5.00	3.72	6.87
1999	12.44	4.50	1.19	5.21
2000	13.23	5.50	6.35	5.37
2001	13.76	5.20	4.06	5.70
2002	14.98	6.2	8.84	10.10
2003	n/a	8,43	n/a	7,4

Source: Steyn, undated

Eskom price levels are effective from January of each year. The table above shows average actual prices, the announced price increase, the effective price increase (i.e. the difference between announced price and actual price increases, based on fixed and variable costs) and the consumer price inflation. The table is instructive in that traditional effective price increases have been below the inflation rate. This is important given that electricity price increases have been lower than the overall increases in the costs of living.

The average increases in prices for different consumers however has had significantly different impacts, as Table 13 below shows

Table 13: Average prices in c/KWh (2000 and 2002)

	2000	2002	% change
Redistributors	12.2	14.09	15.5
Residential	27.7	33.43	20.7
Commercial (Manufacturing)	22.64	19.51	-13.8
Industrial	11.94	12.88	7.9
Mining	12.91	14.14	9.5
Rural (Agriculture)	28.88	26.47	-8.3
Traction	15.35	17.15	11.7
International	10.42	11.24	7.9
Own use	13.81	15.49	12.2

Source: Steyn: undated, and Eberhard: 2001

The changes in average prices indicates that redistributors (almost exclusively municipalities) and residential customers have received the biggest increases in average prices. At the same time, commercial and agricultural tariffs have decreased in percentage terms fairly significantly.

An important trend in the tariff system has been to price electricity competitively for industries, particularly for aluminium smelters. South Africa does not extract raw materials needed for aluminium production, it hosts amongst the largest aluminium smelters in the world. Bauxite ore is shipped into South Africa, and shipped out once it is processed to be usable for industries. The central reason for this system is that South

Africa has pegged the price of electricity for aluminium smelters with the price of aluminium. Consequently, aluminium producers have a significant advantage. Aluminium smelters are however not only energy intensive, but capital intensive. Thus one of the major criticism of electricity pricing for aluminium smelters is that government has provided ‘development pricing’ without linking such pricing to labour intensive sectors.

Municipal tariffs are vastly different, and a single comparative measure on municipal electricity pricing is extremely difficult to construct.

5.4 Future impacts

Thus far, we have concentrated upon measurable impacts of electricity sector. In this section, we focus on the possible impacts of restructuring. Box 3 summarises the positive and negative impacts from the planned restructuring processes. The box indicates that the results of restructuring will have both positive and negative impacts. However, four reasons indicate that restructuring will have an adverse impact on the poor.

First, increased household prices will mean that attempts to shift poor household energy patterns from paraffin (kerosene) and candles, to electricity will run into an affordability problem.

Second, industrial policy seeks to enhance job creation, while the proposed pricing systems favour capital projects. The current pricing of electricity favours large energy and capital-intensive projects, such as aluminium smelters. Current policy seeks to maintain the focus on capital intensive sectors, with current pricing not favouring manufacturing, and in particular labour intensive manufacturing.

Third, the consolidation of the distribution industry will have impacts on local government finances. The current policy proposals are unclear on how local governments will realise revenues with the creation of REDs. Consequently, without an explicit system of pricing and revenues for local government, the possibility of further financial problems at a local government level could be seen. Efficiency improvements in the industry thus have a higher policy importance for decision makers, than ensuring the effective running of local governments.

Fourth, workers in the distribution industry will experience job losses, as consolidation proceeds. Unions are engaged in negotiations around future bargaining arrangements for the electricity sector. These negotiations will be crucial to ensuring that processes of redeployment and retraining precede retrenchments.

Box 3: Possible future impacts of electricity restructuring

	Positive Impacts	Negative Impacts
<p>Services to the poor This category seeks to assess the impacts of restructuring, particularly on the working class and on women</p>	<ul style="list-style-type: none"> Continued extension of electricity likely to continue as government funds the programme through the National Electrification Fund 	<ul style="list-style-type: none"> Establishment of tariff systems and investment requirements will see household bills on electricity increase. The effects of higher prices may be lessened with free supply of basic electricity.
<p>Equity and efficiency balance Most restructuring processes focus on achieving narrow economic efficiency. This category seeks to balance efficiency considerations with equity considerations. This is not a trade off, but rather to ensure that equity outcomes have a higher weighting than narrow economic considerations.</p>	<ul style="list-style-type: none"> Government argues that increases in foreign direct investment in capital intensive projects will have knock-on effects throughout the economy. Increased black economic empowerment likely in the case of new private generation projects 	<ul style="list-style-type: none"> The balance between equity and efficiency is skewed towards the interest of capital intensive large customers
<p>Social and Economic Multipliers The wider social and economic consequences of restructuring are crucial to assessing restructuring proposals. For instance, electricity is an input for industries but also is used by many households. This category will assess the wider social and economic consequences of restructuring, specifically focussing on the knock-on effects on the economy and in society</p>	<ul style="list-style-type: none"> Focus on diversity of generation systems and sources bodes well for continued supply 	<ul style="list-style-type: none"> Electricity as a development agent likely to be reduced to supporting capital investment, and thus not playing a role in job creation The RDP requirement of supporting small business through electricity prices not emphasised in policy Long term shift away from coal will lead to significant challenges for jobs in the coal industry
<p>Environmental Impacts This category will assess the impacts restructuring will have the environment from restructuring</p>		<ul style="list-style-type: none"> Arguably the longer term trajectory to nuclear technology will have a higher environmental impact in

		<p>terms of storage of radioactive waste</p> <ul style="list-style-type: none"> • With higher electricity cost the prospects of poor households to utilise ‘dirty’ but cheaper fuel for cooking likely.
<p>Regulatory Measures This category will assess the regulatory capacities needed under different situations.</p>	<ul style="list-style-type: none"> • NER has emerged as one of the stronger regulators in South Africa 	<ul style="list-style-type: none"> • Unclear whether the current regulatory systems are moving in step with the changes in the industry.
<p>Impacts on Competition, the impacts of competition (and in particular whether it will achieve greater efficiencies) will also be assessed.</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Competition likely to benefit ‘contestable customers’ who will have a choice of supply, and direct provision from the transmission company. Smaller businesses will be captive customers

6 Conclusion

South Africa’s labour movement has won important gains in ensuring that the state continues to play a dominant role in key areas of the economy, including electricity. Whilst this includes private sector participation, it is much better outcome than the ‘fire sale’ feared by organised labour. The discussion on electricity restructuring indicates that while the state still plays a dominant role in the electricity industry significant participation of the private sector in the generation sector, and special customers (i.e. those receiving discounts and a choice of supply) means that competition will be introduced into the sector. In important senses, the trade union movement and its allies have scored a victory against privatisation. This is only half the battle.

The next phase in making services work effectively for the poor, is ensuring that the state links equity and growth objectives. However, efficiency considerations trump equity in four important ways in the electricity sector (i.e. prices for households, inadequate links with job creation, unforeseen impacts on local government and job losses). Engaging in the restructuring process thus requires unions to arm themselves with conceptual understanding of the developmental state playing an important equity enhancing role, and negotiating implementation in ways that enhance equity in South Africa.

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