ESKOM: THE ROOTS OF A CRISIS AND AVENUES FORWARD

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EXECUTIVE SUMMARY

This paper provides an overview of the intersecting crises at Eskom and offers an analysis on the proposed energy reforms.

THE CREATION OF A STATE-OWNED ENTERPRISE AND THE MINERALS-ENERGY COMPLEX

Eskom, South Africa's state-owned monopoly energy provider, is in dire straits. A confluence of institutional and external factors has culminated in a number of extended national blackouts and an unsustainable debt level of over R460 billion at the end of 2019. In addition, the global energy market has changed significantly, calling into question the sustainability of Eskom's reliance on fossil-fuel powered electricity.

THE VARIOUS DIMENSIONS OF ESKOM'S CRISIS

Financial mismanagement and unsustainable debt levels – Prior to 2007 Eskom achieved significant profits; between 1995 and 2006, its net profit margin averaged 12.2% compared to the economy-wide average for non-financial corporations of 7.8% in the same period. However, Eskom's total debt has steadily risen over the past 13 years, from a total of R77 billion in 2006 to R604 billion, as of its 31 March 2019 financial statements. This represents an estimated 17% of total sovereign debt, 62% of which is guaranteed by the state.

Medupi and Kusile – The much-lauded build programme has been mired in corruption and mismanagement scandals. As of August 2020, only four units out of the six generating units are operational at Medupi. The total costs of construction, including interest costs, amounts to over R200 billion, compared to the projected planned expense of R90 billion in 2009. Both mega power stations are expected to be completed by 2023 and it is estimated that an additional R18 billion will be needed to for this.

Coal price – Global coal prices are at record lows, owing to the growing push for less fossil fuel production, which has deleterious effects on the environment. As global demand for coal declines, this should reflect as lower tariffs. However, because of Eskom's costly build programme, the average energy cost has increased. South Africa's coal industry is also undergoing substantial changes that will have ramifications for Eskom.

PROPOSALS TO SAVE ESKOM

Unbundling revisited – In December 2018, President Cyril Ramaphosa appointed an Eskom Sustainability Task Team to advise the government on strategies to resolve Eskom's operational, structural and financial challenges. By February 2019, the task team

recommended that Eskom be fully unbundled by 2022, mirroring the policy plans suggested in the 1998 White Paper. A proposed intervention for the medium- to long-term was establishing an independent transmission and systems operator (ITSO), initially as an Eskom subsidiary, and later to become a stand-alone SOE. A roadmap for restructuring Eskom was released later that year, in October 2019, and outlines, in greater detail, the planned transition to an unbundled transmission system; beginning with the appointment of a Chief Restructuring Officer (CRO) in July 2020.

Energy market reform via unbundling is not a novel phenomenon, and was part of a broader approach in the 1980s towards greater economic liberalisation. Over 106 countries have adopted unbundling reforms in their electricity sectors. The first wave of transmission unbundling began in the 1980s, beginning with Chile (1985), Britain (1990), Norway (1992), Argentina (1992) and Peru (1992). Material conditions in the global energy sector has changed significantly, and generally, higher-income countries have pursued unbundling in the context of excess generation capacity and stable institutions. South Africa originally proposed unbundling in its 1998 White Paper on Energy. This was eventually dropped due to opposition to privatisation.

In Africa, most of power utilities remain vertically integrated monopolies. However, four countries (Uganda, Kenya, Zimbabwe and Egypt) have embarked on energy reform over the past century. Case studies from Kenya and Uganda illustrates that electricity reform requires committed and stable institutions to effectively carry out the reforms. This includes strong regulatory institutions that keep private actors and government officials in check. Power-sector reform is a long-term undertaking, and takes years for outcomes to be visible. As in the case of Kenya and Uganda, it is important for a coherent framework for planning and implementation, with clear steps and timelines to guide the sequencing of the reform. It is equally important that the reform approach be responsive to the constantly changing political and economic context.

However, energy reforms that rely on private sector participation could lead to perverse outcomes, especially for the most vulnerable households. Despite the overwhelming narrative that the private sector is more efficient at providing services, there is little evidence to support this. These claims must be contextualised within the broader political and economic structures that exist. Energy reforms that have allowed a greater role for private actors (especially international multi-nationals) has led to higher prices, in particular if the role and capacity of the energy regulator is weak. South Africa's own attempt to include more private investors in renewable energy generation via the Renewable Energy Independent Power Producer Procurement Programme (REIPPP) remains a contested space in which beneficiaries of the energy transition maintains influence and access to only a few.

International donor climate finance - A proposed solution to Eskom's debt crisis, which transitions it towards renewable energy provision, is to make a transaction that combines

raising international donor climate finance to lower its debt, while simultaneously contributing to a climate change mitigation fund. Members from the Eskom Task Team have argued that Eskom could raise between R150 billion and R200 billion from climate change mitigation funding through a special purpose financing vehicle at discounted interest rates, in return for Eskom accelerating its shift away from coal-based power generation.

Government Employee Pension Fund surplus - Cosatu has proposed using the Government Employee Pension Fund (GEPF), with an estimated asset base of R2 trillion, to bailout the unsustainable debt held by Eskom. Specifically, it suggests that the Public Investment Corporation (PIC) – which manages money on behalf of the Government Employees' Pension Fund (GEPF) – as well as the Industrial Development Corporation (IDC) and the Development Bank of Southern Africa (DBSA) to take on R254 billion of Eskom's debt.

A JUST TRANSITION

A Just Transition – defined as a people-led transition to a zero-carbon economy that creates jobs and reduces inequality – is possible only through well-co-ordinated government policies that seeks to structurally transform Eskom and the economy. The economy's reliance on less productive industries has perpetuated concentrated ownership and wealth patterns in sectors such as mining and fossil fuels production, thus contributing to greater inequality. The effects of climate change will have particularly harsh impacts on more vulnerable sections of the population in South Africa, especially in surrounding coal communities that have experienced decades of water and air pollution. A Just Transition will be imperative to diversify the economy to sustainable methods of production, as well as create employment, alleviate poverty and ensure shared prosperity.

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LIST OF ABBREVIATIONS

CDF	Capital Development Fund
CRO	Chief Restructuring Office
DPE	Department of Public Enterprises
DME	Department of Minerals and Energy
ECB	Electricity Control Board
ESCOM	Electricity Supply Commission
ESI	Electricity Supply Industry
EPP	Electricity Pricing Policy
ERC	Electricity Regulatory Commission
IPP	Independent Power Producer
IRP	Integrated Resource Plan
MEC	Minerals- Energy Complex
NER	National Energy Regulator
NERSA	National Energy Regulator of South Africa
SALGA	South African Local Government Association
SEB	State Energy Board
RED	Regional Electricity Distributor
REIPPP	Renewable Energy Independent Power Producer Procurement
RDP	Reconstruction and Development Policy
VFP	Victoria Falls Power Company

1 INTRODUCTION

Eskom, South Africa's vertically-integrated, state-owned monopoly energy provider, is in dire straits. A confluence of institutional and external factors have culminated in a number of extended national blackouts and an unsustainable debt level of over R460 billion at the end of 2019. In addition, the global energy market has changed significantly, calling into question the sustainability of Eskom's reliance on fossil-fuel powered electricity.

Eskom has historically been at the centre of economic development in South Africa. It was integral to supporting the advancement of the colonial and apartheid governments' economic and political strategies through the provision of low-cost inputs, through the minerals-energy complex, to the burgeoning mining industry. Post-apartheid, Eskom remains in state ownership and continues to be central to the development of the economy, providing up to 96% of South Africa's total energy supply.[1] However, this dependence on Eskom, in its current state, has translated into a crisis resulting in significant economic costs (up to an average of R1 billion a day), a consequence of rolling blackouts.

As a result, several plans have been proposed, in addition to a series of bailouts, including the revival of a failed 1998 energy sector reform. President Cyril Ramaphosa's February 2019 State of the Nation address called for the restructuring of Eskom into three separate entities (termed 'unbundling'). This proposal, previously tabled in 1998, would unbundle Eskom into its generation, transmission and distribution components. This restructuring has garnered a spectrum of responses. This paper explores these proposals, offering insight from the 1998 White Paper's proposal in the context of a changed economic landscape. Utility unbundling is not a novel proposition, as over 100 countries have implemented some form of energy utility unbundling. This paper will also provide examples and lessons from two African countries that have instituted this reform.

In addition, this paper situates Eskom's current financial and managerial malaise within its broader history, by tracing the key events that have shaped the energy state-owned enterprise (SOE) into what it is today. Using the minerals-energy complex (MEC) as a framework for unpacking the causes of the crisis, this paper teases out Eskom's history, and unpacks the policies and key planning decisions made by the government and Eskom's management. It also maps out Eskom's current crisis, explaining the gravity of Eskom's debt in relation to its business model as well as the effect this has on the sovereign debt. Lessons are drawn from other countries that have adopted Independent Power Producers (IPPs) and greater private-sector access in energy generation.

[1] Styan, B. (2015). Blackout: The Eskom Crisis. Jonathan Ball Publishers.

2 THE CREATION OF A STATE-OWNED ENTERPRISE

In 1882, Kimberley - as the largest diamond mining hub in the world - became the first city in the Southern Hemisphere to power electric street lights.[2] By 1905, several gold mines in Johannesburg owned their own generators and supplied neighbouring communities with electricity. As mining industrialisation developed over the next two decades, demand for, and supply of, electricity increased substantially. By the end of 1910, there were up to 58 private electricity producers in South Africa, regulated by the Power Act of 1910, which came into operation three days before the creation of the Union of South Africa.[3]

The transition to a consolidated SOE, from an electricity sector in which power generation consisted of a variety of suppliers was a result of a series of major events. Prior to World War I (WWI), electricity was supplied by a mixture of municipal and private utilities, governed by several bylaws.[4] The first shift in the South African energy sector was prompted by the end of WWI. A global slump in the gold mining industry in 1912, owing to high inflation and a fixed global gold price, led to a decline in global electricity demand. The resulting excess capacity provided an opportunity for South African Railways and Harbours (SAR)[5] to shift away from steam engine technology to electricity-powered engines. ESCOM was thus created to primarily supply cheap electricity for the railway industry. The SAR wanted a state-owned electricity supply industry (ESI) because it gave them unlimited access to a cheap supply of electricity from one centralised source. Both the state and SAR feared that private companies did not have the capacity to prevent or quell labour action.[6] Thereafter, after a series of major wage strikes between 1919 and 1923, aggravated by the dire economic situation post-WWI, both the state and SAR were incentivised to create a centralised electricity provider.

ESCOM was consequently created as a SOE in 1922 and a government appointed electricity regulator, the Electricity Control Board (ECB),[7] was established and governed by the newly established Electricity Act. The ECB regulated and licensed electricity, and ESCOM provided

[2] Ibid.

[3] van der Heijen, T. (2013). 'Why the lights went out: Reform in the South African energy sector.' *UCT Graduate School of Development Policy and Practice.* Retrieved from: https://www.gtac.gov.za/Publications/160-casestudy_eskom_300413.pdf.

[4] Ibid.

[5] SAR was created after the amalgamation of the Central South African Railways, the Cape Government Railways and the Natal Government Railways, after an Act passed by Parliament in 1910.

[6] The SAR were notorious for their extreme dislike for labour organising, to the extent that they enacted a Law that prohibited SAR employees from any protestant action, or face jail-time or a severe fine.

[7] van der Heijen, T. (2013). Op cit.

cheap electricity under a single electrification network. ESCOM raised capital by issuing bonds, and was exempt from corporate income tax as it was a SOE and not a profit-making institution. By 1933,[8] ESCOM owned five power stations and increased its supply of national energy production by 62%. However, about 80% of its sales were distributed by a private power company, Victoria Falls Power Company (VFP).[9]

2.1 MINERALS-ENERGY COMPLEX

A strategic coordination between ESCOM, private businesses and industry and the state, laid the basis for economic development skewed towards servicing the white community in South Africa and was weighted towards a particular amalgam of business interests. The Minerals-Energy Complex (MEC)[10] provides a useful framework for understanding the institutional role mining and minerals processing played in the development of the South African economy and the centrality of electricity and ESCOM therein. As Baker explains:[11]

> "The MEC [...] lies at the core of the South African economy, not only by virtue of its weight in economic activity but also through its determining role throughout the rest of the economy. Referring to a system of accumulation dating back to the 1870s, the MEC is central to the country's historical dependence on cheap coal and cheap labour along racially oriented divisions for cheap electricity. Such a system has in turn served national economic dependence on core mining and minerals-beneficiation sectors, and the interests of export-oriented industry."

The MEC, therefore, refers to a system of accumulation that emerged as the mining industry, mining-linked manufacturing, and financial sectors coalesced around a common strategic goal to exercise significant economic and political power.[12] This meant that linkages between these sectors and the rest of the economy was critical in shaping economic development. It also conditioned the relationship between private capital and the state, and the implementation of macroeconomic and industrial policy.[13] Key activities of the MEC include

[8] Clark, N. (1987). 'South African state-owned enterprises: Death knell of economic colonialism?' *Journal of Southern African Studies.* Vol.14, No.1, pp. 99-122.

[9] Ibid.

[10] Fine, B. and Rustomjee, Z. (1996). 'The Political Economy of South Africa: From Minerals-Energy complex to Industrialisation.' C.Hurst & Co. Publishers.

[11] Baker, L. (2015). 'Renewable energy in South Africa's minerals-energy complex: a 'low carbon' transition?' Review of Political Economy. 42:144, 245-261, page 248. Retrieved from: https://doi.org/10.1080/03056244.2014.953471.

[12] Parliamentary Budget Office. (2017). 'Analysis of Eskom's financial position.' Retrieved from: https://www.parliament.gov.za/storage/app/media/PBO/Analysis_of_Eskom_finances_Report_to_SCOA_presented_8_March_2017.pdf

[13] Fine, B. and Rustomjee, Z. (1996). Op cit.

coal, gold, diamond and other mining activities; non-metallic mineral products; iron and steel basic industries; and fertilisers, pesticides, plastics, basic chemicals and petroleum.

The strong economic and institutional relationships between the state, SOEs, and large private businesses laid the basis for almost all economic activity in South Africa.[14] ESCOM's central role in this network was to support the requirements of energy-intensive, heavy industries, particularly mining and minerals processing. This was primarily done by supporting industrial and big-business ventures by providing electricity at cost (which ESCOM was also legally bound to do under the mandate of the Electricity Act).[15]

These heavy-industrial sectors continue to have influence over the state and the direction of the economy and have been "attached institutionally to a highly concentrated structure of corporate capital, state-owned enterprises and other organisations such as the Industrial Development Corporation (IDC) which have themselves reflected underlying structure and balance of economic and political power".[16]

2.2 FROM ESCOM TO ESKOM

By 1930, ESCOM's 100MW Witbank power station produced among the cheapest electricity in the world, owing mostly to the exploitation of Black labour and abundant deposits of cheap, low-grade coal.[17] By the end of 1970, 16 new power stations (from initially only owning three) were built to meet the increase in electricity demand from mining as well as residential areas, including Hendrina, Komati, Camden and Grootvlei power stations, all of which still operate today.[18] This large growth in capital investment coincided with the global energy crisis in the early 1970s, precipitated by the wars in Vietnam and the Middle East.[19] The increase in the global oil prices triggered the increased use of coal for power generation (as an oil substitute), leading to unprecedented growth in the electricity supply (or, reserve margin[20]).

[14] Ibid.

[15] Ibid.

[16] Fine, B. (2007). 'State, Development and Inequality: The Curious Incidence of the Developmental State in the Night-time.' Draft text as basis for contribution to SANPAD conference, Durban, June 26-30, 2007, page 11. Retrieved from: https://eprints.soas.ac.uk/5611/1/sanpad.pdf

[17] van der Heijen, T. (2013). Op cit.

[18] Styan, J. (2015). Op cit.

[19] Parliamentary Budget Office. 2017. 'Analysis of Eskom's financial position.' Retrieved from: https://www.parliament.gov.za/storage/app/media/PBO/Analysis_of_Eskom_finances_Report_to_SCOA_presented_8_March_2017.pdf.

[20] The reserve margin is the difference between the available supply of electricity and the expected peak demand.

By 1984, ESCOM's monopoly status was solidified by its purchase of South Africa's largest private electricity producer, the Victoria Falls Power Company (VFP). The acquisition of VFP not only secured ESCOM as a monopoly in the generation market, but across the entire value chain; ESCOM owned high-voltage transmission lines and most distribution centres. It also secured long-term contracts with surrounding privately-owned coal mines in Witbank.[21]

However, around the same time, apartheid sanctions had a dampening effect on the South African economy. Growth rates fell from 2.9% in 1978, to -2.5% in 1983 and -1% in 1985.[22] In addition, the inflation rate averaged 13.5% per year between 1980 and 1984; ESCOM's tariffs increased three times by an average of 20% between 1976 and 1977 alone, leading to widespread outrage at the escalating cost of electricity.

The high inflation, coupled with high electricity prices, induced a large political push for a reformed ESCOM. This pressure culminated in the establishment of a government-appointed commission of inquiry into the electricity industry in 1983, the De Villiers Commission, to investigate the harmful effects of ESCOM's monopoly power.

The Commission made several recommendations regarding ESCOM's governance and financial management. It was recommended that it should be restructured into a two-tier control structure – a full-time executive management board and an Electricity Council.[23] The management board would report to the Council, which comprised of representatives from major electricity consumers, municipal distributors, and government representatives. ESCOM's accounting system would also be replaced with standard accounting business practices and its Capital Development Fund was subsequently dissolved in 1984.[24] These reforms were carried out in full, and to further rebrand the company, ESCOM's name was officially changed to Eskom.

The changes improved Eskom's financial performance for a short while (as will be explained later in this paper) but did not temper its monopoly power. This was because the amended Act specifically exempted Eskom from being licensed by the ECB, thus exempting its prices from being regulated.

[21] The largest coal reserves in South Africa were in Witbank.

[22] Styan, J. (2015). Op cit.

[23] Eberhard, A. (Nd). The political economy of power sector reform in South Africa. Available: https://www.gsb.uct.ac.za/files/StanfordPSREberhardSep2004final.pdf

[24] Despite this, Eskom was still exempt from taxes and dividends.

3 POLICIES, PLANNING AND DECISION-MAKING AT ESKOM

It was at this stage in Eskom's history that its financial performance began to decline (into what it is today), due to poor energy planning. The combination of the aggressive build programme in the early stages of its growth (increasing its supply capacity) and the sanction-led decline in economy (decreasing demand) from the mid-1980s, translated into an electricity sector that went from a forecast shortage to excess capacity in a relatively short period of time.[25] Both the supply and demand of electricity was affected: to limit the expected excess capacity, construction of new plants were delayed in 1985; plans for new stations were cancelled; and older plants were decommissioned or mothballed. To spur greater demand, Eskom began extending more low-priced energy contracts to energy-intensive users such as platinum mines and aluminium smelters.[26]

By 1991, the political terrain had shifted substantially, with significant implications for Eskom's lack of energy capacity by 2007. The apartheid government finally succumbed, and the newly-elected government sought to expand access to basic services, including access to electricity. Eskom's excess capacity (as high as 31%) was essential for the extensive electrification programme. However, by 1996, it was forecasted that Eskom would run out of generating capacity by 2007, if it was to fulfil the increased demand.

Between this period and the first load-shedding event in 2008 a number of policies and planning decisions were made that have shaped the contours of the current crisis. This section will highlight the key policies, processes and decisions that have contributed to Eskom's complicated predicament.

3.1 THE RDP AND GEAR

The democratically-elected government inherited a SOE in 1994 that, as a result of apartheid and the structure of the MEC, provided cheap electricity predominantly to heavy industry as well as white residences and businesses. The goal of Eskom, under the democratic government, was to provide affordable electricity to the rest of the previously-excluded population. Concurrently, and against the backdrop of global economic liberalisation that would ultimately undermine this, the Reconstruction and Development Programme (RDP), described as an "integrated, coherent socio-economic policy framework",[27] was formalised into national policy. Improving access to electricity was emphasised as an important

[25] Eberhard, A. (Nd). Op cit.
[26] van der Heijen, T. (2013). Op cit.
[27] Ibid.

component of the RDP objectives of eradicating poverty and promoting sustainable economic and social development.[28]

The electrification drive was relatively successful, with the proportion of households with access to electricity rising from one-third in 1993 to nearly 70% in 2004.[29] Between 1994 and 2001, three million households were electrified. About two-thirds of these connections were conducted directly by Eskom and the remainder by local municipalities. Tariffs for rural and low-income residential customers were cross-subsidised from industrial tariffs and surpluses earned on sales to municipalities. The larger municipalities, in turn, made an additional profit from reselling Eskom's electricity, which enabled them to subsidise property rates and to finance other municipal services. However, many of the smaller municipalities faced debt and non-payment by a substantial proportion of their low-income consumers.[30]

Despite the policy drive for structural economic changes, electricity provision continued to fulfil its role in maintaining the architecture of the MEC. Eskom continued to serve the interests of majority, white-owned businesses, and leading mining companies had access to cheap electricity. Various multi-national companies within this network maintained special pricing agreements with Eskom. By 2000 the Energy Intensive User's Group - whose 36 members include internationalised resource and mining conglomerates such as BHP Billiton, Anglo American and Xtrata - consumed around 44% of the electricity sold in South Africa[31] at heavily discounted electricity prices. While electricity prices were still low for residential consumers during this period, the large-scale electricity distribution programme resulted in significant increases in energy use.

Concurrently, conservative economic policies came to dominate the policy terrain. The RDP was replaced by the Growth, Employment and Redistribution (GEAR) policy in 1996. GEAR was a conservative, macroeconomic policy, in the mould of the Washington Consensus and structural adjustment programmes, which prioritised a neoliberal approach to economic development, such as fiscal austerity, financialisation and privatisation. This approach also shaped energy policy, which reflected trends in energy policy globally – enforced by conditions set by international financial institutions like the IMF and the World Bank – that emphasised market liberalisation and increased competition in electricity production.

[28] Eberhard, A. (ND). Op cit.

[29] van der Heijen, T. (2013). Op cit.

[30] Eberhard, A. (ND). Op cit.

[31] Baker, L. (2012). Power shifts in South Africa's minerals-energy complex: from coal crunch to wind rush? https://www.researchgate.net/publication/273446955_Baker_L_2012_Power_Shifts_in_South_Africa's_Minerals-Energy_Complex_From_Coal_Crunch_to_Wind_Rush

3.2 THE 1998 WHITE PAPER ON ENERGY

In the context of GEAR, a 1998 White Paper set out proposed changes in electricity policy, as the prevailing economic policy at the time. The White Paper claimed it would curtail the vast inequities inherited from the apartheid government through a liberalisation programme that prioritised attracting private investment into the energy sector. The main argument mirrors most neoliberal policies at the time: increased competition promotes efficiency in the context of market forces leading to the most optimal outcome (lowest price).[32] The model of the power sector in the White Paper was one of vertical and horizontal unbundling, separating out the potentially competitive components of the industry (generation) from the 'natural monopoly' (such as transmission) components.

In addition, the Eskom Conversion Bill of 2001 replaced the Eskom Act of 1987 with subsequent amendments: Eskom was to be converted into a public company in 2002 (corporatisation), with its share capital held by the state[33] and was consequently responsible for paying dividends and taxes. A consequence of the corporatisation of Eskom is that the capital subsidies for the connection of low-income consumers are no longer funded internally by Eskom, but derive from fiscal allocations to a national electrification fund. The Eskom Conversion Bill also replaced the two-tier governance structure with a single board.

In May 2001, the Cabinet approved the proposals for the reform of the Electricity Supply Industry (ESI) suggested in the White Paper. The policy stated its intention to unbundle transmission and guarantee third-party access, sell at least 50% of Eskom's generation capacity, and introduce competition through a multi-market model, allowing small and large energy generators.

Major opposition to the White Paper, including from labour unions, was lodged and alternative models presented to the government, with alternative models for distribution that would preserve a more prominent role for Eskom as a vertically integrated monopoly. For example, Cosatu opposed privatisation – and the liberalisation in general – and argued that Eskom should remain a vertically-integrated, publicly-owned utility and be strategically utilised by government to meet development goals in South Africa, in addition to providing low-cost electricity services to all, especially lower-income areas.

Unbundling was never fully realised, including because of a lack of political will and Eskom's use of its monopoly power. The unbundling process which did occur took place only at the accounting/administrative level: independent business units were established as separate

[32] Ibid.

[33] Eberhard, A. (2013). Op cit.

entities, each with their own CEOs and boards; and Eskom's head office was scaled down as staff were moved across country to the new business units. The Eskom board supported competition in principle, but resisted any proposals that it should divest more than 30% of its generation stations and its leadership expressed alarm at the extent of the reform proposals,[34] particularly a recommendation to reduce Eskom's share of the generation market to 30%. It began to lobby government at the highest levels, drawing on its reputation for delivering low prices, for supporting the government's RDP goals and its vision of an African renaissance embodied in early versions of the New Partnership for African Development (NEPAD).[35]

Despite Eskom's involvement in developing the White Paper, the leadership at Eskom began to push back against the restructuring process. Then Eskom CEO, Thulani Gcabashe, was reported to have said that he did not believe that the radical restructuring and partial sale of Eskom was a good idea, he argued: "Eskom has the lowest electricity price in the world, and an excellent technical performance when benchmarked against the rest of the world. We need clear objectives as to why we are going this route".[36]

The following sections give more detail on the proposals contained within the 1998 White Paper, particularly relevant to today's debates.

3.2.1 RESTRUCTURE OF THE GENERATION INDUSTRY

Prior to the release of the White Paper, Eskom dominated the ESI, as discussed in Section 1, supplying most of South Africa's electricity generation requirements in 1996. About 91% of the electricity was generated from coal, with nuclear energy accounting for 6.5%, and hydro and emergency gas turbines making up the remaining 2.5%.[37] Eskom had 24 power stations, dominated by 10 large coal-fired stations – most of the 24 comprised 600MW units and are situated on coal mines in the north-east of South Africa.

The White Paper projected that growth in electricity demand was to be fully utilised, if not surpassing supply, by 2007. This was partly because of the effect on capacity caused by the extensive build and electrification programme after 1994. As seen in Figure 1, in 1985, nominal generating capacity[38] was 37 840MW, while its total net maximum capacity[39] was 35 926MW,

[34] Lloyd, P. (2018). Restructuring South Africa's Electricity Supply Industry. [Online] Available: https://hsf.org.za/publications/focus/focus-64/PhillipLlyod64.pdf

[35] Ibid.

[36] AllAfrica (2001). Retrieved from: https://allafrica.com/stories/200110010307.html

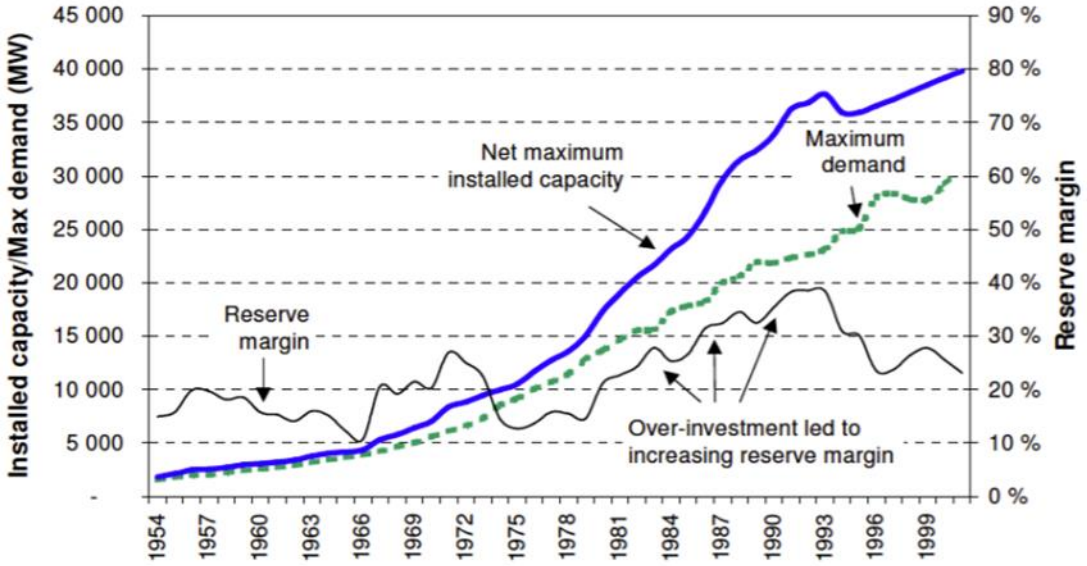
[37] Eberhard, A. (ND). Op cit.

[38] Nominal capacity indicates the maximum output of electricity a generator can produce without exceeding design thermal limits.

[39] Net maximum capacity refers to the electric output an electricity generator can produce under specific thermal conditions.

and its peak electricity demand was approximately 24 798 MW, meaning that the reserve margin[40] was 31%. From 1993, the reserve margin declined steadily as demand increased.

FIGURE 1: GROWTH IN MAXIMUM DEMAND AND CAPACITY IN ESKOM



Source: Eberhard, 2017.

The White Paper argued for greater private-sector investment in the generating sector, arguing that the only way to increase capacity was through increased competition in the generation market to meet projected demand by 2007. The government planned to provide customers the option of choosing their preferred energy suppliers; to permit "open and non-discriminatory access to the transmission system";[41] and to "encourage private-sector participation".[42] The planned changes in the local electricity generation market can be summarised as:

- There would be the entry of multiple players into the generation market, and a generation company – separated from transmission – would be established. In 2001, Cabinet approved proposals that Eskom would retain 70% of the existing electricity generation market, with 30% being marked for sale to private investors (including an initial aim of transferring 10% of this share to black ownership). Given the role that coal-based generation had on significant pollution emissions, with potential long-

[40] The reserve margin is the difference between expected generation capacity (supply) less expected maximum peak demand.

[41] van der Heijen, T. (2013). Op cit.

[42] Ibid.

term effects on the environment, Independent Power Producers (IPPs) were also admitted into the generation market for renewable energy.

- To prevent over-investment in new generation capacity, new investment decisions would be located within a detailed integrated resource planning (IRP) process that would include all sector stakeholders. This would "ensure that utilities avoid or delay electricity supply investments, or delay decommissioning decisions, when it is economical to do so, by optimising the utilisation of existing capacity and increasing the efficiency of energy supply and consumption".[43] The White Paper stated that responsibility for integrated energy planning should lie with the government, rather than any sector participant. Thus, Eskom would no longer have the sole authority to plan for electricity generation – the Department of Minerals and Energy (DME) had the mandate for policy development, including the IRP process, and overseeing the restructuring of the electricity sector. In line with this proposition, Eskom closed down its new works department in 2001. It did not, however, close down its planning department, even though that function was supposed to be taken over by the government, as stipulated in the White Paper.

In 2003, the government began to revise its plans to privatise part of Eskom's generation assets, although restructuring of the sector was still favoured. After its win in the 2004 elections, the ANC stated that it would not sell the core assets of Eskom. Alec Erwin (Minister of Public Enterprises at the time) announced that the government had changed its focus from a competitive wholesale market to ensuring security of supply. It was at this time that the strategy to introduce new participants into the market was changed to specify that only a maximum 30% of new generation capacity would be supplied by IPPs (without privatisation of existing Eskom capacity).

3.2.2 RESTRUCTURING OF THE TRANSMISSION INDUSTRY

Eskom owns the national, integrated transmission grid and the 1996 White Paper proposed that transmission would remain within the ambit of the state, and was to take the form of a separate independent company. To ensure non-discriminatory and open access to the transmission lines, this transmission company would be independent of Eskom's (or any other) generation and retail businesses. Initially this transmission company would be a subsidiary of Eskom Holdings and would be established as a separate state-owned transmission company before any new investments were made in generation capacity.

However, Eskom attempted to delay the separation of transmission services. On occasion, it argued that placing transmission into a subsidiary company within the Eskom group would

[43] Department of Minerals and Energy, 1998. White Paper on the energy policy in the Republic of South Africa. (page 53).

yield 'sufficient' unbundling. It also presented alternative models for distribution that would preserve a more prominent role for the firm as a vertically integrated monopoly.

3.2.3 RESTRUCTURING DISTRIBUTION NETWORKS

In terms of restructuring distribution functions, the 1998 White Paper proposed that the sector would move to cost-reflective tariffs with separate, transparent funding for electrification and other municipal services. More than 400 distributors, mainly municipal electricity departments, comprising 55% of total distribution (that were not Eskom) supplied electricity to end-users. The primary challenges identified in the distribution sector included:

- About 40% of all homes in South Africa and about ten thousand schools and clinics were without ready access to an electricity supply.
- With more than 400 distributors, the distribution sector was highly fragmented, resulting in low efficiencies, high costs, wide disparities in tariffs, and poor financial viability.
- The distribution industry experienced high levels of non-payment and electricity theft, resulting in increasing arrears and payment defaults.
- The electrification programmes of most municipal distributors were limited by difficulties in accessing affordable finance.

The White Paper supported a strategic decision to "restructure the energy market by first reorganising the distribution sector". It was envisaged that the distribution industry would be restructured into five state-owned regional electricity distributors (REDs). Each RED would "require the right balance of below-cost (low-income residential) and above-cost (commercial and industrial) users".[44] This, as with other aspects of the White Paper, was considered a controversial proposal by unions and Eskom management. As further articulated by Eberhard:[45]

> "The ruling ANC was split on the issue – its leadership asserted the importance of a national solution to the problems of electricity distribution, but those involved in local government feared losing their influence. With so many divided loyalties, distribution reform did not have a political champion, which slowed down the process".

[44] Department of Minerals and Energy, 1998. White Paper on the energy policy in the Republic of South Africa.
[45] Eberhard, A. (nd), page 7. Op cit.

3.3 THE FARM INN SUMMITS

In 2001, Eskom began organising a series of meetings with various public and private sector stakeholders to convey its concerns about the ESI reform programme. Held at Farm Inn near Pretoria, the meetings became known as the 'Farm Inn Summits'. In an agreement which originated at the first Farm Inn Summit in October 2001, and which was signed on 15 March 2002, the DME, the DPE, the South African Local Government Association (SALGA), the National Energy Regulator (NER) and Eskom reached broad consensus on the next steps on ESI reform.[46]

It was planned that an ESI restructuring committee, chaired by the DPE, would be established. Eskom would ring-fence its generation stations into clusters, or portfolios, for internal competition. The agreement further suggested that Eskom Holdings establish subsidiary companies for Eskom Generation and Eskom Transmission (although this was later contested by Eskom).

The DPE subsequently established an ESI restructuring office and detailed studies were undertaken by government-led, interdepartmental and stakeholder committees, and external consultants. A follow-up Farm-Inn summit in March 2004, comprising DME, DPE, SALGA, the NER and Eskom, plus additional government departments (National Treasury, the Department of Trade and Industry, the Department of Provincial and Local Government, and the Competition Commission and EDI Holdings), confirmed the reform steps, but agreed to significantly delay target dates. For example, a portion of Eskom's generation assets that should have been divested in 2003 was shifted to 2006–2007. Although there had been general briefings to the Parliamentary Portfolio Committees, and workshops were held with industry stakeholders on the proposed market design, few details of the Farm-Inn agreement and the reform timetable have been made public.

In 2003, the government began to revise its plans to privatise part of Eskom's generation assets. This was solidified after its win in the 2004 elections; the ANC stated that it would not sell Eskom's core assets and Eskom would remain a vertically integrated monopoly. During this time, because of the policy uncertainty, no additional capacity was being produced, the effects of which would culminate into its first load-shedding by 2008.

[46] Ibid.

4 THE VARIOUS DIMENSIONS OF ESKOM'S CRISIS

Eskom's current predicament stems from a confluence of unresolved historical internal problems and myopic energy and administrative planning, exacerbated by fluctuations in the global economy. After a period of excess supply capacity of 13% in the mid-1980s, by 2008 the reserve margin fell to 6%. This was partly because of delayed initiatives to maintain existing and bring on line new capacity during periods when it was making its highest profits, exacerbated by international environmental pressures, increasing coal costs. By 2008, Eskom implemented rolling blackouts (load-shedding) throughout the country owing to an under-supply of electricity.

The next sections will explore the different facets of Eskom's current crisis. It will focus on the financial mismanagement at Eskom, analysis of the coal industry, Eskom's build programme and its tariff structure.

4.1 FINANCIAL MISMANAGEMENT

Prior to 2007, Eskom achieved significant profits; between 1995 and 2006, its net profit margin averaged 12.2% compared to the economy-wide average for non-financial corporations[47] of 7.8% in the same period.[48] After profits began declining from 2007, its net profit margin averaged 4% (including losses between 2007 and 2009), compared to non-financial corporations which saw an average profit margin of 9% over the same period.[49]

The decline in Eskom's profitability since 2007 occurred despite sustained increases in revenue. Figure 2 shows that between 2007 and 2016, Eskom's revenues grew by an annual average of 9.7% in real terms (nominal: 16.9%), while profits fell by an annual average of 9.6% in real terms.[50] Importantly, the significant increase in Eskom's revenues since 2008 was not due to increased electricity sales – total electricity sales declined after 2008 in response to the effects of the global financial crisis, country-wide load-shedding and sustained lower economic growth.

[47] Non-financial corporations are subject to control by government units and whose principal activity is market-oriented production of goods and services.

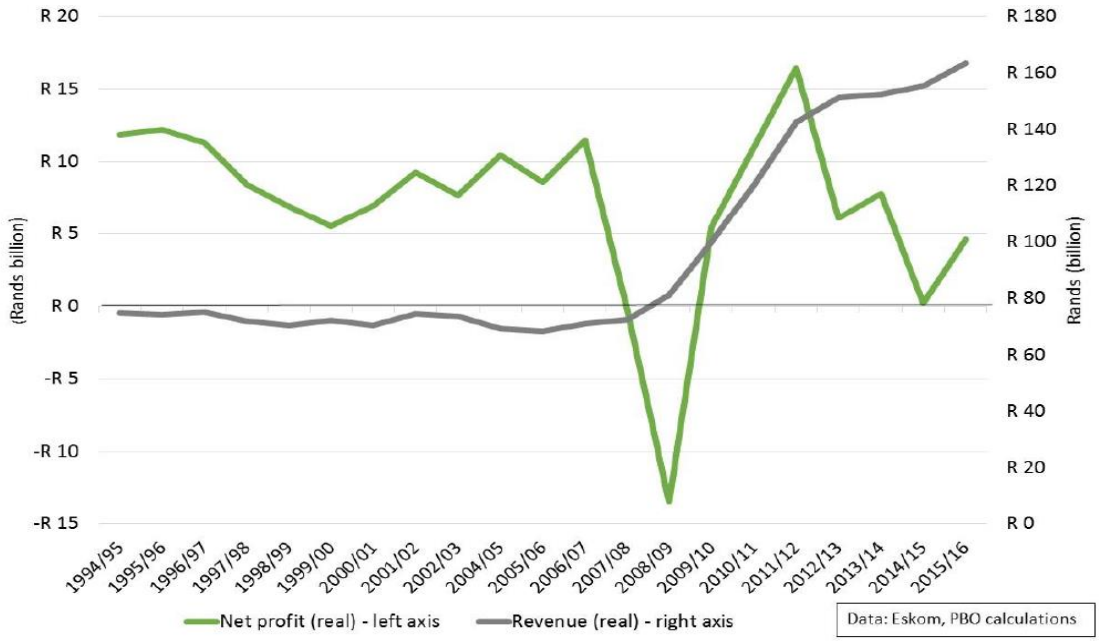
[48] Merten, M. (2019). 'Eskom is in a deep hole.' *Daily Maverick.* Available: https://www.dailymaverick.co.za/article/2019-02-13-eskom-is-in-a-deep-hole-it-will-take-decades-and-serious-financial-wizardry-to-dig-it-out/#gsc.tab=0

[49] Saunders, N. (2017). 'Eskom financials: summary report.' The Eton Group. Retrieved from: http://www.eton.io/wp-content/uploads/2017/09/Eton_EskomFinancialsSummaryReport_20170908.pdf.

[50] Ibid.

The significant increase in Eskom's revenues since 2007/08 has primarily been a result of large increase in electricity tariffs. As shown in Figure 2, Eskom's revenues from 2008 steadily increases from R44.4 billion to R177.4 billion by 2018. However, this did not translate into greater electricity output capacity, which remained steady over the same period. Between 2008 and 2016, average electricity tariffs increased by 374% (real: 168%) – a nominal annual average increase of 16.8% (real: 10.4%). This reversed the trend of the preceding decade (1997-2007) wherein electricity tariffs decreased in real terms.[51] In this period, average electricity tariffs decreased by 21.6% (real: -62.2%) – an annual average decrease of 2.4% (real: -9.4%). The reasons for the real decrease in average electricity tariffs prior to 2007/08, and the subsequent sudden increases since, was due to the timing and size of Eskom's investments, as well as changes to the tariff-setting methodology.

FIGURE 2: ESKOM'S DECLINING PROFITABILITY



Source: South Africa Parliamentary Budgetary Office, 2018.

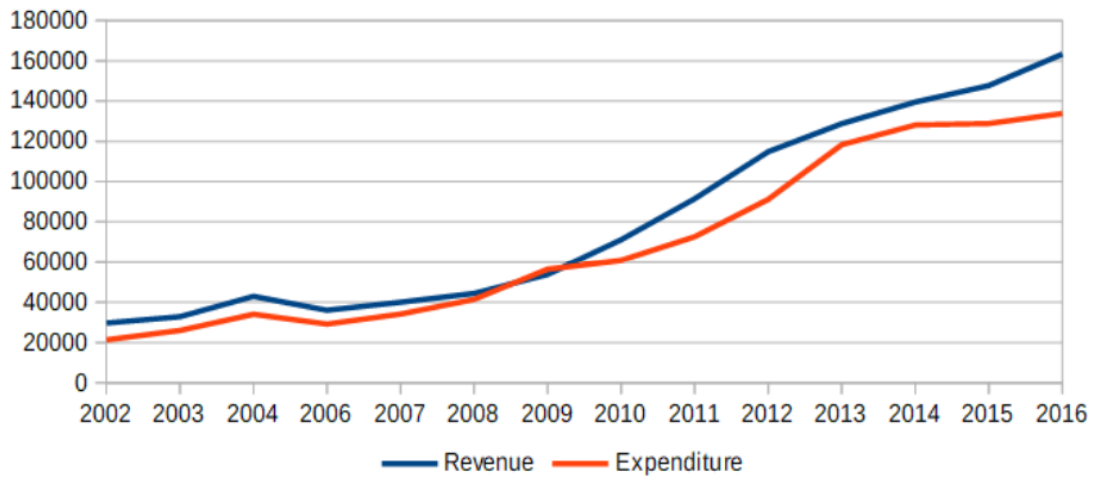
Although rising prices for electricity increased Eskom's revenue, despite falling sales in volume terms, its profits have become increasingly unstable. Figure 3 shows the escalation of Eskom's revenue and expenditure between 2002 and 2016. The largest contributor to Eskom's expenses is the build programme for Medupi and Kusile, along with other operating expenses, such as expenditure items such as "Managerial, Technical and Other Fees",[52] which increased by 140% in the same period. Along with many other irregular expenditures, this amount can be attributed to consulting fees paid to McKinsey and Trillian (discussed below).

[51] Mnguni, G., Amra, R., & Mohamed, S. (2018). 'Analysis of Eskom Finances'. Parliamentary Budgetary Office.

[52] Eskom Financial Statements. (2017). Available: eskom.co.za

The following sections will delve more into the different aspects of Eskom's financial issues including its massive build programme, Kusile and Medupi, the price of coal and corruption.

FIGURE 3: TRAJECTORY OF ESKOM'S REVENUE AND EXPENDITURE BETWEEN 2002 AND 2016



Source: BusinessTech, 2017.

4.2 COAL SECTOR

A key player in the MEC is South Africa's coal industry, which currently supplies coal for over 80% of the country's electricity generation.[53] Historically, most of the country's coal supply has been controlled by five main private monopolies that have disproportionately benefitted from access to cheap electricity from Eskom: Anglo American Corporation, Exxaro, South32 (formerly BHP Billiton), Xstrata and Sasol. While Eskom is their biggest customer for coal supply, they in turn are amongst Eskom's biggest customers for electricity. They wield considerable influence over the utility with regards to setting the terms of coal supply,[54] and also have significant influence over policies governing the electricity generated by coal.

However, the global coal industry is in decline as the world becomes increasingly conscious of the effects of climate change. There have been significant divestments from coal companies that were previous beneficiaries of the coal boom. At the same time, major coal importers like India, Pakistan and South Korea – which make up more than 50% of South Africa's coal exports – are also either transitioning away from coal or have limited their

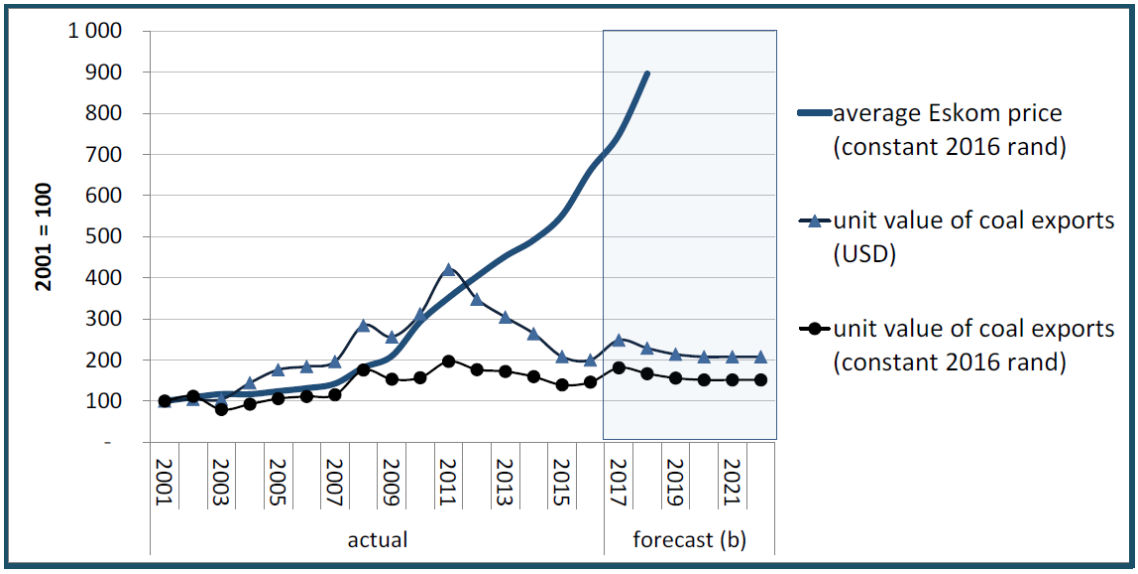
[53] McDaid, L., Austin, B., Bragg, C. (2010). 'Power to the people: raising the voice of civil society in electricity planning-Integrated Resources Plan 2010 inputs and departmental responses.' Cape Town: WWF, South African Faith Communities Environment Institute for Security Studies, October.

[54] Eberhard, A. (2011). Op cit.

growth forecasts.[55] For example, India's[56] stated economic policy is to reduce its reliance on coal imports by at least 60% by 2030.

Ideally, as global demand for coal declines, this should translate into lower tariffs, but because of Eskom's costly build programme, the average energy cost has increased. Figure 4 shows that the average Eskom price between 2001 and 2020 increased significantly while the unit value of coal exports declined steadily. This is because, in addition to its debt servicing costs, Eskom has not adequately contained its coal costs.[57] In its 2018/9 tariff application to NERSA, it anticipated that its total coal costs, including handling, would increase by 9%, which is about 3% above inflation forecasts. Added to this, there are a number of irregular coal contracts that have contributed to its overall coal costs. For example, in 2018 Eskom paid Glencore double the price it paid a smaller supplier for the same quality of coal, reflecting a loss of R1.4 billion.[58]

FIGURE 4: INDICES OF ESKOM'S AVERAGE PRICE COMPARED TO EXPORT PRICE OF COAL IN CONSTANT (2016) RAND (A) AND US DOLLARS



Source: Makgetla, 2016.

South Africa, which exports about 49% of its mining production, is a price-taker in the market, and the Rand denominated coal price is exposed to currency fluctuations, as shown in Figure 5. Dollar denominated coal price moved closely in tandem with export prices but diverged

[55] Institute for Energy Economics and Financial Analysis, 2019. Retrieved from: http://ieefa.org/energyfinance2019/.

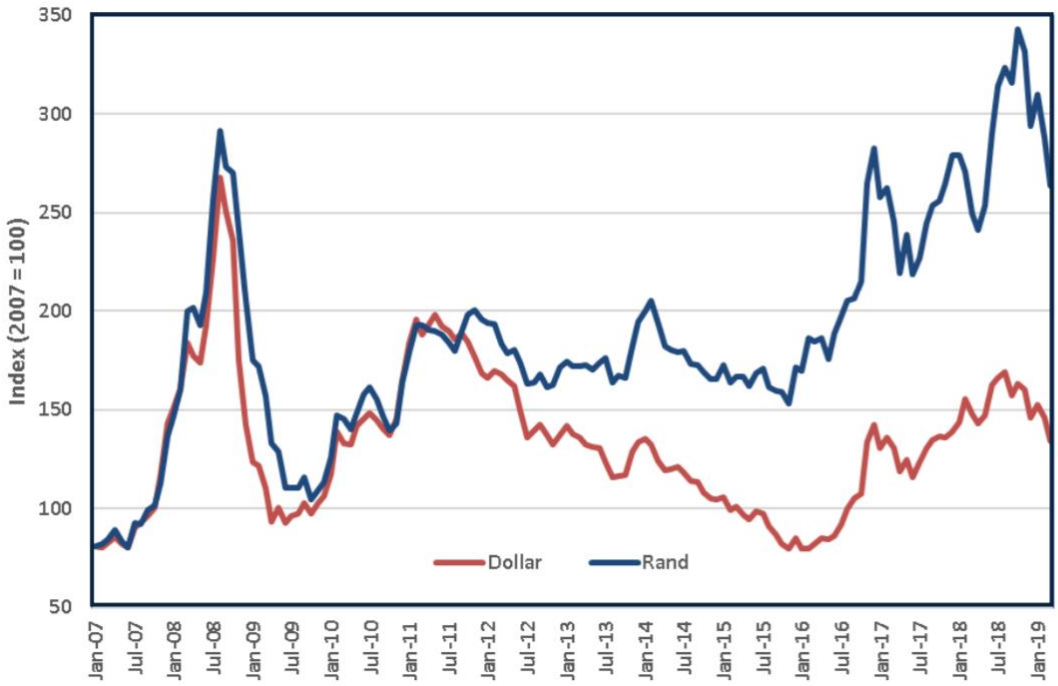
[56] This is also unfortunate for South Africa's coal industry because India is South Africa's largest export market for coal.

[57] Ibid.

[58] https://mg.co.za/article/2019-04-05-00-eskom-loses-billions-on-coal-contracts/

after 2011 due to the decreasing value of the exchange rate and Eskom's primary energy prices.[59]

FIGURE 5: DIFFERENCES IN IMPORT AND EXPORT COAL PRICES



Source: South Africa Minerals Council, 2019.

In addition to the changing global terrain, the exit of huge coal suppliers such as Anglo American has created a 'buyer's market' for these coal assets. This has seen the entrance of new firms, most of which are Black-owned businesses. For example, Seriti Coal, a company that is 79% Black-owned, bought all Anglo American's coal assets in 2018. While this is an important development in the industry, more research is needed into what this means in the context of a global shrinkage in the coal industry. The coal industry has also been mired in a number of corruption investigations that have been uncovered over the past five years and are discussed in Section 4.5.

South Africa's coal industry has also had detrimental effects on the environment and particularly on communities surrounding coal mines. It is the largest source of greenhouse gas emissions in Africa and the 14th largest emitter of greenhouse gasses owing largely to its dependence on coal-fired electricity.[60] Environmental activist groups such as Greenpeace have also documented the effects of coal pollution on people's health in surrounding coal

[59] South Africa Minerals Council. (2018). Retrieved from: www.coalminingmatters.co.za.

[60] Burkhardt, P. 2019. 'Eskom, Sasol emit over half of South Africa's greenhouse gas' *Bloomberg*. Available: https://www.bloomberg.com/news/articles/2019-07-30/eskom-sasol-emit-over-half-of-south-africa-s-greenhouse-gas

mines. Despite this, Eskom is still building the largest coal-fired powered stations in the Southern Hemisphere, discussed below.

4.3 ESKOM'S BUILD PROGRAMME: MEDUPI AND KUSILE

In 2004, Eskom was mandated to undertake a five-year investment plan for the country's electricity infrastructure, covering the generation, transmission, and distribution subsectors.[61] Its projected costs amounted to R93 billion, of which Eskom would fund R84 billion and IPPs would cover the remaining balance.[62] In its Annual Report for 2005/2006, Eskom reported that its board had approved an R150 billion build programme for five years up to the 2011/2012 financial year,[63] driven primarily by an increase in the electricity demand growth from 2.3% to 4%, particularly owing to the commodities boom during the 2000s, as well as the anticipated FIFA Football World Cup in 2010.

Generation projects were projected to take up to 70% of the budget, and transmission projects, 14%. The remainder of the budget was intended to fund improvements to the distribution network, and efforts to diversify the Eskom energy mix. Eskom consequently de-mothballed several power stations and built two new open-cycle peaking power gas turbines (OCGTs).

In 2007, Eskom began building two mega coal-fired power stations, Kusile and Medupi, targeting completion by 2014. Both have suffered massive delays and cost overruns due to poor planning, inappropriate engineering design, and irregular procurement and contracting practices; neither are fully complete as of the start of 2020.[64] In Medupi, as of 2019, only four of the six generating units are operational and the total costs of construction, including interest costs, amounts to R200 billion, compared to the projected amount of R90 billion in 2009.[65] In Kusile, one unit is in commercial service and the cost of production has also ballooned to R200 billion.[66] By 2014, instead of two new operational coal-fired power station the country was again beset with nationwide power outages as well as increased electricity costs. Figure 6 shows the real electricity prices between 1994 and 2017. From the 2007/08 financial year, there is a significant percentage increase in the electricity price, well above inflation rates at the time.

[61] Styan, J. (2015). Op cit.

[62] Ibid.

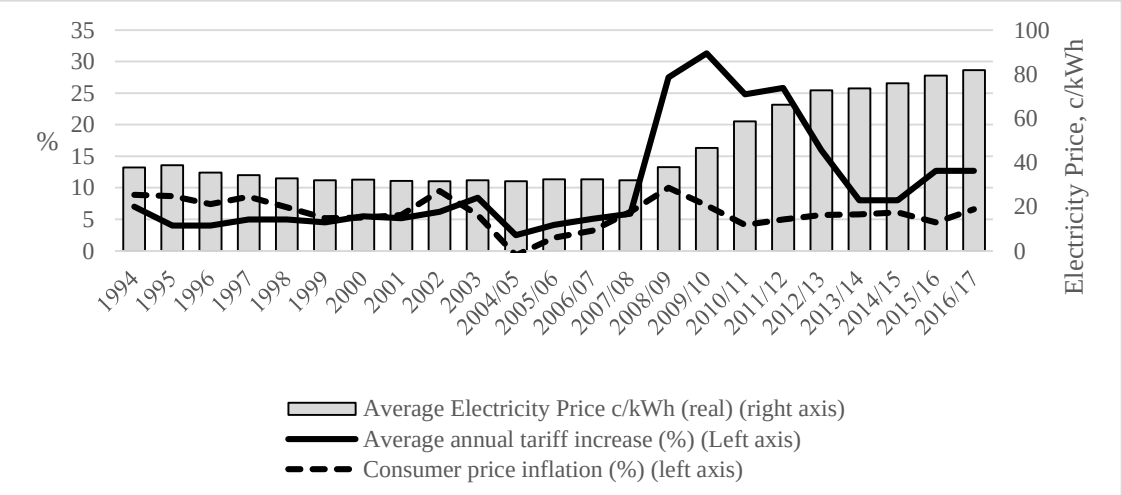
[63] Eskom Annual Financial Report, 2005/2006.

[64] Ibid.

[65] Mondi, L. (2018). 'State, Market and Competition – Can Eskom be rescued?' Centre for Development and Enterprise. Retrieved from: https://www.cde.org.za/viewpoints-state-market-and-competition-can-eskom-be-rescued/.

[66] Ibid.

FIGURE 6: ESKOM AVERAGE ANNUAL TARIFF INCREASES AND ELECTRICITY PRICES, 1994-2017



Source: Bowman, 2018.

4.4 SUMMARY OF ESKOM'S DEBT AS OF ITS 2019 FINANCIAL YEAR

Despite stable year-on-year increases in revenue (owing mostly to steady tariff increases), Eskom, in its March 2019 financial statement, reported a total income loss of R20.7 billion (from a loss of R2.3 billion in 2018) (see Table 1). The substantial loss, despite the revenue increase, is a result of an increase in primary energy cost, resulting in a lower earnings before interest, tax, depreciation and amortisation (EBITDA) (a proxy for free cash flow) that is not large enough to cover increased debt repayments. The government has needed to step-in repeatedly to ease Eskom's financial pressure, including a R69 billion bailout over the next two years (2020/2021).

TABLE 1: SUMMARY OF INCOME STATEMENT

R billion	Mar-19	Mar-18
Revenue	180	177
Other income	2	1
Primary energy cost	(99)	(85)
Net employee benefit expenses	(33)	(29)
Net impairment loss	-	(1)
Other expenses	(18)	(18)
EBITDA	31	45
Depreciation and amortisation expenses	(30)	(23)
Net fair value loss on financial instruments and embedded derivatives	(3)	(2)
Net finance cost	(28)	(23)
Loss before tax	(29)	(3)
Income Tax	8	-
Net Loss for the year	(21)	(2)

Source: Eskom financial statement 2019

Eskom's total liabilities have steadily risen over the past 13 years, from a total of R77 billion in 2006 to R604 billion reported in its 31 March 2019 financial statements. This represents an estimated 17% of total sovereign debt, 62% of which is guaranteed by the state. Eskom's total financial debt was approximately R450 billion by the end of 2019. This financial debt has increased substantially from around R30.2 billion in 2005/06. Most of this debt is attributable to its expansion programme, including Medupi and Kusile. Both mega power stations are now expected to be completed by 2023 and it is estimated that an approximate additional R18 billion will be needed to complete both projects. While Eskom's investment activities decrease as the capital expansion programme nears completion, cash required for servicing the debt has increased substantially from R43.4 billion in 2018 to R69.4 billion in 2019.

Despite this, debt servicing costs are also increasing. It is estimated that the total debt service will amount to an average of R88 billion per year for the next five years. In order to cover this, its tariffs would need to increase by over 40% per annum over that same period.[67] Eskom, as a regulated entity, is unable to pass costs on to consumers through the regulated tariff. In this way, Eskom has greater influence over its cost-reduction and liability usage measures with little control over its revenue collection and cash flow generation. This means that Eskom will have to keep raising new debt in order to fund its debt service obligations because it cannot service its debt from its operating income.

[67] Eskom Financial Statements. (2019). Retrieved from: http://www.eskom.co.za/IR2019/Documents/Eskom_2019_AFS_singles.pdf.

This debt burden is compounded by the lack of electricity payments to Eskom which has progressively worsened overtime. The total municipal debt owed to Eskom amounts to approximately R25.1 billion (including interest). This also includes Soweto's debt which reached R16.1 billion in March 2019 according the latest Eskom Financial Statement. In total, Eskom is owed approximately R40 billion in receivables outstanding.[68]

This is further compounded by Eskom's worsening credit ratings over the 2018-2019 period, as summarised in Table 2. Negative credit ratings have negatively affected Eskom's ability to borrow and pay their mounting servicing debt costs. According to its financial statement:[69]

> "[n]et debt is managed via the continuous monitoring of current and potential debt funding arrangements to achieve the most favourable terms possible. These terms and costs are heavily dependent on Eskom's credit rating. Eskom is focusing on alleviating the rating agencies' concerns regarding the high leveraged financial profile, inadequate electricity price path and funding requirements of Eskom."

TABLE 2: SUMMARY OF ESKOM'S CREDIT RATINGS

	Rating		*Outlook*	
	2019	**2018**	**2019**	**2018**
Standard and Poor				
Foreign currency	CCC+	BB-	Negative	Negative
Local currency	CCC+	BB-	Negative	Negative
Moody's				
Foreign currency	B2	Ba1	Negative	Negative
Local currency	B2	Ba1	Negative	Negative
Fitch ratings				
Foreign currency	-	-	Negative	Negative
Local currency	BB-	BBB	Negative	Negative

Source: Eskom financial statements, 2019.

4.5 CORRUPTION AT ESKOM

Due to the substantial combined financial value of SOEs in South Africa, enterprises such as Eskom and Transnet – which comprise over 20% of GDP in terms of asset value – are

[68] Receivables outstanding refers to debt owed to Eskom.

[69] Eskom Financial Statements (2019). Op cit.

essential to the government in advancing state-led economic transformation goals.[70] The ANC-led government implemented several economic policies that use SOEs as levers for greater access to black investors. Within Eskom and other SOEs, procurement functioned as an instrument to support economic transformation goals, through supplier-development programmes for black-owned and domestic firms.[71]

However, this developmental agenda has been co-opted by corrupt officials and private businesses (coined 'state capture'), the effects of which have been widespread, including malfunctioning SOEs and weak infrastructural capacity. One of the earliest exposed political influences in Eskom, in 2008, involved Hitachi Power Africa, who won the two mega boiler contracts. At the time of the deal, the ANC's investment arm, Chancellor House, owned a 25% stake in Hitachi Power Africa. In 2015, evidence emerged of the corruption of coal supply agreements and other systems at Eskom. This involved, particularly, the (then) acting CEO, Matshela Koko in a R200 million coal deal. A Special Investigating Unit and a Commission of Inquiry (the Zondo Commission) was set up in August 2018, to investigate the theft of over R170 billion, of which R139 billion is purportedly related to 11 contractors for the Medupi and Kusile power plants.

4.6 UTILITY DEATH SPIRAL

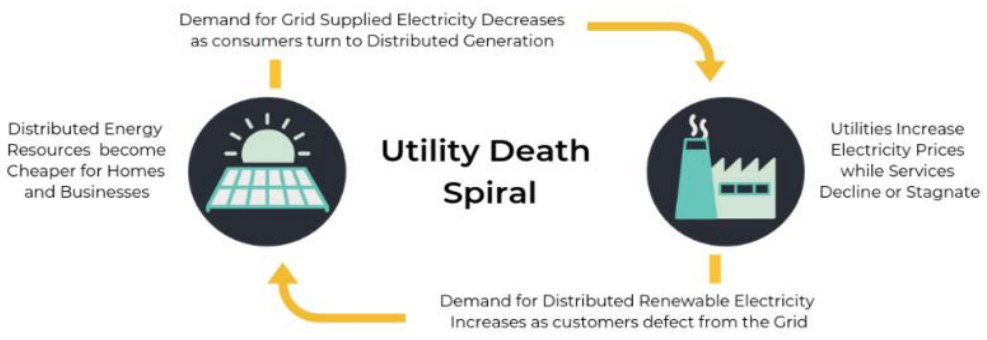
If Eskom does not reverse its current trajectory it runs the risk of falling into a death spiral. A utility death spiral occurs when the rate of electricity demand – due to high tariffs – is too low to compensate for higher tariffs and an unreliable supply of electricity. As more customers begin to generate their own electricity, tariff prices will be increased in order to cover the costs of maintaining and expanding the grid. If tariff prices are too high, less customers will be inclined to use the electricity provided by the utilities, and the utility will, again, need to increase its tariffs (see Figure 7).[72]

[70] Bowman, A. (2018). 'State-owned enterprise and economic transformation in South Africa: the political economy of the Eskom crisis.' Working paper.

[71] Ibid.

[72] Hutchinson, A.J., Gibson, E., Phaweni, T. (2013). 'Utility pricing death spiral.' Available: https://www.wits.ac.za/media/wits-university/conferences/misgsa/documents/MISG%202016%20Utility%20Pricing%20Death%20Spiral.pdf.

FIGURE 7: INFOGRAPHIC OF UTILITY DEATH SPIRAL



Source: Power Futures South Africa, 2019.

A utility death spiral at Eskom will have dire consequences to the South African economy, such as:

- Destabilise the South African economy, as most of Eskom's debt is guaranteed by the government;
- Cause very high electricity prices, further increasing the burden on low income households;
- Trigger more frequent load-shedding, as Eskom struggles to pay its debt, let alone its maintenance costs. Frequent occurrences of load-shedding will further destabilise economic activity; and
- Cause mass job losses in industries directly linked to Eskom, such as in coal mining.

Eskom may not be able to avoid a utility death spiral if demand for alternative forms of electricity generation – such as renewable energy – are more affordable. Global trends in energy production have revealed that governments are veering away from using fossil fuels as their main source of energy. The next section will delve more into this.

5 TRANSITIONING TO RENEWABLE ENERGY

As the global environment confronts the increasingly palpable effects of volatile climate changes, transitioning away from a fossil-fuel-led electricity sector towards low-carbon alternatives has become a global imperative. The Intergovernmental Panel on Climate

Change (IPCC) has warned that the global shift to a zero-carbon emissions economy needs to occur before 2030 in order to avoid the catastrophic consequences of steep global temperature increases. South Africa is one of the most carbon intensive polluters in the world (despite its comparatively small economy), with coal-powered electricity from Eskom comprising almost 60% of total greenhouse gas emissions - and it is still currently building two of Africa's biggest coal fired power stations.

The substantial decline in global renewable energy prices (including in comparison with fossil fuel powered electricity) and South Africa's access to wind and solar power generation provides for a more favourable environment for renewable energy generation. Plans for the significant diversification of South Africa's electricity mix, which includes over 20% of renewable energy in installed capacity, are set out in the biennial Integrated Resource Plan (IRP),[73] written by Eskom and promulgated by the Department of Energy (DoE). The most recent IRP, released in October 2019, provides for a diverse energy mix including:

- the procurement of an additional 1 860MW of nuclear power to be commissioned by 2024;
- 6 000MW of new solar photovoltaics and 14 400MW of new wind power capacity will be commissioned by 2030. This is a limit of about 2GW per annum until 2030.[74]
- 1 000MW of new gas to power will be installed by 2023; and
- uncapped procurement of distributed generation up to and including 2022, and thereafter, procurement would be capped at 500MW a year up to 2030.

The introduction of renewable generation was celebrated for diversifying the country's electricity mix, given that the proportion of coal in the overall electricity mix decreased from 85 to 46%. However, there is concern about the involvement of private producers and the effect this may have on employment and electricity prices.

5.1 PRIVATISING UTILITIES (PPPS AND REIPPPS)

While it is imperative that all major fossil fuel-dependent economies significantly scale down their emissions, it is equally important that efforts to introduce renewable energy are not captured by private-sector interests that perpetuate existing inequalities. The introduction of independent power producers (IPPs) has the potential to increase competition in the energy

[73] The IRP is an electricity infrastructure development plan based on the least-cost electricity supply and demand balance, taking into account security of supply and the environment through the minimisation of negative emission and water use.

[74] Integrated Resource Plan, 2019. Department of Mineral Resources and Energy. Available: http://www.energy.gov.za/IRP/2019/IRP-2019.pdf

market, however, because private interests are concerned with profit and shareholder maximisation, they are not incentivised to sell cheap electricity. This misalignment of incentives often occurs when natural private monopolies are created in the context of an industry with high fixed costs – such as the electricity generation sector – which hinders entry into the market and limits competition.

South Africa's Renewable Energy Independent Power Procurement Programme (REIPPP) is a public-procurement programme that allows Independent Power Producers (IPPs) to submit competitive bids to design, develop and operate large-scale renewable energy power plants across South Africa. As of 2019, 102 IPP projects have been procured from four bidding round windows with further windows to be opened as announced in the 2019 IRP.[75]

To qualify, developers must demonstrate how they will fulfil socio-economic development criteria and offer a price below a certain cap. Bids are scored 70% on price and 30% on socio-economic development criteria which include job creation, advance Black ownership; protect local content, local manufacturing, rural development, community involvement and improve skills development. Ultimately, the bid that meets the requirements at the lowest price obtains the contract.

In practice, however, the REIPPP has raised concerns about who benefits the most from the burgeoning renewable energy sector. Since the inception of the programme, a number of civil society and labour representatives have expressed fears that the introduction of IPPs will create private monopolies driven largely by wealthy businesses backed by international energy multi-national corporations.

Renewable energy IPPs have benefitted from the change in renewable energy market conditions and have acquired access within the coal-dominated regime in terms of access to the grid, policy influence, project development and financial subsidies under the REIPPPP (albeit at a smaller scale than the incumbent MEC beneficiaries). In addition to an influx of international players, whose impact on skills development and the long-term socio-economic benefits of industry in South Africa has yet to be determined, the renewable energy niche has also incorporated a number of major MEC incumbent, such as Exxaro and Anglo American. While renewable IPPs are contributing to the diversification in the national electricity mix, their introduction still contributes to an electricity-intensive model predicated on an increase in demand, with issues of affordability for low-income households unresolved.[76]

The IRP's trajectory is based on a significant increase in mining and minerals beneficiation by 2030, with a simultaneous expansion of electricity generation in these markets. Therefore,

[75] Baker, L. (2015). Op cit.

[76] Ibid.

despite the emergence of new IPPs and evolving organisation of institutions and technologies in the energy sector, the MEC is still a key driver of policy decisions in electricity, and still represents an integral relationship between the state and private capital.[77]

The expansion of competition into energy generation should prioritise other forms of renewable energy ownership that does not only include private participation, but includes other forms of ownership such as participation from communities and energy cooperatives. For example, legislative proposals under the European Union energy package, a blueprint for energy planning, recognises the roles of consumers, citizens and local authorities in the energy transition away from fossil fuels, especially with the advent of innovative technologies.[78] The state could also play a leading role in renewable energy generation, as explained in Section 6 below.

6 UNBUNDLING REVISITED

In December 2018, President Cyril Ramaphosa appointed an Eskom Sustainability Task Team to advise the government on strategies to resolve Eskom's operational, structural and financial challenges.[79] The task team consists of individuals with extensive expertise in the electricity industry, and a number of suggestions to relieve Eskom's debt and financial problems have been outlined. This section will discuss the most pertinent proposals, including unbundling Eskom's key assets, with an example of countries that have followed a similar path.

By February 2019, the task team recommended that Eskom be fully unbundled by 2022, mirroring the policy plans suggested in the 1998 White Paper. The recently proposed intervention for the medium- to long-term was establishing an independent transmission and systems operator (ITSO), initially as an Eskom subsidiary and later to evolve into a completely separate SOE. A roadmap to restructuring Eskom was released later that year, in October 2019, and outlines, in greater detail, the planned transition to an unbundled transmission system; beginning with the appointment of a Chief Restructuring Officer (CRO) before March 2020.

[77] Ibid., page 8.

[78] Gavencha, M., O'Brien, S., Crook, S., Monteiro, C. (2018). 'Models of local energy ownership and the role of local energy communities in energy transition in Europe.' Commission for the Environment, Climate Change and Energy.

[79] The Presidency of South Africa. (2018). Retrieved from: http://www.thepresidency.gov.za/press-statements/president-appoints-eskom-sustainability-task-team.

Cosatu, and other union allies, are opposed to an unbundling strategy for energy reform, arguing that it is 'code for privatisation,'[80] and SAFTU calling it a 'death trap'. As further explained by Sweeney:[81]

> "[i]t is a policy that comes straight out of the privatisation manuals of the World Bank and the International Monetary Fund (IMF). Whatever claims are made to the contrary, unbundling is not an end in itself, but a means to "engage the private sector". The process can stretch out over a period of years, but privatisation is the goal. There has not yet been an unbundling process that did not lead to incursions by the private sector into publicly provided electrical power."

This echoes concerns made after the 1998 White Paper was released. There is no guarantee that restructuring Eskom will not cause job losses and increased electricity costs via the penetration of private sector interests in electricity generation and distribution. In addition, certain vested interests in the private sector – including financial interests within the MEC such as coal and mining – have argued for reform measures that adopt alternative sources of energy such as 'clean coal' and nuclear instead, both of which pose high threats to the environment.[82]

6.1 WHAT IS UNBUNDLING?

Unbundling a utility refers to the separation of a vertically integrated monopoly into different business units, depending on its proclivity to being a natural monopoly or part of a potentially competitive sector. It is a type of structural reform that seeks to streamline its operations by separating the utility into its generation, transmission and distribution units. In the case of energy utilities, the transmission business unit is considered a natural monopoly because the transmission grid interfaces with the day-to-day system operation (i.e. the main electronic interface that balances supply and demand) as a unique centralised unit that requires expensive infrastructure and high maintenance costs. Thus, the transmission unit is usually owned by one firm (or the state). In contrast, the generation and distribution[83] components can be supplied from a variety of independent entities.

[80] Sweeney, S. (2019). 'Unbundling is code for privatisation.' Business Live, February 2019. Retrieved from: https://www.businesslive.co.za/bd/opinion/2019-02-15-unbundling-eskom-is-code-for-privatisation/.

[81] Ibid.

[82] Seccombe, A. (2019). 'Gwede Mantashe back coal and nuclear in SA's energy mix'. Retrieved from: https://www.businesslive.co.za/bd/national/2019-06-04-gwede-mantashe-backs-coal-and-nuclear-in-sas-energy-mix/.

[83] It has been argued that distribution networks are natural monopolies, given their high capital costs. However, advances in the capabilities and affordability of distributed energy technologies may disrupt this assumption. For a more detailed exploration into the changing nature of distribution networks: https://emp.lbl.gov/sites/all/files/Corneli_29June2016.pdf.

Unbundling can be functional, structural, and/or legal. A functional unbundling is considered a modest form of unbundling in that it only separates the transmission business unit from the parent company, without any substantial changes to the energy sector (recall that Eskom created a transmission unit that consisted of a separate accounting unit shortly after the Eskom Conversion Act was enacted in 2001). A more aggressive form of unbundling entails a structural separation in which the three units are separated, often including the legal unbundling of the transmission system and the system operator,[84] of which there are three different types – shown in Table 3 below. In all the options the unbundled entity can be owned by the government or a private company.[85]

TABLE 3: TYPES OF STRUCTURAL UNBUNDLING ARRANGEMENTS

Type	Description	Advantage	Disadvantage
Legally unbundled transmission and system operator (LTSO)	A company operates the transmission grid and system operator, but is a subsidiary of the parent company that owns the other parts of the electricity supply, such as generation, distribution and retail.	Efficient allocation of transmission costs from other parts of electricity supply.	Lack of complete independence, as the LTSO may favour the generating subsidiaries of the parent company for access to the transmission grid.
Independent transmission and system operator (ITSO)	An independent company owns and operates the transmission system and the system operator, which is independent from all other components.	Allows for fair competition among generating companies for access to the transmission grid.	Relying on one private company to own and operate the transmission asset may force rises in tariffs, as a price-setter in the market.
Independent system operator (ITO)	A separate company owns the system operator from all other components of electricity production.	Allows for fair competition amongst generating companies for access to the transmission grid	Coordination problems in terms of information exchange (reliability), and allocation of investment costs (for

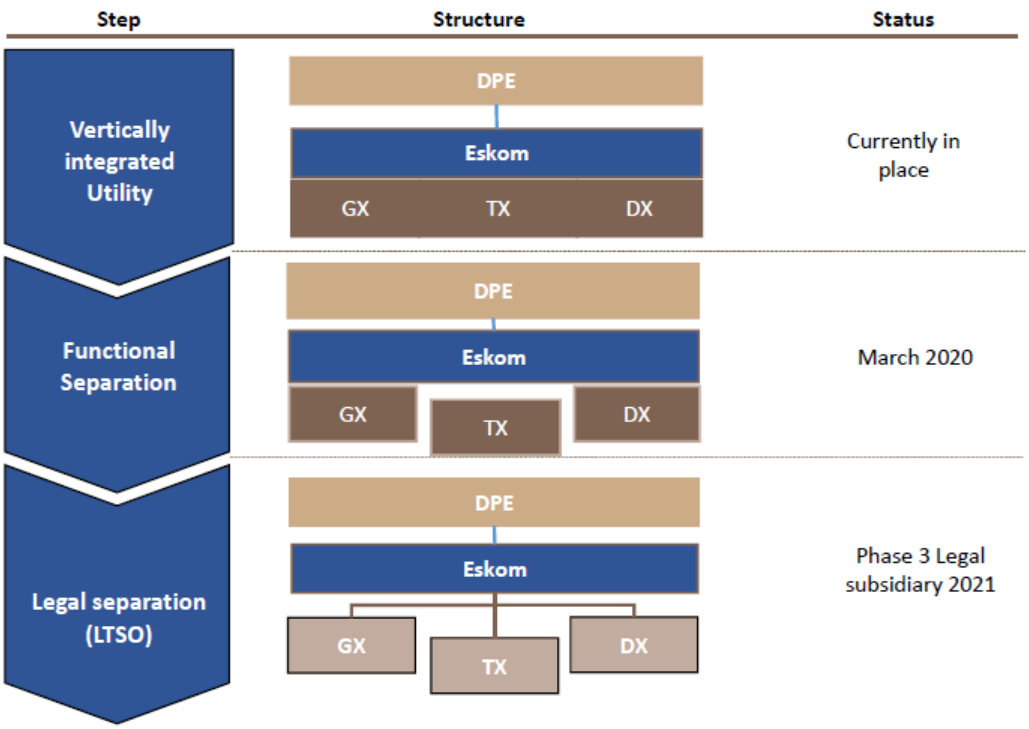
[84] The transmission system refers to the transmission grid and the system operator performs core functions in scheduling and dispatching of generation resources to meet demand. In completely independent system operators, there is a clear distinction between organisations that are responsible for operating the transmission grid and those that own and maintain the overall system operator.

[85] Chawla, M. and Pollit, M. (2014). 'Global trends in electricity system operation: where does the future lie? Retrieved from: https://www.eprg.group.cam.ac.uk/wp-content/uploads/2014/01/Draft-Working-Paper-MC.pdf.

		without dealing with the economic and political challenges of ownership unbundling of the transmission assets.	building new transmission assets) between the independent system operator and the independent transmission system.

According to the *Roadmap for Eskom in a reformed electricity supply industry*[86] released by the DPE in October 2019, the aim of unbundling Eskom is to form a LTSO in the short to medium run (end year 2021 – see Figure 8 - and to eventually transform into an ITSO in the long run. Figure 8 illustrates the planned transition into a legal separation by 2021.

FIGURE 8: PROPOSED ROADMAP TO AN UNBUNDLED ESKOM



The *Roadmap* argues that by formally splitting Eskom into its managerially and financially autonomous components, this will theoretically lead to:

- Cost containment, as each component will be run more efficiently;
- Improved management and greater understanding of the source of existing problems, thereby also addressing corruption; and

[86] Department of Public Enterprises. (2019). 'Roadmap for Eskom in a reformed electricity supply industry'. Retrieved from: https://www.gov.za/sites/default/files/gcis_document/201910/roadmap-eskom.pdf.

- Ease of attracting private investors, as more competition is introduced into the generation market.

6.2 INTERNATIONAL EXPERIENCE WITH UNBUNDLING

Energy market reform via unbundling is not a novel phenomenon, and was part of a broader approach in the 1980s towards greater economic liberalisation. Over 106 countries have adopted unbundling reforms in their electricity sectors. The first wave of transmission unbundling began in the 1980s, beginning with Chile (1985), Britain (1990), Norway (1992), Argentina (1992), and Peru (1992).[87] Material conditions in the global energy sector have changed significantly, and generally higher-income countries have pursued unbundling in the context of excess generation capacity and stable institutions.[88]

In contrast, the main motivation to unbundle vertically-integrated utilities in lower-income countries was in response to poorly performing utilities and the perceived need to attract private-sector investment/competition in generation capacity, networks, and electrification. These reforms were often championed by multilateral donors and were integral to structural adjustment packages to access international funding. These electricity industries were mostly characterised by electricity shortages, high levels of debt, and weak institutional capacity.[89] In Africa, most of the power utilities remain vertically-integrated monopolies, however, four countries (Uganda, Kenya, Zimbabwe and Egypt) have embarked on energy reform over the past century. The next subsections will focus on the experience and lessons learned from two African countries that have adopted an unbundling strategy (Uganda and Kenya).

6.2.1 KENYA

The Kenyan government embarked on electricity sector reform in waves, first in 1997 and later 2004, in order to "ensure affordable, sustainable and reliable supply to meet national and country development needs".[90] The reforms began with the enactment of the Electric Power Act (1997), with the aim of creating an enabling environment for unbundling of the national electricity utility company, as well as facilitating the entry of the private sector in energy generation, which was unbundled transmission and distribution. Kenya Electricity Generation Company (KenGen) was created to be responsible for power generation, Kenya Electricity Transmission Company Limited (KETRACO) owning the Transmission business,

[87] Chalwa, M. & Pollit, M. (2014). Op cit.

[88] Ibid.

[89] Chimbaka, B. (2016). 'Electricity sector market reforms: Getting it right.' Conference paper for Zambian department of economic regulation. Retrieved from: https://www.semanticscholar.org/paper/ELECTRICITY-SECTOR-MARKET-REFORMS-%3A-Getting-It-in-Chimbaka/758733f6f833d0300740f66a078554cd8a137ca2.

[90] Kenya Energy Policy, Ministry of Energy. (2012). https://www.kplc.co.ke/img/full/bWXFzkYGyS97_National_Energy_Policy_-_Third_Draft_-_May_11_2012.pdf.

and Kenya Power and Lighting Company (KPLC) was responsible for distribution. The Kenyan government maintains majority share ownership of KenGen (70%) and KPLC (50.1%) and wholly owns KETRACO.[91] Several supporting institutions were created thereafter, such as The Rural Electrification Agency (REA) in 2007 and the Energy Regulation Authority (ERA), which was later transformed into the Energy Regulatory Commission (ERC) to regulate the sector.

The power market reforms in Kenya have been lacklustre.[92] Proponents of the reforms argued that unbundling will enhance efficiency resulting in lower tariffs and improvement in the quality of service. However, electricity tariffs in Kenya remain high and electricity access rates are still low. Although, rural electricity access rate improved to over 20%, the national access rate is only about 18% of Kenya's population.

Power generation has increased, although a paper by Kathingo[93] shows that the increase in the per capita power generation was insignificant. There was also a significant increase in the participation of the private sector, with IPPs accounting for 26% of power generation. Kapika and Eberhard[94] also observe that the reforms in Kenya resulted in some achievements, especially in green energy sources. However, power reliability is still a challenge with an estimated 53 days of outages per year.[95] This is attributed to limited transmission and distribution infrastructure to transmit power from generators to end-users. The limited capacity is a consequence of underinvestment into the network exacerbated by the narrow focus on service extension to rural areas. Unbundling has not resulted in the promised gains, and it is unclear that the outcomes are any better than they would have been had unbundling not occurred.

6.2.2 UGANDA

Uganda is one of the few developing countries that has undertaken substantial power market reforms. The reforms involved the unbundling of the vertically-integrated government utility, the Uganda Electricity Board (UEB), into separate entities for electricity generation, transmission and distribution, beginning in 1999. The distribution company is currently operated and managed by private firm, UMEME, on concessionary terms for a period of 20 years. The government legislated for the creation of a regulator and the Rural Electrification Agency (REA) and liberalised the market to allow IPPs.

[91] KenGen and KPLC were partly privatised through IPOs from the Nairobi Stock Exchange.

[92] Godinho and Eberhard. (2019). 'Learning from power sector reform: the case of Kenya'. Policy Research Working Paper 8819.

[93] Kathingo, C. (2014). 'Effects of Power Sector Reforms in Kenya.' University of Nairobi. Nairobi.

[94] Ibid.

[95] Ibid.

Just as in the case is in Kenya, electricity tariffs have risen steeply (arguably the highest in the region) contrary to the argument that the reforms would result into lower tariffs because of efficiency gains. System losses continue to be high (although there has been an insignificant reduction in the losses). Electricity generation grew significantly and the access rate also increased. The access rate in rural areas remains significantly low (7%). In 2006, seven years after the start of the restructuring process, the supply deficit had grown to between 90 and 120 MW, approximately 50% between 1999 and 2006.[96]

Further, the power system in Uganda is still relatively small and various civil society organisation have questioned the motivations for unbundling, especially given corruption allegations in 2004 that led to the collapse of the contracted consortium, led by the US-based AES Corporation. Uganda may still lack the institutional capacity to handle too complex an electricity system.

Although power supply is still unreliable, technical and commercial losses high, and electricity access low, electricity reform has seen improved financial performance of electricity enterprises. Overall profitability of the private companies that are involved in the industry has increased by over 20%.[97]

6.2.3 LESSONS LEARNT FROM UNBUNDLING UTILITIES IN AFRICA AND ALTERNATIVES TO UNBUNDLING

The case studies from Kenya and Uganda illustrates the hazards of unbundling. A concerning similarity between and Kenya and Uganda's reforms is the substantial increase in electricity prices shortly after the adoption of the reforms, despite the theoretical assumption that greater private-sector involvement will lead to more efficient outcomes. The case of Uganda shows that privatising the transmission and system operators was a substantial factor in increased corruption and price hikes. In general, allowing a greater role for private actors (especially international multi-nationals) has proven to lead to higher prices, in particular if the role and capacity of the energy regulator is weak. Zambia, by contrast, is a good example of a country that initially set out to liberalise its energy sector – owing to structural adjustments programmes – but retracted this plan after former state-owned companies in other sectors that were privatised led to high price increases and substantial job losses. In addition, the state-owned electricity company was viewed as a the only viable vehicle for rural electrification and privatisation would have affected this programme. Since this decision was made in 1998, the electricity SOE has increased profitability and decreased distribution losses by over 50%.

[96] Meyer, R., Eberhard, A. & Gratwick, K. (2017). 'Uganda's power sector reform: There and back again?'
[97] Chimbaka, B. 2016. Op cit.

Proponents of unbundling have argued that electricity reform requires committed and stable institutions to effectively carry out the reforms. This includes strong regulatory institutions that keep private actors and government officials in check. As in the case of Kenya and Uganda, coherent frameworks for planning and implementation, with clear steps and timelines to guide the sequencing of the reform, are necessarily.[98] It is equally important that the reform approach be responsive to the constantly changing political and economic context. Greater competition and ease of identifying and solving inefficiencies in segments of the sector are other proposed advantages of unbundling. According to Fillipova and Eberhard,[99] who have conducted extensive analysis on energy reform, the further critical element to reduced costs of electricity post-reform lies in introducing a mix of private and public ownership in the generation space, while keeping the electricity transmission infrastructure publicly owned.

However, there are other potential drawbacks to private-sector involvement through IPPs. First, IPPs usually entail long-term price agreements that lock in the public sector for extended periods of time. In the context of constantly-falling renewable energy prices globally this may commit the government to unnecessary expense. Secondly, despite the argument that IPPs promote greater cost efficiencies, experience in African have shown that this is not necessarily case and efficiency is only guaranteed under specific regulatory and institutional conditions. Thirdly, greater privatisation of the electricity industry may not support development goals as the distribution of profits is accrued to a select few providers, and doesn't guarantee efficient electricity access for all.

There are also potential benefits to keeping electricity utilities as vertically-integrated monopolies. Vertical integration facilitates the coordination of highly distinctive and interdependent investments across the supply chain and any new investments in any segment allows for better economies of scale. In vertically integrated utilities, the costs are theoretically lowered because of centralised management. Due to the economies of scale, end-user tariffs with vertically integrated utilities are also theoretically lower because profit margins at each stage in the supply chain are low. It is also easier to avert cascading failures of grid elements and generation units when the supply chain is combined and owned by a single entity.

[98] Filipova, A. & Eberhard, M. (2019). 'Key lessons on institutional arrangements for managing the restructuring of power utilities.' Policy note, Power Futures Lab. Graduate School of Business, University of Cape Town.

[99] Ibid.

7 FINDING A PATH TO SUSTAINABILITY

South Africa faces a series of interrelated challenges: guaranteeing Eskom's financial viability; ensuring a electricity generation, transmission, and distribution system with sound oversight and greater efficiencies that can advance a broader developmental agenda; and transitioning away from a fossil-fuel-reliant energy sector. Unbundling has been advanced as a key policy reform. However, it is unclear that this is optimal, and certain that it cannot achieve, on its own, all these objectives. This section explores three other – mutually compatible – plans currently on the table.

7.1 THE JUST TRANSITION

The Just Transition is a framework, developed by the trade union movement, to protect workers' jobs and livelihoods as the economy shifts towards zero-carbon forms of energy, production and manufacturing, in a fair, just and non-discriminatory manner. This means that economies, communities and workers, in and around coal-fired power stations, need to be integral to any state plans that seek to diversify to renewable energy. As coal supplies 91% of South Africa's total energy, unravelling a heavily coal-dependent economy requires creating alternative decent employment opportunities in the most affected regions. Given the high unemployment rate in South Africa, many institutions, particularly trade unions, argue for a socially-owned renewable energy system that enables job creation in South Africa.

An alliance between labour and environmental movements (aptly termed a 'red-green' alliance) could provide the necessary platform to benefit the interests of workers in the extractive industry while simultaneously championing the environmental justice movement.[100] In 2010, Cosatu and various environmental justice groups attempted to establish a red-green alliance. However, over time, this relationship proved tenuous as workers expressed concern over the detrimental short-term effects, both social and economic, of a coal phase-out. Other Cosatu affiliates, such as the National Union of Mineworkers (NUM) and the National Union of Metalworkers of South Africa (NUMSA) (the latter no longer an affiliate), further argued that the concerns of the environmental activists were 'class-blind' and greatly undermined efforts to sustain the livelihoods of approximately 90 000 coal miners across South Africa.

Other differences between labour and environmental activists also relate to the closure of coal-fired power plants and the extension of the privatised renewable energy programme. The labour movement contest that there should be no job losses under the banner of a Just

[100] Cock, J. (2018). Contesting the colour of a Just Transition in South Africa. Retrieved from: https://www.wits.ac.za/news/latest-news/in-their-own-words/2018/2018-04/contesting-the-colour-of-a-just-transition-in-south-africa.html.

Transition, while parts of the environmental movement are adamant about achieving the closure of coal stations and the immediate adoption of renewable energy.

An illustration of this lack of goal-alignment within the red-green alliance, is NUMSA's urgent court interdict preventing 27 contracts with renewable energy independent power producers (IPPs) from being signed.[101] NUMSA argued that the introduction of IPPs in the market would lead to higher electricity prices that would negatively affect the working class. In turn, environmental groups vehemently condemned the interdict by NUMSA, arguing that renewable energy creates new sustainable opportunities that will grow the green economy and enable a just transition away from coal. This example, is also illustrative of the dangers of renewable energy being associated with narrow private-sector interests, rather than as a key ingredient in a broader, pro-worker, transformation of the economy.

It is clear from the tension between labour and environmental movements that there is tension over short-term and long-term impacts that needs to be balanced effectively. Addressing the climate crisis is in the long-term interests of labour while in the short-run extractive industry workers' immediate needs must be met. As Cock articulates:[102]

> "the labour movement must own the process, undertake research on alternative job creation and formulate clear demands on the state. It must challenge dominant conceptions of a Just Transition that re-packages capitalism through notions like the 'green economy', or 'sustainable' and 'green capitalism', bringing the efficiency of the market to bear on nature and its reproduction."

The electricity crisis (and crisis at Eskom) offers an opportunity for a massive state-led investment in renewables that can benefit communities. This can be done by reskilling workers in the coal industry and in Eskom to provide employment opportunities to them and to communities with a strong dependence on coal production. Regardless of whether Eskom is unbundled, advancing a just transition that benefits communities should be prioritised. Therefore, any financial rescue and unbundling initiatives must be in support of this objective.

7.2 THE ROLE OF INTERNATIONAL CLIMATE FUNDS IN ALLEVIATING ESKOM'S DEBT PROBLEM

A proposed solution to Eskom's debt crisis, which would also transition it towards renewable energy provision, is a combined transaction that raises international donor finance to lower its debt, while simultaneously contributing to a climate change mitigation fund. Eskom could raise between R150 billion and R200 billion from climate change mitigation funding through

[101] Alfreds, D. (2019). Revealed: Here's where the worst air pollution is in South Africa. News24 article. Retrieved from: https://www.news24.com/Green/News/revealed-heres-where-the-worst-air-pollution-is-in-sa-20181029.

[102] Cock, J. (2018). Op cit.

a special purpose financing vehicle at discounted interest rates, in return for Eskom accelerating its shift away from coal-based power generation.[103] The proposed plan will:[104]

- Swap at least 75% of Eskom's legacy market debt into a separate state-owned financial entity (options include: SPV/ring-fenced Treasury facility/DFI-managed JV/Office of the CRO, etc.). This avoids the problem where many diverse debt holders have a veto right over restructuring plans.
- Write-off or convert a portion of Eskom debt (now held by the state financial entity) in order to create an efficient and appropriate capital structure (a refinanced and repurposed Eskom could handle around R200 billion in debt).
- Wind down the toxic debt over time with three financial flows: revenues/dividends from Eskom, annual budget allocations, and R160+ billion of international concessionary climate funding.
- Concessionary climate funding is dependent on modestly accelerating closure of coal-fired power plants by 15% to 2050, which effectively means we are selling the carbon for a highly concessionary financing cost (interest rate) on R160+ billion (the payment for the carbon).
- A large portion of the value of the concessionary climate funding is granted to the South African Just Transition Fund, managed by Development Bank of Southern Africa (DBSA). The Just Transition Fund would support a broad portfolio of social, community, small business and industrial projects to assist affected communities and support the economic transformation of Mpumalanga (as alternative to the sell-off/asset stripping option), including absorption of some redeployed coal workers. Complementary funding for retraining can be funded using SETA funds. Certain workers within the older age brackets who may be 'untrainable' would be 'employed' by a 'human SPV', paying 75% of their monthly wage paid until retirement.

7.3 LIFTING R250 BILLION DEBT USING PUBLIC PENSION FUNDS

Cosatu has proposed using the Government Employee Pension Fund (GEPF), with an estimated asset base of R2 trillion, to bailout the unsustainable debt held by Eskom. Specifically, it suggests that the Public Investment Corporation - which manages money on

[103] Kretzman, S. (2019). 'Green fund could save Eskom.' City Press. Retrieved from: https://city-press.news24.com/Business/green-fund-could-save-eskom-20190519.

[104] This section is drawn from: Swilling, M. (2019). The need for a Just Transition supported by a large climate transaction. Available: https://www.dailymaverick.co.za/article/2019-09-17-religious-commitment-to-coal-could-scuttle-sa-economy/

behalf of the Government Employees' Pension Fund - as well as the IDC and the DBSA to take on R254 billion of Eskom's debt.

In exchange, Cosatu expects unbundling not to proceed and have requested a social compact between the government, business, labour and community. This would outline the commitments and sacrifices each stakeholder will contribute to resolving the energy crisis in South Africa, including:

- Securing affordable electricity supply, given that electricity is a key economic driver of job creation and inclusive growth in South Africa.
- Fixing the operational problems in Eskom, including addressing its bloated management, supply chain inefficiencies and ensuring a cost-reflective tariff structure.
- All of Eskom's contracts with service providers – both public and private entities – must be subject to legal review, with necessary redress effected, in the event that they are found guilty in a court of law.
- Foregrounding the role of renewable energy generation and self-generation. Clear measures for a Just Transition must be outlined, ensuring that renewable energy systems are social-owned and indeed, *just.*
- Reducing Eskom's financial debt by injecting fresh capital and additional resource mobilisation mechanisms.

8 CONCLUSION

Eskom will have to structurally transform or it risks plunging the South African economy into an unprecedented crisis. As its debt grows larger, and the global fossil-fuel industry declines, what it does now to improve its balance sheet and organisational structure will have long-run impacts. Some suggestions to alleviate its debt and reform Eskom have been put forward, but most do not go far enough. For example, unbundling Eskom may improve the utility's ability to track the source of operational and organisational problems, but this will not solve its existing debt problem. Structurally transforming Eskom entails solving its most immediate problems within a broader developmental plan to transition away from coal and create jobs.

In this way, Eskom's crisis is embedded within a stagnant economy, which also requires structural transformation, especially in light of the urgency of climate change. A structurally transformed economy and energy sector is one that is resilient to future crises posed by

climate change. The economy's reliance on less productive industries has perpetuated concentrated ownership and wealth patterns in sectors such as mining and fossil fuels production, thus contributing to greater inequality. The effects of climate change will have particularly harsh impacts on more vulnerable segments of the population in South Africa, especially in surrounding coal communities that have experienced decades of water and air pollution. A Just Transition will be imperative to diversify the economy to sustainable methods of production, as well as create employment and alleviate poverty.

In addition, Eskom must be fully transitioned to renewable energy generation for it to be a sustainable state-owned utility by 2050. Because Eskom's most urgent problem is its escalating debt levels – as it poses a direct threat to the national fiscus – tapping into international climate funds for a deliberate transition to renewables energy may become unavoidable. A well-co-ordinated Just Transition has the potential to diversify and expand the economy away from the MEC, generating employment, sustainable growth and shared prosperity.