A bold step forward for SA's energy sector

Authors: Power Debt Fund team
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South Africa's energy sector took a bold step forward with the release of two papers in late 2019:

1. the updated Integrated Resource Plan (IRP 2019); and
2. the Roadmap for Eskom in a Reformed Electricity Supply Industry (Roadmap for Eskom).

These publications tacitly open up the sector to purchasing electricity generated from multiple energy sources. The proposals are pragmatic and will be supported by the unbundling of Eskom into smaller, more accountable and efficient operating units.

The private market sector eagerly awaits the implementation of these plans, which has been agonisingly slow over the past 12 months.

More clarity is needed on how Eskom's roughly R450 billion debt burden will be managed on a sustainable basis that limits risks to the fiscus. That said, the difference being made under the leadership of Eskom CEO Andre de Ruyter, to craft a more holistic and coherent long-term response to the Eskom crisis, is encouraging. This new approach is no panacea for the years of mismanagement and operational regression in the country's power utility, but it does indicate a welcome re-orientation to addressing Eskom's challenges, even if much work still remains to be done.

1. IRP 2019 – the driving force

IRP 2019 is a key driver behind the restructuring plans envisaged in the Roadmap for Eskom. In an effort to drive maximum cost efficiencies, it underpins a ***decreased*** reliance on:

- dirty coal-fired energy;
- decentralisation of an outdated and unsustainable vertically integrated monopoly; and
- increased competition from various energy suppliers.

As the world moves towards a ***greater*** reliance on alternative energy sources, technology costs are decreasing with economies of scale. IRP 2019 embraces a flexible, diversified energy mix, so as to take advantage of the rapidly evolving energy technology. Energy storage is noted as a game changer for renewables. In addition, the recent discovery of gas resources off the South African (Brulpadda) and Mozambican coastlines presents enormous opportunity.

The nuts and bolts

Updated 2019 plan for the period ending 2030 (MW)

	Year	Coal	Coal Decommision	Nuclear 2	Hydro	Storage	PV	Wind	CSP	Gas/Diesel	Total MW/Net new p.a.
Installed	2019	**37,149**		**1,860**	**2,100**	**2,912**	**1,474**	**1,980**	**300**	**3,830**	**51,605**
Committed	2019	2,155	(2,373)					244	300		**326**
	2020	1,433	(557)				114	300			**1,290**
	2021	1,433	(1,403)				300	818			**1,148**
	2022	711	(844)			513	1,400	1,600			**3,380**
New Additional	2023	750	(555)				1,000	1,600			**2,795**
	2024			1,860				1,600			**3,460**
	2025						1,000	1,600		1,000	**3,600**
	2026		(1,219)					1,600			**381**
	2027	750	(847)					1,600		2,000	**3,503**
	2028		(475)				1,000	1,600			**2,125**
	2029		(1,694)			1,575	1,000	1,600			**2,481**
	2030		(1,050)		2,500		1,000	1,600			**4,050**
Decommssion			(11,017)								
Total Installed		**33,364**		**1,860**	**4,600**	**5,000**	**8,288**	**17,742**	**600**	**6,830**	**78,284**
Capacity Mix 2030		42.6%		2.4%	5.9%	6.4%	10.6%	22.7%	0.8%	8.7%	100%
Energy Contribution		**58.8%**		**4.5%**	**8.4%**	**1.2%**	**6.3%**	**17.8%**	**0.6%**	**1.3%**	
Draft IRP 2018		**33,858**	**(12,000)**	**1,860**	**4,696**	**2,912**	**7,958**	**11,442**	**600**	**11,930**	**75,256**
Difference vs draft 2018		(494)	983	0	(96)	2,088	330	6,300	0	(5,100)	3,028

1. Excluded from the table is an allocation to an unspecified 2000MW to fill the short-term gap by 2022 and flixible "other" (distributed generation, co-generation, biomass, landfill) of 500MW pa from 2023
2. Nuclear in 2024 refers to the refurbishment of the existing Koeberg Power Station, not new capacity

Source: IRP 2019, IRP draft 2018, RMB Global Markets (data as at 18 October 2019)

Renewables

Onshore wind, solar photovoltaics (PV) and concentrated solar power (CSP) are the biggest contributor of renewable energy, from around 5% of the current energy mix to almost 25% in 2030. They have displaced gas as the previously dominant source of new energy supply.

Current infrastructure constraints, such as inadequate ports and overland gas transportation facilities, have extended the roll-out timelines of the renewables. In the meantime, IRP 2019 plans to utilise the gas for the conversion of expensive diesel-fired power plants (peakers) located around the coast of South Africa to gas-fired power.

Nuclear

Nuclear energy features in IRP 2019 only in respect of a further investment in Koeberg Power Station in order to extend its life for a further 20 years from its scheduled decommissioning in 2024.

This is deemed a prudent initiative, given the high operating efficiencies of Koeberg and the low cost of its planned refurbishment. Any new nuclear capacity to be considered after 2030, will depend on technology developments and updated assumptions to the energy mix over the next 10 years.

Energy dependence on coal

Currently: 72% // By 2030: 43% // By 2050: 20%

Coal

Coal will continue to play a significant role in electricity generation in South Africa. However, with the scheduled decommissioning of existing power plants, coal's current contribution to the energy mix will gradually reduce from the current 72% to 43% by 2030, and potentially to 20% by 2050.

In the meantime, almost R70 billion will be spent over the next five years to retrofit existing coal-fired plants to meet minimum environmental standards. More research into clean coal technologies is planned, and, apart from completing Medupi and Kusile, a further 1 500MW of new coal-fired plant capacity is planned by 2030, provided that funding can be procured.

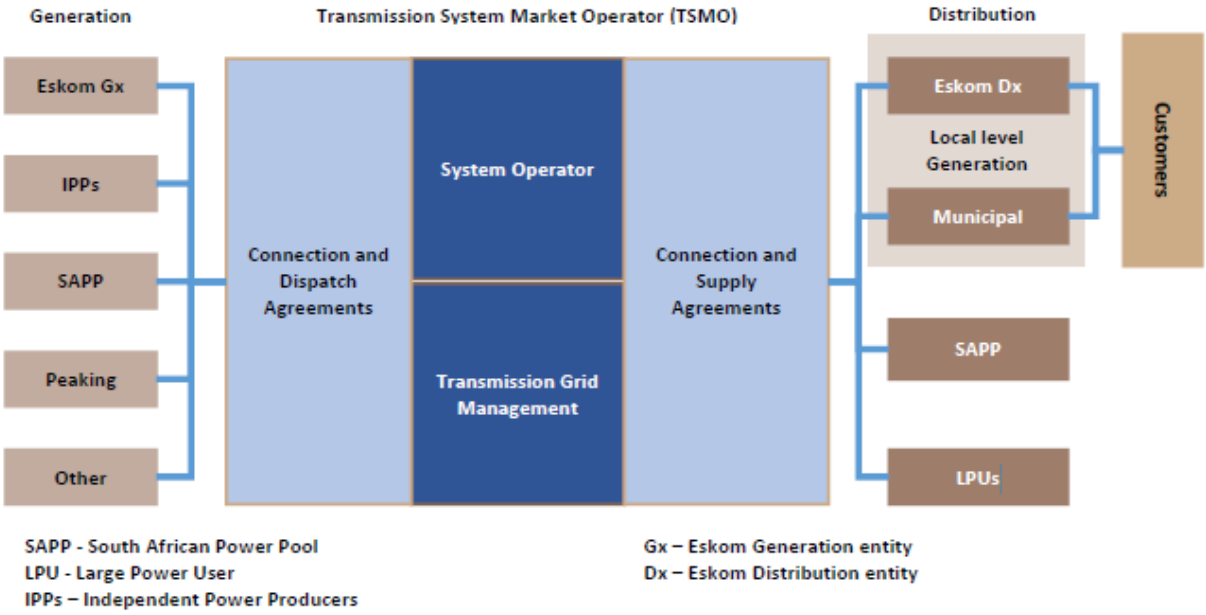
2. Roadmap for Eskom

The stated vision for South Africa's energy future sees Eskom's transition from a vertically integrated monopoly to an entity in which generation, transmission and distribution are functionally and legally separate.

This introduces the prospect of competition in electricity generation, both between various Eskom plants and among Eskom Generation (Eskom GX), independent power producers, and embedded generation.

Eskom Transmission (TSMO) – the central role

As highlighted in the diagram below, Eskom Transmission will play the central role of Transmission System Market Operator (TSMO), responsible for balancing electricity supply and demand in real time. Large energy users will also be licensed to develop their own generation capacity. The TSMO will buy energy from generators (including Eskom's own power plants housed in its generation entity) in terms of Power Purchase Agreements. In turn, Eskom Transmission will sell the procured power to its distribution entity, municipalities and large private sector power users, in terms of Connection and Supply Agreements.



Source: Roadmap for Eskom in a reformed electricity supply industry

Red flag
While the centralised purchase of electricity on a least-cost basis from a variety of generation sources is positive and in line with international norms, it would be preferable if the TSMO were independent of Eskom Holdings.

Having the TSMO as a subsidiary of Eskom Holdings introduces the possibility of a conflict of interest. This begs the question: what mechanisms will be in place to ensure that the TSMO isn't favouring Eskom GX in its purchasing decisions? The TSMO would need to purchase electricity in a transparent, fair and cost-effective manner, but the Roadmap does not detail how this conflict will be managed. We expect this to be clarified as the TSMO is established and its board of directors is constituted.

Distribution – yet to take shape
The Roadmap notes that further thought will need to be given to the structure of the distribution sector, as there are currently no policy parameters to deal with this changing landscape.

Challenges to reshaping the distribution sector include the dependence of many municipalities on revenue from electricity tariffs and the development of roof-top solar and similar local embedded generation.

Impact of the restructure – hazy in parts
The planned restructure of the utility is expected to open up a power market in which there will be a far bigger participation by the private sector. The key challenge is the migration from a model dominated by Eskom, to one which includes a multiplicity of different generators and Eskom providing a facilitative role through their continued operation of the transmission grid.

It is intended that this new business model will enhance the operating transparency and cost efficiencies of power generation – to the benefit of Eskom, the energy sector, and, ultimately, the South African consumer. However, the market is awaiting the details of the proposed allocation and terms of the Eskom debt. And, the Minister of Finance has stipulated that any further fiscal assistance to Eskom will be contingent on the progress of the restructure, operational improvements and cost cutting.

A just transition for workers
The Roadmap seeks to protect and grow jobs through a just transition of Eskom's power station and coal sector workers into new sectors that will be developed by the new energy mix. Many new jobs are planned in the downstream value chain, such as manufacturing of renewable energy components, given the expected growth of new energy sectors both locally and across the continent. Retraining and bridging initiatives for workers are planned, with a social safety net for those who are not able to transition to the new opportunities.

Recent developments at Eskom
Eskom's new CEO, Andre de Ruyter, appears to be getting the basics right:
- strictly applying recommended plant maintenance requirements;
- redirecting control and accountability for these decisions back to the management of the power stations;
- leaning on original equipment manufacturers for technical support; and
- entering into long-term arrangements to rebuild maintenance capacity.

However, in our view, we need to moderate our expectations of what a possible turnaround for Eskom might look like. Even with the basics under control, an 18- to 24-month period of significantly increased load shedding is expected. The current condition of the fleet and the damage that has already been done means that it will take time for the incremental benefits to be seen. In short, we need to continue to monitor both the quality of the decisions taken on Eskom and their outcomes.

Eskom's turnaround

We need to moderate our expectations: even with the basics under control, an 18- to 24-month period of increased load shedding is expected.

We estimate that current power shortages will increase as aging power stations are taken off line more frequently for maintenance. This underlines the urgency for government to announce the next bid window of the Renewable Energy Independent Power Producer Programme - and to implement the decisions already taken to procure more power from the private sector.

What do Investors want to see?

Private sector capital seeks to earn risk-adjusted, commercial returns, which take into account the intended term and liquidity of the investment. Substantial private sector capital is available for investment in the energy sector, and investor demand is premised on:

- transparent and clear rules of engagement with all stakeholders;
- fair treatment of all lenders (which is crucial);
- consistent communication and updated planning, timelines and objectives;
- commitment to corruption-free contracts, which have the financial backing of government; and
- a financially and operationally sustainable borrower that is able to repay its liabilities.

Our focus has now shifted from the guiding principles for energy sector reform, as outlined in the Eskom Roadmap, to government's **commitment** to energy sector reform, as evidenced by the practical execution of the unbundling in the timeframes stated.

We are at a crossroad

While the vision for South Africa's new energy path is encouraging, pragmatic and full of developmental potential, it must translate into urgent execution of the plans set out in IRP 2019 and the Eskom Roadmap in order to have any real value. The energy sector is at a crossroad, and actions taken now will have multi-generational social, economic and environmental implications for our country.

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