# Eskom and energy:
## Large-scale renewables programme the only way to keep the lights on

*By Mark Swilling*

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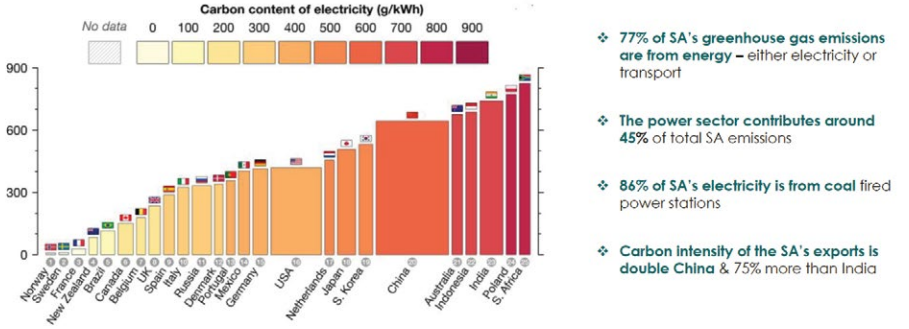
*Taking account of current actual empirical conditions and the balance of power in South Africa, MARK SWILLING traces the prolonged discursive process through which South Africa arrived at its – precarious and contested – decision in favour of a large-scale renewables build programme. This article is based on a paper presented in July at a panel discussion on 'What constitutes a progressive perspective on our energy crisis?" organised by the Progressive Citizenship Initiative.*

South Africa's energy system is the most coal-intensive in the world. As a result, compared to other countries, it is the most carbon intensive economy in the world. Eskom, the vertically integrated state-owned power utility, owns 15 of the 16 coal-fired power stations that together comprise just over 40 GW of installed capacity.[1] At the same time the coal fleet is old (on average 41 years old by 2022) and therefore most of the power stations need to be decommissioned by 2050.

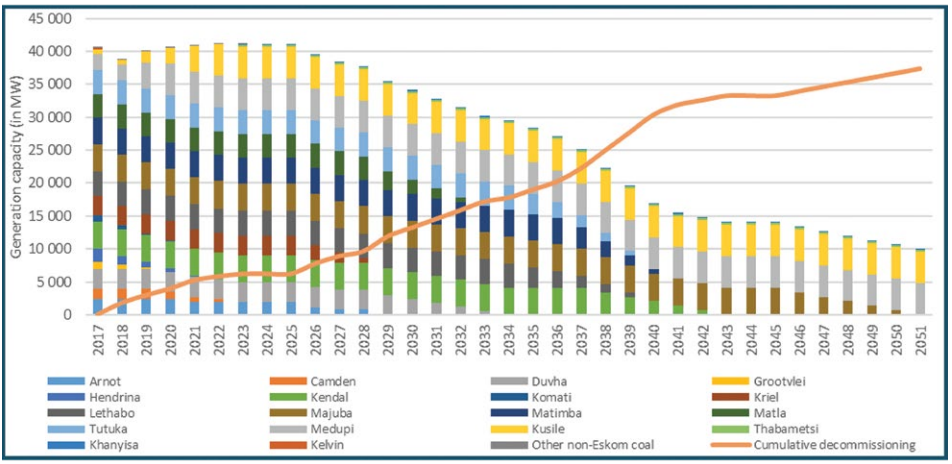
**Figure 1: Carbon content of electricity**




*Source: Carbon Brief, 2018*

Figure 2 reflects the official decommissioning strategy through to 2051 based on figures from the Department of Energy and Eskom. These figures assume that two new privately owned power stations that are being planned, Khanyisa and Thabametsi, will get built, which is now highly unlikely. Just as unlikely is that South Africa will be able to raise funding to build another coal-fired power station, especially since China announced it will no longer fund coal-fired power stations outside China (Carbon Brief, 2022).

**Figure 2 South Africa's coal-based generation capacity and scheduled decommissioning**

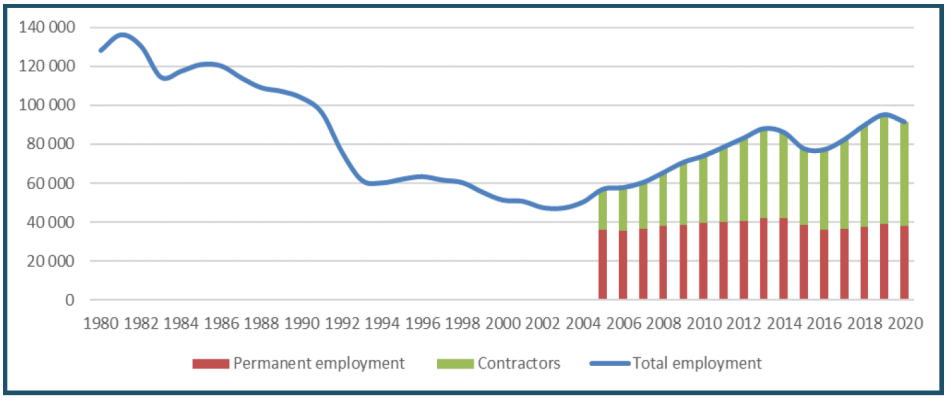



*Source: Hermanus & Montmasson-Clair, 2021*

In a country with one of the highest unemployment rates in the world, the socio-economic impact of decommissioning is a highly charged political issue. A total of ➤➤

150,000 workers are employed in the coal-related value chain. By 2020 there were 91,459 workers employed in coal mines that service both Eskom (around half the mined coal) and the coal export market. This figure included 7,433 mineworkers employed by Sasol, South Africa's fuel-from-coal company. There were around 15,000 transport-related jobs: Transnet Freight Rail (about 12,000 people directly depending on the domestic and export coal lines), the Richards Bay Coal Terminal (532 people in 2014) and coal trucking (about 200 trucking small businesses employing 2,000 to 4,000 people in 2018). Eskom's coal-fired power plants employed about 10,000 people, Sasol employed 17,814 people, steelmaking 6,622 and cement production the rest (about 7,000 people in 2016) (Hermanus & Montmasson-Clair, 2021). Of the 85,000 people directly employed in coal mining, about half were permanently employed while the rest were contract workers. The rise in contract workers who have less secure employment with fewer benefits is a key feature of the restructuring of the coal sector in response to the profit squeeze and leveraged buyouts by black empowerment companies.

**Figure 3: Direct employment in coal mining in South Africa**



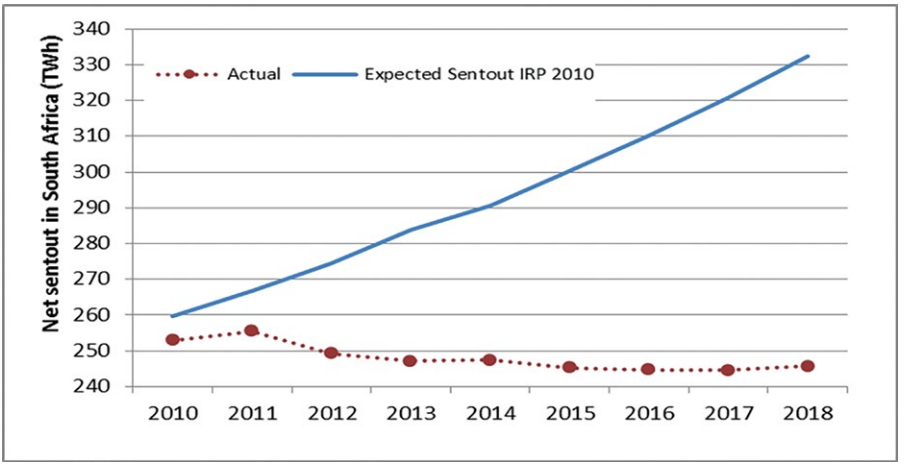

*Source: Hermanus & Montmasson-Clair, 2021*

South African energy planning has been notoriously poor. During the late apartheid years over-investment in generation capacity resulted in steep drops in prices that suited the post-1994 democratic government. However, instead of building additional capacity after 1994 in anticipation of future demand as recommended by Eskom, this was delayed until 2008 by which time it was too late – loadshedding had begun, and has not stopped since, with seriously negative economic impacts.

In 2010, the government published the Integrated Resource Plan, its official energy policy (Department of Mineral Resources and Energy, 2011). As reflected in Figure 4, predictions of demand were proven totally wrong. This had much to do with the restructuring of the economy as the secondary sector went into decline and the services sector grew, thus reducing the energy intensity of the economy. This, plus relatively low growth rates after the global financial crisis, partly explains declining demand.

But the other driver was the rising costs of coal supplies and therefore electricity production. South Africa's coal fleet was designed to burn cheap low-quality ($CO_2$ intensive) coal, and the high-quality coal was exported mainly to developed economies. Profits from the latter effectively cross-subsidised the former which, in turn, contributed to the fact that South Africa had the cheapest (and most $CO_2$-intensive) energy in the world in the early 1990s. After South Africa was re-absorbed into the global economy after 1994, new markets opened up in the Global South (especially Asia and Latin America). But the demand was for cheaper low-quality coal, thus creating competitive pressures that pushed up the price of cheap coal at a time when higher quality coal was becoming less abundant. This, coupled with pressures to increase coal prices to enable black economic empowerment in the mining sector, contributed to rising prices (Burton, Marquard & McCall, 2019).

**Figure 4: Expected Electricity Sent-out from IRP 2010–2030 vs Actual Sources: Statistics SA & Promulgated IRP 2010–2030**




*Source: Department of Mineral Resources and Energy, 2019*

Finally, Eskom became the prime target of state capture forces during the presidency of Jacob Zuma, 2009 to 2018 (Bhorat *et al.*, 2017; Eberhard *et al.*, 2014; Godinho, Hermanus & Eberhard, 2018). Eskom was effectively looted during this period, its labour force massively expanded, maintenance of power stations neglected and expenditure controls effectively abandoned. Table 1 presents a summary of the state of play in 2019 compared to 2007. Employee costs increased three-fold, coal costs six-fold and the selling price nearly five-fold. The total amount of coal bought remained the same, electricity sales declined and debt ballooned from R40 bn to R440 bn between 2007 and 2019. ➤➤

**Table 1:**

| | 2007 | 2019 |
|---|---|---|
| Employee costs (billion rand) | 9.5 | 33.3 |
| Employees | 32 674 | 46 665 |
| Coal costs (billion rand) | 10 | 58.5 |
| Coal purchases (Mt) | 117.4 | 118.3 |
| Electricity sales (GWh) | 218 120 | 208 319 |
| Total installed capacity (MW) | 42 618 | 44 127 |
| Revenue (billion rand) | 39.4 | 179.9 |
| Ave selling price (c/kWh) | 18 | 90.01 |
| Debt (billion rand) | 40.5 | 440.6 |

*Source: Bloomberg*

Advised by Bain Consulting Group, Jacob Zuma's solution to the energy crisis was a fleet of Russian-built nuclear power plants which would have cost South Africa $76 billion. The secret so-called 'nuclear deal' that he and Vladimir Putin signed in 2014 was declared illegal by a High Court ruling in 2017 that was initiated by two major environmental groups.

Without a coal or nuclear solution to the energy crisis, the only option available was renewables. After Cyril Ramaphosa became President in 2018, he poured cold water on the nuclear deal and promoted coal-fired power and renewables. But by 2020 his Presidential Economic Advisory Council declared that renewables with gas backup are the only option (South African Presidential Economic Advisory Council, 2020). By mid-2021, Eskom, the President and the entire cabinet minus the Minister for Mineral Resources and Energy were agreed that a rapid large-scale renewables build programme was the only option available if South Africa was going to keep the lights on. How did this partial consensus on a renewables-based transition pathway emerge?

## *The first discursive period*

The first discursive period started with the White Paper on Energy Policy in 1998 and the White Paper on Renewable Energy in 2003. This marked the start of a fundamental contradiction between a bid to re-imagine the future of the energy sector in crude neo-liberal terms, and the real-world dynamics of low electricity prices that was enabling an export-oriented growth model. Both White Papers emphasised the importance of unbundling the vertically integrated nature of the electricity sector and the related entry by the private sector (with a preference for black empowerment companies) in both coal-fired power generation and renewables.

This was part of a wider neo-liberal policy turn that occurred in 1996 when the Minister of Finance announced the introduction of the Growth, Employment and Redistribution (GEAR) strategy to replace the more social-democratic Reconstruction and Development Programme (RDP) that was adopted by the new democratic government after 1994 (Visser, 2004; Gelb, 2006; Swilling, 2020). Unbundling and privatisation of energy generation was the imaginary at the heart of both White Papers. Following the neo-liberal 'regulationist' script developed elsewhere in the world, this was coupled to the proposal to establish an independent regulator (Eberhard, 2006). As a result, the National Energy Regulator of South Africa (NERSA) was established on 1 October 2005 in terms of the National Energy Regulator Act, 2004 (replacing the National Electricity Regulator that existed between 1995-2006).

However, for private investors to enter the generation market, electricity prices needed to be substantially higher. But riding off the back of over-investment in sunk costs during the apartheid era, Eskom's prices were far too low to make private investment profitable. Ministries responsible for the export-oriented economic growth strategy resisted raising electricity prices (reinforced by NERSA's interpretation of their role as acting in the 'public interest'), while endorsing the neo-liberal imaginary that imbued economic policy in general. The end result was the absence of public investment in new generation capacity because of the assumption that this would be forthcoming from the private sector; while at the same time private sector investment did not happen because electricity prices were too low.

In 2008 President Mbeki apologised to the nation for this imbroglio, and the rush commenced to build two new coal-fired power stations (Medupi and Kusile) using Eskom's internal capabilities (which were being hollowed out by state capture) with disastrous consequences. The cost of Medupi and Kusile ballooned from a project cost of R163.2 bn in 2007 (for completion in 2015) to R450 bn by 2021 (without being fully completed) (*BizNews*, 2021).

In the meantime, NERSA decided in 2007 to initiate investigations into a Feed-in-Tariff (FiT) to promote renewable energy. After going far down the road, including publishing a set of FiTs (later arbitrarily revised downwards) and raising expectations of renewable energy developers who even incurred expenditures securing land and expertise, the National Treasury (NT) concluded in 2010 that FiTs contradicted government financial regulations. The Public Private Partnership (PPP) Unit within NT worked with the Department of Energy (DoE) to design an alternative approach, which drew heavily on ➤➤

the templates that had been developed globally by then (with involvement of South African experts from Cape Town University) for procurement via the auction mechanism (Eberhard, Kolker & Leigland, 2014; Swilling *et al*., 2022). A team of local and international experts were appointed[2] who re-coded a detailed set of rules and procedures that became the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) and led to the first Request for Proposals (RFP) on 3 August 2011.

## *The second discursive period*

The establishment of the Independent Power Producers Office (IPPO) to manage the RFP in August 2011 marks the start of the second discursive period, which ends with the fourth bid window in 2015. Institutionally, the REIPPPP was made possible by a partnership between the DoE, NT and the Development Bank of Southern Africa (DBSA), which mandated the IPPO, as a semi-autonomous institutional entity within the DoE, to oversee ministerial determinations for the procurement of utility-scale RE.

Participation by the NT, and specifically its Public-Private Partnership Unit, was instrumental in configuring the programme. The NT's provision of state guarantees for 20-year Power Purchase Agreements (PPAs) is widely recognised as a feature that increased the REIPPPP's investment attractiveness and sustained its viability (Montmasson-Clair & Ryan, 2014; Eberhard & Naude, 2016). Much of the success of the procurement framework has been attributed to its stringent and comprehensive design, together with ongoing adjustments and improvements, the particularities of which have been detailed in various recent studies (Montmasson-Clair & Ryan, 2014; Kruger & Eberhard, 2016; Bayer, Schäuble & Ferrari, 2018; Kruger, Nygaard & Kitzing, 2021).

Re-imagining a South African energy future that was not exclusively about coal was a tricky story to sell. It was the IPPO that built and disseminated the narrative, emphasising that the REIPPPP was necessary to demonstrate South Africa's progress on climate change commitments as per the Paris Agreement, as well as to respond to the need for adequate, reliable, flexible and affordable electricity generation capacity (Department of Mineral Resources and Energy, 2023). Montmasson-Clair and Ryan (2014) argue that another motivation was a recognition, by the South African government, that Eskom was ill-equipped to meet the country's electricity demand and thus not capable of ensuring energy security to underpin broad-based socio-economic development.

For Karén Breytenbach, the head of the IPPO (Breytenbach, 2018: 1), an energy transition pathway that merges decarbonisation and 'safe and just operating spaces' (SJOs) was a strategic priority for South Africa:

> *Through the REIPPPP we have proved that we can quickly help reduce the country's reliance on fossil fuels, that we can stimulate an indigenous renewable energy industry and that we can contribute to socio-economic development and environmentally sustainable growth. Today, our REIPPPP approach has become an export product in itself, with an increasing number of countries in Africa and elsewhere in the world, adopting and adapting the South African model to suit their particular conditions.*

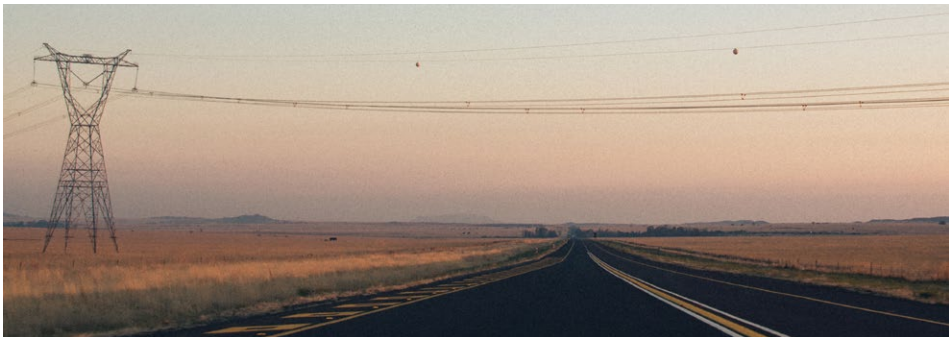
> **South African energy planning has been notoriously poor.**

The re-coding of the procurement rules was done in a way that departed from South Africa's statutory procurement standards in order to give more weight to SJOs. Qualifying bids were assessed according to a 70:30 split between price (70) and economic development (ED) criteria (30). The ED criteria included job creation, local content, ownership, management control, preferential procurement, enterprise development (EnD) and socio-economic development (SED). The REIPPPP is internationally recognised for this unique re-coded fusion between price-competitiveness and a fulfilment of ED requirements (Eberhard & Naude, 2016; Schmidt *et al.*, 2017). And it has yielded results: across the SED, EnD and community ownership categories, investments by IPPs in local communities are reported at around R50 billion over the duration of the 20-year PPAs (Department of Mineral Resources and Energy, 2023).

In accordance with the Integrated Resource Plan (IRP) 2011, four ministerial determinations were announced by the DoE and overseen by the IPPO between 2011 and 2015 (Department of Mineral Resources and Energy, 2023). Over the course of these four 'bid windows', the programme procured 6,323 MW of RE from 92 utility-scale, grid-connected projects of various technologies, but predominantly wind and solar photovoltaic (PV) (GreenCape, 2020). Despite the complexity of the bidding process and the stringent ED component, the REIPPPP positioned South Africa as an attractive destination for private-sector investment in utility-scale RE (Baker, 2015; Eberhard & Naude, 2016). During this time, the REIPPPP demonstrated promising growth, attracting R209.7 billion by 2019 of private investment (mostly from internal sources) through 92 approved projects (Department of Mineral Resources and Energy, 2023). On the whole, the first three rounds were largely over-subscribed and the programme demonstrated continual learning and iteration (Montmasson-Clair & Ryan, 2014). A significant reduction in costs was also evident, with major declines across all technologies: from R3.65/kWh in Round 1 for solar PV to R0.95c/kWh in Round 4, and from R1.51/kWh in Round 1 for onshore wind to R0.75c/kWh in Round 4. Eskom's electricity price rose to R0.91c/kWh by the time the Round 4 projects came online. By 2021, wind had dropped to R0.66c/kWh, solar PV to R0.60, and coal-fired power rose to R1.31/kWh.

## *The third discursive period*

The third discursive period is the hiatus between the fourth bid window in 2015 and the demise of the nuclear option in 2017, but with effects that lasted into 2021. Instead of building on the remarkable momentum achieved during the four bid windows, policy uncertainty brought the entire nascent renewable energy industry to a shuddering halt. This despite the fact that the massive flow of mainly South African capital into 92 utility-scale renewable energy projects had rapidly catalysed the build-up of South African project implementation capacities, upstream manufacturing capabilities (due to local content requirements) and significant downstream servicing businesses in the transport and operations and maintenance sectors (Swilling *et al.*, 2022). ➤➤



Eskom was positioned by the Zuma-centred power elite as a bulwark against renewables, including a CEO who used Twitter to run a social media campaign against renewables. Instead of a transition to renewables, Eskom and the Zuma-centred power elite re-imagined South Africa's energy transition pathway around nuclear energy as the cornerstone of a new black-owned mineral-energy-industrial complex, complete with uranium mines part-owned by the President's son (Bhorat *et al.*, 2017). Even though the High Court brought down the nuclear strategy in 2017, Zuma remained defiant until his exit from power in 2018.

From the start, President Ramaphosa's administration has suffered a policy split between pro- and anti-renewables forces. Soon after he was elected in 2018, his then Minister of Energy, Jeff Radebe, immediately executed the outstanding agreements with 27 preferred renewable energy bidders that had been put on hold since 2015 by Eskom's succession of CEOs, with the then President's full support. However, the coal- and nuclear-centred imaginary was kept alive by the new Minister of Mineral Resources and Energy (and Chairperson of the governing party), Gwede Mantashe, appointed by President Ramaphosa to replace Radebe in December 2018. As a result of his antipathy towards renewables, the fifth bid window was only opened in early 2021. This means that the procurement hiatus effectively lasted for six years in a country beset by continuous loadshedding, with 2020 the worst year for loadshedding despite recessionary conditions.

## *The fourth discursive period*

The fourth discursive period commenced towards the end of 2019 with the publication of two key documents – the 2019 IRP by the Department of Mineral Resources and Energy (DMRE) and the Eskom Roadmap by the Department of Public Enterprises. The 2019 IRP laid out for the first time a comprehensive framework for decommissioning of coal-fired power stations and the large-scale construction of utility-scale renewables (see Table 2). Controversially, the 2019 IRP provided for 1.5 GW of new coal power. The Eskom Roadmap, released by the Ministry responsible for Eskom, provides the framework for unbundling Eskom into separate publicly owned generation, transmission and distribution entities. Needless to say, neither the decommissioning targets nor the renewables ramp-up targets had been met by 2023 because the DMRE was in charge of regulatory codes that govern the highly complex procedures for procuring renewable energy. The DMRE's preference for 'clean coal' and nuclear has resulted in these delays.

**Table 2: IRP 2019**

| | Coal | Coal (Decommissioning) | Nuclear | Hydro | Storage | PV | Wind | CSP | Gas & Diesel | Other (Distributed Generation, CoGen, Biomass, Landfill) |
|---|---|---|---|---|---|---|---|---|---|---|
| Current Base | 37 149 | | 1 860 | 2 100 | 2 912 | 1 474 | 1 980 | 300 | 3 830 | 499 |
| 2019 | 2 155 | -2 373 | | | | | 244 | 300 | | Allocation to the extent of the short term capacity and energy gap. |
| 2020 | 1 433 | -557 | | | | 114 | 300 | | | |
| 2021 | 1 433 | -1 403 | | | | 300 | 818 | | | |
| 2022 | 711 | -844 | | | 513 | 400 1 000 | 1 600 | | | |
| 2023 | 750 | -555 | | | | 1 000 | 1 600 | | | 500 |
| 2024 | | | 1 860 | | | | 1 600 | | 1 000 | 500 |
| 2025 | | | | | | 1 000 | 1 600 | | | 500 |
| 2026 | | -1 219 | | | | | 1 600 | | | 500 |
| 2027 | 750 | -847 | | | | | 1 600 | | 2 000 | 500 |
| 2028 | | -475 | | | | 1 000 | 1 600 | | | 500 |
| 2029 | | -1 694 | | | 1 575 | 1 000 | 1 600 | | | 500 |
| 2030 | | -1 050 | | 2 500 | | 1 000 | 1 600 | | | 500 |
| **TOTAL INSTALLED CAPACITY by (% of MW)** | 33364 | | 1 860 | 4 600 | 5 000 | 8 288 | 17742 | 600 | 6 380 | |
| **% Total Installed Capacity (% of MW)** | **43** | | **2.36** | **5.84** | **6.35** | **10.52** | **22.53** | **0.76** | **8.1** | |
| **% Annual Energy Contribution (% of MWh)** | **58.8** | | **4.5** | **8.4** | **1.2*** | **6.3** | **17.8** | **0.6** | **1.3** | |

**Installed Capacity**
**Committed/Already Contracted Capacity**
**Capacity Decommissioned**
**New Additional Capacity**
**Extension of Koeberg Pant Design Life**
**Includes Distributed Generation Capacity for own use**

- 2030 Coal Installed Capacity is less capacity decommissioned between 2020 and 2030
- Koeberg power station rated/installed capacity will revert to 1926 MW (original design capacity) following design life extention work.
- Other/Distributed generation includes all generation facilities in circumstances in which the facility is operated solely to supply electricity to an end-use customer within the same property with the facility
- Short term capacity gap is estimated at 2000 MW

*Source: Department of Mineral Resources and Energy, 2019*

Andre de Ruyter was appointed as Group Chief Executive (GCE) of Eskom in early 2020 and tendered his resignation in late 2022 after the Minister of Mineral Resources and Energy accused him of treason for not ending loadshedding. He had two goals: (a) clean up Eskom by getting rid of state capture forces that were embedded across the entire Eskom value chain and (b) re-establish energy security for South Africa. By August 2020 he realised three things about his second goal: (a) that the 15 Eskom power stations were in worse shape than anyone had previously assumed and could not be salvaged; (b) no-one was going to lend money to Eskom to build new coal-fired power stations and even if they did, it would take a decade before they came on line; and (c) renewables ➤➤

were the only way to bring new power onto the grid quickly and most affordably. He established within Eskom a Just Energy Transition Office to coordinate the planning and implementation of the strategy. The President, in turn, established the Presidential Climate Commission (PCC) in December 2020 to prepare a South African position for the COP26 meeting in late 2021 and to oversee policy-making to achieve the Net Zero by 2050 target. The PCC published the cabinet-approved Just Energy Transition Framework (Presidential Climate Commission, 2022).

An influential scientific report published by the CSIR in 2020 confirmed that the renewables-based energy transition pathway would be the cheapest and most viable option (Roff *et al.*, 2020). According to the 2019 IRP, renewables would ramp up into the 2030s followed thereafter by additional coal-fired power (Figure 5). This was contrasted with a decarbonisation scenario (accelerated decommissioning and accelerated implementation of renewables) that saved 1.5 Gt of carbon (Figure 6). The surprise finding was that the system costs for both were similar, but with major SJO advantages for the second decarbonisation scenario. Based on historic data from the implementation of the REIPPPP, 10,000 jobs were created per GW. The decarbonisation scenario assumes that 5 GW of renewables will be built per annum through to 2050, which equals 50,000 construction jobs per annum. About 200 operational jobs per TWh would be created during ongoing operations over 20 years. Given that total output by 2050 would rise to 400 TWh per annum, this equals 80,000 jobs, compared to 56,000 coal workers who work for coal mines that supply Eskom.

**Figure 5: Current Policy Trajectory (with RE build limits retained): Annual Electricity Production**

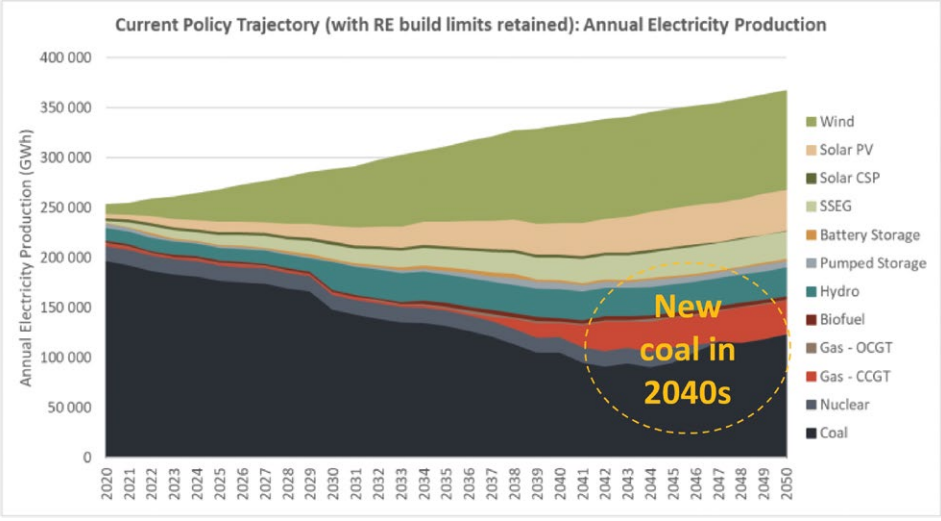
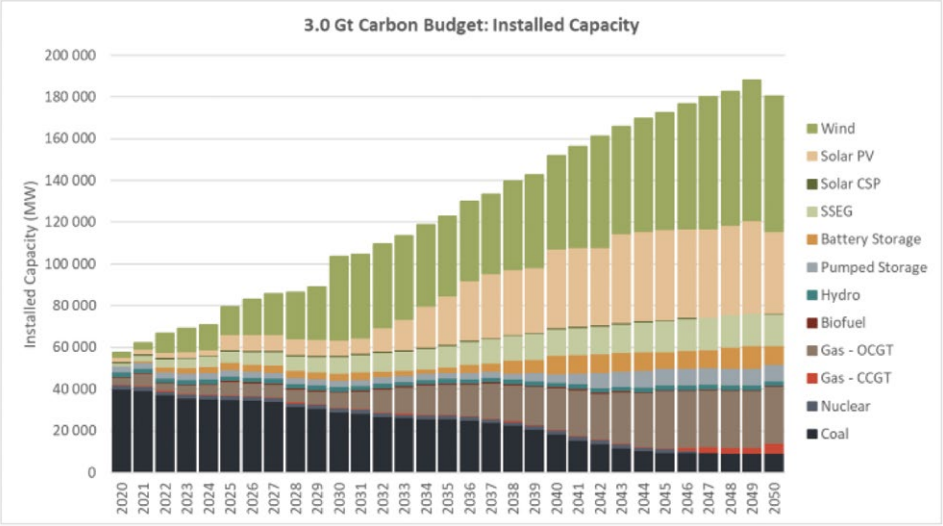


**Figure 6: 3.0 Carbon Budget: Installed Capacity**




*Source: Roff et al., 2020*

Influenced by the CSIR/Meridian report and the results of Eskom's own modelling, De Ruyter presented Eskom's Just Energy Transition strategy to the PCC in August 2021 where he called for accelerated decommissioning of the coal-fired power plants and the accelerated ramp up of renewables. He made it clear that renewables plus gas back-up was the only realistic option. This proposal included an emphasis on SJOs with respect to interventions to benefit workers and communities affected by the closure of coal mines and coal-fired power stations.

## *The fifth discursive period*

The fifth discursive period started in late 2021 when South Africa's Just Energy Transition Partnership (JETP) was announced at COP26 in Glasgow. This marked a key turning point not because this imaginary achieved policy consensus within the South African polity, but because the discursive dynamic that followed shifted in favour of the transition pathway promoted by de Ruyter. The difference, however, is that Eskom was no longer alone in promoting a renewables-based energy transition pathway, nor did it retain control of the narrative. The JETP provides a good example of the benefits of an integrated JET pathway. First announced at COP26 in 2021, the South African government presented the JETP investment strategy at COP27 in Egypt in 2022. This was approved by cabinet in the lead-up to COP27.

Up until that point energy policy (as expressed in the IRP) was driven by the DMRE and South Africa's updated Nationally Determined Contribution (NDC) was driven by the ➤➤

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Department of Environment, Forestry and Fisheries (DEFFE). The latter was in line with the National Development Plan approved in 2012 which called for a "transition to a low-carbon, resilient economy and just society" (National Planning Commission, 2012:212). These two separate policy processes – the coal-oriented IRP and the Net Zero-oriented NDC – were not aligned with each other as envisaged in the National Development Plan (NDP) and the PCC's Just Transition Framework. In an attempt to overcome these divergent policy trajectories, the President followed a recommendation by the National Planning Commission to establish the PCC in 2020. Since then, the PCC has facilitated the integration of energy and climate policy, resulting in the cabinet-approved Just Transition Framework (JTF) (Presidential Climate Commission, 2022). This included a process that led to an updating of the NDC to include a more ambitious set of decarbonisation targets. Approved by cabinet, the JTF became the basis of the JETP.

The JETP was formulated by the Presidential Task Team on Climate Finance (PTTCF) that was appointed in early 2021 and charged with the responsibility of drafting the JETP in time for presentation at COP27. Although the mainstream narrative in South Africa had hitherto been about 'decarbonisation plus social mitigation' (i.e. ameliorating the impact of coal-closure on miners), the JETP has shifted the emphasis decisively into a wider narrative (which is also consistent with the NDP), i.e. 'decarbonisation plus mitigation plus green industrialisation'. This is because the decarbonisation of the power sector was only one of three focus areas of the JETP, the others being green hydrogen and electric vehicles (EVs). Furthermore, provision was even made in the JETP for social ownership of renewables via cooperatives. Most significantly of all, it is not just a policy framework – it is also an investment plan that estimates the total costs of the energy transition over the next five years (R1.5 trillion) and then situates the donor contribution announced at COP26 of R130 billion in that context.

This brings into relief the fundamental reality that the bulk of the funding will therefore need to be internally generated by South African financial institutions. The combination of the cabinet-approved JTF formulated by the PCC, the cabinet-approved JETP presented at COP27, the updated NDC with more ambitious targets and the soon to be approved Climate Bill means that South Africa has succeeded in merging its decarbonisation commitment with its developmental agenda at the level of policy intention and commitment. The upshot is an ambitious energy transition pathway that has yet to achieve policy consensus within the policy elite that will be needed to ensure rapid and effective implementation. Alternative coal- and nuclear-centred transition pathways continue to be promoted by influential political players aligned with the coal-based vested interests, but they are now subordinate to the mainstream renewables-based narrative.

As the South African loadshedding crisis worsened considerably into 2022 (with, on occasions, nearly half the coal-generation fleet out of commission), the President seized the initiative in July 2022, reinforced by his State of the Nation Address in February 2023. In essence, the transition pathway envisaged by the President (but not underpinned by a robust internal political settlement), comprised three basic strategies: fix the broken and ageing coal-fired power stations (without a commitment to decommission old power stations in line with the JETP), maximise de-regulation to allow for market-driven delivery of utility-scale and rooftop renewables, and reinforce delivery of utility-scale renewables (with socio-economic development impacts) via the REIPPPP. Given that the latter increases costs to fund socio-economic development, it is effectively no longer a competitive option for developers and is, therefore, to all intents and purposes dead.

To drive this reform programme, he established a new Ministry for Energy in the Presidency and announced that the Electricity Regulation Amendment Bill would be tabled soon that will introduce major reforms aligned with international trends towards greater market competition in the energy sector. The focus of this reform initiative is energy security to support economic recovery, not specifically decarbonisation nor even social justice. Decarbonisation and social justice are effectively by-products of this new drive for energy security: decarbonisation because renewables are the cheapest way to increase generation capacity quickly, and social justice because jobs and services will result from accelerated economic growth.

In February 2023 the Minister of Finance announced that the state would help Eskom pay down its debt, but on condition its business model shifts decisively from being primarily a generation business to being primarily a transmission and distribution business. He also announced a major tax incentive for renewables. By early 2023 the Energy Action Plan was in place which essentially focused on (a) fixing the coal-fired power stations that can be fixed within budget constraints; (b) procurement of massive quantities of renewable energy; (c) upgrading and extending the transmission grid; (d) promoting energy efficiency; and (e) rooting out corruption. By mid-2023, 4.4 GW of rooftop solar had been installed, equal to a total investment of R65 billion. Furthermore, 9 GW of embedded solar generation was in the pipeline, and Bid Windows 7 and 8 were announced calling for a total of 10 GW of renewables. This is equal to 25 GW of new generation capacity, in a country that only has 48 GW of installed coal-fired power generation.

## *Strategic conclusion*

In light of the actual empirical conditions and the balance of power, the progressive strategic position going forward would be as follows:

- Support the break-up of Eskom (partly to break the grip of state capture forces on Eskom) into three *publicly-owned* utilities, namely generation, transmission and distribution.
- Based on hard empirical financial evidence, accept that no future coal-fired power or nuclear-powered generation capacity will be built in South Africa because both are unfundable from public and private sources – at best, some power stations might be fixed to last their life cycle. ➤➤

- Accept that 5 GW of renewables must be built every year from now, and forever – once you start building renewables, they must be replaced after 20 years, this creating a permanent set of construction jobs equal to 10,000 jobs per GW.
- The National Transmission Company of South Africa must be constituted, with a progressive technically competent board. Accept that in order to fund the extension of the grid it will be necessary to enable Build-Operate-Transfer (BOT) agreements for sections of the grid (e.g. Northern Cape) – this will be similar to the major toll road agreements, resulting in the transfer of the assets back to the state at the end of the concession.
- Enable the renewables build programme, and the grid extension programme, drive the largest industrialisation programme since 1994 that will result in the drastic reduction in imports of components required for this energy transition.
- Actively support the commitment in the JETP to socially owned renewables, including via cooperatives, partnerships between communities and local governments, and social enterprises.
- Mobilise communities, social movement and trade unions around a practical set of just transition demands and implementable programmes, in particular in Mpumalanga.

REFERENCES

Baker, L. 2015. The evolving role of finance in South Africa's renewable energy sector, *Geoforum*, 64: 146-156. DOI: 10.1016/j.geoforum.2015.06.017.

Bayer, B., Schaüble, D. & Ferrari, M. 2018. International experiences with tender procedures for renewable energy – A comparison of current developments in Brazil, France, Italy and South Africa, *Renewable and Sustainable Energy Reviews*, 95: 305-327.

Bhorat, H., Buthelezi, M., Chipkin, I., Duma, S., Mondi, L., Peter, C., Qobo, M., Swilling, M. & Friedenstein, H. 2017. Betrayal of the Promise: How South Africa is Being Stolen. State Capacity Research Project. Available at https://wwwo.sun.ac.za/cst/wp-content/uploads/2017/09/Betrayal-of-the-Promise.pdf

*BizNews*, 2021. Falling short: Medupi and Kusile an Eskom plan designed to fail – Chris Yellend. Available at https://www.biznews.com/thought-leaders/2021/03/17/eskom-medupi-kusile-yelland

Breytenbach, K. 2018. Remarks by the Head of the IPP Office, 13 March. Available at https://www.energy.gov.za/files/media/speeches/2018/Remarks-by-the-Head-of-the-IPP-Office.pdf

Burton, J., Marquard, A. & McCall, B. 2019. Socio-economic Considerations for a Paris Agreement – Compatible Coal Transitions In South Africa. Energy Research Center (ERC) policy brief. Available at https://lifeaftercoal.org.za/wp-content/uploads/2020/05/Burton-Marquard-McCall-JT_Paris_South-Africa-Final.pdf

Carbon Brief. 2018. Guest post: Ten charts show how the world is progressing on clean energy. Available at https://www.carbonbrief.org/guest-post-ten-charts-show-how-the-world-is-progressing-on-clean-energy/

Carbon Brief. 2022. China Briefing, 31 March 2022: Impact of coal push; 'No new overseas coal power projects'; Analysis on energy plans. Available at https://www.carbonbrief.org/china-briefing-31-march-2022-impact-of-coal-push-no-new-overseas-coal-power-projects-analysis-on-energy-plans/

Department of Mineral Resources and Energy. 2011. Integrated Resource Plan for electricity. Available at https://www.energy.gov.za/IRP/irp%20files/IRP2010_2030_Final_Report_20110325.pdf

Department of Mineral Resources and Energy, 2019. Integrated Resource Plan 2019 (IRP 2019). Available at https://www.energy.gov.za/IRP/2019/IRP-2019.pdf

Department of Mineral Resources and Energy. 2023. South Africa's Independent Power Producer Procurement Programme: Presentation to the Portfolio Committee.

Eberhard, A. 2006. The political economy of power sector reform in South Africa, in Victor, D.G. & Heller, T.C. (eds.). *The Political Economy of Power Sector Reform*,Cambridge: Cambridge University Press: 215-253.

Eberhard, A., Kolker, J. & Leigland, J. 2014. South Africa's Renewable Energy IPP Procurement Program: Success Factors and Lesson. World Bank Group. Available at https://openknowledge.worldbank.org/bitstream/handle/10986/20039/ACS88260WP0P1482120Box385262B00PUBLIC0.pdf?sequence=1&isAllowed=y

Eberhard, A. & Naude, R. 2016. The South African renewable energy independent power producer Procurement programme: A review and lessons learned, *Journal of Energy in Southern Africa, 27(4):1-14*. DOI: http://dx.doi.org/10.17159/2413-3051/2016/v27i4a1483.@Eskom_SA. 2019. March 19.

Eskom. 2019. Eskom operates an aging coal fleet infographic [Twitter post]. Available at https://twitter.com/Eskom_SA/status/1107930980365553666/photo/1

Gleb, S. 2006. The RDP, GEAR and all that: reflections ten years later, *Transformation: Critical Perspectives on Southern Africa*, 62: 1-8.

Godinho, C., Hermanus, L. & Eberhard, A. 2018. Reconceptualising State Capture – With a Case Study of South African Power Company Eskom, conference paper prepared for the Public Affairs Research Institute's State Capture and its Aftermath: Building Responsiveness Through State Reform. 22-24 October, Johannesburg.

GreenCape. 2020. Utility-scale renewable energy – 2020-Market Intelligence Report. Available at https://stellenbosch-my.sharepoint.com/:w:/r/personal/18737943_sun_ac_za/_layouts/15/Doc.aspx?sourcedoc=%7B5CE88076-D242-4564-AAC7-D8621317EA18%7D&file=Nat%20Pol%20Regime%205%20Feb%202023(1).docx&action=default&mobileredirect=true&DefaultItemOpen=1&login_hint=18737943%40sun.ac.za&ct=1676952325562&wdOrigin=OFFICECOM-WEB.MAIN.REC&cid=3dc59bd3-f85f-40fc-b3d8-302598589910a

Hermanus, L. & Montmasson-Clair, G. 2021. Making sense of jobs in South Africa's just energy transition: Managing the impact of a coal transition on employment, *Trade and Industrial Policy Strategies (TIPS) policy brief*, (3). Available at https://www.tips.org.za/images/Policy_Brief_Making_sense_of_jobs_in_South_Africas_just_energy_transition_Managing_the_impact_of_a_coal_transition_on_employment_April_2021.pdf

Kruger, W., Nygaard, I. & Kitzing, L. 2021. Counteracting market concentration in renewable energy auctions: Lessons learned from South Africa, *Energy Policy*, 148:111995.

Montmasson-Clair, G. & Ryan, G. 2014. Lessons from South Africa's Renewable Energy Regulatory and Procurement Experience, *Journal of Economic and Financial Services, 7*(S): 507-526.

National Planning Commission, 2012. Department: Presidency Republic of South Africa, National Development Plan. Available at https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf

Presidential Climate Commission. 2022. Just Transition Framework. Available at https://www.climatecommission.org.za/just-transition-framework

Roff, A., Steyn, G., Tyler, E., Renaud, C., Brand, R., Burton, J. 2020. A Vital Ambition: Determining the cost of additional CO2 emission mitigation in the South African electricity system. Available at https://meridianeconomics.co.za/wp-content/uploads/2020/07/Ambition.pdf

Schmidt, T., Matuso, T. & Michaelowa, A. 2017. Renewable energy policy as an enabler of fossil fuel subsidy reform? Apply a socio-technical perspective to the cases of South Africa and Tunisia, *Global Environmental Change*, 45: 99-110. DOI: https://doi.org/10.1016/j.gloenvcha.2017.05.004

South African Presidential Economic Advisory Council. 2020. Briefing Notes on Key Policy Questions for SA's Economic Recovery. Available at https://www.markswilling.co.za/wp-content/uploads/2020/10/PEAC-Report.pdf

Swilling, M. 2020. The age of sustainability: Just transitions in a complex world. Routledge, Taylor & Francis Group.

Swilling, M., Nygaard, I., Kruger, W., Wlokas, H., Jhetam, T., Davies, M., Jacob, M., Morris, M., Robbins, G., Funder, M., Hansen, U., Olsen, K., Davy, E., Kitzing, L., Khan, B. & Cronin, T. 2022. Linking the energy transitions and economic development: A framework for analysis of energy transitions in the global South, *Energy Research & Social Science*, 90: 102567.

Visser, W. 2004. "Shifting RDP into GEAR". The ANC Government's Dilemma in Providing an Equitable System of Social Security for the "New" South Africa, in *TH-Tagungsberichte 39 "Mercy or Right". Development of Social Security Systems*, Akademische Verlaganstalt, Wien: 105-124.

ENDNOTES

1. Kelvin power station is privately owned.
2. Legal: Linklaters (UK); Technical: Tony Wheeler Consulting (UK); Governance: Ernst & Young; Project management: SPP Projects; SA legal firms: Bowman Gilfillan, ENSAfrica, Ledwaba Mawai, Webber Wentzel; Technical: Mott McDonald (SA); Finance design: Ernst & Young, and PWC. NA