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Restructuring and Unbundling at Eskom, South Africa

Applied Research Project

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[February 2025]

DECLARATION

I Masilo Makgoba, hereby declare that this master's dissertation, Restructuring and Unbundling at Eskom, South Africa is my original work, conducted under the supervision of Dr Oba Pius at Wits Business School. This study has not been submitted, in whole or in part, for any other degree or qualification at this or any other academic institution.

This work adheres to the ethical guidelines of Wits Business School and, where applicable, ethical approval was obtained for data collection involving human participants. To the best of my knowledge, this dissertation contains no material previously published or written by another person, except where due reference is made in the text.

Masilo Makgoba

Date: February 2025

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I am grateful to Eskom for granting me access to data and personnel, which were critical to exploring the Restructuring and Unbundling at Eskom, South Africa. The insights shared by industry professionals during interviews and discussions were invaluable and greatly enhanced the practical relevance of this study.

On a personal note, I owe a heartfelt thank you to my family, my wife Dietla Makgoba and my daughters for their constant support and understanding. To my mother, Maria Makgoba, and my siblings, thank you for your encouragement and belief in me. Thank you for your patience and motivation during challenging times that kept me going.

I dedicate this work to all those striving to improve the efficiency and sustainability of the energy sector. This study is a small contribution to that collective effort, made possible by the support of everyone mentioned above.

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ABSTRACT

The restructuring of vertically integrated power utilities through unbundling has been widely proposed as a strategy to enhance operational efficiency and performance in the energy sector. This study investigates the impact of Restructuring and Unbundling at Eskom South Africa. The primary objective was to assess whether unbundling establishes clear performance incentives and improves efficiency across the ESI value-chain. A qualitative research approach was employed, utilizing semi-structured interviews with utility stakeholders and document analysis of operational and annual reports from Eskom. The findings indicate that unbundling can enhance efficiency by clarifying roles, incentivizing performance, and market entry liberalisation particularly in Generation, where competition can drive improvements. The study concludes that while unbundling offers potential for value chain optimization, financial transparency and introduction of competition that is intended to drive efficiency and reduce tariff, its success depends on robust governance, tailored implementation strategies addressing the socio-economic factors and regulatory framework. These findings contribute to the discourse on unbundling vertically integrated power utilities in developing nations by highlighting the need for context-specific approaches to maximize efficiency while addressing coordination and equity concerns. This research provides a foundation for future studies to explore long-term impacts and quantitative measures of efficiency in unbundled utilities.

KEY WORDS

Unbundling

Restructuring

Vertically integrated utility

Eskom

Energy

Electricity

Fossil fuel

Coal

Renewable energy

ABBREVIATIONS

ANC……. African National Congress

CAPEX……. Capital Expenditure

CO_2…….. Carbon dioxide

CPA……. Central Purchasing Agency

CSIR……. Council for Scientific and Industrial Research

DMRE…….. Department of minerals and energy

DPE……..... *Department of Public Enterprises*

Dx……. Distribution division

EAF……Energy availability factor

ERA……...Electricity Regulation Act

ESG……...Environment, Social and Governance

ESI……... Electricity supply industry

Eskom RT&D……...Eskom research, testing and development

EU……..…… European Union

FDI……. Foreign Direct Investment

FGD……...Flue gas desulphurization

FY……...Fiscal year

GCEO……Group Chief Executive officer

GE……. Group Executive

GHG……. Green House Gas

GIZ……. Deutsche Gesellschaft für Internationale Zusammenarbeit

Gx……. Generation Division

HR……. Human Resources

ICASA……Independent Communications Authority of South Africa

ITSO……. Independent transmission and system operator

ISO……Independent system operator

IFC……. Investment and Finance Committee

IPA……. Interpretative phenomenological analysis

IPPs…… Independent Power Producers

IRP…….. Integrated Resource Plan

IT…… Information Technology

KPI……Key performance indicator

LTSO……Legally unbundled transmission system operator

MES……..... Minimum emission standard

MYPD……. Multi-year price determination methodology

MO……Market operator

NDC…….. Nationally determined contribution

NDP…… ……...National development plan

NEM……. National Electricity Market (Australia)

NERSA……... National Energy Regulator of South Africa

NTCSA……. National Transmission Company South Africa

OCGT……. Open cycle gas turbines

OECD……. Organization for Economic Cooperation and Development

OEM……. Original Equipment Manufacture

PCLF……. Planned capability lost factor

PPA……. Power Purchasing Agreement

PPPFA……. Preferential Procurement Policy Framework Act

PFMA……. Public Finance Management Act

ROI……. Return on investment

SA……South Africa

SAGEN……. South African German Energy Programme

SMME's……. Small, medium and micro enterprises

SOE……State owned enterprises

SPC……. State power corporation (China)

TSO……...Transmission System Operator

Tx……..…. Transmission division

USA……. United States of America

USD…… United states dollar

VIU……. Vertically *Integrated Utility*

VWP……. ……. Virtual wheeling platform

ZAR……. South African Rand

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FIRST SECTION: INTRODUCTION

1.1. INTRODUCTION

Electricity is an integral part of economic development and advancement, economic justice, and the progression of modern civilization with applications in all sectors of industry, business, and domestic use.

The 2019 Department of Public Enterprises (DPE) strategic plan for Eskom in a restructured energy market provides indicators of the impact of South Africa's current ESI. The DPE emphasizes necessity to reform the energy industry and the consequences of not aligning to international restructuring trends of the VIU (Vertically Integrated Utility). This would further exacerbate the situation at Eskom and the economic meltdown of the country (Department: Public enterprise , 2019).

Eskom is struggling to honour their key objective to the state which is to “keep the lights on at all times”. This is a gloomy symptom of a state that is disintegrating and collapsing (Styan, 2015). Eskom's size and magnitude as a vertically integrated power utility is becoming a source of its downfall, with a monopolistic position on energy supply, chronic governance issues, skyrocketing electricity prices and poor service performance (Lawrence, 2020).

The previous Public Enterprises minister Jeff Radebe reaffirmed the 1998 White Paper's Policy outcomes that commercial electricity was highly improbable to become rare in the relatively near future, that electricity security can be intensified via amplified diversification and agility of supply and that state objectives guaranteeing access can be accomplished via legislating delivery instead of direct provision mechanisms of electricity (Lawrence, 2020, p. 4).

The 1998 Energy Policy white paper of South Africa recites that the state must establish a strategic energy framework that guarantees the country's energy resources are adequately exploited and formulated to satisfy the country's demands by allowing all citizens to have access to affordable energy (Department of minerals and energy, 1998) and establish a good balance between Supply and demand of electricity. The policy further anticipated a 4,2% demand growth that will exhaust Eskom’s additional power generation capacity by 2007 (Department of minerals and energy, 1998).

The necessary legislation was never adopted, and no privatized generation of electricity was constituted. As the economy was growing faster in 2004, the electricity reserve margins fell dramatically. In 2007–08, continued reserve margins to fall below 10%, resulting in rolling blackouts (McRae et al, 2013).

According to the National development plan (NDP) 2019, the country will develop an electricity industry that fosters economic growth and advancement by investing adequately in electric infrastructure before the year 2030 (Department of energy, 2021). The energy sector is transforming, innovating technologically, shifting customer preferences and the impacts of global warming are redefining how power is generated, distributed, and used worldwide. South Africa must address the unique difficulties that endanger its power supply and hamper its economic growth as it adapts to these developments (Department: Public enterprises, 2019).

The power utility sector is traditionally characterized by vertically integrated companies that own and operate all stages of the electricity value chain, from generation to transmission and distribution. This model has been subject to growing scrutiny due to concerns regarding competition, market efficiency, and consumer welfare. Unbundling refers to the separation of these integrated functions and it has emerged as a potential solution to address these challenges (USAID, 2022).

1.2. PROBLEM STATEMENT

This study investigates the implications of unbundling Eskom into generation, transmission, and distribution entities as a strategy to address South Africa's energy crisis, characterized by load-shedding, financial distress, and the need for a just energy transition. It examines the potential benefits, such as improved operational efficiency, financial sustainability, and market competition, against challenges, including policy uncertainty, stakeholder resistance, and risks of exacerbating energy poverty. By analysing the restructuring process and proposing measures to enhance its effectiveness, the study explores whether unbundling can deliver a transparent, equitable, and sustainable electricity supply system, while addressing gaps in existing policy frameworks and stakeholder engagement.

1.3. RESEARCH QUESTIONS

The study will seek answers to the following research questions,

- How does the unbundling of Eskom into separate generation, transmission, and distribution entities enhance financial transparency, and what regulatory mechanisms are required to ensure accurate and accountable monitoring of each division's financial performance?
- In what ways does unbundling Eskom's generation, transmission, and distribution divisions improve value chain efficiency, and how do performance-based incentives influence operational outcomes across these segments?
- To what extent does unbundling Eskom, particularly generation sector to promote competition, and how does this competition influence efficiency gains and electricity tariff reductions for South African consumers?

1.4. RESEARCH OBJECTIVES

The main objectives of the study are to:

- To evaluate the extent to which unbundling improves financial visibility and accountability within Eskom's operations.
- To assess whether unbundling foster value chain efficiencies by creating clear mandates and incentives for each division while examining the coordination mechanisms needed to maintain a cohesive value chain.
- To investigate the impact of unbundling on market competition, particularly in generation, and determine whether it results in cost efficiencies and affordable tariffs, while identifying regulatory safeguards to prevent oligopolistic market structures.

1.5. BENEFITS OF THE STUDY

The research study, "Restructuring and Unbundling at Eskom, South Africa," provides significant benefits by addressing critical challenges in South Africa's electricity supply industry (ESI) and offering actionable insights for policymakers, stakeholders, and academics. Focused on unbundling Eskom into separate generation, transmission, and distribution entities. The study enhances financial transparency, improves value chain efficiency, promotes market competition, and supports a just energy transition (JET), all tailored to South Africa's unique socio-economic context. These benefits, grounded in the literature review, contribute to resolving Eskom's operational and financial crises while advancing sustainable energy policy.

The financial transparency as (Boulle et al, 2019) note, supports foreign direct investment (FDI) and reduces fiscal reliance, guiding NERSA to strengthen regulatory oversight and mitigate corruption risks.

The study also enhances value chain efficiency by establishing clear mandates and performance incentives. Separating divisions allows generation to optimize energy availability factor (EAF) and transmission to ensure grid reliability (Eskom, 2020). (Koten et al, 2008) show that the EU's divisional unbundling improved operational performance, while (Paul et al, 2022) found productivity gains in OECD countries through aligned incentives. Unbundling offers a framework to streamline operations, though coordination is needed to preserve economies of scale (USAID, 2022).

Promoting market competition, particularly in generation, is another benefit, potentially lowering tariffs and driving innovation. The study aligns with the Electricity Regulation Act Amendment Bill, which enables IPPs via an independent transmission system operator (DMRE, 2022). (NordPool et al, 2020) emphasize that competition reduces monopolistic barriers, fostering consumer choice. However, the study cautions against oligopolistic risks, as seen in Australia (Marshall et al., 2020), advocating regulatory safeguards to ensure affordability.

1.6. LIMITATIONS

There are several limitations to conducting this research.

- Unbundling a vertically integrated power utility is a relatively new and evolving concept in many jurisdictions. As a result, there is insufficient comprehensive comparative studies that provide insights into the potential benefits. There is no clear articulation on the subject because of its novelty and insufficient expertise in the field of unbundling vertically integrated power utilities.
- Data is developed through semi structured interviews by participants who are positioned in and originate from certain environments. The researcher acknowledges the biasness of the evidence we examine and take it into account during interpretation instead of eliminating the bias (Young, 2009).
- Vertically integrated power utilities are complex entities with numerous interconnected operations and relationships. Researching and understanding the intricate details of these complexities requires substantial time and resources.
- Unbundling a vertically integrated power utility entails regulatory, legal, institutional, and cultural factors that vary across regions and countries. Research findings from one context may not be directly applicable to another. This diversity makes it challenging to develop a one-size-fits-all approach.
- Assessing the impacts of unbundling requires long-term analysis to observe the effects on competition, consumer prices, reliability, and overall industry efficiency. However, long-term data collection and analysis can be challenging due to various factors such as changes in regulations, market conditions, and technological advancements.

SECOND SECTION: LITERATURE REVIEW

2.1. INTRODUCTION

The revised business framework for Eskom should ensure the provision of dependable, cost-effective, economically viable and environmentally sustainable electricity to foster inclusive economic development, aligning with the demand of the fourth industrial revolution (Department: Public enterprise , 2019).

The VIU's in the Energy sector are being restructured because of the high adoption of competition in the generation of electricity all over the world (DBSA, 2019).

The continual development of novel technological innovations in the energy sector poses a threat to the established conventional vertically integrated power utilities and this could disrupt the sector with significant capital investments and established infrastructure (Bracamontes, 2016).

2.2. BACKGROUND

Businesses that expand through mergers and acquisitions, break apart through divestitures and spinoffs. Whenever synergies from a company prove unfavourable, or when the expenses associated with keeping the business assets intact surpass the advantages of maintaining the conglomerate, breakup transactions become beneficial (Eckbo et al, 2008).

Vertically integrated power utilities are regulated state-owned companies designed to annihilate competition through the monopolistic ownership of Electricity Generation, Transmission and Distribution grid (Koten et al, 2008).

Unbundling

A business model used to prevent discrimination and liberate competitive activities within conventional monopolistic Electricity supply industry (ESI) with massive capital investment costs. This involves vertically separating the VIU’s divisions into Generation, Transmission and Distribution potentially leading to better services and pricing for consumers. It involves regulatory oversight to ensure fairness (IEA, 2001).

Vertical and horizontal unbundling are the two types of unbundling that an electricity company can implement.

Vertical unbundling separates a vertically integrated energy company's generation, transmission, and distribution businesses (Kachaje et al, 2017).

Horizontal unbundling divides a countrywide monopoly company into distinct generation, transmission, and distribution companies for provincial or regional (Kachaje et al, 2017).

According to (USAID, 2022), Vertical unbundling alone may improve transparency and oversight, however this approach could negatively impact gains and economies of scale because generation, transmission and distribution are now required to function their corporate company operations separately. Unbundling ought to typically be complemented with privatization and additional market policies to achieve major gains in business processes, transparency, and accountability.

2.3. UNBUNDLING AN ORGANIZATION

Organizations have no recourse but to unbundle themselves and make a firm decision about which business to focus on if they are to survive (Singer et al, 1999), each organization is associated with diverse economics which will determine their ultimate organizational design and structure.

State-owned companies must be restructured into a configuration that can be acquired by the private industry and to plan for privatization. It requires the repayment of loans, the formation of the company's long-term economic health and the assurance of revenue potential (Greenberg et al, 2002). Financial management and accountability are strengthened, and unproductive practices are phased out.

In developed economy countries, vertical unbundling of the electricity industry is considered as an effective method. The advantage of unbundling would be that it creates independent companies with distinct tasks that can be governed as monopolistic or as a competitive business and it eliminates conflicts of interest (NordPool et al, 2020). It moreover enhances grid reliability because these businesses are essentially interested in the optimum functioning of the power grid and their

regulated income. Unbundling enhances traceability and accountability, and it also intensifies competition in the electricity industries.

The formation of a legally unbundled transmission system operator (LTSO), an independent transmission and system operator (ITSO), or an independent system operator (ISO) itself is required for meaningful unbundling of a vertically integrated utility to separate transmission division operation from generation division and distribution division (Boulle et al, 2019).

2.3.1. Case study and comparative Analysis

2.3.1.1. Reforming the ESI around the world

Unbundling of vertically integrated energy companies has been part of a larger trend of electricity market changes around the world. Over 90 countries have implemented their own grid transmission and market operator companies with the overwhelming bulk of them being state-owned (Boulle et al, 2019). The need for enhanced industry growth and improved funding have become the primary factors of these reforms.

The demise of government ran markets and the fast growth of South-East Asian markets in the late 1980s prompted governments and organizations to recognize the necessity of incorporating the private industry in massive infrastructure design, implementation, and administration. To provide adequate electricity and decrease electricity tariffs to customers, international observations indicate a drive toward deregulation as well as the implementation of competition in the energy market (Abayomi et al, 2020).

In developing countries, restructuring in the energy sector surged during the 1990s. The restructuring has spread throughout the Africa's Sub-Saharan region. Revised electrical legislation have been enacted that advocate for the restructuring of government owned power infrastructure and the inclusion of independent power producers. Multiple private management licenses have been issued, unfortunately they failed to yield massive long-term advances in the state-owned utility's efficiency. Just a few private licenses and permissions remain, most of which are in Francophone

West Africa. The generation sector has been dominated by the independent power producers (Eberhard et al, 2011).

The reform of the ESI of South Africa is inextricably linked to the reorganization of state-owned companies. The reformation process dates to the late apartheid era when the government decided to transform Eskom into a utility. The Company oversaw a major percentage of the country's sovereign debt, but the government had little influence over it. As a result of poor investment strategies, Eskom had to hike energy prices significantly in the 1980s to meet its income needs (Greenberg et al, 2002).

Vertically integrated utilities in the Energy sector have its roots embedded in a strong national interest worldwide. The electricity sectors, such as other essential industries, i.e., water, transportation, and communications were regarded as vital for industrial prosperity and economic growth. It was critical to provide these services at a low cost. These needs for power were met by monopolies run or controlled by regional or national governments (Chao et al, 2008).

2.3.1.2. Reforming China ESI

The State Power Corporation (SPC), China's historic vertically integrated energy utility was unbundled into 11 businesses including five generation groups, four auxiliary companies and two transmission power grid companies. The restructuring had an immediate impact on the management philosophy and operation of historically SPC power stations, as they no more had the benefit of being part of a vertically integrated monopoly and must compete with IPPs (Zhao et al, 2013). The restructuring was constructed upon similar efficiency criterion which was implemented in the decentralization and unbundling framework of the power industries throughout other countries by unbundling the vertical integration and improve the effectiveness and competition across other generation groups (Xie et al, 2020).

The ability to generate and transmit electricity would be determined by economic effectiveness and validity order instead of political considerations like state owned entity protection and employment. China's governing bodies anticipates that the restructuring and regulatory transformation will boost China's energy sector's overall competitiveness and efficiency (Zhao et al, 2013).

China's Transmission grid companies are owned completely by the government. This segment acts as a significant state electricity division, which is accountable for increasing the effectiveness of electrical supply by guaranteeing that all citizens have the same opportunity to receive electricity while enhancing economic growth (Xie et al, 2020).

2.3.1.3. Reforming the EU ESI

To guarantee fair trading between VIUs and IPPs in the electrical sector, EU member states ensure the following conditions are met.

- To avoid cross-subsidization, distinct finances should be established independently for Generation, Transmission and Distribution. Financial unbundling is the lightest severe method of unbundling.
- Divisional unbundling necessitates the segregation of operational and Strategic functions for power generation, transmission, and Distribution processes.
- Distribution, Transmission and Generating must be decoupled lawfully, according to the legal unbundling.
- The most radical form of unbundling is shareholding unbundling. Companies are prohibited from owning a stake in both Generation and transmission (Koten et al, 2008).

To enhance free trade of electricity and welfare of the public, European Union (EU) countries restructured their VIU in line with their competition commission by unbundling the monopolistic state regulated companies and established strict legal and regulatory framework to avoid any exploitation by VIU. An indicates of the different components of unbundling processes in Fig 1.

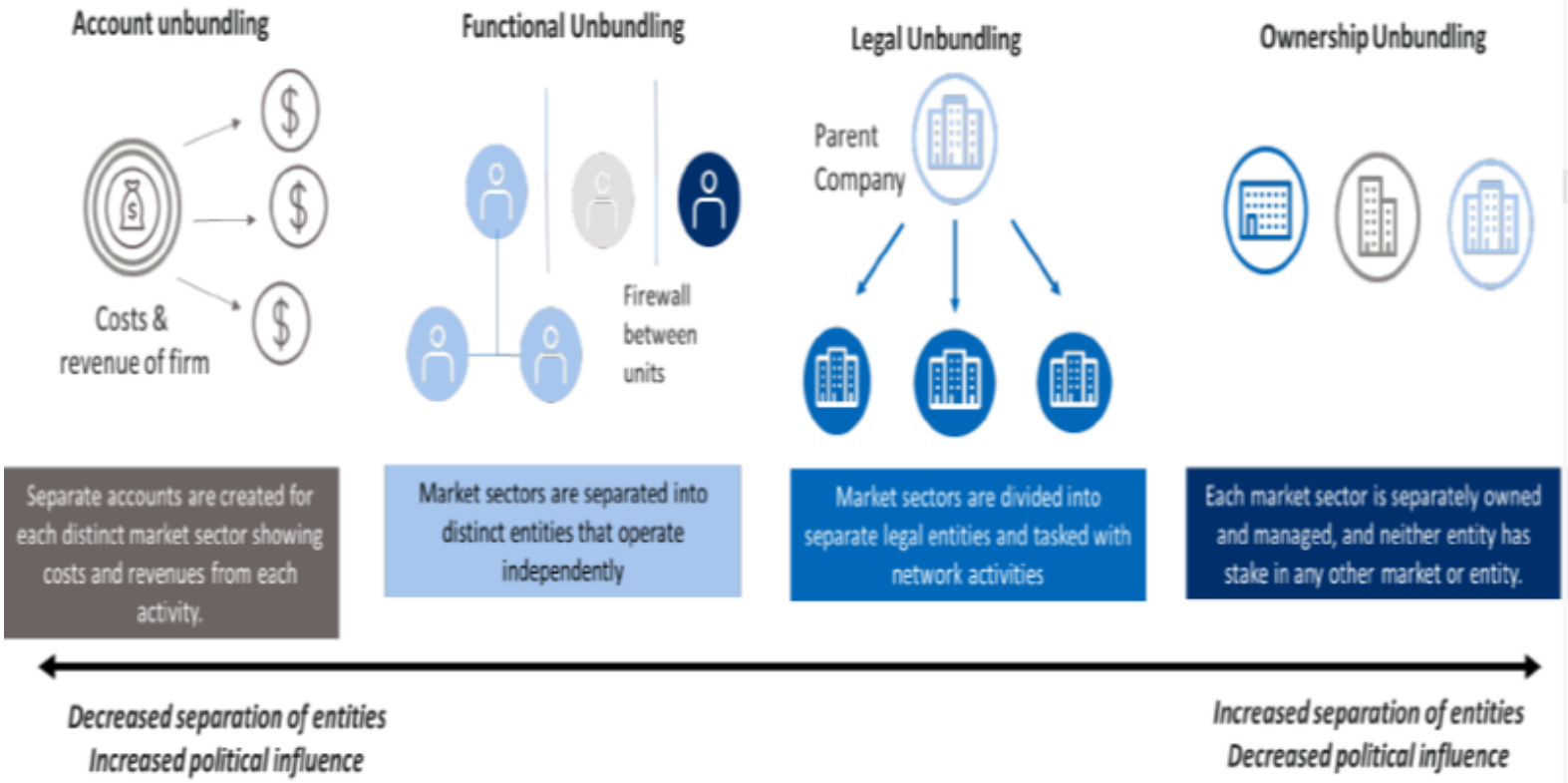


Figure 1: components of Unbundling, source: (USAID, 2022)

Unbundling a country's electricity supply Industry may result in a variety of economic advantages including enhanced system reliability, greater competition, amplified capital investment, and eventually enhanced sustainable supply, lower energy tariffs, and amplified economic expansion for the state (T.Khan et al, 2016).

2.3.1.4. Reforming OECD countries ESI

Several Organization for Economic Cooperation and Development (OECD) economies energy sectors maintained their vertically integration status in the energy sector and government in the 1980s. Restructuring the energy sector in the OECD countries involved, reduced vertical integration through unbundling, reduced market entrance restrictions to IPP's and privatization of state -owned energy generating units (Paul et al, 2022).

The unbundling mandates the regulator to distinguish between possible competing industries, particularly generation and distribution, and state monopoly functions, like transmission that should be regulated. Businesses' critical attributes and revenue objectives may be improved by unbundling; however such restructuring may lead transmission companies to pursue profit maximization at the expense of customers satisfaction (Xie et al, 2020).

2.3.1.5. Reforming Malawi ESI

Immediately after the corporatization and managerial agreement of the electricity restructuring proposals, Malawi began working on vertical unbundling. Most African countries tend to favour vertical unbundling versus horizontal unbundling. Malawi's ESCOM became vertically unbundled into generation, transmission, and distribution by 2002, however all sections remained together under the company.

Unbundling is being extensively supported as an essential technique to stimulate private sector participation, although it seems to be undesirable in developing economy nations with limited institutional capability. Unbundling process in Malawi was eventually put on hold, and it is unclear when it will resume or in what shape (Kachaje et al, 2017).

2.3.2. Eskom’s unbundling of Vertically integrated power utility

The vertically integrated model of Eskom, as shown in figure 2, was initially effective and served well for a long period of time. However, this structure has become insufficient to meet South Africa's current energy needs, leaving Eskom in a precarious position with challenges such as load shedding and state capture (Kessides, 2020).

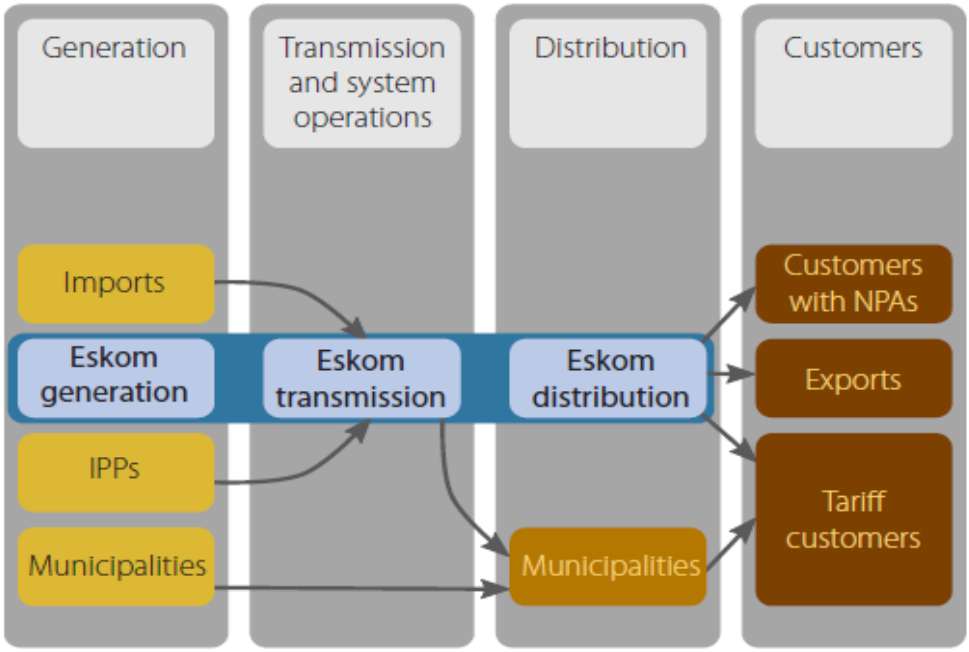


Figure 2: Vertically integrated Eskom structure, Source (Kessides, 2020)

The significance of electricity supply reliability and tariffs in promoting the South African economy's attractiveness and stimulating industrialization is also critical. Supply of electricity at an affordable cost is critical for emerging industrialization to generate employment for the country and to participate more effectively in the global economy (Department: Public enterprise , 2019)

The President of South Africa Cyril Ramaphosa declared during the 2019 State of the Nation Address that Eskom Holdings SOC Ltd will be unbundled into three fully state-owned enterprises comprising of Generation, Transmission, and Distribution (Parliamentary Monitoring Group, 2021).

Eskom undertakes to unbundle the vertically integrated utility so that its divisions can be legally separated. The timeframe for establishing an independent legal company for the transmission industry was set for December 2021, with the goal of forming an independent Electric Grid network and a Market Operator (Eskom, 2021).

2.3.2.1. Objectives of the unbundling strategy

- Increase sustainable power supply through increased competition by market operator.
- Financial independence and accountability.
- Increased Foreign direct investment (FDI) through low carbon financing for Eskom's renewable programme.
- Increased economic expansion.
- Strive for low carbon emissions in line with the Paris agreement (Department of mineral resources and energy, 2019).

2.3.2.2. DPE and Eskom's actions

- Establish a Transmission subsidiary within Eskom as soon as humanly possible. Eskom recruiting a senior executive to coordinate the execution of these measures.
- Establish a distinct Eskom restructuring unit that reports to the executive team to supplement the existing Eskom transformation team with greater expertise.
- Implement aggressive cost-cutting strategies, such as revision of coal and IPP agreements and enhance operational management, including maintenance of power stations under stringent control and consequence management.
- State and Eskom will work together to achieve adequate capacity and skills to administer the project (Department of mineral resources and energy, 2019).

South Africa has a plethora of untapped renewable energy sources. (Todd et al, 2021) is addressing why the adoption of such technologies on a massive scale is hampered by policy restrictions. The Author argues that Eskom prioritizes technological innovations that complement their areas of expertise and organizational capabilities, which are associated to Fossil fuelled power generation. Eskom's strategy did not include building a conducive atmosphere for renewable energy.

The country' renewable resources program has the potential to provide the country's projected 2025 energy consumption of 40 GW (Lawrence, 2020).

Unbundling the vertically integrated power utility into distinct firms will improve service delivery, reduce system inefficiency, and break the Eskom dominance by reducing entry barriers to new power generators, thus fostering a more competitive environment (Abayomi et al, 2020).

Integrating competition into an electricity market has several advantages.

- encourages performance and innovation in competitive activities.
- effectively meets consumers' needs; and
- reduces the room for regulation, resulting in an effective, focused regulatory frameworks (OECD reports, 2001).

Encouraging funding to hybrid energy system markets comes with its own set of difficulties. There is uncertainty over who is responsible for energy market planning, how acquisitions must be handled, and how government owned utilities and IPPs should distribute investment (Eberhard et al, Africa's Power Infrastructure, 2011).

2.3.2.3. Benefits of Vertical Unbundling

South Africa will not be compelled to privatize its Generation, transmission, and Distribution businesses because of ownership unbundling. It is beneficial to keep government sovereignty of both Generation, transmission, and Distribution division if adequate organizational separation is maintained. It is therefore simpler to implement a competitive Power industry market with a fully autonomous market operator with unbundled generation and distribution because the stakeholders in this market possess distinct tasks and functions (NordPool et al, 2020).

Financial transparency is one of the integrity layers. Financial transparency and the segmentation of generation, transmission and distribution divisions' accounts will enable transparent monitoring and annual financial statements. As a result, Eskom's credit deficiencies could be reduced.

Unbundling will:

- Permit the distinct organizations to generate capital on the merits of their independent revenue, balance sheets, and cash flows at a lower cost.
- Increase openness throughout the value chain to lower the risk of deception, bribery, and rent seeking.
- Reduce the systemic risk South Africa by isolating problems and dealing with them where they arise, without compromising the entire system.
- Place the power industry in a position to adopt renewable energy technology generation, and other sector reforms. Give confidence to investors that they will be treated in a fair and transparent manner.
- Allow the individual parts of the company to be regulated and have separate price determinations.
- Limit state assistance in terms of funding and guarantees is necessary, owing to greater market participation and financing throughout.
- Encourage competition in the electrical sector, which is intended to result in increased quality and reduced pricing (Eskom, 2022).

2.3.2.4. Challenges of unbundling

There are risks to executing a project of this nature no matter what process is followed:

- Eskom will be distracted from the short-term critical priorities such as stabilising operations and financial sustainability – solution is to ensure that adequate staff are allocated to run the project independent of operational requirements.
- Economies of scale may be eroded – solution is that the way in which the unbundling is managed must be tightly controlled to ensure that there is no growth in staff complement in the new structures and that staff are optimised.

- Lack of coordination and roll out of project - solution is management of the project in a holistic manner over time that allows iteration and learnings to be fed back into the process.

- Non-adherence or adoption of procurement policy and procurement system controls will deliver inefficiencies, disruptions, a rise in maverick spending, greater compliance, financial and reputational risks, etc (Eskom, 2022).

2.3.3. History of South African electricity

Kimberly, a mining town in the Cape, was the first city in the country to erect electric streetlights, in advance of London that was utilizing gaslights. The financial resources poured in gold mining fuelled rapid expansion on in the Electrical Power industry (Eberhard et al, The Political, Economic, Institutional and Legal Dimensions of Electricity Supply Industry Reform in South Africa, 2003). In 1923 electricity was generated by private entities and the municipalities being regulated by the government.

The government took over the private power suppliers between the period 1949 and 1960. A vertically integrated strategy or the bundling of generation, transmission and distribution was adopted by the government in 1975 to generate 87.4% of the country's electricity at a moderate cost as electricity was regarded as the lifeline to grow the country's economy (Christie, 1984). Fig 3 indicates the history of Eskom from the 1970's to the 2020s.

Eskom had to secure funding through issuing securities, debentures, and equities despite getting interest-bearing debts from the government in the early stages. Eskom was exempted from paying tax but could not generate a profit (Eberhard et al, The Political, Economic, Institutional and Legal Dimensions of Electricity Supply Industry Reform in South Africa, 2003). This vertically integrated system took advantage of economies of scale and encouraged by the government of that time.

Eskom was transformed from a statutory organization to a public business in the year 2002. The company is governed by the Public Finance Management Act (PFMA) and is formed under the Companies Act, Act 71 of 2008. The governance structure governs the company's engagement with its investor, the State as well as how the company conducts its business operations (Eskom, 2022). Fig 4 indicates the Electricity liberation in South Africa from indicating attempts to implement the energy white paper 1998.

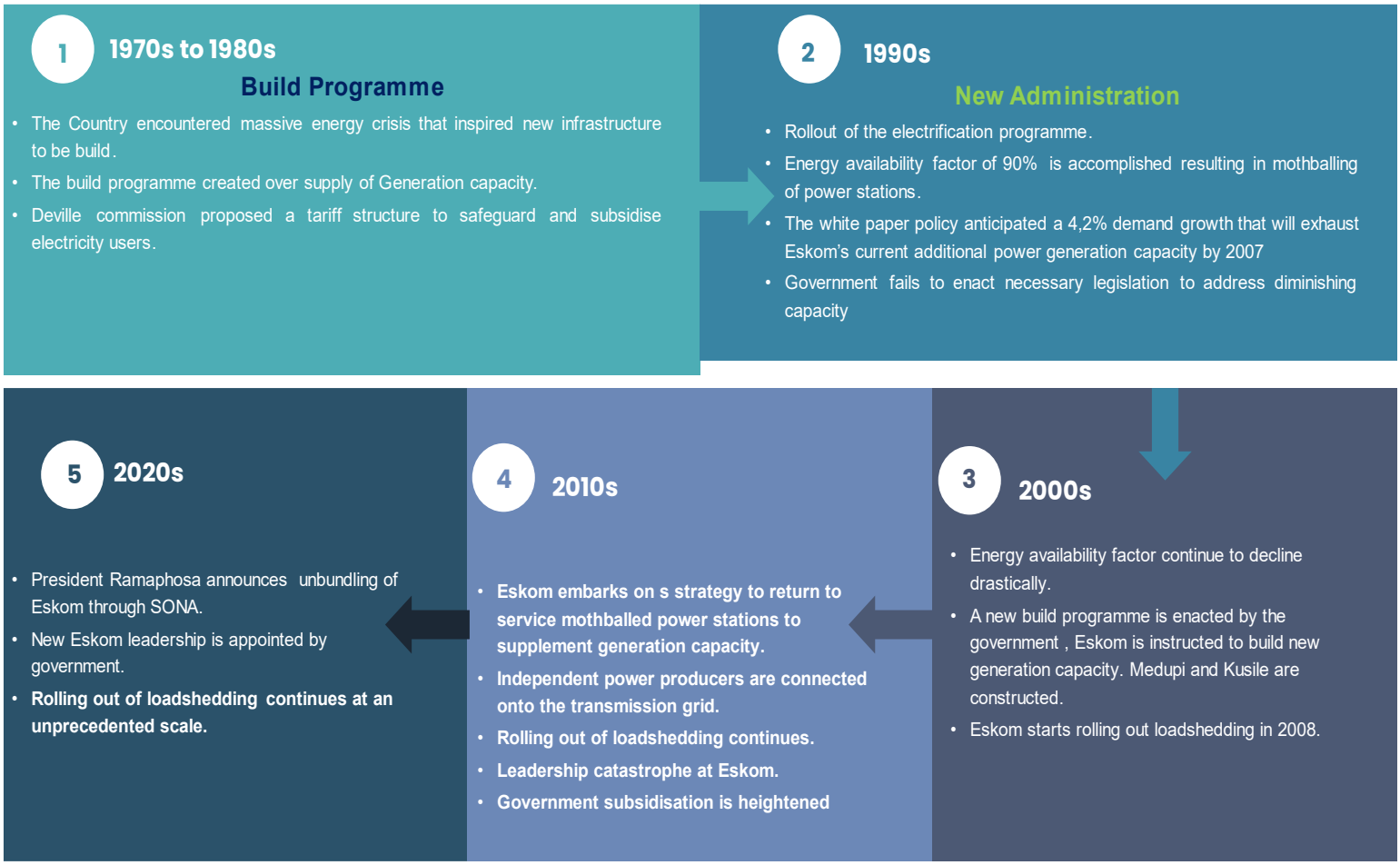


Figure 3: History of Eskom, Source: Eskom Holdings Corporate Plan FY22–FY24

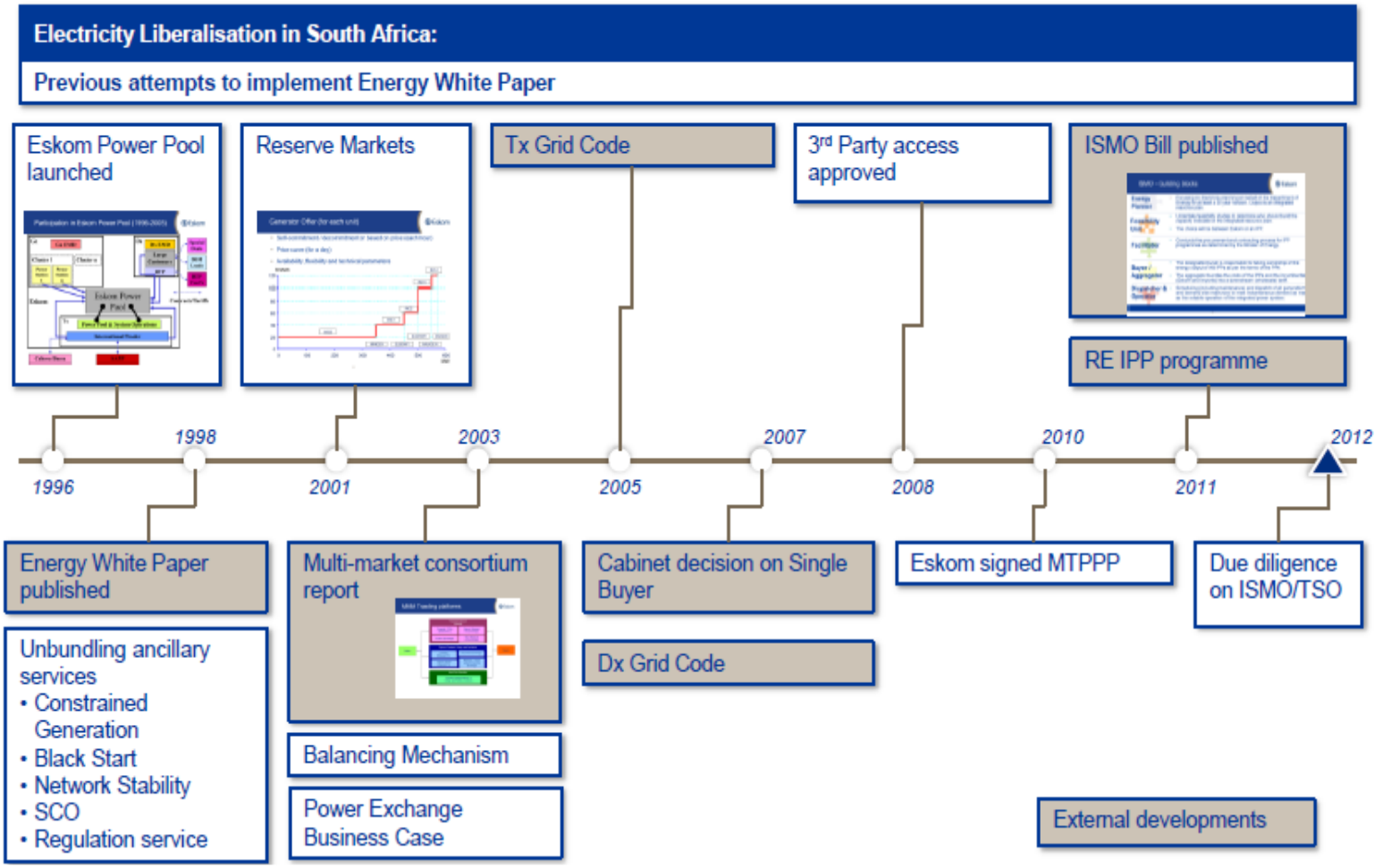


Figure 4: Electricity liberation in South Africa, Source: (Bowen, 2023)

Eskom's Macro and Miro economic analysis



2.3.4. Paris Agreement

In 2016, South Africa became a signatory of the Paris Agreement, pledging to minimize greenhouse gas (GHG) emission levels as part of its self-defined goals in its Nationally determined contribution (NDC) (Steenkamp et al, 2018). The government made a commitment to cut carbon emissions by 34% in the year 2020 and 42% by 2025 (Essex et al, 2019).

The energy industry in the country accounts for about 80% of the nation's greenhouse gas emissions, with power generation and liquid fuel production accounting for 50% (Department of mineral resources and energy, 2019, p. 37). In the quest to reduce emissions and complying with the Paris agreement, The Power utility has presented a revamped strategic plan to decommission the power plants that are nearing the final stages of their design lifespan. These stations include Komati, Grootvlei and Hendrina.

Fig 5 indicates the global GHG emissions with electricity and heat contributing 42% of the global emissions with fig 6 indicating that South Africa contributes to 1.3% of Global Carbon dioxide (CO_2) emissions.

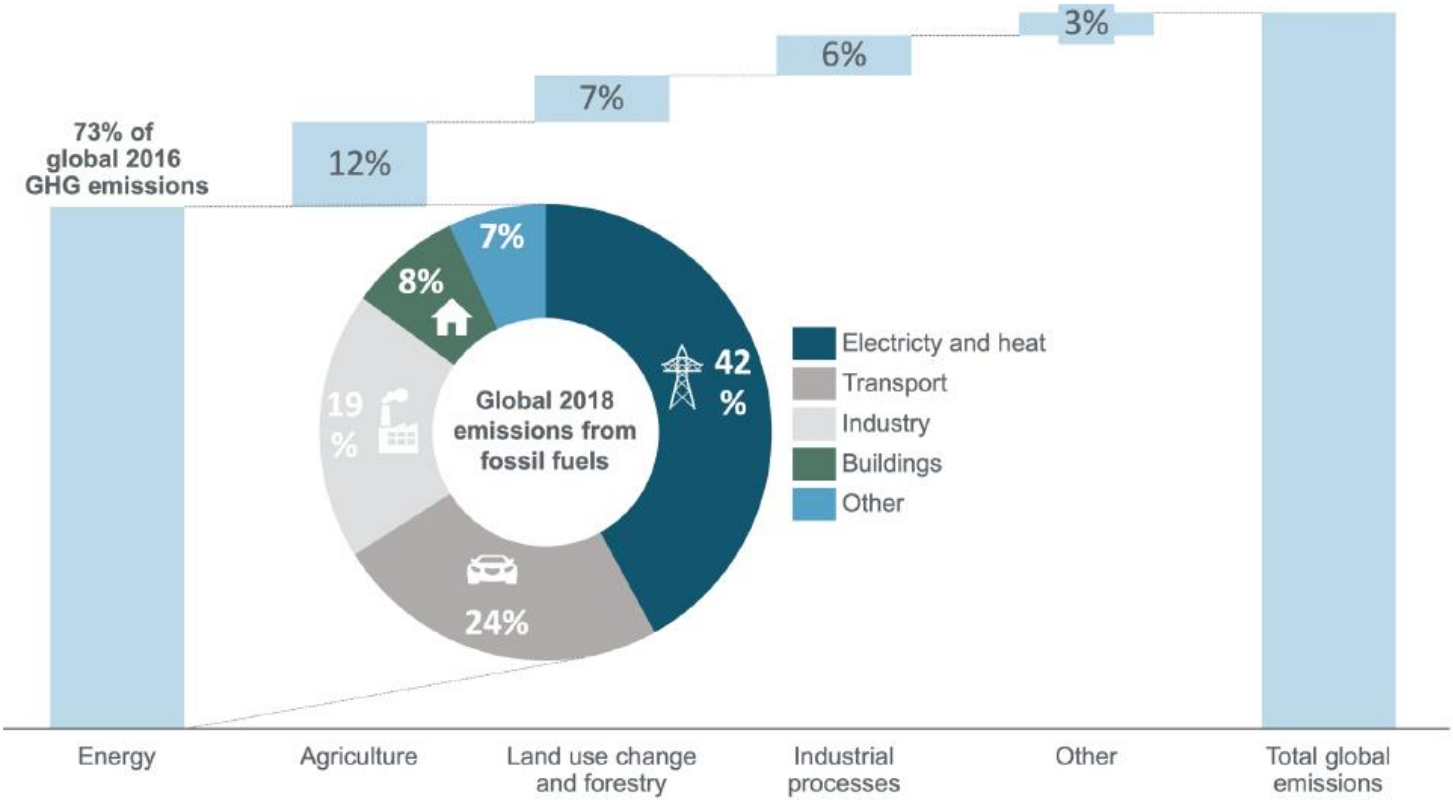


Figure 5: Global greenhouse gas emissions, source: IEA (resource institute, 2020)

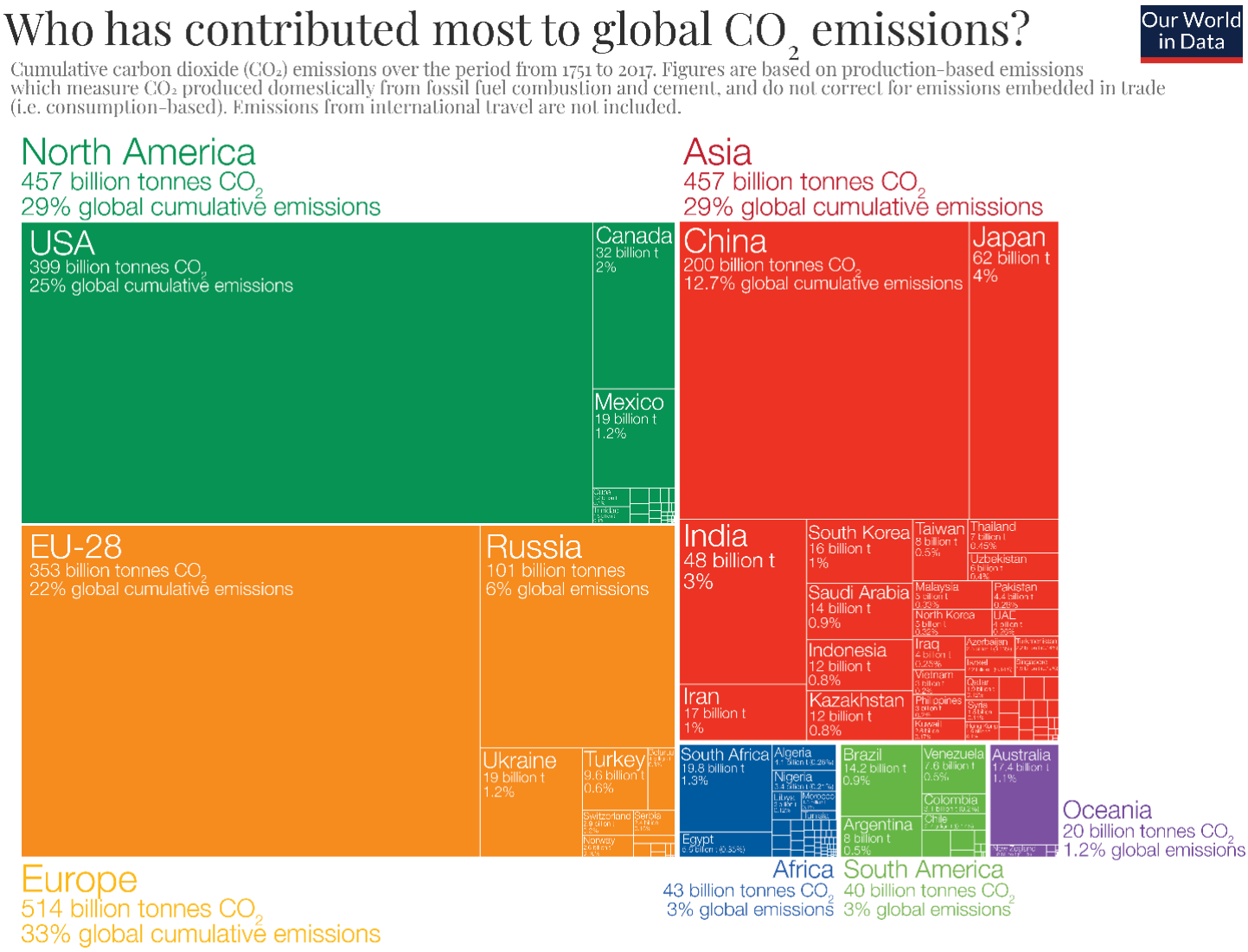


Figure 6: Global CO2 emissions, source: (Moodley, 2023)

2.3.5. Just Energy transition

Germany's top research institutions have revised their Previous projection of a 3.1% expansion and now anticipate that the economy would likely fall by 0.4% in 2023 as a consequence of the energy crisis (Kowalcze, 2022).

Compared to the entirety of 2021, the first semester of 2022 saw a 40% increase in coal exports to Europe from South Africa. Several nations shipping the coal, such as Spain, Poland, and Germany, commenced shipping coal from South Africa after the

Russia – Ukraine war had begun. These nations obtained 355,000 tonnes, 182,000 tonnes, and 157,000 tonnes, respectively. France had increased its coal imports from south Africa by 7-fold during the same period (Zhijian et al, 2022).

The European Union has traditionally been recognized as a dependable supporter of the shift to a sustainable economy due to its adoption of comprehensive policies and enshrinement of its 2050 carbon neutrality target. The European Union spearheaded initiatives to reduce GHG, safeguard tropical forests, and aid South Africa's transition to a sustainable electricity (Liboreiro, 2022).

Eskom Technical issues

Eskom's power stations are ageing with an average age of 37, functioning at lower efficiency (from 90% in 2005 to 70% in 2018, then below 60% in 2019) and progressively susceptible to shutdowns. Fossil fuelled power plants are massively contributing to the world's 10th ranking in CO_2 greenhouse emission per capita (Lawrence, 2020).

As a contingent measure to curb the elevated demand of electricity, The Eskom Board of Directors made a definitive resolution in 2003 for the Return to Service project of the three power plants, Grootvlei, Camden, and Komati for a collective power capacity of 3800MW. These power stations were mothballed in the late 1980s (Bigala et al, 2011).

The lifespan of some of the Return to service station like Komati has come to an end, further increasing the burden on Generation plant's energy available factor (EAF).

Due to a combination of aged power plants, unplanned repairs, and design problems at the recently build Medupi and Kusile power stations, Eskom has been forced to implement frequent load shedding to allow itself enough time to recover the grid in the event of an emergency. Eskom is now in a lot of trouble financially, and it's been criticized of poor management (Abayomi et al, 2020)

Eskom's Interim Chairman Prof. Malegapuru Makgoba stated that the company must implement a turnaround strategy urgently as the electricity supply forecast for the next three-year planning cycle indicates an electricity supply gap of up to 6 000MW, it would

persist over the following five years as old fossil fuelled-fired power plants near the end of their production life. To mitigate the electricity deficit, the government launched an urgent 2 000MW procurement program as well as rapid procurement process for an increase of 11 800MW of power. This move is in alignment with the IRP 2019, which serves as a roadmap for the ESI's decarbonisation future (Eskom , 2021).

Capital structure of Eskom's new generation-build projects, as well as consequent budget overruns due to execution bottlenecks, have resulted in considerable energy tariffs imposed amid the power supply challenges up to 2008. These circumstances, combined with the 2008 global recession, have heightened the discussion over the Country's Energy industry's framework, governance, administration, and leadership (T.Khan et al, 2016).

2.3.6. Energy Economics

Energy is not a product that's capable of being purchased and sold on the open market, however Specific commodities i.e., natural gas, oil, and coal can be traded. Energy economics is the pricing of fuel markets, and it's a convenient way to refer to all the important economic ideas that come up while researching various fuels (Evans et al, 2009).

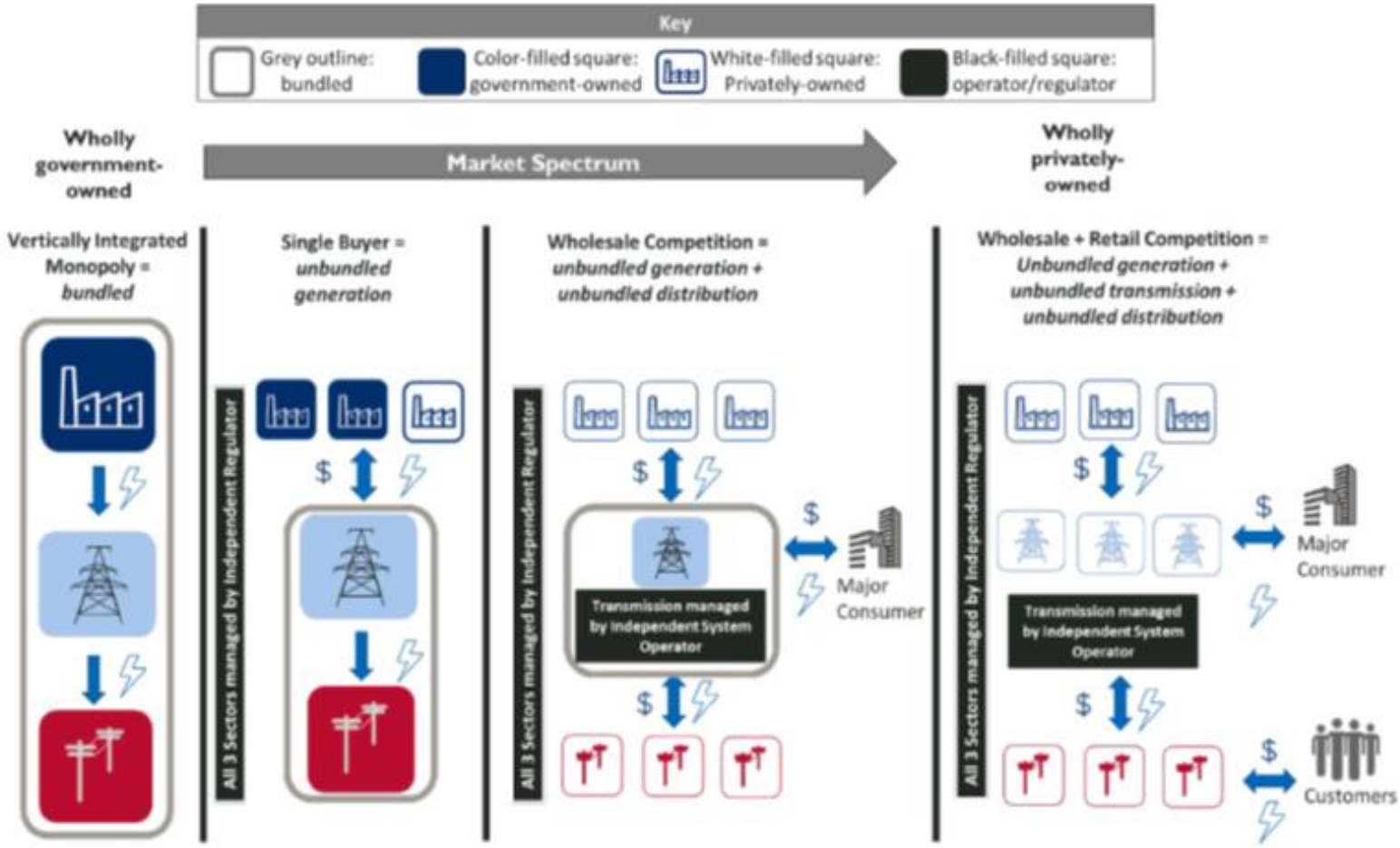


Figure 7: Phases of Power Market Restructuring and Utility Unbundling Reforms along the Market Spectrum, source: (USAID, 2022).

Single buyer model

A single buyer is a single organization buying electricity from energy producers and selling it to customers, referred to as the central purchasing agency (CPA) select from multiple independent power producers (IPP) companies to promote competition in the power generation industry. These IPP's are prohibited from acquiring entrance into the transmission network sales that reach the final customer. The transmission network is monopolized by the CPA along with sales to the end user (Hunt et al, 1996).

Competition in Wholesale electricity markets

Direct purchases of electricity from producers are made by distribution or retail businesses, who then distribute it via a transmission network. However, the distribution and retail businesses continue to exert power over the final customer. Transmission network is accessible to any user (Hunt et al, 1996).

Retail Competition

Every client selects their own electricity supplier. Transmission and distribution networks are accessible. The retail business is competitive and distinct from the distribution, the California model (Hunt et al, 1996).

Central purchasing agency (CPA)

The electricity sector has used the term Single Buyer to refer to a business structure in which one a single entity, typically state-owned controls the electricity monopoly on the sale and purchase of wholesale energy. Several developing countries, especially those in Asia, experienced remarkable outcomes when they implemented the Single Buyer model, drawing crucial capital investment into their struggling electricity sectors. The strategy supported economic development by alleviating electricity constraints (Arizu et al, 2006).

The CPA in fig 10, refers to a TSO organization designated to carry out the duties of the Single Buyer in a marketplace that is competitive, as well as an acquirer of legacy PPA's and a potential buyer of additional infrastructure and electricity as needed to preserve the system's reliability in a competitive marketplace (DMRE, 2022, p. 4).

- Finalize vesting contracts with Eskom Generation power plants with PPA to CPA.
- Adopting the current PPA's with legacy contracts from independent electricity providers through vesting contracts.
- Transecting all electricity bought through power purchasing agreement (PPA) to the Day Ahead Market.
- Signing sales contracts with distributors.
- Acquiring the auxiliary services on behalf of the system operator

Advantages of Single buyer model

- The capacity to acquire capital investment funding by providing long-term PPAs.
- Providing an efficient replacement for failing energy industries to implementing reform.
- The capacity to centralize purchasing, acquire expertise and take advantage of economies of scale.
- Simplicity in application due to the lack of the need for major modifications to negotiating agreements / contracts in industry structures or prevailing cultural norms (Arizu et al, 2006).

Power purchasing agreements.

Is an agreement comprising of an IPP's and Eskom, local government, or a licensed electricity broker. The parties to the contract decide on the cost and duration for which electricity will be supplied. PPAs may incorporate up to twenty years in the terms of agreement to provide the producers with the assurance they need to make the investment. Through a PPA, the generator can raise funds to construct the infrastructure for electricity generation as seen in fig 8 (Sustainable Energy Africa (SEA), 2015).

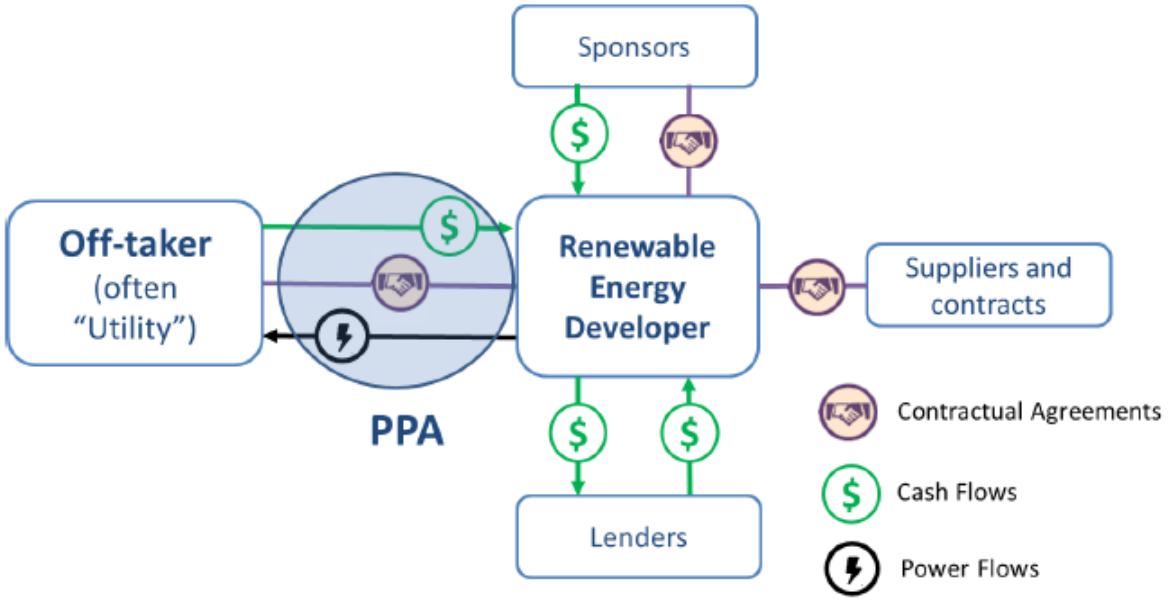


Figure 8: Power Purchase Agreements, Source: (IRENA, 2018)

Market design

There is no standard electricity structure for liberalized wholesale markets. Each jurisdiction has a unique framework for markets, governance, legislation, and system oversight (Wilson, 2002).

Centalised and decentralised electricity markets

Each moment supply and demand of electricity need to be maintained in sync, this is managed by the system operator. In a centralized design, the day ahead of the delivery, Generators provide comprehensive cost details to the system operator, who determines the amount of output for every generation plant also called capability-based bidding. This is not the case with the decentralized electricity market, which depends on the Generator's self commitment and sends the system operator less precise cost data. US markets have adopted the centralised design model while Europe adopted the De-centralised model as seen in table 1 (Ahlqvist, 2022).

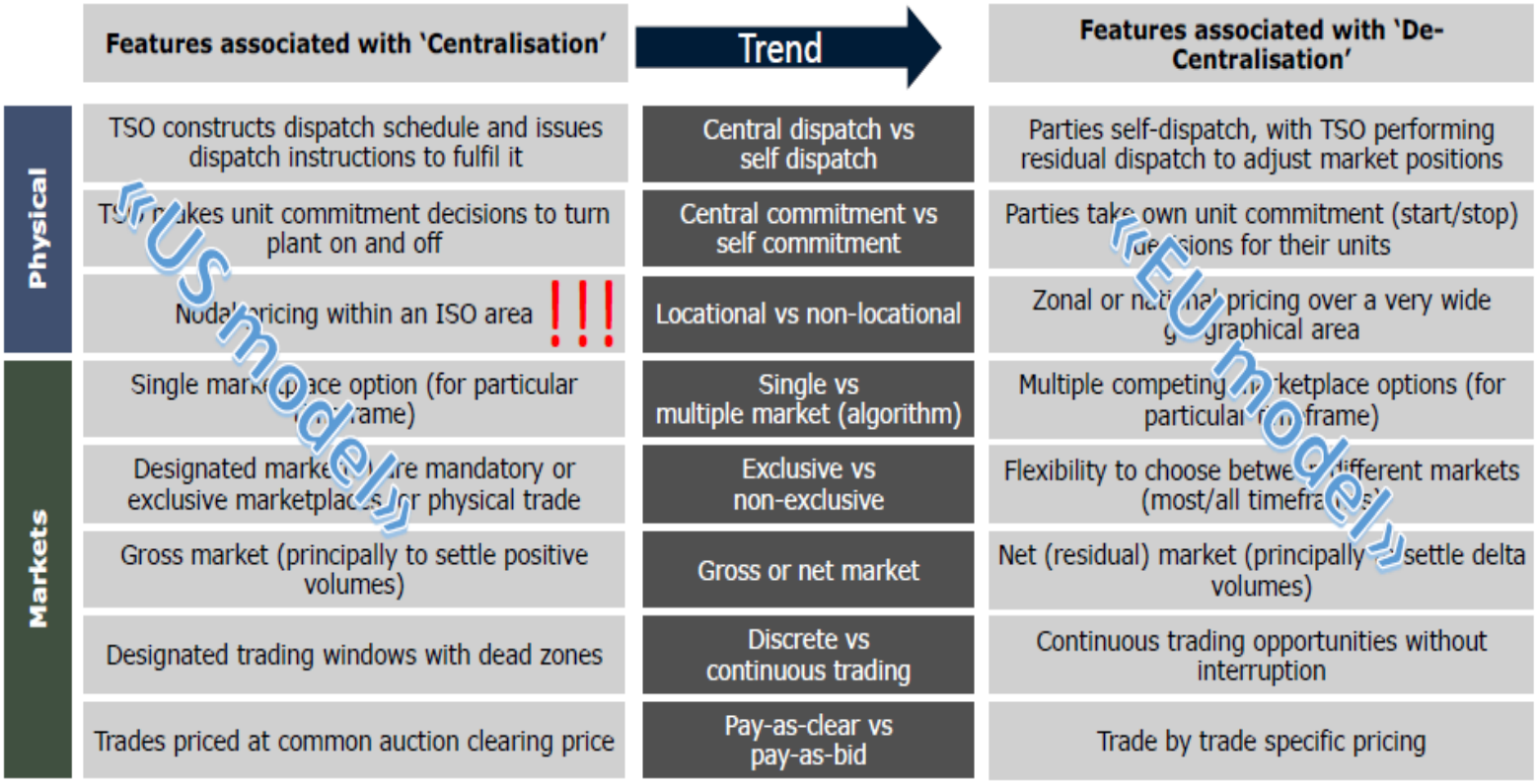


Table 1: Market designs are centralised or decentralised, Source (Bredesen, 2023)

The spot market

This market simulates continuous trading by adjusting prices on a frequent basis. However, faulty metering and software restrictions may necessitate payments over a narrower period, for instance, by utilizing the mean price during that hour (Wilson, 2002).

A centralized day-ahead market fig 10, has the benefit of guaranteeing the day ahead dispatch's technical viability and cost effectiveness. If the grid experiences no unexpected shocks, like outages, power disruptions, transmission problems, or fluctuations in renewable generation, no real-time market alterations would be required (Ahlqvist, 2022).

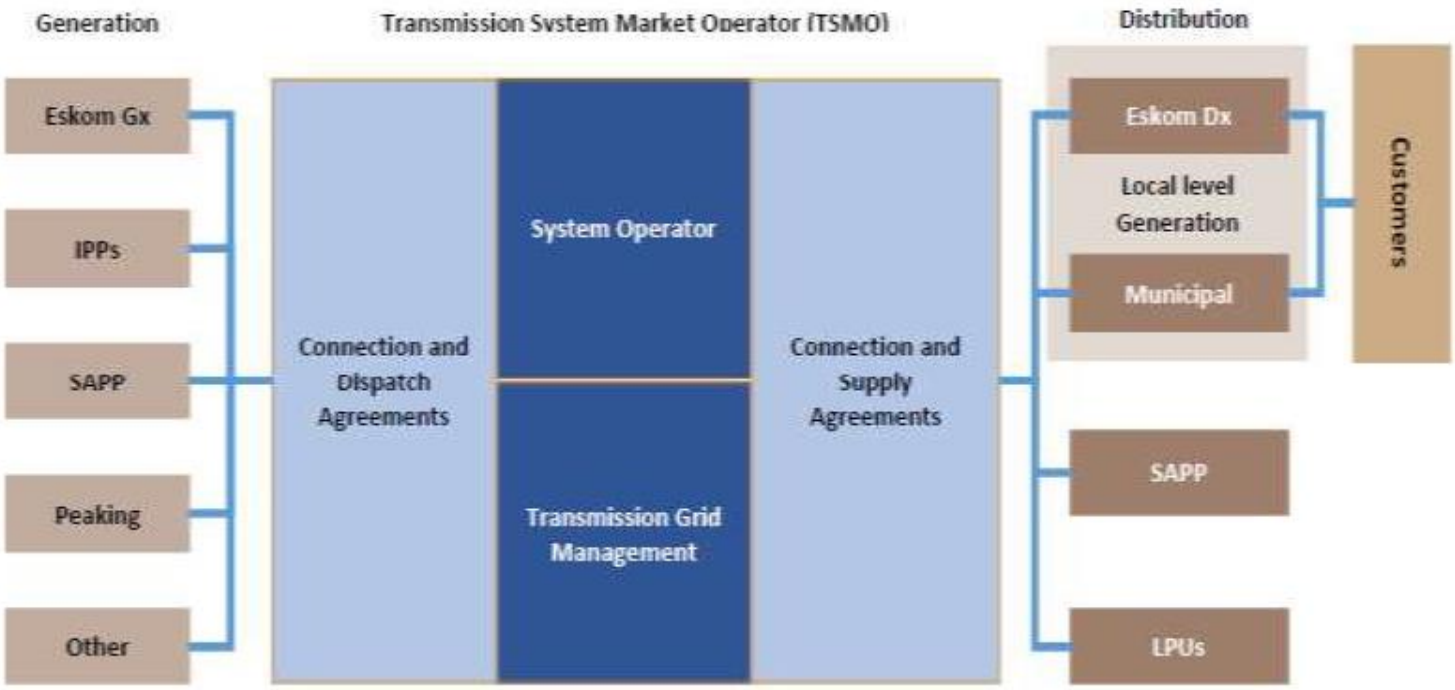


Figure 9: Eskom's proposed interim electricity market structure.

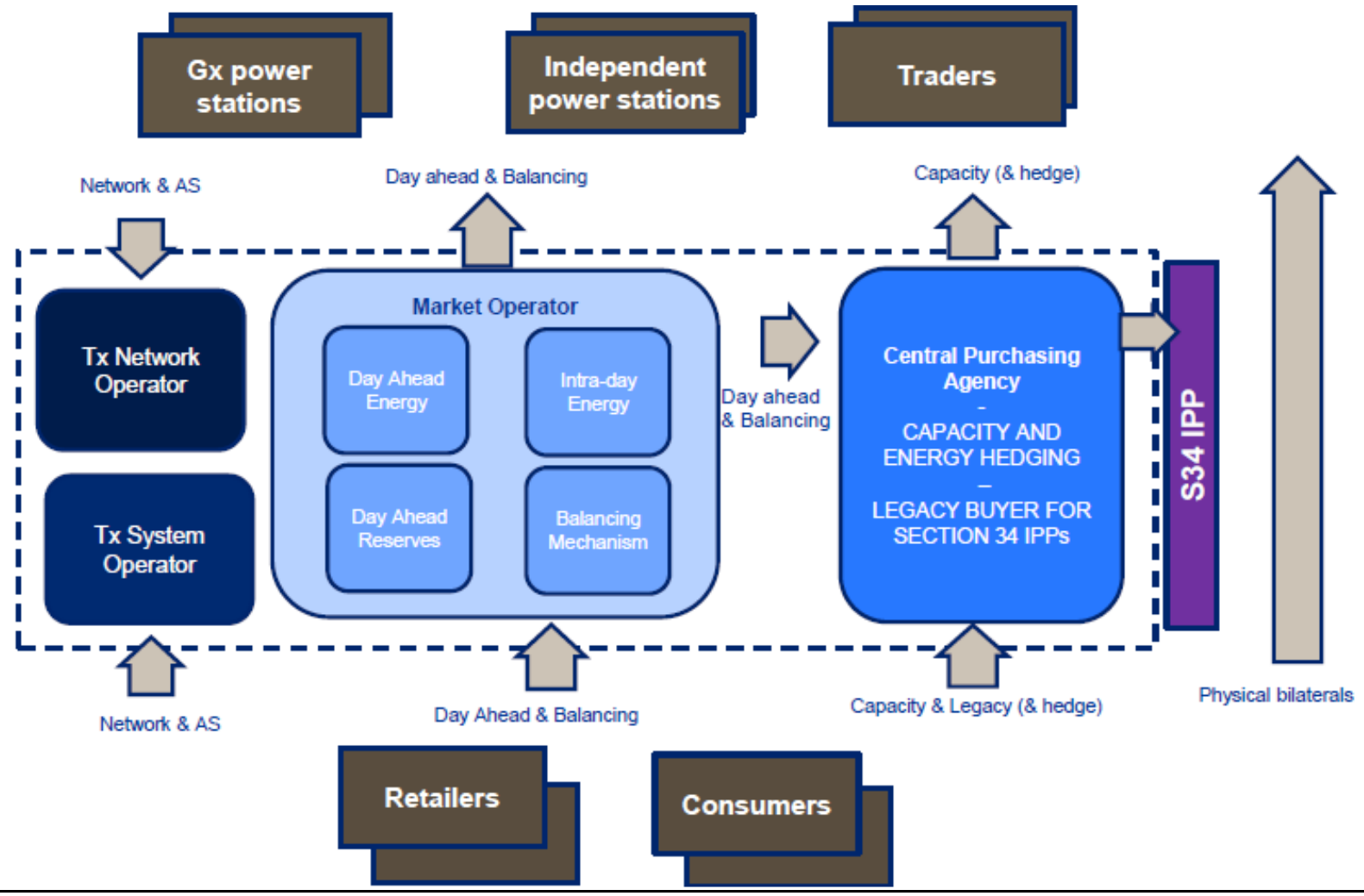


Figure 10: Eskom's Proposed multi-market model, Source: (Bowen, 2023)

An Established oligopolistic electricity sector has a substantial barrier for entrance due to the substantial capital investment required to finance assets with heavy sunk costs like plant, equipment, and machinery. Substantial fixed expenses necessitate a sizable market share to raise funds for debt management and dividend payments to investors. Challenges for prospective competitors in this sector include gaining market share and achieving competitive rates of return (Nagy, 2012).

Competition in Wholesale Electricity Markets

Eskom transmission consulted the German government funded South African-German Energy Programme (SAGEN) requesting additional technical support and capacity expansion for implementation of restructuring the ESI of South Africa (Bredesen, 2022).

The only thing a government seeking ESI restructuring can be certain of, is that the regulation institutions will encounter a lot of tough circumstances for which it is unprepared and that compromises are guaranteed to be made in the initial market design (Wolak, 2003).

Market manipulation by oligopolies, also known as market power exploitation, is a widespread issue that has risen during the ESI liberalization from the vertically integrated structure in most energy markets (Guo et al, 2019). Market power is the capacity of an actor in the market to commercially influence the price of goods away from levels of competition.

The upsurge in electricity prices by 130% in the Australian National Electricity Market (NEM) between 2015 and 2017 was attributed to the use of market power and it led to risks in energy security, such as national power grid collapse that occurred in 2016 (Marshall et al, 2020).

(Wolak, 2003) argue that Wholesale markets ought to be developed to accommodate the ESI's initial constraints. The California' scenario, whereby a combination of wholesale market where power producers and power traders had a great deal of discretion to increase their income and a retail market that severely limited the flexibility of the big retailers created massive problems.

The country's vertically integrated operator of the rail transport system in South Africa forbids competition from using its network. Since competitors and market through access rights has the possibility of improving the effectiveness and efficacy of the rail system through higher price and quality competition, the government's policy is that entry should be permitted on this infrastructure (Truen, 2022). The same approach is being adopted in the energy sector.

Discrimination in the ESI issues can be resolved through divestiture of the VIU by the state since it takes away the motivation to practice unfairness (IEA, 2001).

Generation projects should be purchased through a cost-effective and competitive methods having as much commercial agility as possible. IPPs have demonstrated that they are a widely recognized and successful method of incorporating private funding into the electricity sector, there continues to be plenty of opportunity for enhancement in how such developments are executed (Foster et al, 2020).

Retail Competition

The retail competition model has been implemented in various OECD countries i.e., Finland, Norway, Spain, Sweden and some states in the USA and the UK. Under the limitations set by the transmission network. Interactions between generators, consumers, and a variety of potential agents, such as merchants, power transfers, and traders, are free to occur. Consumers are permitted to select their suppliers and to structure their agreements on the demand side, while generators are permitted to offer their electricity to any consumers in the market on the side of supply (International Energy Agency, 2001).

England and Wales adopted the centralized wholesale market for their ESI. It is required that power consumers purchase from the pool and that generators sell their output to the pool.

Distribution of electricity

Wheeling agreements

Wheeling is the term used for referring to how electricity is transferred between the supplier to the customer via the power grid. It addresses the usage of electrical networks and associated expenses. The costs associated with utilizing the network, such as connection fees, business processes, servicing, refurbishing, support for customers and management (Sustainable Energy Africa (SEA), 2015).

Wheeling fundamentally facilitates the willing buyer/willing seller concept of privately produced electricity being transported across the national grid to meet consumer's demand. Electricity wheeling is an accepted method around the world. In 2008, Eskom has authorized third-party wheeling fig 11, which enables an IPP's to physically

transport energy across the transmission grid promoting energy availability (Eskom, 2023).

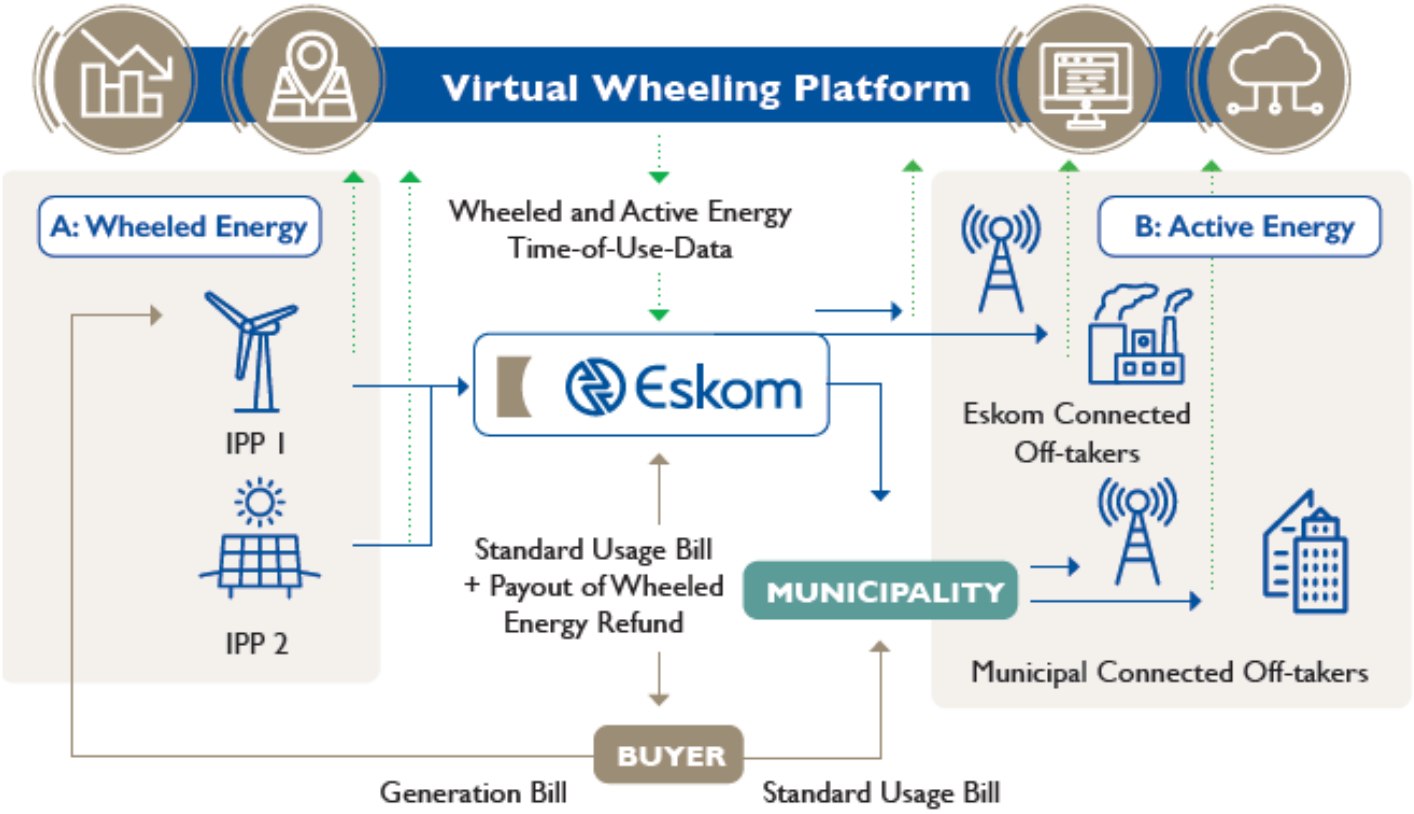


Figure 11: High level schematic of the virtual wheeling platform design, source *(Eskom, 2023)*.

For the municipality linked and Eskom direct linked consumers, who are the load off-takers and IPP generation, the Virtual Wheeling Platform (VWP) will offer a command centre perspective regarding all wheeling transactions and the corresponding wheeling operations (Eskom, 2023).

The role of municipalities

Municipalities in South Africa have a variety of choices or business models at their disposal to take advantage of the potential presented by green energy technologies.

- How the municipality builds, generates, purchases, or facilitates power systems, the scale of the power systems, how connected they are.

- The mode of operation which includes fee structures, cooperation contracts, and financial management plans (GIZ, 2017).

Energy wheeling is the process of transferring the electricity over the current transmission or distribution infrastructure, allowing generators to resell their electricity to third parties. Third-party wheeling programs have the potential to yield several advantages for municipalities, such as increased revenue, economic expansion, security of electricity, and sustainability for the environment. Municipalities may strengthen neighbourhoods and their capacity for managing their energy by encouraging private funding, environmentally conscious programs, and advancements in technology (GIZ, 2023).

2.3.7. Legal

Electricity Regulation Act 4 of 2006 Amendment Bill

The purpose of the amendment bill is to create a competitive multimarket framework for ESI, regulate local governments, reticulation of the ESI, develop a state governing structure for the electricity supply industry, to designate the National Energy Regulator of South Africa (NERSA) as a the guardian and administrator of the ESI regulatory structure, offer licenses and authorization as the means of regulating generation, transmission, distribution, system operation, reticulation, trading, and the import and export of power (DMRE, 2022).

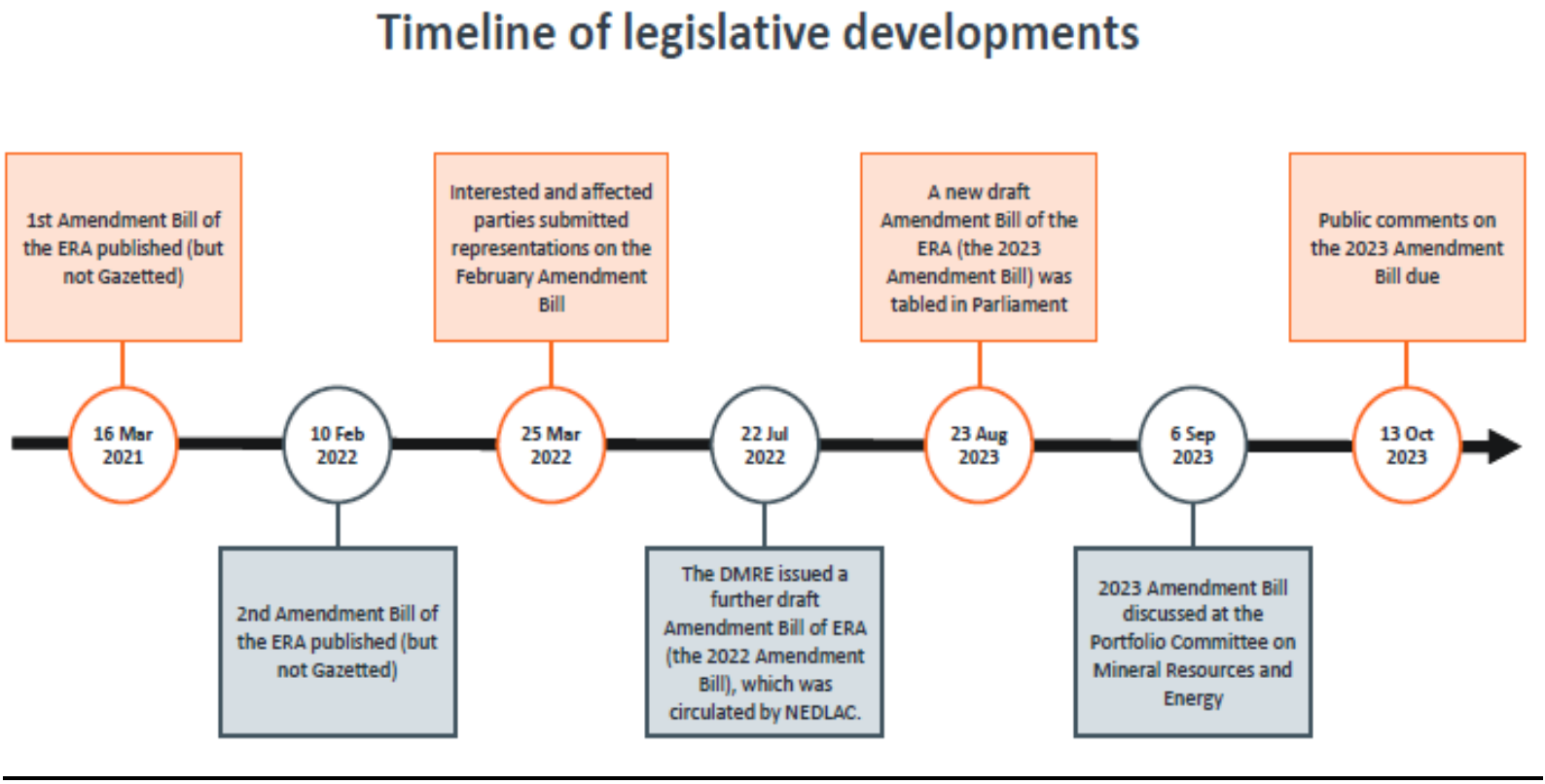


Figure 12: Electricity Regulation Act 4 of 2006 Amendment Bill timelines, Source (Van-der-Poel, 2023)

The Government appears to be pursuing a hybrid market structure that permits wholesale electricity to be exchanged in three different ways, as evidenced by the Bill currently before Parliament.

- Regulated PPA's in which the TSO or local governments act as the counterparty and the state or municipalities purchase power via a competitive bidding system.
- A trading platform.
- Bilateral supply contracts, which are ongoing PPAs between end users and IPP's or brokers (Allenovery, 2023).

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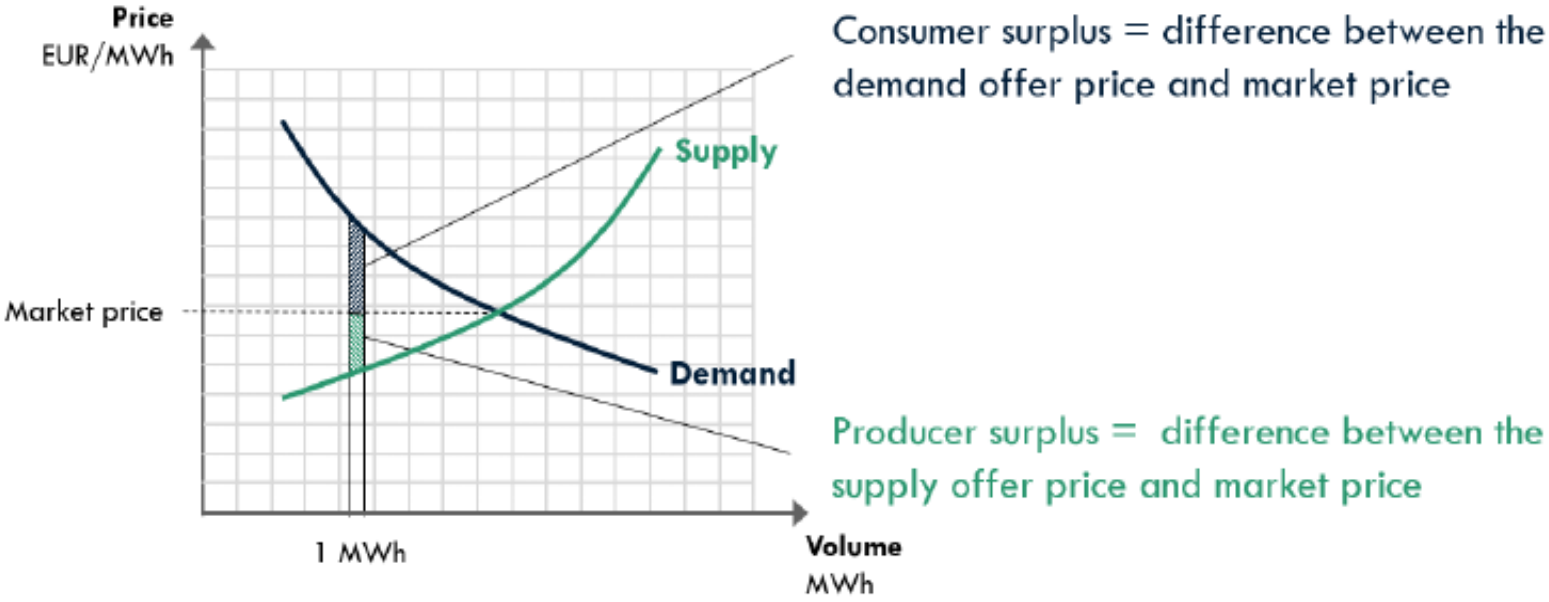


Figure 13: Maximizing social economic welfare, Source: (Bredesen, 2023)

Optimise the seller and buyer surplus fig 13, while considering potential limitations in both orders and the transmission infrastructure resulting in the maximum overall economic welfare.

2.3.8. Pricing

According to (EPRI, 1997) , the unbundling of the VIU's will necessitate a better ability to compile rivalry and client data essential for competitive markets. To rapidly develop and execute advertising and sales decisions, it will also be necessary to acquire new pricing instruments. A complete shift in how the customer connection is framed.

The Multi-Year Price Determination (MYPD) Methodology was created to regulate the appropriate financial status for Eskom. It serves as the framework for NERSA's evaluation of the price adjustment requests submitted by Eskom. It uses a cost-of-service-based framework including incentives for Eskom, the licensee, to make effective supply chain decisions and efficient investments (Nersa, 2021).

The capital expenditures of the Generation companies will be improved when the sales price of electricity is above the incremental cost of generating the electricity (Kirsch, 1996).

The access pricing

There is a relationship between unbundling and vital subject of access pricing in ESI systems. Vertical integration involves figuring out how much an upstream company will charge a downstream company for their input. Under access pricing, a single company controls the network that distributes the goods to consumers at large (Evans et al, 2009, p. 62).

Nersa VIU Pricing issues

NERSA is compelled to approve tariffs based on acceptable expenditures and revenues despite its lack of influence on sales due to the MYPD approach (Nersa, 2021). The overall amount of revenue needed by the utility is averaged to establish an average price. Nersa should consider adopting a more dynamic and flexible pricing policy that considers the changing energy landscape and promotes sustainability.

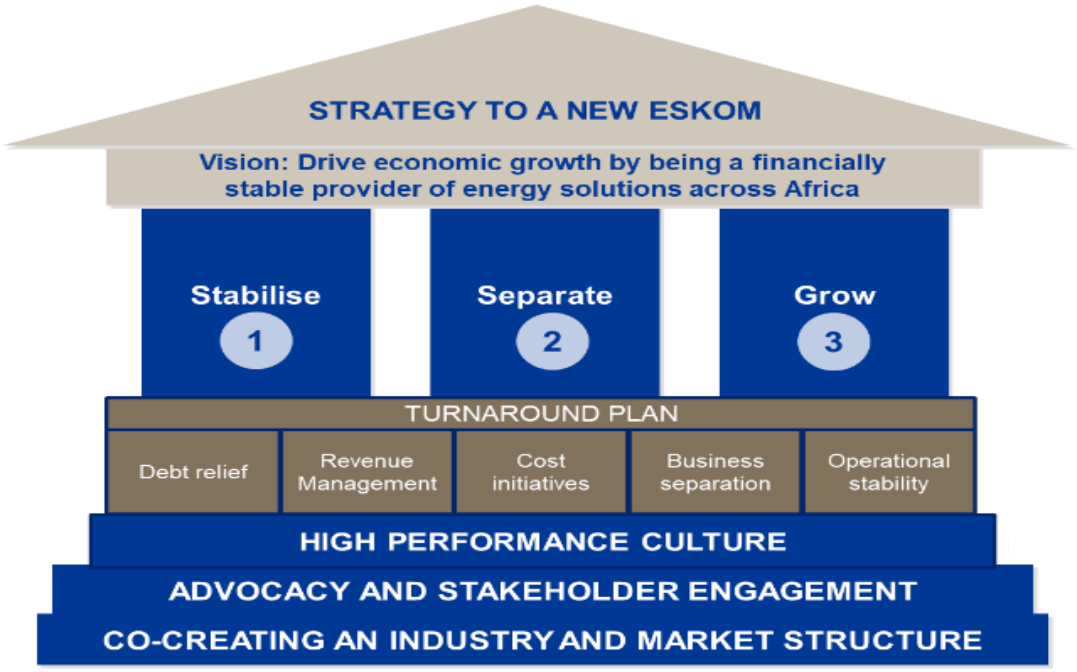


Figure 14: The Eskom Unbundling strategy, Source: (Eskom, 2020)

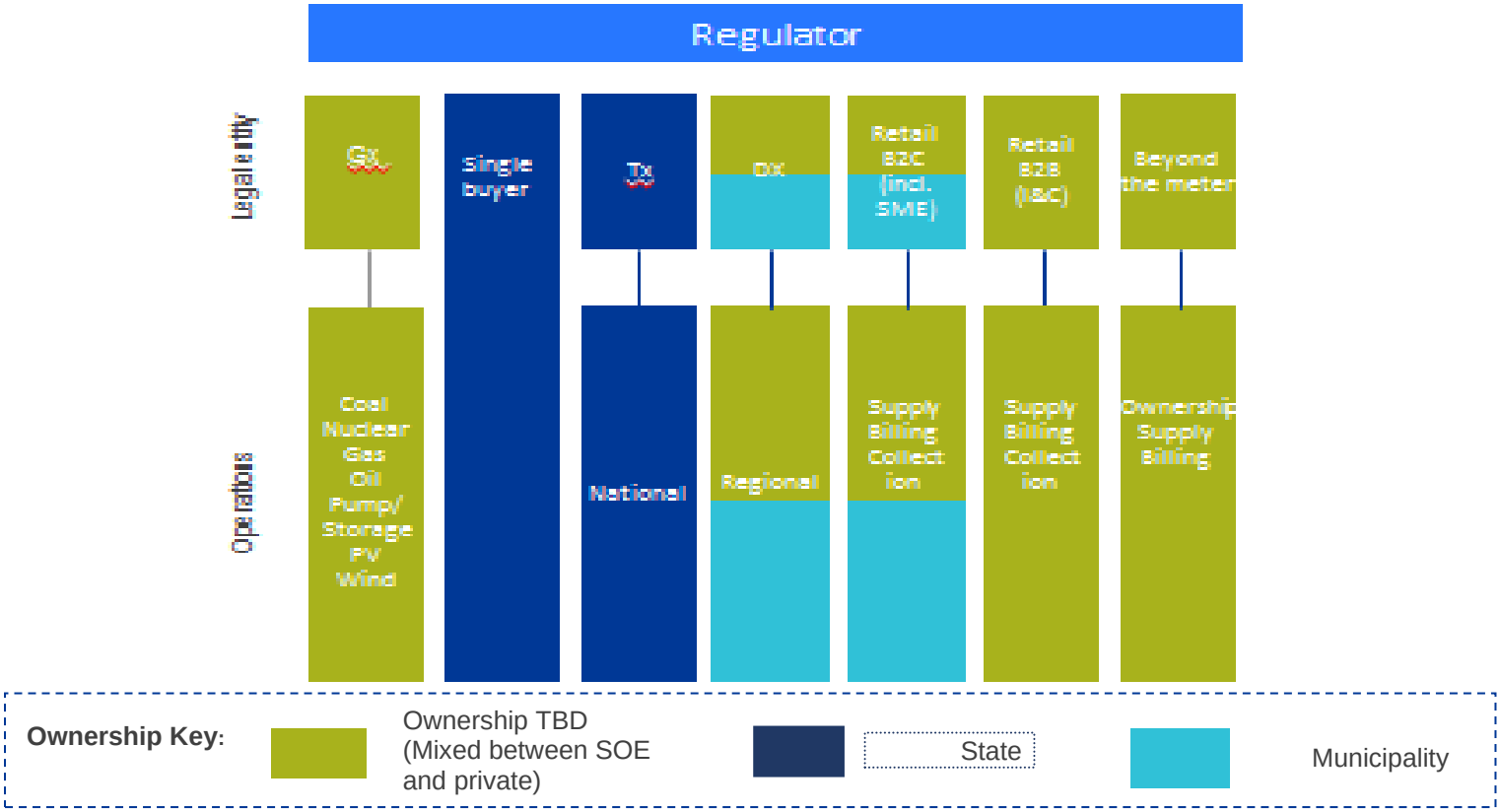


Figure 15: Proposed Unbundled Structure, Source: (Eskom, 2020)

Proposed Unbundling

Within the framework of the Fourth Industrial Revolution and renewable energy transition, the cost viable and ecologically friendly energy will fuel equitable expansion in the economy. The company's new strategy must supply dependable, cost-effective power.

The company's new strategy must be informed by:

- Implementing relevant standards to ensure electricity supplies and equal coverage, strengthening the company's economic condition, and reducing reliance on the government's treasury and
- Establishing a stream of emergent goods based on research and development that can enhance profitability and equip the company for lengthier expansion, to satisfy statutory requirements for a reduced emission future (Department: Public enterprise , 2019, p. 24).

Divisionalisation

The separation of Eskom into three clearly defined divisions (Generation, Transmission and Distribution

- All service functions required for separate operations with the exception of Information technology and Treasury and some other niche services such as tax, Commercial policy and assurance remaining at the centre
- New organisational structures developed, Divisional Boards with a delegation of authority that devolves all operational decisions.
- Employer remains Eskom with the same conditions of employment.
- Separate licence applications but one tariff determination.
- Treasury manages all borrowings and lenders.
- Investment capex allocated centrally and managed in divisions (Eskom, 2020).

Legal Unbundling

The establishment of a wholly owned subsidiaries of Eskom with:

- Separate financial statements and audited reports, Separate bank accounts and Separate tax returns.
- Shareholder of the three subsidiaries is Eskom Holdings.
- Separate licences, price determination process to be defined by government policy including municipality determinations.
- Electricity markets in place to trade electricity and capacity etc.
- IT managed centrally, with some core applications going back to line but the data ring fenced.
- Assets and Liabilities transferred to subsidiaries (Eskom, 2020).
-

Various options of unbundling a vertically integrated utility.

SCENARIO 1

Plan, review and implement functional unbundling, moving directly thereafter to legal unbundling.

SCENARIO 2

Immediate legal Unbundling of Transmission as a subsidiary of Eskom Holdings.

SCENARIO 3

Divisionalisation with three divisions, separate management and divisional boards with implementation occurring over a two-year period and legal unbundling possibly occurring later.

2.4. PROPOSITIONS

2.4.1. Unbundling of Eskom will lead to financial transparency that will enable translucent monitoring of financial performance.
2.4.2. Unbundling enhances the value chain efficiency, establishing clear performance incentives inside the component parts; (Generation, Transmission and Distribution) of the power utility.
2.4.3. Unbundling Eskom will create competition in the energy sector which is intended to lead to efficiency gains and drive electricity tariffs down.

2.5. CONCLUSION

Eskom's unbundling strategy represents a pivotal step toward transforming South Africa's electricity supply industry (ESI) to meet the demands of a modern, competitive, and sustainable energy landscape. By unbundling its vertically integrated utility into separate generation, transmission, and distribution entities, Eskom aims to enhance operational efficiency, financial transparency, and market competition while aligning with the national development plan (NDP) and global trends such as the Paris Agreement. The strategy's objectives are sustainable power supply, financial independence, increased foreign direct investment, economic growth, and reduced carbon emissions that reflect a comprehensive approach to addressing Eskom's challenges, including load shedding, ageing infrastructure, and financial crisis.

Global case studies, such as China's unbundling of the State Power Corporation and the EU's rigorous market reforms, demonstrate that vertical unbundling can foster competition, improve grid reliability, and attract private investment, provided robust regulatory frameworks are in place. Experiences from developing nations like Malawi highlight the risks of unbundling in contexts with limited institutional capacity, underscoring the need for careful implementation in South Africa.
The proposed unbundling offer flexibility but require meticulous coordination to mitigate challenges like eroded economies of scale, operational distractions, and procurement inefficiencies.

The Electricity Regulation Act Amendment Bill and the introduction of a hybrid market structure, incorporating regulated power purchase agreements, trading platforms, and bilateral contracts, signal a commitment to fostering a competitive ESI. Wheeling agreements and the role of municipalities further enhance opportunities for private sector participation and renewable energy integration. Success hinges on addressing regulatory gaps, ensuring dynamic pricing mechanisms, and managing market power risks, as evidenced by global examples like Australia's price surges.

By learning from international reforms and tailoring its approach to South Africa's unique socio-economic and environmental context, Eskom's unbundling can pave the

way for a resilient, equitable, and low-carbon energy future, driving industrial growth and societal welfare.

THIRD SECTION: METHODOLOGY

3.1. INTRODUCTION

This research seeks to expand the existing literature surrounding the unbundling of vertically integrated Power utilities in developing countries, by investigating the effect of the proposed Restructuring and Unbundling at Eskom, South Africa. The research falls within the umbrella of qualitative research.

3.2. RESEARCH DESIGN

Qualitative research aims to enhance and widen our perspective of how everything in our social environment originated to be as they are. The study question entails investigating how individuals perceive something, what opinions they hold, researching a novel domain where challenges are not yet recognized or acknowledged (Hancock et al, 2009).

In research studies, qualitative approaches which rely on narration and perception instead of quantitative form is being frequently employed because they are thought to grasp the areas that conventional methods cannot achieve (Lacey et al, 2007).

- Qualitative research provides explicit details of processes, conditions or methods describing the viewpoints and experiences of the participants.
- Data is not generated out of thin air but developed by participants who are positioned in and originate from certain environments.
- We acknowledge the bias of the evidence we examine and take it into account during interpretation instead of eliminating the bias (Young, 2009).

The underlying principles of qualitative research comprise **Ontology** and **Epistemological** suppositions.

An **Ontology** is a set of psychological assumptions regarding how and what may be learned about human experience. The decision of what to research, how to frame the study questions, and how to perform the study are all influenced by the researcher's ontological presuppositions (Smith et al, 2016).

An **Epistemology** is a conceptual belief structure of who can know and how to build knowledge that matters (Smith et al, 2016).

Ontology refers to the researcher's beliefs about reality, while epistemology concerns how knowledge it is acquired and understood. This study adopts a constructivist approach, recognizing that participants' experiences shape their understanding of Eskom's restructuring.

The qualitative research design was selected to explore stakeholders' perspectives on Eskom's restructuring, as it provides rich contextual insights into complex phenomena.

Alternative approaches

Quantitative research may not be the most suitable approach for studying Eskom's unbundling at its current stage due to several inherent limitations that clash with the nature of this complex evolving processes. It relies heavily on numerical data and predefined variables to test hypotheses or measure outcomes such as such as cost efficiencies, energy output, or employment statistics etc.

The unbundling process is deeply embedded in South Africa's unique socio-political and economic context, involving intricate dynamics like energy poverty, historical reliance on coal, and political tensions over privatization. Quantitative methods struggle to capture contextual nuances or the subjective experiences of stakeholders (Rahman, 2016), such as Eskom employees, policymakers, whose perceptions are critical to understanding the restructuring's implications. Quantitative research excels at measuring tangible outcomes, it is less suited to the current study of Eskom's unbundling.

Qualitative research aligns effectively with the research objectives for studying Eskom's unbundling by providing in-depth, contextual insights that complement the goals of understanding stakeholder perspectives, operational impacts, socioeconomic implications, and policy alignment.

3.3. SAMPLING AND PARTICIPANTS

Primary research data is acquired through semi-structured interviewing with experts in the field. Approximately 6 energy experts will be randomly selected, and the collected data will be used for triangulation through purposeful sampling technique.

Purposive sampling classifies participants based on predetermined standards that are pertinent to a specific study issue, and that it is among the most popular sampling techniques in qualitative research (MACK et al, 2005).

3.4. DATA COLLECTION

Semi-structured interviews were conducted virtually with six participants representing key members of Eskom management instrumental in shaping the strategic direction of Eskom. The interviews lasting between 80-90 minutes with audio-recorded with consent and transcribed verbatim for analysis.

The research originally planned to engage eight respondents for a more comprehensive representation. However, due to constraints imposed by time limitations and operational demands, it was not possible to interview a larger number of participants. All individuals interviewed contributed in their personal capacities, offering their own viewpoints. They did not officially represent the organizations. Nonetheless, throughout the research report, references were made to Eskom annual reports and energy policy documents in connection with the respondents.

3.5. DATA ANALYSIS

Grounded Theory

This method was first used in the research of Glaser and Strauss. The primary characteristic is the development of a novel theory through the gathering and examination of data regarding a phenomenon (Hancock et al, 2009, p. 12).

It turns the traditional hypothesis-testing technique to conceptual framework by making data gathering the principal step and mandating that theory be closely related to all the data (Howitt et al, 2011).

According to (Charmaz, 2006), the definition of grounded theory includes:

- Concurrent engagement in data gathering and analysis
- Creating analytical codes and classifications based on data rather than already-formed, logically derived hypothesis.
- Utilizing the constant comparative technique, that evaluates at every point of the research.
- enhancing proposition formation at every stage of data gathering and evaluation.
- Sampling conducted to build theories rather than to ensure statistical representation.

Interpretative phenomenological analysis

The goal of IPA is to examine in depth how participants construct interpretations about their social and personal environments. The primary measure of an IPA research's validity is the significance that participants attribute to diverse perspectives, situations, and states (Osborn, 2007).

(Alase, 2017) state that, IPA was explored in terms of its ethos and sensibility as a technique that aims to grow beyond its current role as a study instrument. IPA incorporates extensively and deliberately from a variety of philosophical views rather than attempting to operationalize any one philosophical principle.

Transcripts were coded using IPA by identifying recurring themes and patterns reflecting participants' lived experiences within Eskom. Initial codes were grouped into themes, such as operational impacts or socioeconomic concerns, then interpreted to uncover deeper meanings, ensuring alignment with participants' subjective perspectives and research objectives.

PROPOSITIONS

3.1. Unbundling of Eskom will lead to financial transparency that will enable translucent monitoring of financial performance.
3.2. Unbundling enhances the value chain efficiency, establishing clear performance incentives inside the component parts; (Generation, Transmission and Distribution) of the power utility.

3.3. Unbundling Eskom will create competition in the energy sector which is intended to lead to efficiency gains and drive electricity tariffs down.

3.6. ETHICAL CONSIDERATION

Ethical approval was obtained from Wits Business School's Research Ethics Committee. Additionally, Ethical approval was also obtained from Eskom granting permission and security clearance for the research, with documentation affixed in appendix.

Participants were obligated to sign participants consent form and examine the participant information sheet attached in appendix, prior to interviews and collection of data. Participants were fully informed about the purpose of the research and its objectives, what their involvement would entail and how their data would be used. They were also made aware of their right to withdraw from the study without consequences.

Anonymity and confidentiality of participants was kept throughout the research, and data collected cannot be liked back to the participants. Researcher ensured that there was no manipulation of the participants' viewpoints.

3.7. LIMITATIONS and RELIABILITY

To enhance reliability, data triangulation was employed by comparing interview insights with Eskom's annual reports and energy policy documents, ensuring a robust cross-verification of findings.

Participants may be potentially influenced by their vested interests which might provide subjective perspectives. The small sample size of interviewees could further restrict the generalizability of the research study. triangulation mitigates these issues by grounding insights in documented evidence.

FOURTH SECTION: RESEARCH FINDINGS AND ANALYSIS

4.1. INTRODUCTION

This chapter examines the unbundling of South Africa's Electricity Supply Industry (ESI), with a focus on Eskom, the state-owned power utility, as a strategic response to financial, operational, and socio-economic challenges. The research findings and analysis are systematically organized based on the research propositions.

The chapter begins with the historical context of Eskom's restructuring efforts, particularly the 2003 Multi-Market Model, followed by an exploration of the current unbundling strategy driven by global trends and the national development plan. The chapter evaluates the advantages and disadvantages of unbundling, including its potential to enhance financial transparency, improve value chain efficiency, and foster competition, while addressing criticisms related to privatization risks, energy access, and market dynamics. Financial implications, competitive landscapes, and the Just Energy Transition (JET) are analyzed, with emphasis on the Electricity Regulation Act (ERA) amendment and its role in enabling a liberalized market. The chapter concludes by assessing three key propositions: financial transparency, value chain efficiency, and competition-driven tariff reductions, highlighting the need for tailored reforms to address South Africa's unique socio-economic context.

Unbundling the Electricity supply industry

All business must rejuvenate their strategies to align with global trends, ensuring they remain pertinent and responsive to evolving consumer demands. Nokia serves as a notable example of a company that did not successfully adapt its strategy to meet these changing market expectations.

Developing countries have unique challenges in contrast to those faced by developed nations. Developed countries are not dealing with dilapidating infrastructure and non-functional municipal services. South Africa should avoid simply adopting ESI market models from other nations, rather draw insights from these diverse market strategies

to craft a bespoke solution that addresses the South African problem and socio-economic conditions prevalent in the country.

Previous unbundling restructuring strategy

Eskom was developed as a government initiative by the state with the objective of being an enabler of economic growth and advancement in the country. The power utility was transitioned from a statutory body to a SOE in 2002. The corporation is managed by Public Finance Management Act (PFMA) and was established under companies act 71 of 2008.

Unbundling is not an emergent strategic direction advocated by the shareholder of the power utility. Historically the ESI has evolved and attempted other restructuring strategies similar to unbundling.

Multi market model 2003

In 2003, Government developed a restructuring approach known as the multi-market model. This strategy included the unbundling of generation division aiming to introduce competition within the electricity sector and the horizontal unbundling of the distribution division into six regional electricity distributors.

Generation division instituted internal trading/ bidding amongst its power stations to appease investor confidence based on operational and financial performance of each business unit. Power stations were sub-divided into cluster A,B,C, which engaged in biding and trading amongst each other in an internal competitive market. The price of electricity was low for private companies to cover the substantial capital investment costs, creating significant barriers to market entry. Eskom could generate revenue from assets that were already paid for. This proposed restructuring was unsuccessful because Eskom was the cheapest supplier of electricity being a monopoly.

Current unbundling

It became evident in 2008 that the country had overcommitted to the construction of two large-scale power plants being Medupi and Kusile and lacked the capital infrastructure to fund similar mega-projects. The absence of adequate funding and the

customer preferring a specific product (green energy) of electricity are driving the strategic direction, compelling the government and Eskom to reform the ESI market. Major Western banks and foreign investors are reluctant to finance coal-based power plant projects.

The current landscape is conducive to transition from fossil fuels to renewables technology and the time is appetizing to attract interest and private investment in the ESI. Unbundling will enable private companies to build their own generators and compete in the generation space.

The country is in a state of emergency and numerous solutions are currently under consideration by the shareholder, thus irrational decision-making and emotions should not have room to impair politicians and policy makers judgement.

Eskom must undergo restructuring in line with global trends that promote the VIU unbundling strategic reform aiming to foster competition within the ESI.

The restructuring of Eskom presents both advantages and disadvantages.

Advantages of unbundling

- Each division will be micromanaged by respective executive team. Challenges in Generation will not be inundated with challenges in other divisions. The division will focus on its core mandate which is to generate electricity.
- The integration of renewable technology into Generation's energy mix will be facilitated by the unbundling strategy aligning with global decarbonization efforts.
- Generation mandate will be guaranteeing that the country has sufficient coal reserves, renewables, gas, nuclear and improving the EAF.

Advantages of the VIU

- Non-core business functions such as Human Resources, Information Technology, and Finance can be shared to benefit from economies of scale, thereby enhancing operational efficiency across the organization.
- The various divisions are financially supporting one another through cross-subsidization.

- The VIU possesses greater purchasing power compared to a scenario where assets are segregated through unbundling. The VIU is preferred by insurance providers because the government provides guarantee on Eskom's loans and the power utility does not default on its financial obligations.

Eskom's debt should be linked to its assets since the debt was incurred to finance the acquisition of assets, such as Medupi and Kusile. The expected return on investment from these assets will generate revenue, which can then be utilized to manage and pay off the associated debt.

IPP integration into the ESI

The Just Energy Transition (JET) strategy should be executed at a financially sustainable pace for South Africa, given its status as a developing nation with constrained institutional capabilities. Instead of phasing out coal-fired power stations, the integration of renewable energy technologies should proceed pragmatically addressing uncertainties related to their reliability and the challenges associated with maintaining base load electricity.

This transition towards renewable technology through IPP's must be conducted in a just and sustainable manner taking into consideration, the macro and socio-economic factors within the country.

Implementing the reform focused only on compliance with the minimum emission standard (MES) at the cost of energy security and shifting away from fossil to renewable sources such as solar and wind without a robust repowering strategy could detrimentally affect the economy. This is because IPPs do not provide baseload power, their output can be unreliable, and the cost-effectiveness of these green technologies is currently suboptimal.

If electricity supply capacity is adequate, coal-fired power stations could be decommissioned, but this should not occur during times of severe load shedding, such as stages 4 and 6.

Competitive and open markets are advantageous for trade. The existing VIU market could potentially foster an oligopolistic structure. This scenario mirrors the current market dynamics in the telecommunications sector where high barriers to entry have resulted in a market dominated by major players like Vodacom, MTN, and Cell C. The

price of their products is expensive compared to overseas markets, i.e., data indicating a lack of genuine competition.

Critics of unbundling

South Africa is a developing country with limited institutional resources. In 2024 marking three decades in democracy, there are communities within the country without access to electricity. It should be a primary focus of the country to ensure that all its citizens, especially those in rural areas have access to affordable and reliable electricity.

Unbundling might not guarantee electricity access for all citizens. The shareholder is implementing reforms to allow private power producers to compete with Eskom's generation driven by capitalist influences. If private corporations control electricity distribution, they might disconnect low-income consumers who fail to pay their electricity bills.

South Africa must gravitate towards energy security as contributions towards world emissions compared to the developed nations like China, Russia, USA etc, is negligible. Pareto analysis indicates that if the major polluters significantly reduce their emissions, the global pollution challenge would be substantially mitigated.

4.1. FINANCE

The USD/ZAR exchange rate increased due to the depreciation of the South African Rand which was influenced by adverse macroeconomic conditions Consequently, Eskom faces increased costs in servicing its dollar denominated debts.

Under the Preferential Procurement Policy Framework Act (PPPFA) the practice of securing three quotations for tenders has led to conditions where bidders lacking appropriate credentials are favoured. Prior to the implementation of the PPPFA and BBBEE, Eskom operated a more restricted tendering system engaging exclusively with Original Equipment Manufacturer (OEM).

Unbundling and financial crisis at Eskom

Unbundling the ESI might address the symptoms of Eskom's problems rather than fundamentally solving them. This strategy may be influenced by political agendas from

different governing parties rather than a genuine intent to resolve core issues. To effectively tackle the crisis, it is crucial to pinpoint the underlying causes. A significant challenge is that despite Eskom providing electricity to municipalities, it struggles with revenue collection due to widespread payment defaults by these local governments. Incorrect contracting within the power utility have contributed to both financial and operational inefficiencies.

Unbundling could improve financial accountability and transparency by enabling each segment to function independently thereby diminishing the practice of cross-subsidization which has traditionally obscured the true cost of electricity. Unbundling could attract private capital into targeted areas such as renewable energy, thus broadening investment options and lessening dependence on state fiscus with the ultimate goal of achieving financial stability within Eskom.

Financial traceability and accountability

Unbundling is driven by two factors mainly, investor capital and the customer demanding a specific product (green technology), this influences the energy mix.

Investors are particularly intrigued in acquiring access to the transmission grid owing to the substantial sunk expenditures associated with establishing the transmission infrastructure.

Unbundling Eskom's operations might be questioned if the utility was debt free suggesting that the strategy is not solely driven by financial liabilities. While Eskom's debt is a significant factor, the example of China shows that unbundling can occur independently of debt issues. China restructured its Electricity Supply Industry into five distinct entities without financial distress indicating that unbundling can also be motivated by objectives like improving efficiency, competition, and innovation within the sector.

Revenue, balance sheets, and cash flows

Unbundling Eskom’s various Divisions will allow each division to operate independently potentially attracting investment tailored to their operational strengths, balance sheet and revenue generated. Investors might be more inclined to invest in a

well-performing power station without the burden of the financial liabilities from transmission or distribution.

Fiscal dependence

Unbundling Eskom could potentially reduce fiscal dependence by fostering competition and attracting private investment, thus alleviating the financial burden on the country, this depends on effective policy implementation and market reform. Underlying issues like corruption and operational inefficiencies must be tackled effectively.

Investor visibility

Unbundling of Eskom simplifies the identification of underperforming sectors by segmenting the business into distinct divisions, each with its own leadership. This approach increases transparency for shareholders, enabling a more detailed and focused examination of operational inefficiencies within each division.

The government utilize Eskom as a means to foster economic prosperity within the country. If the shareholder prioritizes creating an enabling environment through electricity provision, the identity of the electricity supplier becomes irrelevant. The shareholder's focus should be on enhancing conditions for enablement.

Foreign Direct Investment

FDI is stimulated by macro-economic factors particularly the political domain of that country. Investors will be reluctant to invest in a country, if there are industrial actions, riots, and other unrests. Government must create an environment that is conducive for investors to plough their capital.

4.2. COMPETITION

Competitive markets.

Eskom is mandated to support industries dependent on electricity to foster economic growth. Such industries would create employment opportunities, leading to an

increase in tax revenue for the country, thereby bolstering the national economy and enhancing fiscal health. Investment in infrastructure and providing subsidies to the economically disadvantaged would trigger a beneficial domino effect across the economy. Encouraging significant infrastructural investments from industries, like the steel sector, could significantly reduce unemployment rates in the country.

Eskom's workforce is apprehensive about the restructuring fearing the loss of 40,000 jobs which contrasts with the difficulty of millions of unemployed South Africans. The severe economic downturn caused by loadshedding further underscores the need for change. Proceeding with the restructuring could be justified if it promises to address the unemployment crisis among the youth. Eskom employees should embrace innovation and the company should diversify its product offerings to secure their employment.

The fundamental motivations of private enterprises within capitalist systems are rooted in the pursuit of profit maximization.

In a country grappling with high unemployment, privatizing Eskom could be problematic during the initial phase of restructuring leading to significant barriers to entry and limiting market liberalization. This could result in higher electricity tariff for consumers in the short to medium term. Policymakers must exercise vigilance and caution regarding the implementation of such policies.

Eskom's monopoly has stifled innovation and reduced competitiveness which has led to persistent load shedding, adversely affecting the quality of life for South Africans, and hindering economic growth.

Fostering competition within the Generation sector of the ESI is desirable, with the strategy's effectiveness being evaluated over a period. Eskom should undergo unbundling as the global trend has transitioned from large VIUs towards a more segmented ESI that allows for better management. Customer preferences are becoming more diverse, necessitating that Eskom adapt to meet these evolving demands. Eskom's financial instability means that its funding sources are influencing the choice of technology, while customer demand for green energy is also shaping its strategic direction.

Liberalizing the ESI is imperative because the economic cost of electricity shortages is severe. Eskom fails to provide a dependable and continuous supply of electricity currently.

In a country where a significant portion of the population relies on government grants, private companies might struggle to generate profit within the ESI. The country is transition into a welfare state and fails to foster adequate job creation to drive economic growth. In areas like Soweto, many residents do not pay for electricity stating that it is their democratic right to receive free electricity which is enshrined by the country's constitution "right to human dignity". This situation complicates the commercial landscape for private entities in the electricity sector.

Eskom generation will not have to operate the expensive Open Cycle Gas Turbines (OCGTs) with significant diesel consumption as it is the supplier of last resort currently. The power stations will also comply with their maintenance and outage plans in competitive markets. Such changes would enhance the operational efficiency and EAF of the Generation division, thereby improving profit margins.

The regulatory framework governing Eskom and IPPs must be aligned. It would be inequitable to hold Eskom to stringent government regulations concerning the PFMA, BBBEE and PPPFA while IPPs are not subject to the same procurement transparency through open tender processes.

IPP in competitive markets

The competitive landscape will not be equitable if the government write off more than R250 billion of Eskom's debt while new market entrants are burdened with the substantial initial capital investment required to enter the ESI. The new entrants require a fair and just market where they can succeed.

The existing IPPs are not dependable as their electricity output is inconsistent, primarily due to weather variability and they are incapable of providing the consistent baseload power that nuclear and coal plants offer.

Eskom is not meeting the current electricity demand, IPP’s through the current PPA’s are not effective and reliable. It remains the responsibility of Eskom to ensure that the

transmission grid frequency is stable to avoid total blackouts which will be disastrous for the country.

Price/ Tariff

The strategy for unbundling is influenced by the energy mix (green technology adoption) and availability of funding. The primary concern revolves around gaining access to transmission lines given the substantial capital investment associated with the transmission infrastructure.

To achieve long-term sustainability in the ESI, it is crucial to balance the supply and demand for electricity. Opening the market to enhance competition can lead to an increase in electricity supply, which may ultimately result in lower tariffs.

Some of the projects that were launched during previous bid windows failed, the government may liberalize the market, but the strategy might not be a success.

South African policies should not be shaped solely by Western influence, given the country's unique socio-economic challenges. The presence of well-established workers' unions with significant economic and political influence is notable. Industrial actions are frequent in South Africa, particularly when workers believe their rights are being infringed upon by employers.

Monopoly companies lack the autonomy to unilaterally adjust the prices of their products. Eskom cannot raise the price of electricity in response to an increase in operating costs without NERSA's approval, leading to financial losses while still needing to cover its operating costs and other financial obligations. Eskom is unable to collect revenues from municipalities and the government has barred the company from disconnecting electricity to those municipalities in arrears, exacerbating its financial strain.

Eskom is requesting the regulatory body to adjust electricity tariffs upwards through MYPD framework due to rising production costs. The regulator's role is to prevent Eskom from using tariff increases to service debts on its assets.

Over the long term, electricity prices could decrease if the regulator effectively manages the risk of an oligopolistic market structure that could lead to price collusion. Nersa must maintain its regulatory oversight in the restructured ESI to curb unethical practices and price collusion among market players.

The electricity tariff should be contained within inflationary rises. UK increased their electricity tariffs by 80% prompting residents to go on strike

From a consumer perspective the source of electricity, whether from a private entity or Eskom is irrelevant. The focus is on obtaining a dependable service at a fair cost. The telecommunications sector in South Africa, overseen by the independent regulator ICASA exemplifies regulation in an oligopolistic market aimed at preventing predatory pricing. Nonetheless, data prices in South Africa remain high relative to other markets. Nersa should foster a market environment that is both free and equitable, ensuring that IPPs are not marginalized and preventing the formation of a monopolistic hold by Eskom in generation sector.
Nersa must reform the ESI tariff structure and implement cost-reflective tariffs that increase with inflation. The government must employ targeted direct subsidies to bridge the income gap between rich and poor people.

System operator (ITSO) reducing entrance barriers in electricity markets

ERA

The reform in the ERA amendment bill moves the country away from a VIU monopoly model to an unbundled ESI. Loadshedding has illustrated limitations to the conventional monopolised VIU model. The reform aims to establish an independent transmission system operator (TSO) that will allow public and private sector entities to feed electricity into the system in a manner that is free from conflict of interests. A liberalised market will benefit the country and economic growth and all South African consumers.

The key driver for these reforms is the passage of the ERA amendment bill. The intention is to have the market code submitted for approval in parallel to the parliamentary process of the ERA, so that when the ERA is promulgated, the ESI will have a market code that can be approved. The market code will ideally establish the timelines for the transition and the steps along the way for full trading.

The ERA amendment bill directs that the TSO and the market operator will be independent but in the interim the NTCSA which is a subsidiary of Eskom will fulfil the TSO obligations.

The enactment of the Electricity Regulation Act (ERA) in 2006 heralds a new era in the transformation of the electricity supply industry in South Africa. The Act provides for the establishment of a National Energy Regulator, increased competition in generation, and financial independence for the state-owned utility. The promulgation of the Act paves the way for the implementation of the Government's White Paper on Energy Policy of 1998 and addresses concerns raised by the Competition Commission and others about the structure of the electricity supply industry in South Africa.

The intention of the strategy is to retain the central dispatch model with individual power stations/ individual generating units, IPP's offering energy while scheduled by the MO.

There have been significant changes in the power sectors across the globe. These changes are driven by the prevailing conditions and forces that exist in each country. Causes vary and evolve over time and space. The ability to mobilize sufficient funding is also important to the ability to finance the entity and to fulfil its role as an enabler of growth and development in the country. The ability of the entity to work and cooperate with and complement other economic agents, the structure of the markets and regulation all play important roles as well.

The Electricity Regulation Act 4 of 2006 was promulgated to govern the ESI of the country. The current industry is still transforming, and substantial directional change may only occur after a few decades of normal operations. Industry dynamics, aspects of economic regulation, policy developments and objectives, global benchmarks, and local coherent government objectives may lead to further modification in the medium- and longer-term strategic direction of the ESI. There are many other supply industry issues that require resolution and ongoing attention.

The enactment of the Electricity Regulation Act (ERA) of 2006 heralds a new era in the transformation of the electricity supply industry in South Africa. The Act provides for the establishment of a National Energy Regulator, increased competition in generation, and financial independence for the state-owned utility. The promulgation of the Act paves the way for the implementation of the Government's White Paper on Energy Policy of 1998 and addresses concerns raised by the Competition Commission and others about the structure of the electricity supply industry in South Africa.

Inadequate investment by Eskom has led to the electricity generation, transmission, and distribution system no longer being able to meet demand. As a result, age, lack of maintenance, skills shortages, mismanagement, and weather-related factors have stressed the current power situation in the country. This has resulted in the 2008, 2014, and 2015 spate of load shedding and increased the likelihood of rolling blackouts on a regular and ongoing basis. It has also reduced Eskom's ability to retain new investments for future expansion while putting consumers at stake.

Government sovereignty in the energy sector

It is essential for the state to hold shareholding in the transmission sector of rather than in generation or distribution. he government's management has led to the decline of the petroleum sector within the country's ESI, notably reducing refining capacity by half and majority of SOE’s are not profitable. Furthermore, there has been a lack of innovation from the current administration in the ESI.

The government must build resilience of the electricity markets and not resilience of Eskom. Unbundled could attract investment due to opportunities in green technology and JET.

4.3. VALUE CHAIN EFFICIENCY

Unbundling enhances management focus, improve efficiency, create greater transparency around performance.

The power utility employs substantial workforce including a notable increase in ghost employees. Unbundling the organisation will enhance management efficiency and accountability.

Multiple Eskom contractors are executing Eskom’s fundamental activities thereby delegating essential maintenance tasks. Eskom's artisans have shifted towards contract supervisory and administrative roles diminishing the retention of practical maintenance expertise. Similarly, engineers at Eskom are no longer focusing on design work but rather contract administration. There has been inadequate

management of coal quality with contracts often honoured without stringent quality checks leading to inefficiencies and potential financial waste.

Andre DeRuyter, the previous Group CEO of Eskom resigned due to poor performance in the Generation division, they ought to have removed the GE of generation because of inadequate EAF. The GE continued to hold their position. The CEO ignored the current Eskom challenges like loadshedding, in favour of concentrating on long-term strategies such as the Jet transition.

Eskom's largest committee with its extensive mandate significantly delays numerous projects. The IFC oversees all major projects with budgets exceeding R1.5 billion resulting in extended and cumbersome agendas that can delay project approvals by more than six months due to resource constraints. With multiple projects from various divisions being presented to the same board, the process becomes inefficient. Unbundling Eskom's structure could allow each division to concentrate solely on its projects thereby enhancing project management and reducing delays.

Adoption of Just Energy Transition

The separation of transmission into National Transmission Company of South Africa (NTCSA) would foster an environment more flexible to grid access. Eskom has not been advancing new renewable energy technologies such as additional wind farms beyond the Sere Wind Farm. The conversion of Komati Power Station to green technology was strategically chosen due to the availability of existing infrastructure, including the grid, workforce, land, and other resources.

Eskom employees are frustrated through the build process and skills development at Medupi and Kusile exacerbated by the lack of new construction projects. Generation can accelerate the renewable technology build program by leveraging competent group capital employees that were formerly responsible for construction of major projects within Eskom.

Renewable technology is becoming more affordable over time, much like any other new technology. Companies favour green energy products and aim to improve their ESG compliance which encourage investor confidence. Renewable energy is still far more expensive than using coal to generate electricity, the cost is decreasing significantly as technology advances.

The unpredictable nature of solar and wind energy necessitates substantial battery storage supported by base load Generation. Maintain a robust transmission network to effectively manage the energy mix and the system frequency properly.

The country should not phase out coal entirely since OCGTs are still deployed to maintain the grid frequency. They are expensive and produce substantial emissions due to their reliance on diesel as an energy source. OCGT's should be repurposed to leverage Gas as a fuel source due to lower emissions. If the shareholder decommissions 16 gigawatts (GW) of coal capacity that supplies baseload electricity owing to MES without an adequate repowering strategy, the economy will suffer negative consequences.

There is no ideal solution to this problem because renewable technology minerals are mined in methods that contradict the effort to reduce greenhouse gas emissions.

Clean coal technology

Kusile Power Station has commissioned and is currently operating its Flue Gas Desulfurization (FGD) plant, which is considered a step towards cleaner coal usage due to its ability to remove sulphur oxides (Sox). Medupi Power Station is scheduled to commission its FGD plant in 2027, according to earlier statements by previous Eskom's GCEO, Andre de Ruyter. FGD technology is notably costly, with estimates around R40 billion. Implementing this technology at older power stations, which already have aging infrastructure, poses significant challenges due to the substantial financial investment required contributing to high and unaffordable electricity tariffs.

If a power station seeks a loan from a lender to construct an FGD or carbon capture plant. The technology will reduce emissions, but it will not enhance the profitability. Nonetheless, there will be environmental benefits as a result.

Private financial institutions might not favour investments in FGD and carbon capture technologies since these do not enhance profit margins. Only major international funding bodies like the World Bank and IMF might finance such projects for the purpose of meeting EMS compliance.

Coal remains South Africa's predominant energy source due to its abundance, providing the most cost-effective electricity compared to renewable technologies. It

serves as a reliable base load that is not affected by weather variability ensuring consistent power supply.

The country possesses substantial coal reserves, particularly in the Waterberg region, presenting an opportunity for energy generation. The country can utilise institutions like the Council for Scientific and Industrial Research (CSIR), Eskom's RT&D, and various higher education and scientific research institutions to advance research in clean coal technologies. This investment could enable South Africa to produce electricity in a manner that is both cost-effective and sustainable.

Coal gasification technology is currently under evaluation at the Majuba Power Station. This process can be integrated with other clean coal technologies to significantly decrease emissions.

Nuclear technology is operating successfully at the Koeberg nuclear power station, which was connected to the grid in 1984 and generates roughly 1869MW of energy, accounting for approximately 5% of Eskom's total generation capacity. The government should consider aggressively investing in nuclear or providing a conducive environment for investors to tap into this reliable energy space.

The country lacks the financial capacity to substitute its dispatchable high-inertia coal power plants with variable intermittent non dispatchable and low-inertia renewable energy sources, which also offer minimal ancillary services. The transition would require investments in backup storage, flexible gas options, and solutions for maintaining system inertia and grid frequency stability.

The sabotage of the Nord Stream pipeline has compelled Western nations to fall back on coal for energy, leading to increased investment in carbon capture technologies. Both Germany and China have significantly expanded their investments in these technologies to mitigate the environmental impact.

South Africa exports coal to Western countries and it is the same nations are advocating for South Africa to transition towards renewable energy technologies completely. This pressure is being exerted even though the Western countries utilized coal and similar energy sources to build their economies.

South Africa has the opportunity to exploit high-quality sweet coal as Europe phases out its coal usage. This would lead to reduced ash accumulation on fabric filters and enhance the energy efficiency of quality coal with high calorific value integrated with clean coal technologies.

Public perception

Five years following the President's announcement of Eskom's unbundling at the 2019 State of the Nation Address, there has been little tangible progress. Employees at Eskom express concerns about privatization, fearing they might be "sold to the highest bidder". The public reacted positively to the news initially, but the lack of advancement has since eroded public trust.

The government is only disclosing its short-term strategic direction to the public and potential investors. It is imperative for the shareholder to communicate their long-term restructuring strategy.

Perceived challenges

In a country where the economy is supported by unions, mining, and industry. Failing to engage employees in discussions about strategic direction can lead to job security concerns. This uncertainty might provoke industrial actions, potentially resulting in Eskom shutdowns.

Eskom has operated for a century and was built on a vertically integrated strategy to capitalize on economies of scale. The current plan involves unbundling its various divisions from the monopoly structure, establishing independent boards and organizational frameworks for each.

There is no definitive restructuring plan, as the strategy for unbundling is intertwined with the JET initiative.

The Poor communities will only prioritize environmental concerns once their fundamental needs, such as shelter, safety, and food, are satisfied. It is impractical to expect someone to focus on environmental stewardship when they are struggling with hunger.

Managing conflicts of interest will be challenging, with potential outcomes including high tariffs for the average South Africans and rampant corruption.

Summary

Arguments in Favour of Unbundling

The South African government is advocating for the unbundling of Eskom as part of a comprehensive economic restructuring plan aimed at resolving the utility's financial and operational challenges.

There is a range of viewpoints concerning the unbundling the Divisions of Eskom into standalone businesses.

Proponents argue that unbundling can lead to increased efficiency, innovation, and consumer choice by breaking monopolistic structures into competitive segments. It could lead to an Increased Efficiency with the introduction of specialized executive management focused on each segment's unique challenges, potentially increasing operational efficiency.

Unbundling is considered as an approach of promoting competition in the electricity industry, especially in the generation sector, which could drive down costs and promote innovation. The establishment of an Independent Transmission System and Market Operator would theoretically level the playing field for IPPs.

A more efficient business strategy would involve municipalities buying energy directly from IPPs rather than Eskom acquiring expensive renewable energy from these producers and subsequently selling it at a loss based on tariffs set by NERSA.

Arguments Against Unbundling

Critics contend that the world bank designed Unbundling and it is a precursor for privatisation. Political and social resistance to unbundling stems from a broader scepticism about privatization or market liberalization in strategic sectors. Unbundling might lead to foreign control over South Africa's energy resources compromising national sovereignty and the state's ability to pursue energy policies aligned with national developmental goals.

Unbundling might fragment essential services thereby compromising economies of scale, increase operational costs, and potentially lead to service quality degradation if not managed with stringent regulatory oversight resulting in inefficiencies and higher electricity tariffs for consumers.

Rather than fostering competition, the restructuring might pave the way for a few large corporations to dominate the energy sector leading to an oligopolistic structure susceptible to price manipulation. Fears of job losses or adverse changes in employment conditions as the transition to a new market model might necessitate downsizing or altering labour practices to align with private sector norms.

Each viewpoint reflects different priorities, from economic efficiency to service reliability and social equity. This dichotomy presents a complex challenge for policymakers highlighting the need for further research into how costs can be managed while still reaping the benefits of competition.

The research findings suggest that;

Proposition 3.1: Unbundling of Eskom will lead to financial transparency that will enable translucent monitoring of financial performance.

Unbundling Eskom into separate entities for generation, transmission, and distribution could improve financial transparency by isolating the financial performance of each segment. If the generation division is incurring significant losses, this would be more visible, allowing for targeted interventions. Achieving this transparency requires robust regulatory oversight to ensure accurate reporting and accountability. Without proper governance, unbundling could risk obscuring financial issues if entities operate independently without sufficient scrutiny.

Proposition 3.2: Unbundling enhances the value chain efficiency, establishing clear performance incentives inside the component parts (Generation, Transmission, and Distribution) of the power utility.

Unbundling can potentially enhance efficiency by creating distinct entities with clear mandates and performance incentives. Generation division could focus on optimizing power production, while the transmission division ensures efficient grid management. This separation allows each entity to set specific performance targets and performance-based incentives could encourage innovation and cost-efficiency within

each segment. Coordination between these entities is critical to avoid disruptions in the value chain. If not managed effectively, unbundling could lead to inefficiencies.

Proposition 3.3: Unbundling Eskom will create competition in the energy sector, which is intended to lead to efficiency gains and drive electricity tariffs down.

Unbundling Eskom could introduce competition in generation and distribution sector. Competition in generation could incentivize providers to lower costs and improve service quality thereby attracting FDI. This could lead to efficiency gains potentially reducing electricity tariffs and benefiting consumers. The impact on tariffs depends on several factors like the regulatory framework, market structure, and the cost of transitioning to a competitive model. If competition is poorly managed, it could lead to higher costs for consumers especially if new entrants prioritize profits over affordability.

FIFTH SECTION: CONCLUSION and DISCUSSION

5.1. DISCUSSION

This study investigates the implications of restructuring and unbundling Eskom, South Africa's vertically integrated power utility, into separate generation, transmission, and distribution entities. The research addresses critical questions regarding financial transparency, value chain efficiency, and the promotion of competition, offering insights into the potential benefits and challenges of this transformative strategy. The findings align with global trends in electricity sector reform while highlighting the unique socio-economic and political context of South Africa, which shapes the feasibility and outcomes of unbundling. This discussion synthesizes the research findings, evaluates their implications against the literature, propositions and considers their relevance for policy and practice in South Africa's electricity supply industry (ESI).

Financial Transparency and Accountability

The research findings support Proposition 3.1, which postulates that unbundling Eskom will enhance financial transparency, enabling clearer monitoring of each division's financial performance. By separating generation, transmission, and distribution into distinct entities with independent financial statements, unbundling reduces the impenetrability associated with cross-subsidization, a practice that has historically obscured Eskom's true operational costs (Eskom, 2022). This aligns with international experiences, such as China's unbundling of the State Power Corporation, where segmentation improved financial accountability and reduced systemic risks (Zhao et al, 2013). In South Africa, the financial distress caused by Eskom's USD-denominated debt, exacerbated by the depreciation of the South African Rand, underscores the need for such transparency to attract private investment and reduce fiscal dependence on the state.

The study emphasizes that financial transparency hinges on robust regulatory oversight. Without stringent governance, as seen in some developing nations like Malawi, unbundling risks creating fragmented entities prone to mismanagement or corruption (Kachaje et al, 2017). The findings suggest that South Africa's National Energy Regulator (NERSA) must strengthen its capacity to enforce accurate reporting and prevent financial irregularities. While unbundling could isolate underperforming

segments of Eskom, it does not inherently resolve Eskom's debt burden, which requires complementary measures such as debt restructuring or targeted subsidies for low-income consumers to mitigate tariff increases (Nersa, 2021).

Value Chain Efficiency and Performance Incentives

Proposition 3.2, Asserts that unbundling enhances value chain efficiency by establishing clear performance incentives. The separation of Eskom's divisions into independent entities with distinct mandates allows for specialized management focus, potentially improving operational efficiency. For instance, the generation division can prioritize optimizing energy availability factor (EAF) and integrating renewable technologies, while the transmission division focuses on grid reliability (Eskom, 2020). This mirrors the European Union's experience, where divisional unbundling clarified roles and incentivized performance, leading to improved grid reliability (Koten et al, 2008).

The study identified coordination challenges as a significant risk. The literature suggests that unbundling can erode economies of scale, increasing operational costs if not managed effectively (USAID, 2022). Eskom's vertically integrated model has historically leveraged shared services like human resources and IT, unbundling could lead to inefficiencies unless central functions are streamlined. The findings also reveal operational inefficiencies within Eskom, such as poor coal quality management and reliance on contractors for core maintenance tasks, which unbundling alone cannot resolve. These issues require internal reforms, including stricter contract oversight and workforce reskilling, to complement the restructuring process.

The research further underscores the role of performance-based incentives in driving efficiency. By setting division-specific key performance indicators (KPIs), unbundling could encourage innovation and cost-efficiency, as seen in OECD countries where unbundled utilities improved productivity (Paul et al., 2022). However, the success of such incentives depends on aligning them with South Africa's socio-economic priorities, such as energy access and affordability, to avoid prioritizing profit over public welfare.

Competition and Tariff Reductions

Proposition 3.3, Suggests that unbundling will foster competition in the energy sector, leading to efficiency gains and lower electricity tariffs. The research indicates that unbundling the generation sector, in particular, can promote market entry for independent power producers (IPPs), aligning with global trends toward liberalized electricity markets (NordPool et al, 2020). The Electricity Regulation Act (ERA) Amendment Bill facilitates this by establishing an independent transmission system operator (TSO) and market operator, reducing barriers to entry and enabling wheeling agreements that allow IPPs to supply electricity directly to consumers (DMRE, 2022). This competitive landscape could drive innovation, improve service quality, and attract foreign direct investment (FDI) in renewable energy, as seen in South Africa's renewable energy program (Todd et al, 2021).

The findings highlight significant risks associated with competition, particularly the potential for an oligopolistic market structure. The literature cites Australia's National Electricity Market, where market liberalization led to price surges due to market power exploitation (Marshall et al, 2020). In South Africa, where Eskom's monopoly has historically suppressed tariffs below cost-reflective levels, introducing competition could initially increase prices, especially if new entrants prioritize profitability. The study notes that IPPs currently face reliability challenges, as renewable sources like solar and wind cannot provide consistent baseload power, necessitating continued reliance on Eskom's coal and nuclear plants for grid stability (Lawrence, 2020). This asymmetry underscores the need for a balanced energy mix and regulatory safeguards to prevent price collusion.

Stakeholder resistance, particularly from Eskom's workforce and unions, further complicates the transition to a competitive market. Fears of job losses and privatization, as highlighted in the interviews, reflect broader socio-political tensions in South Africa, where energy is viewed as a public good (Eskom, 2023). Unbundling must be accompanied by robust stakeholder engagement and socio-economic factors to mitigate adverse impacts on employees and low-income communities. NERSA's role in reforming tariff structures to reflect costs while protecting consumers is critical to ensuring long-term affordability, as evidenced by the need for targeted subsidies to bridge income disparities (Bredesen, 2023).

Environmental Implications

Environmentally, unbundling facilitates the Just Energy Transition (JET) by enabling the integration of renewable technologies, aligning with South Africa's Paris Agreement commitments (Steenkamp et al, 2018). The findings caution against a rapid transition that compromises energy security, given the unreliability of intermittent renewable sources and the high cost of battery storage. The continued use of coal, supported by clean coal technologies like flue gas desulfurization (FGD) and carbon capture, is proposed as a pragmatic bridge to sustainability, leveraging South Africa's abundant reserves (Moodley, 2023). This approach contrasts with Western pressures for rapid decarbonization, which the study critiques as overlooking South Africa's developmental needs and global emission disparities.

Policy and Practical Implications

The findings underscore the need for a tailored approach to unbundling that balances efficiency gains with social equity and environmental sustainability. NERSA must enhance its oversight capacity to ensure financial transparency, prevent market power abuse, and implement cost-reflective tariffs with targeted subsidies for low-income consumers. Stakeholder Engagement: Transparent communication with Eskom employees, unions, and communities is essential to address fears of privatization and job losses, fostering buy-in for the restructuring process.

A phased unbundling strategy, as proposed in Scenario 3 Divisionalisation followed by legal unbundling, can minimize disruptions while allowing for iterative learning and coordination across divisions (Eskom, 2020). Public-private partnerships can support investments in clean coal and nuclear technologies to maintain baseload capacity while scaling up renewables, ensuring a pragmatic JET.

5.2. CONCLUSION

The unbundling of Eskom, South Africa's state-owned power utility presents a multifaceted challenge and opportunity within South Africa's energy sector landscape. It encapsulates a complex interplay of economic, political, and social considerations. This research has aimed to explore the potential impacts and implications of this significant restructuring, providing insights into both the opportunities and challenges it presents.

This study has shown that unbundling Eskom could lead to significant benefits in terms of innovation and investment, despite the contrasting view that it might disrupt established economies of scale. This research contributes to this ongoing debate by providing empirical evidence that supports the potential for positive outcomes under the right regulatory framework.

Sub-cost-reflective tariffs is part pf the major reasons for the financial challenges, lack of salary increases in Eskom, inability to do the required level of maintenance, huge debt on the balance sheet, sub-investment credit rating leading to speculative or junk-bond status. From a macroeconomic perspective, not increasing tariffs exacerbates these issues. Raising tariffs could benefit the economy by improving Eskom's financial health and operational capabilities. And this is before factoring in the load shedding, which is always the inevitable outcome of sub-cost-reflective tariffs. Higher tariffs would undoubtedly make electricity less affordable to low-income groups, however that must be mitigated by targeted direct subsidies to the poor South Africans.

Coal remains a key source of energy production in the country. With abundant coal reserves throughout the country, it is crucial to invest in environmentally friendly carbon capture coal technologies.

The shareholder must accept responsibility and take accountability for their actions and acknowledge that their actions have adversely affected the electricity utility.

Unbundling could lead to a more competitive and dynamic energy sector potentially accelerating the adoption of renewable energy sources, but the challenges are not to be underestimated. The management of substantial debt, ensuring grid stability,

preventing market monopolies, and safeguarding consumer interests require meticulous planning and robust regulatory oversight.
The socio-economic implications, particularly concerning job security and community welfare, further complicate the transition. The success of unbundling hinges on robust regulatory frameworks, transparent governance, and a commitment to social equity particularly in ensuring energy remains accessible and affordable to all segments of society.

The research underscores the necessity for targeted interventions like subsidies for low-income communities to mitigate the cost implications of higher tariffs. The environmental aspect cannot be overlooked, transitioning to a more sustainable energy mix must continue at a pragmatic approach with investments in environmentally friendly carbon capture technology for coal usage as a bridge to renewable sources. While unbundling holds the promise of revitalizing South Africa's energy sector, it demands a strategic and pragmatic phased approach that considers the long-term welfare of both the utility and the population it serves supported by comprehensive policy frameworks, continuous stakeholder engagement and adaptive governance to mitigate adverse outcomes while capitalizing on the benefits.

This qualitative approach rooted in IPA facilitated a thorough investigation of stakeholders' lived experiences during the research study thereby capturing nuanced perspectives from participants. It prioritized participants' subjective interpretations, IPA upheld methodological rigor, while ethical integrity was maintained through informed consent and transparency. This research highlights the value of qualitative depth in unpacking complex organizational change, revealing operational, socioeconomic, and policy insights. It highlights the need for balanced restructuring strategies that address stakeholder concerns while advancing South Africa's energy future.

Future research should focus on detailed scenario analysis to better anticipate the multifaceted impacts of unbundling, ensuring decisions are grounded in empirical evidence. Further studies could assess long-term efficiency outcomes by quantitative metrics like cost efficiency, reliability indices etc., to validate the findings of this research.

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APPENDICES

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/BA2507246/403
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

This certificate is only valid if accompanied by formal permission from the relevant stakeholder(s).

Project title	Restructuring and unbundling processes at Eskom, South Africa
Investigator / Researcher	Mr Masilo Makgoba
Nature of Project	MBA (Research Article)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	2022-09-01
Expiry date	Date of submission of the project / research report
Chairperson	Prof Anthony Stacey ☎ +27 11 717 3587 +27 82 880 4531 anthony.stacey@wits.ac.za

Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

Signature

2022-09-15
Date:

Eskom

The Registrar

Date: 18 February 2025

Enquiries: Kagiso Mgimeti
Email: Researchdataclearance

To whom it may concern

ETHICAL CLEARANCE: PERMISSION AND SECURITY CLEARANCE TO CONDUCT A RESEARCH STUDY FOR MASTER'S IN BUSINESS ADMINISTARTION DEGREE AT THE UNIVERSITY OF WITWATERSRAND (WITS), FOR MASILO MAKGOBA.

Research Topic: "Restructuring and Unbundling at Eskom, South Africa".

1. Intellectual Property Rights

All rights and title of Eskom-owned data and/or Intellectual property shared with Masilo Makgoba, for the purpose of this academic study, shall remain vested with Eskom. All rights, title and interest in and to the Intellectual property of the experimental based research, research results and questionnaires developed shall remain vested with Eskom.

2. Publication Protocol

Eskom recognises that under the academic policies of WITS University, the results of research work must be publishable and agrees that the Researchers engaged in the research shall be permitted to present a symposia, at national or regional professional meetings and to publish in journals, theses or dissertations, or other methods of reporting of their own choice, results of the Research.

The WITS University may publish or allow the publication of the proprietary data of Eskom, on whatever medium, concerning the research provided that this does not affect the protection of Intellectual Property Rights. Eskom shall be given 30 (thirty) days prior written notice of any planned publication of the research to take steps necessary to protect its rights.

Head Office
Tel +27 11 800 8111
Eskom Holdings SOC Ltd Reg No 2002/015527/30

ETHICAL CLEARANCE: PERMISSION AND SECURITY CLEARANCE TO CONDUCT A RESEARCH STUDY FOR MASTER'S IN BUSINESS ADMINISTARTION DEGREE AT THE UNIVERSITY OF WITWATERSRAND (WITS), FOR MASILO MAKGOBA.

If, before the end of this period, Eskom so request, a copy of the planned publication shall be provided to Eskom within 30 (thirty) days after receipt of such request. Eskom may require the removal of any or all of its Confidential Information or Intellectual Property from a planned publication in order to protect its proprietary rights and interests and the Researchers will be required to comply with any such requirement prior to publication.

Eskom may object to the planned publication within 30 (thirty) days after receipt thereof. The planned publication shall be suspended until the end of this consultation period, not exceeding twelve (12) months. In the absence of any objection within the above-mentioned period, it is deemed that the Eskom agrees to the publication.

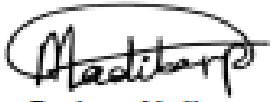
3. Copyright

All rights and title of Eskom-owned data and/or Intellectual property shared for the purpose of this academic study, shall remain vested with Eskom. The documents shall be marked with the copyright notice which is as follows: "© Eskom Holdings SOC Ltd 2021."

The WITS University shall acknowledge Eskom as the copyright owner of the Intellectual property of the experimental based research, research results, and questionnaires, and if applicable, in other publications.

It must be noted that this general clearance for the use of the requested data is for a limited period only, which will be for the period 01 May 2023 to 30 April 2026.

Yours sincerely



Prudence Madiba

GENERAL MANAGER: RESEARCH TESTING AND DEVELOPMENT

Date: 2025-02-20

Participant information sheet

Dear Sir/Madam

My name is Masilo Makgoba, I am a Master of Business Administration (MBA) student in Faculty of Commerce Law and Management at Witwatersrand University.

My research is titled: **Restructuring and Unbundling processes at Eskom, South Africa.**

The Objectives of the research Identifying opportunities and gaps in Restructuring the energy sector of developing countries with limited institutional capability, focusing on reduced vertical integration through the unbundling strategy of vertically integrated power utilities, leading to reduced entrance barriers thereby improving competition.

Please note your participation will be anonymous, meaning your personal details do not have to be recorded.

- Your participation is voluntary and you can withdraw at any time without penalty.
- You are being requested to participate in an interview which will be voice recorded, the data will then be transcribed into a written document.
- Throughout the research project your privacy will be protected and your participation will remain confidential.
- Data will not be analysed individually and all the data will be transferred to a computer programme to analyse the entire group. This means that you are assured of anonymity.

If you agree to participate, please go through the questions, and familiarise yourself with the topic and summery under appendix before we can proceed recording.

This interview should take an hour of your time at most. If you have any concerns, please contact me with the detail provided below.

Researcher name: Masilo Makgoba

Email: makgobma@eskom.co.za

Phone: 0791183537

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Research Interview question
1) What is your role in your organisation?
2) What is your perspective towards reforming the ESI of South Africa? And do you think that Unbundling Eskom will Transform the electricity supply Industry.
Financial Performance. 3) Is unbundling Eskom the relevant strategy to overcome the current financial crisis at Eskom? Explain. a. Do you think that the strategy will enhance financial traceability and accountability within the organization? Explain. b. Will the unbundling strategy Permit the distinct Divisions to generate capital on the merits of their independent revenue, balance sheets, and cash flows at a lower cost? c. Will unbundling Eskom reduce the fiscal dependence on the country, considering that South Africa is developing country with limited institutional capabilities. explain? d. Will unbundling Eskom give capital providers more visibility of the component parts of the sector i.e., Generation, Transmission, Distribution, resulting in more investment comfort and give confidence to investors. And that they will be treated in a fair and transparent manner. e. Is unbundling Eskom the relevant strategy to enhance FDI in Eskom and the country since electricity is an integral part of economic development and advancement? Explain.

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Competition (Market Entry Liberalisation)

4) The main purpose of government owned monopolies was not to make a profit but for economic justice and advancement to all citizens of the country. Private companies want to maximise their profits in competitive markets.

   a) Will introducing competition in the ESI lead to economic advancement and ultimately reduce tariffs higher quality goods and services, greater variety of generation industry and enhanced innovation?

   b) Will The formation of a legally unbundled transmission and market operator (LTSO), an independent transmission and system operator (ITSO) reduced entrance barriers, thereby intensifying competition in the electricity supply industry of SA?

   c) (NordPool et al, 2020) argues that It is beneficial to keep *part* of government sovereignty of both Generation, transmission, and Distribution division if adequate organizational separation is maintained. Do you agree? Explain.

Value Chain Efficiency

5) Unbundling Eskom will enhance management focus, improve efficiency, create greater transparency around performance, provide greater protection against corruption and rent-seeking? Do you agree? Explain.

   a) Unbundling Eskom will reduce the systemic risk of South Africa's ESI by isolating problems and dealing with them where they arise, without compromising the entire system. Do you agree? Explain

   b) Unbundling Eskom will allow the individual components, i.e., Generation, Transmission and Distribution of the company to be regulated and have separate price determinations. Is this preferred over the current vertically integrated structure?

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c) Unbundling Eskom will place the power industry in a position to adopt renewable energy technology in generation, and other sector reforms. Shift the company away from a dependence on coal and fossil fuels and position the organization to adopt clean technology (Just Energy Transition). Do you agree? Explain.

d) Do you think this strategy will influence the public perception of the company positively and regain public trust. Explain.

e) What are the perceived challenges that will come with the implementation of this restructuring?

Appendix

Research Summery

Electricity is an integral part of economic development and advancement, economic justice, with applications in all sectors of industry.

Eskom is struggling to honor their key objective to the state which is to "keep the lights on at all times". This is a gloomy symptom of a state that is disintegrating and collapsing (Styan, 2015). Eskom's size and magnitude as a vertically integrated power utility is becoming a source of its downfall, with a monopoly position on energy supply, with chronic governance issues and poor service performance (Lawrence, 2019).

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PARTICIPANT CONSENT FORM

NAME OF PARTICIPANT:

Title of the project: **Restructuring and unbundling processes at Eskom, South Africa**

Main investigator: **Masilo Makgoba**
Contact details: **0791183537**

1. I agree to take part in the above research. I have read the Participant Information Sheet.

2. I understand what my role will be in this research, and all my questions have been answered to my satisfaction.

3. I understand that I am free to withdraw from the research at any time, without giving a reason.

4. I am free to ask any questions at any time before and during the study.

5. I understand what information will be collected from me for the study.

6. I understand what will happen to the data collected from me for the research.

7. I have been told about any disadvantages or risks regarding me taking part.

8. I understand that quotes from me may be used in the dissemination of the research.

9. I understand that the interview will be recorded.

10. I have been informed how my data will be processed, how long it will be kept.

11. I have been provided with a copy of this form and the Participant Information Sheet.

Name of participant (print).....

Signed.....

Date.....

I WISH TO WITHDRAW FROM THIS STUDY.

If you wish to withdraw from the research, please speak to the researcher or email them at makgobma@eskom.co.za stating the title of the research or send them this withdrawal slip.

You do not have to give a reason for why you would like to withdraw.

Please let the researcher know whether or not you are happy for data that has been collected up to this point to still be used. You are completely free to ask for any data to also be removed.