



The Challenge of Leading Change During the Energy Transition at a Freight Company in South Africa

**A research report submitted to the Faculty of Commerce, Law, and
Management, University of the Witwatersrand, in partial fulfillment
of the requirements for the degree of Master of Management in
Energy Leadership**

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ABSTRACT

This qualitative case study investigates the leadership challenges within the energy transition of a South African Freight Company. Through semi-structured interviews and thematic analysis, the study identifies key barriers such as strategic deficiencies, organizational constraints, resistance to change, and communication gaps. It highlights the importance of transformational and collaborative leadership styles in overcoming these challenges and driving successful energy transitions. The research further explores the significance of adopting structured change management strategies, particularly Kotter's Eight-Step Model, to address bureaucratic hurdles and stakeholder resistance. The findings suggest that a participatory leadership approach, combined with continuous capacity-building and effective communication, is crucial for sustainable energy transitions. The study offers practical insights for freight companies to navigate the complexities of the energy transition and contribute to achieving South Africa's net-zero targets.

Keywords: Leadership, Energy Transition, South Africa, Freight Industry, Change Management

DECLARATION

I, Nzuzo G Sikhakhane declare that this research report is my work except as indicated in the references and acknowledgments. It is submitted in partial fulfillment of the requirements for the degree of Master of Management at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: Nzuzo Godfrey

Signature:



Signed at Alberton

On the 23 day of September 2025.

DEDICATION

I dedicate this work to my loving wife, Zama Sikhakhane, whose unwavering support, love, and encouragement have been my greatest source of strength throughout this challenging journey. Your patience and understanding during moments when I needed to dedicate time to my research are deeply appreciated. Thank you for believing in me and standing by my side every step of the way.

To my two beautiful daughters, Luyanda and Moqhele Graces Sikhakhane, you are the light of my life and the driving force behind my determination. Your boundless love, vibrant spirits, and constant joy have filled my heart and motivated me to push harder, even in the toughest moments. May this work inspire you to chase your dreams fearlessly, knowing that with dedication and hard work, anything is possible. To my family, thank you for your unwavering belief in my potential, your sacrifices, and your constant encouragement. Your love and support have been the pillars of my success. This achievement is as much yours as it is mine, and I am forever grateful for your presence in my life.

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LIST OF ACRONYMS

ADKAR	Awareness Desire Knowledge Ability Reinforcement
ESG	Environmental, Social, and Governance
FC	Freight Company
HCM	Human Capital Management
JET IP	Just Energy Transition Investment Plan
LNG	Liquefied Natural Gas
NDA	Non-Disclosure Agreement
OD	Organizational Development
PCC	Presidential Climate Commission
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SADC	Southern African Development Community
SDGs	Sustainable Development Goals
SOEs	State-Owned Entities
TVET	Technical and Vocational Education and Training

DEFINITION OF TERMS

In this study, the following definitions are applicable:

Leadership: is defined as producing change and movement by establishing direction, aligning people and motivation, and inspiring people (Kotter, 1990).

Energy Transition: “The shift from non-renewable to renewable energy sources, focusing on replacing fossil fuels with low or zero-carbon options. It includes electrifying consumption, improving other sectors like transport, and digitalizing grids to boost energy efficiency” (Enel Green Power, 2023).

Change Management: “Change management is a systematic approach to dealing with the transition or transformation of an organization's goals, processes, and technologies. The purpose of change management is to implement strategies for effecting and controlling change and helping people to adapt to change” (Hanna et al., 2024).

Organizational Development (OD) focuses on enhancing an organization's effectiveness through planned change. In the context of the energy transition, OD practices assist energy organizations or companies in adapting to new energy policies, technologies, and market conditions. Key aspects that need attention include change readiness, culture and leadership, and continuous improvement (Burnes, 2017; Cummings, 2004).

Organizational Architecture: refers to the structure and design of aligning organizational structures, processes, and systems with new energy objectives based on Agenda 2030. Key aspects to address this include structural alignment, processes and systems, and integration (Galbraith, 2014; Lawrence & Lorsch, 1969).

Human Capital Management (HCM): involves the strategic management of an organization's human resources. In the context of the energy transition, HCM focuses on developing and utilizing the skills and talents required for the successful implementation of new energy initiatives. Key areas include skills development, talent management, and performance management (Becker & Huselid, 2006).

Freight Company (FC): The term "Freight Company" is used as a synonym (instead of the actual company name) to conceal its identity, as per the agreement between the researcher and the company. The core function of the company is to provide rail transportation of commodities for both domestic and export markets. The company operates its locomotives using a combination of electricity and diesel.

CHAPTER ONE: INTRODUCTION

1.0 Introduction to the study

The global shift towards sustainable energy solutions emphasizes the urgent need to transition from fossil fuels to cleaner, renewable energy sources. In South Africa, the transport sector is a significant consumer of energy, heavily reliant on petroleum derivatives and coal-based electricity, making it a major contributor to greenhouse gas emissions (Ntuli et al., 2024; Todd & McCauley, 2021). Rail transport, despite being more energy-efficient, remains underutilised due to infrastructure challenges and safety concerns (Ntuli et al., 2024). This study explores leadership challenges in driving the energy transition at a state-owned Freight Company in South Africa, highlighting the importance of effective leadership in navigating complex challenges for successful energy transition.

1.1 Background

The global push for renewable energy has grown due to the severe impacts of climate change, prompting international agreements like the Kyoto Protocol and the Paris Agreement to phase out fossil fuels and promote effective climate governance (Doan et al., 2024; Wan et al., 2021). Countries have responded with regulations to reduce fossil fuel dependence, aiming for a transition to clean, renewable energy sources and a decarbonized economy (Nieto et al., 2020). Despite the growing demand for renewable technologies (Singh et al., 2019), fossil fuels such as coal, oil, and gas remain dominant in global energy consumption, with projections showing coal consumption decline, while oil and natural gas usage stay stable (Ritchie et al., 2024). Effective leadership is essential to managing the fossil fuel decline and navigating the complexities of the energy transition.

In Africa, the energy transition is crucial, with state-owned entities playing a central role in harnessing the continent's mineral resources for renewable energy (Nsafon et al., 2023). Despite abundant fossil fuels, many African nations face energy poverty, and addressing energy security, growth, and access is essential for a sustainable, low-carbon transition (Okpanachi et al., 2022). The continent's progress in renewable energy lags behind the Global North, where the European Union leads the way.

Africa's potential requires substantial investments in infrastructure, skills, and technology to accelerate energy transition (Simelane & Abdel-Rahman, 2012). Effective leadership, supported by strong policy frameworks, is vital to drive energy projects that enhance development, improve access, and foster innovation (Bornemann & Weiland, 2021). In the SADC region, leadership is needed to adapt renewable technologies to local resources, promoting sustainability and a circular economy, which requires collaborative efforts from its member countries, including South Africa (Schoenmaker, 2017).

South Africa's energy landscape is marked by a heavy reliance on coal for electricity generation, a historically stable but environmentally harmful energy source (AIDC, 2023). This dependence, coupled with aging infrastructure, frequent load shedding, and financial challenges within state-owned enterprises, has impeded progress in energy transition efforts (AIDC, 2023; CRSES, 2024). Although policy initiatives have encouraged renewable energy investments, the shift toward sustainable technologies has been slow. In the rail sector, modernisation efforts are hindered by infrastructure decay, policy inconsistencies, and a lack of coordinated national strategies (Ngcobo et al., 2024). Hybrid power systems, incorporating hydrogen fuel cells, solar, wind, and battery storage technologies, present a promising solution for decarbonizing rail transport, but their implementation remains limited (Stellenbosch University, 2024).

Despite these challenges, efforts to diversify the energy mix are underway, with increased investments in renewable sources like wind and solar, supported by both government policies and private sector initiatives (CRSES, 2024). The country's energy strategy also emphasizes the role of natural gas and nuclear energy to enhance energy security and reduce carbon emissions. However, South Africa's energy sector continues to face significant obstacles, including aging infrastructure, frequent power outages, and financial difficulties within enterprises like Eskom (AIDC, 2023). As the country strives to balance energy supply with environmental sustainability and economic growth, the need for modernisation and reform becomes increasingly urgent. The energy sector is undergoing a transformation, driven by both global shifts toward renewable energy and local demands for improved sustainability practices (Department of Energy, 2019). The transition to a more diversified and resilient energy system is critical and requires substantial investment and strategic

planning to address these challenges and achieve long-term energy goals.

South Africa presents a unique context for studying the challenges of leading change during energy transitions. Key features of the country's energy sector, such as coal dominance, infrastructure and technological readiness, economic and social factors, and regulatory and policy environments, contribute to the distinct challenges and opportunities faced by state-owned, energy-intensive entities like freight companies (Freight Company, 2023).

Thus, leadership within South Africa's state-owned enterprises must navigate the legacy of historical and cultural contexts while addressing infrastructural and financial constraints in steering the transition to sustainable energy. The strategic role of these enterprises, the complexity of regulatory environments, and socio-economic factors create a unique setting for this study. These contextual elements contribute to both the challenges and opportunities of managing energy transitions, highlighting the relevance of the study's findings for similar countries with comparable energy landscapes.

The Freight Company under this research is a state-owned company and the largest division compared to the other five sister companies (Freight Company, 2023). As the largest division of this state-owned enterprise, this Freight Company's approach to the energy transition may provide valuable insights into the challenges its leaders faced in leading change in the energy transition (Freight Company, 2023). The core function of this Freight Company is to provide rail transportation of commodities for export, regional, and domestic markets. To fulfill its mandate, this Freight Company owns a fleet of electric and diesel locomotives, wagons, and traction and distribution substations that feed its rail network that connects cities, mining areas, and ports countrywide. Some of the commodities transported by this Freight Company are coal, agricultural products, iron ore, manganese, citrus fruits, and general freight. Due to the large-scale transportation and logistics activities this Freight Company is classified as an energy-intensive company (Freight Company, 2023).

Energy Supply at the Freight Company: - This Freight Company is a key player in South Africa's freight transport sector, heavily relies on Eskom, the national utility, for its electrical supply. The Freight Company receives electrical power from Eskom

directly and through municipalities. The electric power received is further processed and conditioned in the traction and distribution substations to supply locomotives, relay rooms and facilities (Freight Company, 2023). Diesel locomotives are used to haul freight mainly in non-electrified lines, for shunting purposes and under power outage conditions. This dependency (to Eskom) is a direct result of South Africa's centralized power generation model, which is dominated by Eskom's coal-fired power stations. As illustrated in the image (figure 1), the national grid draws energy from coal, diesel, imported electricity, and limited private renewable sources. TFR's reliance on Eskom for traction power, particularly for its fleet of electrical locomotives, exposes it to the vulnerabilities of an aging, coal-dependent energy system.

This dependence has significant implications for Freight Company's energy transition efforts: such as *unreliable power supply, limited energy diversification, high carbon footprint, Financial Constraints and Uncompetitive Tariffs, Regulatory and Policy Barriers and Leadership Challenges in Energy Transition*: The leadership at Freight Company are therefore expected to navigate complex regulatory environments, managing the impact of Eskom's instability, and overcoming resistance to change. These challenges highlight the need for visionary leadership, strategic alliances, and policy advocacy to drive energy transition. Figure 1 also suggests the possibility of hybrid power solutions, integrating renewable off-grid generation with existing infrastructure. This approach could provide Freight Company with reliable, cleaner, and cost-effective energy, reducing its dependence on Eskom thus reducing carbon emissions. Without structural reforms, policy adjustments, and strong leadership that can accurately articulate and address challenges of leading change during energy transition, this vision remains an unfulfilled potential.

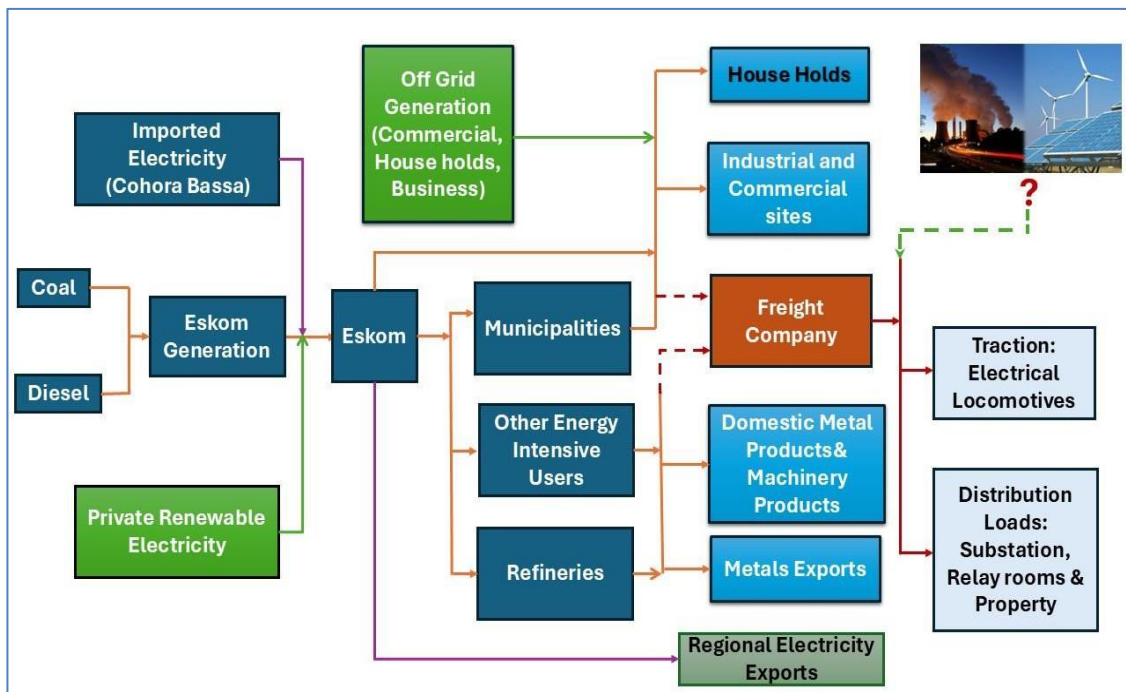


Figure 1

Electrical energy flow and source of supply for a Freight Company. Adapted from TIPS 2021.

1.3 Problem Statement

The Freight Company plays a crucial role in South Africa's freight transport sector and is heavily dependent on Eskom, the national utility, for electricity. This dependence is a direct result of South Africa's centralised power generation model, dominated by coal-fired power stations. Despite the country's growing focus on energy transition, this reliance exposes the Freight Company to the vulnerabilities of an aging, coal-dependent energy system, with significant implications for its operations and sustainability.

Identification of the Problem:

The Freight Company faces several challenges in its energy transition efforts due to its reliance on Eskom. These challenges include an unreliable power supply, limited energy diversification, a high carbon footprint, financial constraints, uncompetitive tariffs, and regulatory barriers. Additionally, the company has made minimal progress in adopting renewable energy solutions, lacking agreements with Independent Power Producers (IPPs) or internal energy projects for hybrid power solutions that could diversify its power supply. The Freight Company remains deeply reliant on traditional

energy supply methods, and transitioning to renewable sources will require strong leadership to guide this change. However, this transition is vulnerable to resistance from those seeking to preserve the status quo and maintain complacency. Leading this change will not be without its challenges, particularly in navigating and shifting toward renewable energy sources within the Freight Company.

Justification for the Problem:

The Freight Company's dependence on Eskom's coal-based energy system impedes its ability to transition to cleaner and more reliable energy sources. As the global push for decarbonisation intensifies, these challenges contribute to the slow pace of adopting hybrid power systems with will enhance the integration of renewable energy technologies to is energy supply system, both of which are crucial for reducing its carbon footprint and improving energy reliability. This issue is further exacerbated by the lack of clear identification and articulation of Freight Company specific challenges that leaders face that slow or hinder the transition toward renewable energy sources (Freight Company, 2023).

Scope of the Problem:

The problem is primarily focused on the Freight Company's reliance on traditional fossil fuel-based sources of power supply that lacks diversification, and the barriers to adopting renewable energy solutions within the South African freight transport sector.

1.4 Purpose of the study

The purpose of this study was to investigate and understand the specific challenges faced by leaders at a Freight Company in South Africa as they navigated the energy transition. By exploring these challenges and analysing the current leadership trends, the study aimed to identify effective leadership strategies that can help address and overcome the obstacles encountered during the energy transition. Ultimately, the research sought to provide actionable insights and recommendations for enhancing leadership effectiveness in managing the energy transition within the freight industry. To fulfil this purpose and to have a structured approach in uncovering these challenges, the theory of Leading Change using Kotter's 8-Step Change Management Framework was used (Kotter, 1996).

The specific objectives of the study were hence:

- i. *To explore the challenges of leading change during the energy transition at a state-owned Freight Company in South Africa.*
- ii. *To analyse leadership trends and strategies during the energy transition at a state-owned Freight Company in South Africa Freight, focusing on key challenges involved in shifting to renewable energy sources*
- iii. *To recommend leadership strategies for consideration during the energy transition at a Freight Company in South Africa.*

1.5 Research questions

The shift from coal-dependent systems to renewable energy sources requires not only technological advancements but also effective leadership capable of addressing the organizational, cultural, and financial barriers that often arise. This research seeks to explore these leadership challenges, analyse prevailing leadership trends and strategies, and ultimately propose actionable recommendations to guide successful leadership during the energy transition at a state-owned Freight Company. The research question is:

- *What are the key challenges and leadership strategies involved in leading the energy transition at a state-owned Freight Company in South Africa?*

1.6 Significance of the study

This research addresses a critical gap in empirical knowledge by examining the leadership challenges and practices associated with energy transitions in South Africa's freight industry. While existing literature predominantly focuses on countries like China, India, and Russia (Ali, 2023; Ordonez et al., 2023; Mitrova & Melnikov, 2019), there is limited insight into how similar transitions are managed within the South African freight rail context. A study by (Ntuli et al., 2024), explored strategies for reducing carbon emissions in South Africa's transport sector, and emphasises the shifting from road to rail freight to achieve a 50% modal split by 2043. Although this shift promises environmental benefits and logistics improvements (Ntuli et al., 2024), the challenges of the energy transition from the rail perspective have not been fully explored. The increased rail volumes resulting from this shift could contribute significantly to the Freight Company's greenhouse gas emissions, increasing the demand and highlighting the importance of leadership in navigating the challenges of the energy transition to ensure its success.

Additionally, this study builds on an article by Todd and McCauley (2021), which identified policy barriers hindering South Africa's energy transition, offering recommendations to facilitate the adoption of renewable energy. This study provided valuable insights into policy challenges; it also underscored the need to explore other leadership-related obstacles beyond policy barriers. By uncovering these challenges and developing strategies to overcome them, this research will contribute and empower leaders in the Freight Company with deeper understanding of these challenges and thus accelerating the energy transition in South Africa's freight rail sector. The findings will be instrumental in shaping local policies and strategic plans, allowing policymakers and Freight Company executives to create more targeted interventions that address local challenges effectively (Li et al., 2023).

The research also aims to enhance the understanding of leadership effectiveness in managing energy transitions, a key factor in improving management strategies within the freight industry. By analysing leadership practices that have successfully overcome energy transition challenges, the study will provide valuable insights for developing more effective leadership training and strategies, as evidenced in the Indian case study by Ordonez et al. (2023). Moreover, as energy transitions are vital for achieving Sustainable Development Goals (SDGs) such as affordable and clean energy (SDG 7) and climate action (SDG 13), the findings of this research will contribute to South Africa's alignment with these global goals. Through comparative analysis with energy transition efforts in China, India, and Russia, this study offers benchmarks and lessons learned that can be adapted to the South African context, providing a nuanced understanding of how global strategies can be tailored to meet local needs (Jia et al., 2020; Horan, 2019).

1.7 Structure of the report

The This research report is structured to provide a comprehensive examination of the challenges faced by leaders in navigating the energy transition at a Freight Company in South Africa. The report is organised into five chapters, each addressing key aspects of the study.

Chapter One: Introduction provides an overview of the study, including the background, problem statement, and purpose of the research. It also outlines the research questions, significance of the study, and the structure of the report. This

chapter sets the foundation for the research by introducing the challenges of leading change in the context of the energy transition.

Chapter Two: Literature Review delves into the global, regional, and local context of the energy transition. It discusses the role of leadership in facilitating the transition, particularly within Africa and South Africa. It also explores leadership strategies that support energy transitions, with a focus on organisational performance and leader-follower relationships. The chapter concludes with a discussion of the conceptual framework for the study and the rationale for using Kotter's model.

Chapter Three: Research Methodology outlines the research design and approach used in this study. This chapter justifies the qualitative case study method and discusses the population, sampling method, and data collection process. It also explains the research instrument, data analysis techniques, and how the study ensures reliability and validity. Ethical considerations are also addressed in this section.

Chapter Four: Presentation and Discussion of Findings presents the key findings of the research. It includes an overview of the company and participant demographics, followed by a detailed discussion of the findings related to the steps of Kotter's change model. The chapter also explores leadership trends during the energy transition and provides a summary of the key insights.

Chapter Five: Conclusion and Recommendations draws conclusions based on the research findings, directly addressing the research questions. This chapter highlights the contributions of the study to existing research, discusses literature gaps, and provides actionable recommendations for addressing leadership challenges. Finally, it offers suggestions for further research to continue exploring the topic of leadership in energy transitions.

This structure ensures that the study presents a logical progression from background and literature review to research methodology, findings, and actionable conclusions.

1.8 Summary

Chapter One introduces the study, focusing on the challenges of leadership during the energy transition at a Freight Company in South Africa. The global shift towards sustainable energy is highlighted, emphasizing the country's reliance on fossil fuels, particularly in the transport sector, which contributes significantly to greenhouse gas emissions. The study explores the role of leadership in overcoming these challenges,

especially in a state-owned entity within South Africa's energy transition context.

The Freight Company's dependence on fossil fuel-based energy sources through the national utility, for electricity is a central issue in the research. This reliance on coal-based power impacts the company's ability to diversify its energy sources and transition to cleaner alternatives. The company faces several energy-related challenges, such as unreliable power supply, limited diversification, high carbon emissions, financial constraints, and regulatory barriers, all of which require strong leadership to navigate.

The purpose of the study is to investigate the leadership challenges faced by the Freight Company in managing its energy transition. By examining challenges of leading change that the leaders in this Freight Company face, leadership trends and strategies, the research aims to identify these challenges and the ways to overcome these them. Further, the research aims to provide recommendations for consideration by the Freight Company for implementation during energy transition. The study is guided by Kotter's 8-Step Change Management Framework, with specific objectives focused on understanding the challenges, analysing leadership strategies, and recommending improvements to guide the energy transition.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter explores the context surrounding the energy transition in South Africa, focusing specifically on the Freight Company's challenges in leading change. The global push for a shift to renewable energy is a priority across industries, including the freight industry, which is increasingly committed to transitioning to more sustainable energy sources. South Africa's energy sector, with its reliance on coal, limited infrastructure, and complex regulatory environments, presents unique challenges for state-owned, energy-intensive companies like the Freight Company. This chapter discusses how leadership in these organisations must navigate historical, cultural, and financial constraints while driving the transition to sustainable energy. South Africa's energy transition landscape creates both challenges and opportunities for leadership, offering valuable insights for countries with similar energy contexts.

The Freight Company under study is the largest division of a state-owned enterprise in South Africa, playing a significant role in the country's energy-intensive transport sector. With a fleet of electric and diesel locomotives and extensive infrastructure, the company faces unique leadership challenges related to its transition to renewable energy. Despite the increasing need to move toward cleaner energy sources, the company's reliance on coal-based electricity from Eskom exposes it to vulnerabilities. The literature reviewed identifies external challenges such as policy uncertainty, financial constraints, and a shortage of skilled professionals. However, the gap in existing research lies in understanding the internal leadership challenges that hinder the company's progress in adopting renewable energy solutions, such as organizational culture and resistance to change.

The chapter is structured as follows: Section 2.1 discusses the global push for an energy transition, highlighting the urgency for sustainability across industries. Section 2.2 focuses on the role of leadership in facilitating the energy transition, including leadership in Africa, the SADC region, and South Africa. Further sections delve into leadership challenges and strategies, particularly in South Africa's energy transition, followed by a conceptual framework used for this study (Kotter's 8-Step Change

Management Model) and the rationale for using it. The chapter concludes with a summary of the reviewed literature.

2.1 Global push for an energy transition

There has been a global push for an energy transition to renewable forms of energy, emanating from severe climate change-related disasters that have negatively impacted human lives globally. This resulted in the construction and formation of key international agreements such as the Kyoto Protocol and the Paris Agreement (Doan et al., 2024). These agreements are aimed at catalyzing a shift towards effective climate governance, prompting increased calls for cooperation in phasing out fossil fuel-based energy sources (Doan et al., 2024; Wan et al., 2021). Countries worldwide have responded to these concerns by implementing regulations and legislation to address the risks associated with continued reliance on fossil fuels (Sun et al., 2019; Tian et al., 2020).

- **The Case of State-Owned Freight Companies in China, India and Russia**

State-owned enterprises (SOEs) in China, India, and Russia face unique challenges in transitioning to renewable energy, highlighting the complexities of managing energy transitions in politically and economically entrenched environments. In China, SOEs contribute significantly to emissions annually (Ali, 2023). Political resistance from these entities complicates aggressive climate policies and the phasing out of coal-based energy, even as the railway sector adopts renewable energy solutions (Ali, 2023). For instance, China's railways have integrated solar photovoltaic panels on station roofs, parking lots, and other unused spaces to power lighting, air conditioning, and heating, generating 544.6 GWh of green energy annually, with the Xiong'an station project alone producing 66 MW (Li et al., 2023; Jia et al., 2020).

Efforts to diversify energy sources in China's rail sector are focused on non-traction areas. Scholars have proposed innovative solutions, such as installing solar panels on locomotive rooftops, building green substations, and coupling renewable sources with traction substations to create a complementary multi-powered system (Li et al., 2023). However, practical engineering challenges remain. The image attached (in figure 2) illustrates the power supply philosophy for the Chinese railway system, emphasizing

a hybrid approach that leverages renewable energy for non-traction purposes while reducing dependency on traditional power sources.

In India, Indian Railways faces political economy challenges that hinder energy transformation. Issues such as trade barriers, grid integration, and the need for a robust legal framework for renewable energy credits impede leadership efforts to drive change (Ordonez et al., 2023). Similarly, in Russia, railway energy transition projects approved in 2014 have faced continuous delays due to global competition, technological isolation from recent geopolitical conflicts, and financial constraints (Mitrova & Melnikov, 2019). These examples highlight the broader challenge of navigating political, economic, and technological obstacles when implementing renewable energy solutions in SOEs. During the time of research, there was no South African railway related case study or accounts of successful diversification of sources of supply. A gap therefore exists in understanding this lack of progress in South Africa's freight rail sector. This research aims to bridge this gap by exploring the underlying challenges that leaders face during the energy transition, providing insights to inform recommendations for consideration in the South African freight industry.

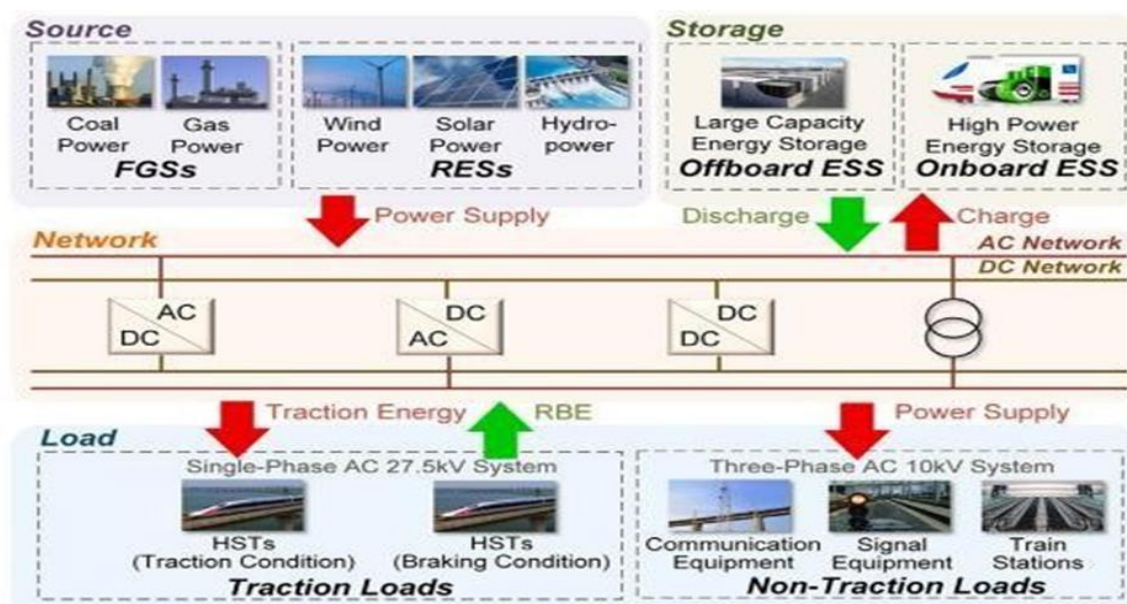


Figure 2

Energy Mix Approach for Railway Network in China. From Li et al. (2023).

The primary goals of climate change governance include transitioning from non-renewable to clean and renewable energy sources, leading to a decarbonised economy (Nieto et al., 2020). The demand for renewable energy technology

development and deployment has grown in response to international climate change agreements (Singh et al., 2019). Despite this push, fossil fuel-based sources like oil, coal, and gas continue to dominate global energy consumption, with renewable and low-carbon energy sources accounting for smaller percentages.

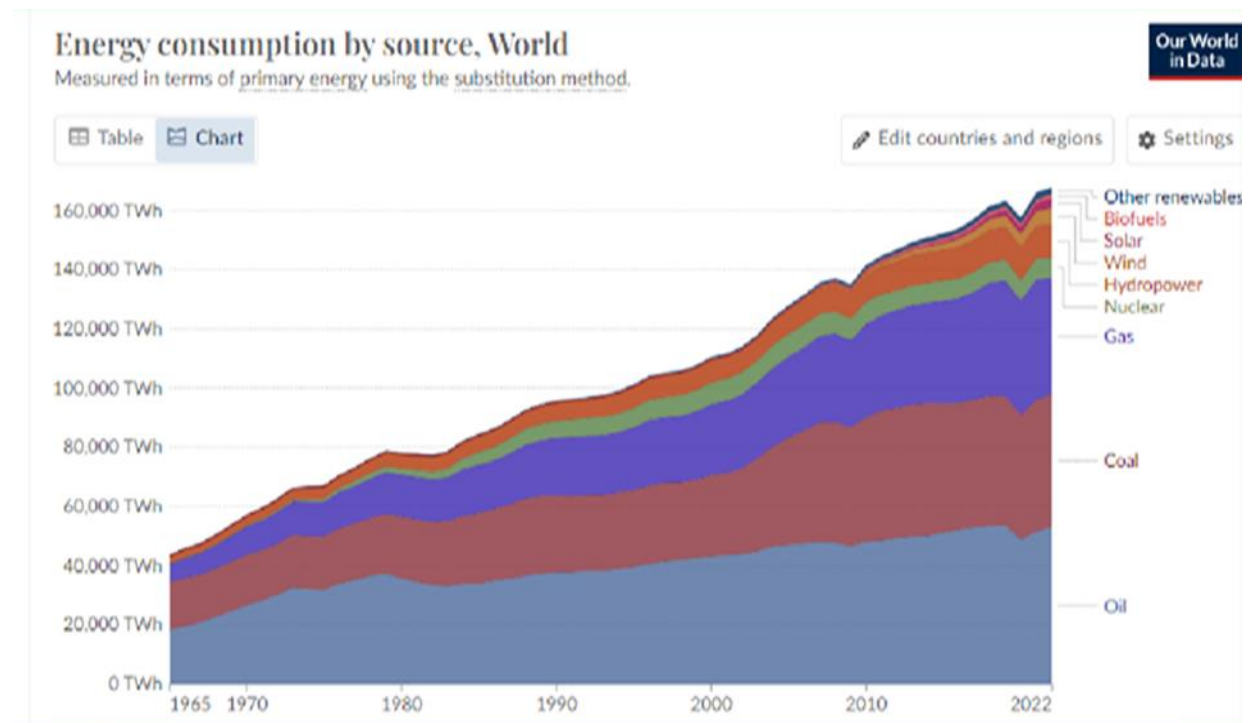


Figure 3

Global energy consumption. From Ritchie et al. (2024).

Figure 3 provides an overview of *global energy consumption*, highlighting the continued dominance of fossil-based sources. Figure 4 further projects the consumption trends of fossil-based energy sources, with coal predicted to decline after the year 2025, while oil and natural gas remain relatively stable. Effective leadership strategies are crucial for realising the projected decline in fossil fuel usage and navigating the complexities of sustainable change. These leadership strategies required for a successful energy transition must be identified and be clearly defined for effective implementation during the energy transition.

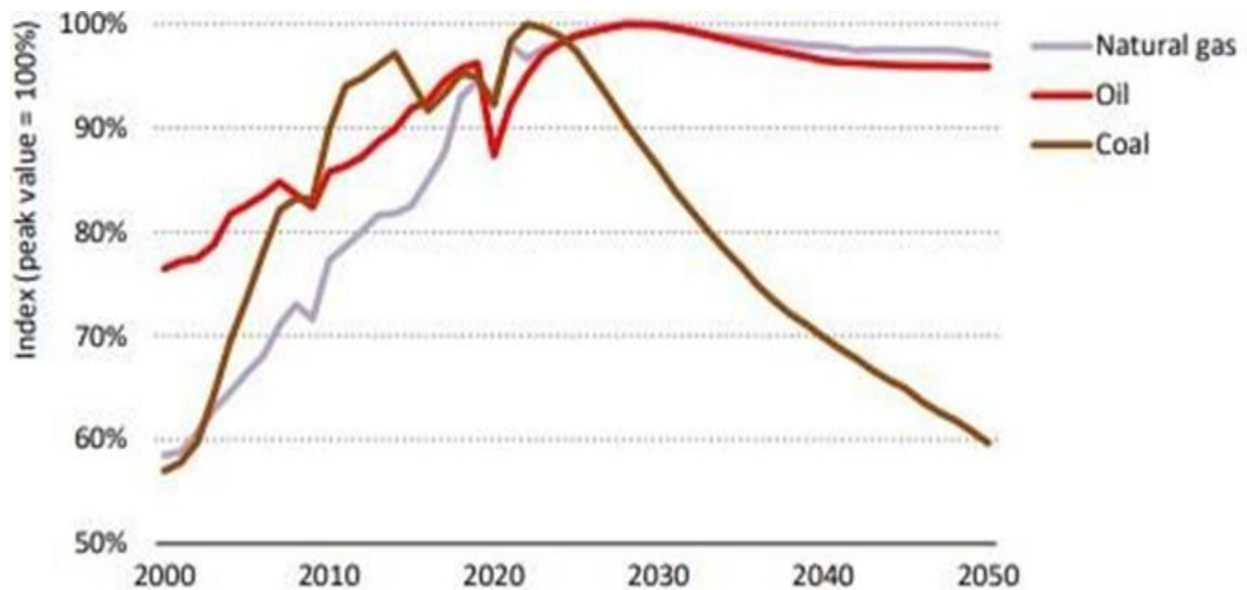


Figure 4

Fossil fuel consumption projections and actuals between year 2000 and 2050. From Ritchie et al. (2024).

- **Coal dominance, Infrastructure challenges, Economic and social challenges in South Africa.**

South Africa's reliance on coal for electricity generation remains a critical challenge for its energy transition. As depicted in figure 5, coal accounts for a staggering 78.5% of total electricity production in 2023/24, while renewable sources contribute a modest 8.8% (CRSES, 2024). The country's energy supply struggles to meet demand, resulting in unserved energy of 4.4%, which necessitated load shedding (CRSES, 2024). This coal dependency is deeply entrenched in the energy value chain, influenced by historical, economic, and infrastructural factors (Department of Energy, 2019).

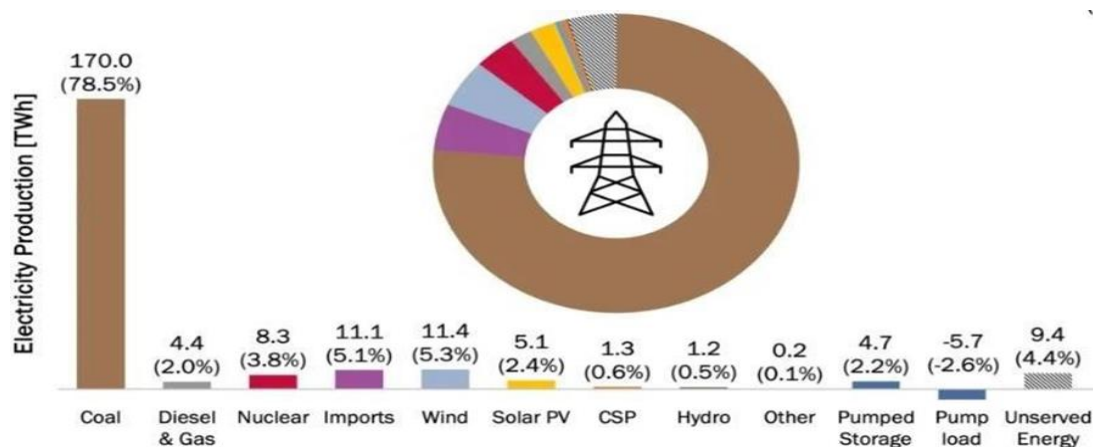


Figure 5

South African Energy Mix. From CRSES 2024

South Africa's *infrastructure challenges* are compounded by outdated coal-fired power plants and insufficient integration of renewable energy. The legacy of apartheid has left the country grappling with spatial and economic inequalities, affecting energy access and policy implementation (Essex & de Groot, 2019). Load shedding, a measure to prevent grid collapse, highlights the system's vulnerability (Eskom, 2010). Limited grid access and outdated infrastructure impede the diffusion of renewable technologies, emphasizing the need for modernized, resilient energy systems (Jain & Jain, 2017; Cherp et al., 2018).

Economic and social challenges also hinder energy transition efforts. The high cost of renewable energy technologies, economic dependence on coal, and potential job losses in coal industries pose significant obstacles (IRENA, 2022; The Presidency, 2022). Additionally, skill gaps in the renewable sector and inadequate funding further complicate the transition (Baker, 2017).

Although South Africa's government has committed to ambitious decarbonization goals, regulatory and policy complexities slow progress. The Renewable Energy Independent Power Producer Procurement Program (REIPPPP) demonstrates efforts to integrate renewable energy, but challenges remain in translating policy into practice (Department of Energy, 2019; PCC, 2022; NERSA, 2023). The integration of Independent Power Producers into the national grid marks progress, but effective leadership and regulatory alignment are crucial for a sustainable energy future.

The Freight company where the research was conducted is the state-owned entity and therefore is not immune from the challenges described in this section. The positive aspect is with regards to regulation and policy progress made with regards to REIPPPP. This implies that the Freight Company faces significant challenges in leading change towards a hybrid energy mix, despite South Africa's progress in renewable energy (through initiatives like the REIPPPP). While the government has created a favorable environment for energy diversification, including the integration of IPPs, the company has made no progress in this area. This highlights internal barriers, such as resistance to change, lack of strategy, financial concerns, and outdated infrastructure, that are hindering the adoption of renewable energy. These challenges need to be investigated further to understand why the company is not moving forward, especially when the national energy transition is gaining momentum

2.2 The Role of Leadership in Facilitating Energy Transition

Leaders play a crucial role in fostering an innovative culture to facilitate the adoption of renewable energy technologies (Vogel & Fischler-Strasak, 2014). The growing global concerns about climate change have intensified the shift towards renewable energy sources, aiming to replace high-carbon fuels with low-carbon alternatives like geothermal, solar, wind, bioenergy, and hydropower (Tian et al., 2020). This transition, however, presents significant challenges for leaders both locally and globally (Tian et al., 2020). In recent years, corporate leaders have shifted from profit-driven strategies to those focusing on economic, environmental, and social objectives (Moleka, 2023).

2.2.1 Leadership in the Energy Transition in Africa

Effective leadership is key in Africa's energy transition, particularly in leveraging the continent's vast mineral resources for renewable energy development. Despite its rich fossil fuel and mineral resources, Africa faces ongoing challenges with energy poverty (Nsafon et al., 2023). Addressing energy security, economic growth, and access to energy is essential, and a sustainable, low-carbon transition is necessary to combat climate change. While Africa lags behind the Global North, particularly Europe, in renewable energy adoption, the continent's potential remains vast but requires substantial investment in infrastructure, skills, and technology (Simelane & Abdel-Rahman, 2012). Bornemann and Weiland (2021) emphasize the importance of strong policies to support renewable projects, which can drive sustainable development and innovation.

2.2.2 Leadership in the SADC Region's Energy Transition

In the Southern African Development Community (SADC) region, leadership within state-owned entities is critical for driving the transition to renewable energy. Schoenmaker (2017) stresses the importance of adapting renewable energy technologies to regional resources to promote sustainability. This is crucial for successful energy transition within the freight logistics -especially the railway sector, which connects various SADC member countries from import and export markets. Effective leadership in the SADC region should prioritize cross-border collaboration and policy advocacy to overcome energy access challenges, especially in Sub-Saharan Africa, where many still lack electricity. Medinilla et al. (2019) suggest that promoting cross-border electricity trade can enhance energy reliability and affordability. These cross-border electricity trade agreements can present a good

opportunity and conducive environment for decarbonisation in the quest to achieve net zero targets within the SADC region. Strengthening power pools within the region and advocating for supportive energy policies are therefore crucial for a smooth, sustainable energy transition (Bowa et al., 2019).

2.2.3 Leadership in South Africa's Energy Transition

South Africa's energy transition is at a critical stage, with state-owned entities playing a vital role in driving sustainable change. Effective leadership is essential in navigating this shift, particularly in managing policy changes, technological innovations, and economic development (Cherp et al., 2018). The transition in South Africa involves a complex integration of techno-economic, sociological, and political dimensions, where state leadership aligns energy policies with national goals such as energy security and economic growth (Cherp et al., 2018). The Just Energy Transition Investment Plan (JET IP) 2023-2027 outlines the investments needed for decarbonisation and the creation of green jobs, aiming to ensure a fair transition that addresses the impact on communities and workers (The Presidency, 2022). Implementation of the JET IP in the context of energy transition within the railway sector is crucial to ensure that energy transition within this sector is justified. The establishment of the Presidential Climate Commission (PCC) to guide the transition, foster stakeholder engagement, and build consensus is another key leadership initiative (PCC, 2023). This is crucial for leadership in the freight sector in overcoming leadership challenges like- stakeholder management, creating a conducive environment to embrace innovation and supporting research and development in energy technologies with the common goal of reducing fossil fuel dependence and increasing the use of renewables in the South African railway sector (SAIIA, 2023).

2.2.4 Trust, Collaboration, and Resilience in Leadership during the Energy Transition

Effective leadership in the energy sector during the transition is not limited to technical expertise; it requires the ability to guide individuals and teams through challenges with clarity, purpose, and resilience. Central to this leadership approach is trust, which fosters loyalty and respect through open, honest, and two-way communication (Arces, 2004). By prioritizing transparency, leaders create an environment where collaborative decision-making, feedback, and shared responsibility thrive. As such, leadership in the energy transition must also be characterized by understanding, empathy, and a shared

vision, enabling teams to navigate change with confidence and effectiveness (Arces, 2004).

2.2.5 Leadership in Large-Scale Projects: Insights from the Gautrain Case Study

A relevant example of effective leadership in a large-scale infrastructure project is the Gautrain case study in South Africa, as explored by Mthombeni et al. (2022). This study focuses on the leadership exhibited by the Gautrain Management Agency (GMA) in managing stakeholder relationships and balancing development priorities during the expansion of the Gautrain rapid rail system. While the case provides valuable insights into leadership within a complex socio-economic and political context, it does not delve deeply into the nuances of energy transition leadership. Nonetheless, the case highlights how strategic leadership can steer large projects-especially in the railway sector, towards success by addressing multiple competing interests and fostering collaboration among diverse stakeholders (Mthombeni et al., 2022).

2.2.6 Enhancing Organizational Performance through Leader-Follower Relationships

In the context of state-owned enterprises (SOEs), research in India and China underscores the significance of leader-follower relationships in organisational performance. High-quality relationships between leaders and their followers enable greater decision-making flexibility, easier access to resources, and more motivation and support from leadership. These dynamics encourage employees to work harder and improve performance outcomes (Badarai et al., 2023). Furthermore, transformational leaders who offer psychological support strengthen these relationships, fostering increased commitment, proactivity, and overall organizational success (Badarai et al., 2023). This research demonstrates that the energy transition, like other sectors, benefits from leadership that cultivates strong interpersonal connections, motivating teams and driving the performance necessary to succeed in a rapidly evolving landscape.

2.2.7 Leadership challenges in the energy transition in South Africa

As a state-owned entity within the South African context, the Freight Company is bound by national regulations and policies that govern the energy transition. South Africa's energy landscape is undergoing a significant transformation, driven by the imperative to reduce carbon emissions and adopt more sustainable energy solutions. As such, the Freight Company is not only a participant in this transition but also directly and indirectly

influenced by the following leadership challenges facing South Africa.

2.2.7.1 Regulatory hurdles

Leaders in South Africa's freight sector face significant challenges due to complex regulatory frameworks and bureaucratic inertia. The South African Energy Risk Report identifies regulatory challenges, including policy uncertainties and lengthy approval processes, as major impediments to timely energy project execution (Murombo, 2016; SANEA, 2024). These barriers negatively impact the momentum needed for successful energy transition projects (Gatzert & Kosub, 2017).

Murombo (2016) further emphasizes that regulatory inertia remains a significant hurdle, affecting electricity pricing and renewable adoption. Institutional bottlenecks and resistance to change within state power utilities hinder progress. The persistence of outdated regulations maintains the status quo in electricity supply and pricing structures, delaying the transition to renewable energy. Addressing these regulatory challenges requires policy reforms and the removal of bureaucratic obstacles to create a more dynamic and adaptable energy sector.

2.2.7.2 Technological disruption

Rapid advancements in renewable energy technologies require leaders to adapt swiftly. The "Challenges and Opportunities of Energy Transition across Africa" study highlights that technological disruptions necessitate continuous learning and adaptation to integrate new technologies effectively (Nwala et al., 2023). To keep pace, South African leaders must prioritize training and skills development and the development of a strategic skills roadmap for a just energy transition (Akoobhai, 2024).

Maxontana (2022) additionally identifies the skills gap in South Africa's renewable energy sector as a major challenge. A shortage of skilled professionals in advanced energy technologies prolongs project timelines and delays the resolution of technical issues. This gap stifles innovation and compromises energy infrastructure security. Furthermore, companies face rising operational and talent acquisition costs due to the limited availability of skilled workers. Without targeted skills development, businesses risk losing competitiveness and financial sustainability in the renewable energy market.

2.2.7.3 Organisational culture

Transitioning to sustainable energy requires a cultural shift within organizations. The "Implications for a Just Energy Transition in South Africa" article notes that entrenched practices and resistance to change hinder progress, underscoring the need for cultural transformation (Jerab & Mabrouk, 2023; Mirzania et al., 2023).

Jerab and Mabrouk (2023) highlight that leadership plays a crucial role in shaping this transformation. Leaders must foster an environment that embraces sustainability and innovation by leading by example. Resistance to change is a significant barrier, as employees and stakeholders may be accustomed to traditional energy systems. Effective communication, empowerment, and continuous improvement strategies are necessary to reshape organisational culture (Jerab & Mabrouk, 2023).

2.2.7.4 Infrastructure development

Upgrading infrastructure to support renewable energy is a key leadership challenge. The "South African Energy Risk Report" identifies infrastructure inadequacies as a critical barrier, requiring strategic planning and investment (SANEA, 2024). They noted that energy-related infrastructure uncertainties evolve rapidly, posing high risks to transition efforts. Leaders must hence anticipate and address these uncertainties through proactive infrastructure investment and planning.

2.2.7.5 Financial unsustainability

Securing funding for energy projects remains a persistent challenge. Financial constraints, coupled with economic uncertainties, pose risks to the sustainability of energy initiatives (Hussain, 2013; SANEA, 2024; Soumonni & Ojah, 2022). Hussain (2013) highlights the high cost of capital required for renewable energy projects, the lack of equity financing, and exposure to regulatory risks. Additionally, the absence of long-term funding further complicates financial sustainability. Soumonni and Ojah (2022) emphasize the lack of renewable finance and innovation, limiting South Africa's ability to transition effectively.

2.2.7.6 Capacity building and a skills shortage

A shortage of skilled professionals hampers the implementation of new energy technologies. The "Identification of Skills Gaps in South Africa" report reveals that the existing workforce lacks the necessary skills, highlighting the urgent need for targeted

capacity-building programs (Akoobhai, 2024). The report further identifies challenges in aligning South Africa's Technical and Vocational Education and Training (TVET) system with industry needs, resulting in a shortage of skilled workers crucial for the energy transition. The stigma around vocational training further limits workforce availability for renewable energy infrastructure development. The persistent skills gap contributes to high employee turnover, as workers seek better career growth opportunities. Without robust upskilling initiatives, companies struggle to build a stable, skilled workforce.

2.2.5 Leadership strategies to support the energy transition

2.2.5.1 Fostering innovation

Encouraging a culture of innovation is essential for the energy transition. The "Assessment of Challenges and Strategies for Driving Energy Transition" study suggests that leaders should promote research and development to drive technological advancements (Chipangamate & Nwaila, 2024).

Joel and Oguanobi (2024) argue that emerging markets face structural rigidities and social dilemmas in achieving a just energy transition. Effective leadership must promote technological, social, and financial innovation. These strategies ensure a balanced transition while preventing undue burdens on vulnerable communities (Joel & Oguanobi, 2024). Aremu et al. (2018) additionally highlight the need to foster entrepreneurial thinking, which involves creativity, risk-taking, and opportunity recognition. Leaders must create an environment where employees feel empowered to experiment, learn from failures, and drive innovation in renewable energy solutions (Aremu et al., 2018).

2.2.5.2 Stakeholder engagement, inclusive decision-making, and sustainable partnerships

Building strong stakeholder relationships is crucial for successful energy transitions. The "Stakeholder Engagement and Influence" paper emphasizes that inclusive decision-making enhances project success and community support (Jerab & Mabrouk, 2023; Joel & Oguanobi, 2024; Ezech et al., 2024; SANEA, 2024).

Jerab and Mabrouk (2023) argue that effective leadership requires ethical decision-making and stakeholder involvement. Leaders who model accountability and transparency build trust, ensuring sustainable partnerships. Joel and Oguanobi (2024) highlight that inclusive decision-making fosters ownership and buy-in from stakeholders,

aligning diverse interests toward common goals. Effective stakeholder engagement strengthens collaboration and innovation in energy transition initiatives.

2.2.5.3 Policy alignment

Aligning organizational strategies with national policies ensures coherence in energy transition efforts. The "Geopolitical Energy Futures in South Africa" briefing highlights the importance of strategic policy pathways (SAIIA, 2023). Mthembu and Nhamo (2022) similarly identified poor stakeholder engagement and weak institutional coordination as major barriers to policy-driven innovation. Strengthening institutional frameworks and fostering multi-sectoral collaboration are essential to overcoming these challenges and achieving a successful energy transition (Mthembu & Nhamo, 2022).

2.2.5.4 Energy transition and leadership attributes

Effective leadership attributes, such as adaptability, visionary thinking, and collaborative decision-making, are crucial for navigating the complexities of the energy transition. The "Challenges and opportunities for just energy transition partnerships" policy brief emphasizes the importance of transformational and collaborative leadership in driving equitable outcomes (Islam et al., 2020; Tamasiga, 2024). Leaders must adopt a flexible, participatory approach, empowering stakeholders to co-create solutions for a sustainable energy future.

The transition from non-renewable to renewable energy presents significant challenges and complexities, requiring practical solutions and shifts in both mindset and action. Meijerink and Stiller (2013) argue that energy transition cannot be successful without behavioral change, reinforcing the essential link between leadership and climate change mitigation and adaptation (Meijerink & Stiller, 2013). The successful implementation of Agenda 2030 and beyond necessitates leadership that mobilizes actors across multiple levels (Mangondo & Thakhathi, 2021). Similarly, the Paris Agreement targets drive global energy transformation through collaboration among communities, governments, and nations at local, regional, and global levels (Filho et al., 2019).

However, a lack of transformational leadership remains a significant barrier to achieving Sustainable Development Goals (SDGs) and net-zero targets (Mangondo & Thakhathi, 2021). Van der Voet (2013) highlights that while transformational leadership fosters

innovation, its effectiveness is often constrained by rigid bureaucratic structures (Van der Voet, 2013).

To address these limitations, leaders must cultivate coordinated, transformative, and participatory leadership approaches that align with international climate objectives (Mangondo & Thakhathi, 2021). A critical review by Piwovar-Sulej and Iqbal (2023) further validates the link between leadership styles and sustainable performance, emphasizing the dominant role of sustainable and transformational leadership in ensuring a successful energy transition (Piwovar-Sulej & Iqbal, 2023). As such, this era demands leadership that fosters inclusivity, strategic coordination, and cross-sector collaboration to advance a just and sustainable energy transition.

2.3 Literature Synthesis on Leadership and Energy Transition

South Africa's energy transition is a complex process shaped by policy shifts, technological change, and economic hurdles, with effective leadership in state-owned entities playing a pivotal role. Transformational and collaborative leadership styles, which motivate and inspire, are especially important for managing organizational change and overcoming resistance. While literature highlights external challenges such as policy uncertainty, financial constraints, and skills shortages, limited attention has been given to internal factors within the Freight Company, including organizational culture and resistance to change. Addressing these internal dynamics is critical for integrating hybrid power systems, advancing renewable energy adoption, and aligning with national net-zero goals. Ultimately, the success of the transition will depend on leadership's ability to navigate both internal and external pressures while driving sustainable development. The literature provided a foundational understanding of the leadership attributes and strategies essential for achieving a successful energy transition at Freight Company where the case study was conducted.

2.3.1 Analytical Focus

This study explores the challenges faced by leaders during the energy transition and considers whether adaptive, transformational, and collaborative leadership practices emerge as relevant responses. The consistency table is shown in Table 1 below, showing the research question, research objectives, and the above-stated proposition.

2.4 Conceptual framework

The concept of change or transformation has become essential for organizations and society at large. Efficient management that ensures organizational competitiveness strongly depends on a thorough understanding of the change process (Paraschiv et al., 2019). For a successful and lasting energy transition in the South African context, it is crucial to address change at three key levels: Organizational development, organizational architecture, and human capital management.

Change management is therefore an interconnected process applicable across various departments in organizational development and can adopt either a top-down or bottom-up approach. Different authors offer varying perspectives on change management (Paraschiv et al., 2019). Despite these differing views, change is inevitable, and effective change management is crucial. Successful implementation of change within an organization requires specific leaders to plan the change management process carefully, ensuring that transformation occurs in a controlled and coordinated manner to achieve specific objectives (Paraschiv et al., 2019).

In the article “Change Management Within Companies,” Paraschiv et al. (2019) emphasize the importance of change management for organizations. They identify the challenges companies encounter during this process and outline key models and theories of change management. Additionally, Errida and Lotfi (2021) comprehensively examine thirty-seven change management models and identify factors affecting change management. Based on the case studies and reviews by Errida and Lotfi (2021) and Paraschiv et al. (2019), three prominent models have been identified and are illustrated in the provided comparison table below (Errida & Lotfi, 2021)

Table 1*Consistency table: research questions and propositions*

RQ #	Research Question or Objective	Prop #	Analytical Focus
1	What are the key challenges and leadership strategies involved in leading the energy transition at a state-owned Freight Company in South Africa?	1	
1.1	To explore the challenges of leading change during the energy transition at a state-owned Freight Company in South Africa.	1	This study explores the challenges faced by leaders during the energy transition and considers whether adaptive, transformational, and collaborative leadership practices emerge as relevant responses (Akoobhai, 2024; Jerab & Mabrouk, 2023; Mangondo & Thakhathi, 2021; Mirzania et al., 2023; Moleka, 2023; Murombo, 2016; Todd & McCauley, 2021; Xavier et al., 2017).
1.2	To analyse leadership trends and strategies during the energy transition at a state-owned Freight Company in South Africa Freight, focusing on key challenges involved in shifting to renewable energy sources		The Freight Company uses adaptive, transformational and collaborative leadership practices focused on communication, stakeholder engagement, and strategic vision to drive energy transition (Islam et al., 2020; Mangondo & Thakhathi, 2021; Tamasiga, 2024; Van der Voet, 2013)
1.3	To recommend leadership strategies for consideration during the energy transition at a Freight Company in South Africa.		Possible strategies to address the challenges may include, leadership structural changes, the use of structured framework, innovative funding and skills development(Jerab & Mabrouk, 2023; Joel & Oguanobi, 2024; Mangondo & Thakhathi, 2021; Ezech et al., 2024; SANEA, 2024)

Table 2

Three main models for change management in organizations.

Theoretical Model	Kurt Lewin's Model (Malik 2022)	ADKAR Model (Malhotra 2019)	John Kotter's Model (LucidChart 2019)
Key elements of a model	1. Unfreezing: This stage is an awareness and motivation stage regarding change.	1. Awareness: of the need to change 2. Desire: to support and participate in the change	1. Setting Climate for Change: a. Creating a sense of shared need and urgency b. Developing and being part of a guiding coalition c. Developing a vision and strategy 2. Enabling and engaging the organization: d. Communicating the change and mobilizing commitment
	2. Changing: This stage is a transition and transformation stage -takes more time.	3. Knowledge: of how to change 4. Ability: to implement required skills and behavior	e. Enabling employees to make the change f. Generating and celebrating short term wins 3. Implementing and sustaining new change: g. Consolidating gains and building on success
	3. Freezing: Presents need for stability after change have occurred. Acknowledge change becoming norm. Employees content with new practices	5. Reinforcement: to sustain the change	h. Making it stick

Note. Adapted from LucidChart (2019), Malhotra (2019), and Malik (2022).

The importance of a change management model lies in its role as a compass that guides efforts toward change by outlining specific processes and steps to be followed (Errida & Lotfi, 2021). It illustrates various factors that influence change and identifies key levers that lead to success during the change management process (Errida & Lotfi, 2021). Parry et al. (2014) categorises change management models into two types, processual and descriptive. The **processual model** determines the steps for conducting and managing change, while the **descriptive model** specifies the variables and factors affecting organizational performance and the success of change (Errida & Lotfi, 2021). Lewin's and Kotter's models are processual, whereas the (Awareness, Desire, Knowledge, Ability, and Reinforcement) ADKAR model is descriptive (Errida & Lotfi, 2021; Paraschiv et al., 2019).

John Kotter's Eight-Step Model for Leading Change is a seminal model based on research in the private sector. Kotter found that the change management process can be broken down into eight stages, requiring considerable time (LucidChart 2019). Based on the theories presented, the adopted theoretical framework for this research

was the theory of leading change by Kotter (Kotter, 2012). Kotter's Eight-Step Model is therefore chosen as the most suitable model to form the basis of this research.

2.4.1 Rationale for choosing Kotter's model

Lewin's change management model serves as the theoretical foundation for planned change management (Schein, 2010) and focuses on reducing resistance (Galli, 2019). Kotter's model can be seen as a detailed extension of Lewin's model (see Table 2) (Schein, 2010). The first four elements of Kotter's model correspond to the initial phase of Lewin's model, while elements five, six, and seven aligns with the second phase, and element eight fits into the final phase, the freeze phase (see classification in Errida & Lotfi, 2021, and Table 2). Although the ADKAR Model shares some similarities with Kotter's model, it is less detailed.

In the process of organizational change, it is crucial for a coalition of senior leaders to be committed and actively involved in the design, communication, and practical implementation of energy transition initiatives (USAID, 2015). Legitimacy for these initiatives is reinforced when senior leadership communicates clearly, providing assurance and motivation that the change represents a positive development for the organization. Without senior leadership involvement or if they do not prioritize the changes, other staff members may neglect the initiatives, potentially viewing them as mere formalities (USAID, 2015). This can lead to the rejection of long-term energy transition initiatives. Kotter's model emphasizes a top-down approach, creating an environment conducive to the approval of pro-renewable energy policies, which demonstrates commitment to energy transitions (Galli, 2019) a strong point for its consideration as a key model for this research.

State-owned entities often face unique challenges such as complex stakeholder environments, bureaucracy, and resistance to change. Kotter's model is particularly suited for these contexts (Burnes, 2017; Kotter, 2012). The model is designed to address complex stakeholder management and build a shared vision through stage three and four – see figure 6 (Kotter, 2012). It also tackles bureaucracy and resistance through steps one and six as described in figure 6. Kotter's focus on anchoring changes in the organizational culture (Step 8) ensures that changes are sustainable, which is critical for state-owned entities that experience high turnover and shifting priorities, thus facilitating long-term change (Kotter, 2012).

For these reasons, Kotter's change management model was considered the most appropriate for this research. Kotter's model is illustrated in Figure 6 where each step towards change is explained. Figure 7 provides the pictorial view of the eight stages. The incremental effect of change is illustrated, demonstrating the positioning of different stages and phases of the journey of change.

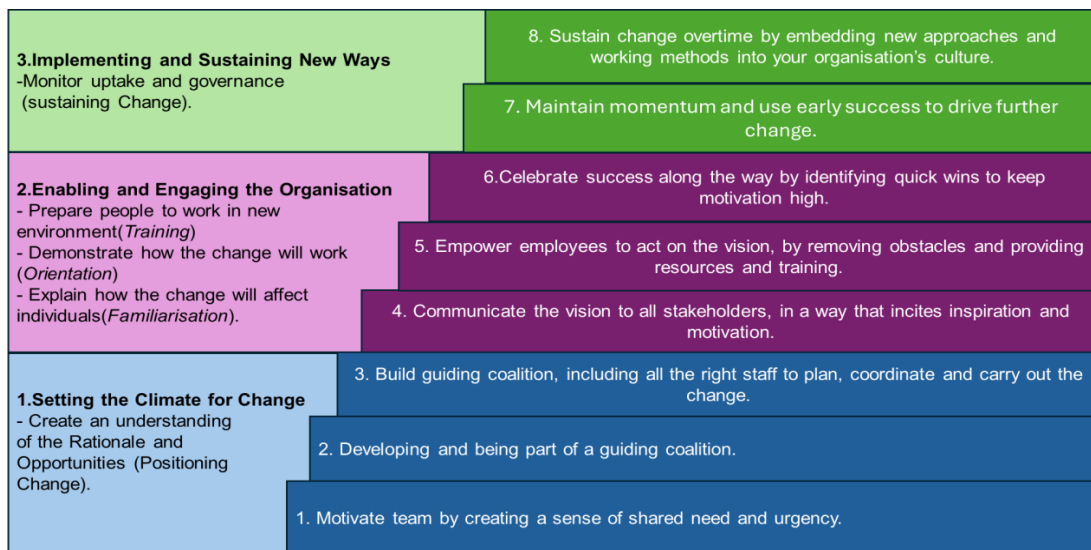


Figure 6

Kotter's 8-step change management model from Paraschiv et al. (2019).

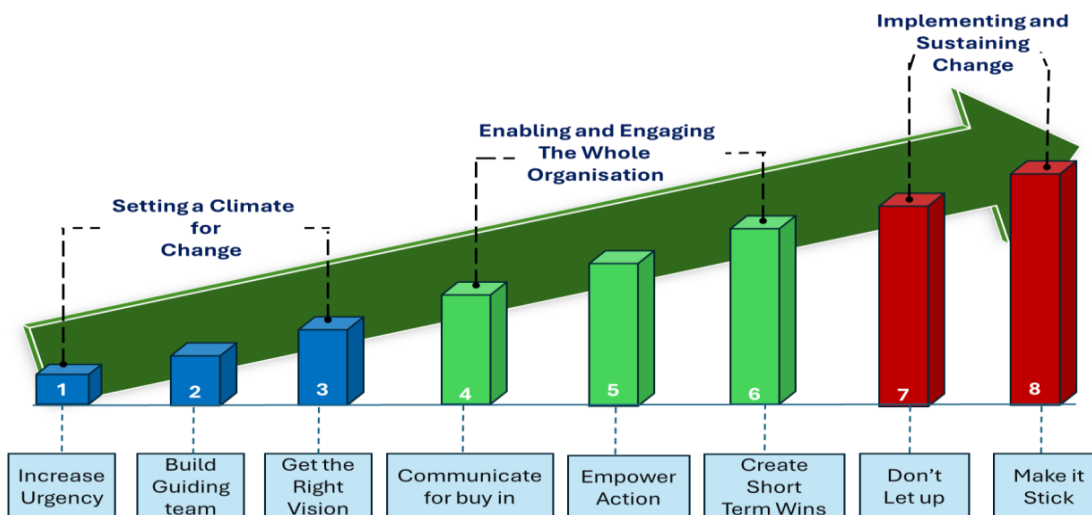


Figure 7

Kotter's 8 step Change Management Model-translated to graphical view. Kotter and Cohen (2008).

2.5 Summary

In summary, chapter two of this research focused on the critical role of leadership in managing South Africa's energy transition, particularly within state-owned enterprises. The transition is marked by complex challenges, including policy uncertainty, financial constraints, and a shortage of skilled professionals. To successfully navigate these challenges, leaders must adopt transformational and collaborative leadership styles that align energy policies with national climate goals and overcome resistance to change. The review underscores the importance of addressing both external challenges related to the country's reliance on coal-based energy and internal organizational challenges such as resistance to change and organisational culture.

Effective leadership is essential for overcoming these barriers and facilitating the integration of renewable energy technologies, thereby reducing the company's carbon footprint and contributing to South Africa's net-zero targets. The literature suggests that leadership strategies focusing on communication, stakeholder engagement, and strategic vision are crucial for tackling challenges like resistance to change, resource constraints, and skill gaps during the energy transition in the freight industry. The review proposes that adaptive, transformational, and collaborative leadership approaches are key to guiding organisations through these hurdles.

Additionally, the review highlights the importance of effective change management, particularly in organisations undergoing energy transitions. Change management is essential at three levels: organizational development, architecture, and human capital management. Kotter's Eight-Step Model is identified as the most suitable framework for managing change in state-owned enterprises like the Freight Company, where challenges like bureaucracy and stakeholder resistance are prevalent. Kotter's top-down approach, emphasis on senior leadership involvement, and focus on cultural alignment make it a valuable model for ensuring the success and sustainability of energy transition initiatives.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlines the research methodology employed in this study to explore the challenges of leading change faced by leaders at a Freight Company during its energy transition. It provides a detailed explanation of the research approach, design, and methods used to collect and analyse data. The study adopts a qualitative approach, specifically a case study design, which allows for an in-depth exploration of the complex issues surrounding challenges of leading change in the energy transition within the context of a state-owned entity. This approach is particularly suited to the research as it provides rich, detailed insights into the experiences and perspectives of individuals within the company, which are critical for understanding the leadership dynamics at play.

The decision to use a qualitative approach was based on the need to gain a deeper understanding of the nuanced leadership challenges faced by the Freight Company in navigating its energy transition. A qualitative case study approach enabled the researcher to explore the problem within its real-life context, allowing for a comprehensive examination of the factors influencing leadership decisions and organisational change. In total, ten participants from the Freight Company were interviewed using semi-structured interviews, which provided flexibility for participants to share their experiences and insights while ensuring that specific topics were covered. The data collected was analysed using thematic analysis with the help of Dedoose software, which facilitated the identification of key themes and patterns within the data. This chapter is structured as follows: it first explains the research approach and design, followed by a discussion of the data collection methods, and concludes with an overview of how the data was analysed.

3.1 Research approach

The researcher conducted an exploratory qualitative case study to generate insights into the challenges of leading change during the energy transition within a selected Freight Company in South Africa. This research utilised semi-structured interviews for data collection. As explained by Magaldi and Berler (2020), semi-structured interviews

allow for a guided yet flexible conversation, enabling a deeper exploration of leadership challenges during the energy transition (Kvale & Brinkmann, 2009). Key advantages included adaptability, thematic alignment with Kotter's change management model used in this research, contextual depth, bias control, and ethical considerations (Mashuri et al., 2022).

The qualitative approach was chosen due to its effectiveness in exploring complex leadership challenges and understanding the nuanced experiences and perceptions of individuals involved in the energy transition process (Creswell & Creswell, 2017). It was particularly relevant for this study, which sought to gain in-depth insights into the challenges of leading change during the energy transition and identifying strategies to address them.

Qualitative research is designed to answer open-ended questions, such as "how" and "why", which are not easily quantifiable. Further, due to its exploratory nature, qualitative research is typically nonlinear, in contrast to the structured, linear approach of quantitative research (Cleland, 2017). The qualitative case study approach was adopted because it effectively explains processes and patterns of human behavior that are challenging to quantify and aligns them with the research objectives (Cleland, 2017; Tenny et al., 2024).

Qualitative approaches are additionally based on two main assumptions, inductive reasoning and topic specificity (Walters, 2001). Inductive reasoning involves drawing general conclusions from specific observations or data, allowing patterns to emerge from the study rather than relying on pre-existing propositions or hypotheses. Topic specificity emphasizes the importance of focusing on specific cases or contexts to understand their unique dynamics and complexities (Walters, 2001). In this study, it was assumed that leadership styles and practices played a critical role in facilitating the energy transition within the Freight Company. However, due to NDA restrictions and limited document access, the study could not triangulate findings through organisational reports or observations. This limits the confirmability of results, which rely solely on participant perspectives.

3.2 Research design

A case study approach was adopted as the research design for this study, as it provided an opportunity to conduct exploratory research on the challenges of leading change during the energy transition in a Freight Company. According to (Yin, 2009), the case study design involves an in-depth exploration of organizations and companies to understand the leadership challenges and dynamics thereof that shape certain outcomes. Yin further argues that this design allows for detailed examination of individual cases within their real-life context, thus providing rich qualitative data. In this study, the case study design was utilized to facilitate the exploration of a selected Freight Company to understand leadership challenges that are affecting energy transition efforts.

The key advantageous attributes of this design that was adopted include in-depth analysis, contextual understanding, and flexibility due to the use of semi-structured interviews (Yin, 2009). The use of a case study enabled the researcher to establish contextual understanding, which helped the researcher to interpret cases within their real-life setting and conditions, which form a crucial attribute for accurate interpretation of findings. Despite the potential drawbacks of this design which include limited generalizability, potential for bias, time consumption, and lack of statistical rigor, the case study design was nevertheless able to provide the researcher with deep, contextual understanding and valuable insights when exploring complex issues of leadership challenges during energy transitions.

3.3 Population and sample

3.3.1 Population

Respondents were selected to ensure that the research captures a wide range of perspectives and experiences and hence provided a robust and nuanced understanding regarding answering the research questions and achieving the research objectives.

The respondents were drawn from employees in a Freight Company who occupied senior leadership positions, middle management, and, operational staff, who all played a pivotal role in driving and managing energy transition efforts (Northouse, 2021).

3.3.2 Inclusion and exclusion criteria

3.3.2.1 Inclusion criteria

The inclusion criteria for this study were based on the type of entity and geographic location. The following criteria were observed:

Type of Entity: The research was conducted in an energy-intensive Freight Company. The inclusion of an energy-intensive Freight Company as the focus of this case study is based on the significant role such companies play in South Africa's economy, particularly in the transportation and logistics sectors. These are inherently energy-intensive due to their reliance on fuel and electricity for their operations. As South Africa is undergoing an energy transition, the challenges faced by these companies in transitioning to more sustainable energy sources are particularly relevant. These companies are uniquely positioned to experience both the pressures of transitioning to renewable energy and the complexities of managing operational and financial constraints. By focusing on an energy-intensive Freight Company, this study provides valuable insights into the specific leadership challenges faced in this sector during the energy transition.

Geographic Focus: The study was limited to entities operating within South Africa. Geographically, the study is focused on entities operating within South Africa, a country that is currently grappling with a highly centralized and coal-dependent energy system. South Africa's energy landscape presents unique challenges, including unreliable power supply, regulatory barriers, and financial constraints. Furthermore, the country is at a critical juncture in its energy transition, making it an ideal setting to explore how leadership within energy-intensive industries can drive change. The focus on South Africa allows for an in-depth examination of the localized impacts of energy policy, infrastructure development, and the evolving regulatory environment on the operations of Freight Company, thus ensuring the research is both contextually relevant and impactful.

3.3.2.2 Exclusion Criteria

The following exclusion criteria were followed:

- a) **Minimal energy output:** Companies that were not involved in intensive energy use were excluded.

- b) **Non-South African entities:** Entities outside South Africa were excluded to maintain the geographic focus of the research.
- c) **Irrelevant and non-energy-related leadership levels:** employees who were not part of energy/energy-related departments were excluded (Yukl et al., 2019).

3.3.3 Sampling method and sample size

The sampling method for this research was purposive sampling, a technique commonly used in qualitative research. This method involves identifying and selecting information-rich cases for case study research, particularly useful when resources are limited (Patton, 2002). This method was employed to select individuals who were directly involved in or knowledgeable about the energy transition process and the challenges of leading energy transition within the selected Freight Company. This method ensured that participants possessed relevant experience and insights necessary to address the research question (Patton, 2002). The sample size for this research was a total of ten participants, who were selected from the Freight Company's national sustainability, environmental, technical, energy account, quality management divisions and infrastructure maintenance depot.

The work functions of the selected sample included: Sustainability specialists, Environmental specialist, Principal engineer from Infrastructure maintenance office, Electrical engineers from quality assurance and energy accounts, maintenance engineers, engineering technician and the substation maintenance electrician.

Senior Executives: One executive member serving in the sustainability division of the Freight Company was interviewed. The sustainability division was responsible for strategic decision-making related to the energy transition.

Middle Managers: Four middle managers were interviewed. One middle manager was from the company's environmental division, while the other two were under the infrastructure maintenance and sustainability division respectively. One middle manager preferred not to disclose his core function within the Freight Company. The insights from these middle managers were crucial because they were the implementors and overseers of the implementation of energy transition strategies in the company.

Operational Staff: These were ground forces, involved in the day-to-day operations related to energy management and the transition. A total of five operational staff were interviewed. Three operational staffs were from the infrastructure maintenance depot and the last two were from quality control and energy management divisions at the operational level.

3.4 The research instrument

There were three research main interview guides that were used as research instruments during the data collection phase of the research. The main research instruments used in this study were interview guides. These interview guides were developed based on the literature review and research question (Gaskell & Bauer, 2000). These instruments were designed uniquely to extract insights from different work functions namely: *Senior Executives, Middle Managers and Operational Staff* (see Appendix C). The chronological arrangement of questions was designed based on Kotter's 8-step change management model. This was crucial to ensure that interviews aligned with specific research objectives, resulting in increased validity of the research findings (Yin, 2017). The Interview guides that were used in this research are attached in Appendix A. The procedure on how data was collected, processed, and analyzed has been explained in the next sub-section (see Figure 8). The researcher adhered to the conditions that formed the basis of approval by the Freight Company to access participants. Participants in the same work function category were asked the same questions. This was done to capture their unique challenges in leading change during the energy transition at the Freight Company.

3.5 Data analysis and interpretation

This study used thematic analysis for the analysis of data. Braun and Clarke (2006) define thematic analysis as a method for identifying repeated patterns of meaning across a dataset, whether from interviews, focus groups, or various texts. This approach allows for a structured examination of qualitative data by organizing and interpreting themes, providing insights into participants' experiences, meanings, and realities. Thematic analysis involves an iterative process of moving between the entire dataset, coded extracts, and emerging interpretations, with writing as an integral part of the analysis (Braun & Clarke, 2006).

This research employed a case study approach following Yin's (2009) structured framework, which ensures a systematic and iterative data analysis process. Data was collected through semi-structured interviews conducted via Microsoft Teams (Microsoft365, 2021) and analyzed using Dedoose software (See Figure B1 in Appendix B) (Kastner, 2023). The analysis followed a step-by-step approach, integrating thematic analysis principles to ensure a comprehensive exploration of leadership dynamics and the energy transition. The process of data collection, processing, and analysis is described in the steps below and illustrated in Figure 8.

Stage 1 (Teams Platform): Data collection and transcription – During this stage, data was collected through semi-structured interviews. The researcher conducted in-depth interviews with ten participants as the primary method of data collection. The decision to use the Teams platform was due to the geographical distribution of the participants. Another advantage of using Teams was its transcription function, which allowed for immediate downloading of transcriptions along with audio files. Three classes of interview guides (aligned with each participant's work function and roles towards the energy transition in the Freight Company) were used to extract insights from each participant (the interview guides are attached in Appendix A). All transcripts were refined and aligned with the corresponding audio recordings before uploading them to the Dedoose platform. Transcription errors were corrected, and all identifying information related to the Freight Company and participants was anonymized in compliance with the non-disclosure and confidentiality agreements.

Stage 2 (Dedoose Software Platform): Data coding and organization – During this stage, all transcripts were uploaded to the Dedoose software platform, and participant's demographics were defined and linked within the software. Following this process, parent codes were created. While initial parent codes were deductively drawn from the research objectives, the analysis remained open to emergent themes. Inductive coding was applied to identify sub-themes that arose directly from participant responses, allowing the findings to reflect both theory -informed and data led insights. These parent codes served as the primary categories derived from the research question and research objectives. Two parent codes were identified from the research question:

- i. Challenges of leading change during the energy transition

ii. Leadership strategies and solutions to address these challenges

• Stage 1

• Stage 2

• Stage 3

• Stage 4

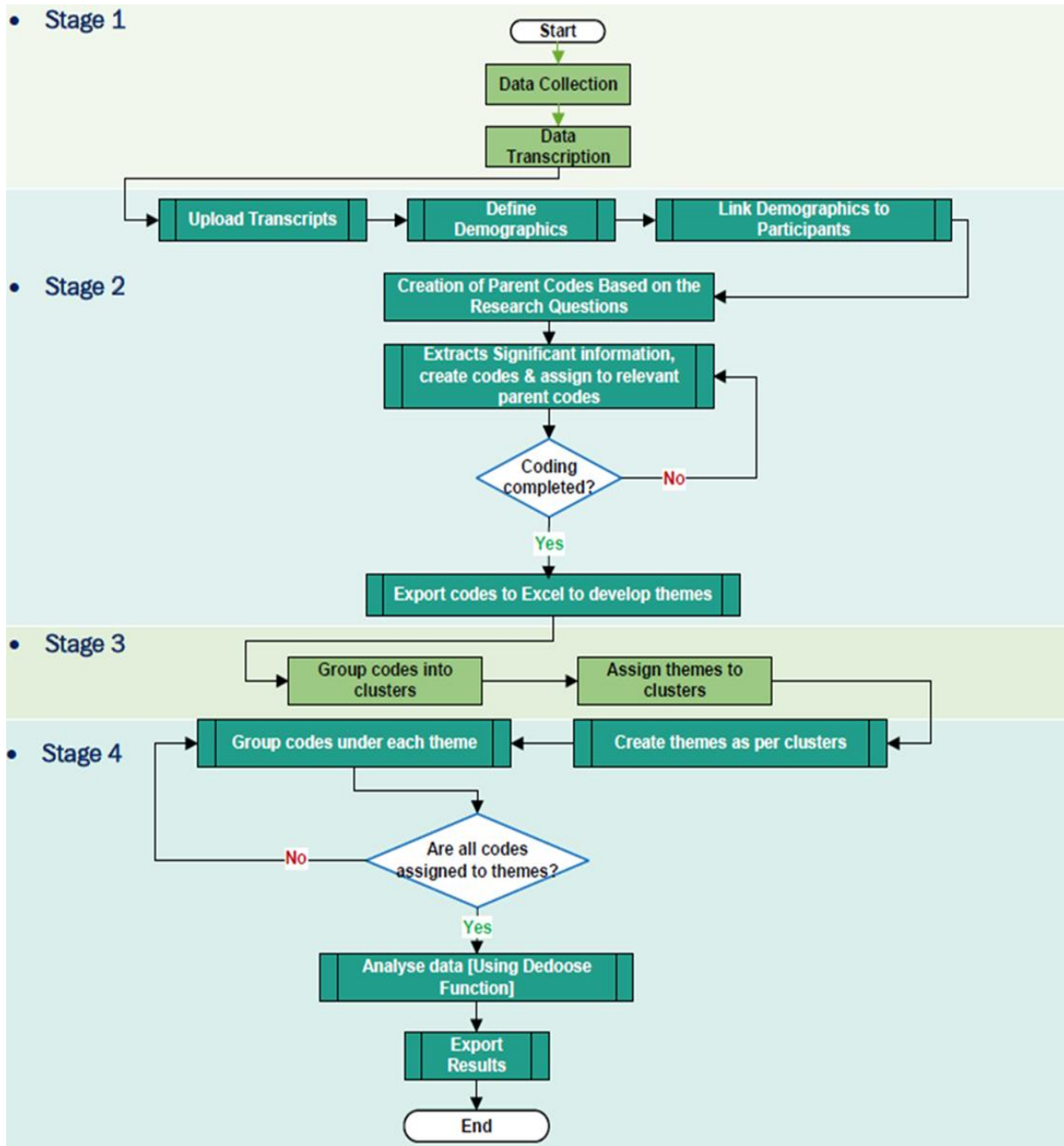


Figure 8

A linear, but iterative process followed during data analysis. Insights drawn from Kastner (2023)

Once the parent codes were defined, significant information was extracted from each transcript based on interview questions and participant responses. Participants' responses were quoted and stored under each relevant sub-code as evidence supporting particular insights. This process continued until all significant information from transcripts was coded. After completion, the coded data was exported to Excel for further processing.

Stage 3 (Microsoft Excel): Development of themes – During this stage, the codes were first grouped into clusters. Following this grouping, themes that best captured the overall insights from each cluster were assigned.

Stage 4 (Dedoose Platform): Theme definition and code allocation – The themes developed in Excel were then created within the Dedoose software under each parent code. The codes belonging to each theme were sorted and grouped accordingly, maintaining consistency with the clusters that were formed in Excel. This process was repeated for each cluster until all codes were assigned to their respective themes. Once the allocation of codes was completed, data analysis was conducted using the Dedoose analysis function. This function added value by associating demographic insights with participant's contributions per theme, based on the significant information and evidence extracted from their responses. After completing the analysis, the results were exported for further interpretation and presentation of findings (Table E1 of Appendix E for exported data). The illustration of the data analysis process is shown in Figure 8.

3.6 Limitations of the study

The researcher encountered challenges in gaining access to key stakeholders and obtaining sensitive organizational documents (Yin, 2009). To address this, a memorandum was drafted and submitted to the Freight Company to request permission for participant access and document retrieval. One participant did not grant full permission to be directly quoted, and they further requested that certain demographic information not be disclosed in their consent form. Due to the non-disclosure agreement restrictions and limited document access, the study could not triangulate findings through organisational reports or observations. This limits the confirmability of results, which rely solely on participant perspectives.

An additional limitation related to the Dedoose software platform, which had restricted functionality in generating themes. As a result, the researcher had to export coded data to Excel for classification and theme development before re-importing the generated themes back into the Dedoose platform. Furthermore, the agreement between the researcher and the Freight Company imposed restrictions on using the company's actual name. Compliance with the signed Non-Disclosure Agreement (NDA) further limited the researcher's ability to freely reference the company or access

documents such as energy policies, memorandums, and energy audit reports.

Furthermore, the researcher is an employee at the case site, which could pose potential ethical limitations such as enhanced bias. To address this limitation, I ensured that participant selection was based purely on their professional roles and relevance to the research, rather than personal relationships. Additionally, I made sure to create a neutral and confidential interview environment where participants felt comfortable sharing their honest views, while also maintaining objectivity in data analysis to avoid any influence from personal feelings or prior knowledge of the participants.

3.7 Reliability and validity

The trustworthiness of the data was ensured through transferability, credibility, and dependability. To improve reliability and validity, the study provided a detailed context and participant selection criteria for transferability, allowing for future comparison. Credibility was maintained through member checks, allowing participants to confirm their responses, ensuring accuracy. Dependability was achieved by documenting the research process, including interview protocols and analysis procedures, and using an audit trail to track data analysis. These strategies ensured the study's rigor, making the findings reliable and valid.

3.7.1 Transferability

Transferability could not be completely ensured in the research process (due to context specific findings). Transferability refers to the extent to which the findings of a study can be applied to other contexts, settings, or populations (Lincoln & Guba, 2004). Based on the methodology and data collection process employed in this study, several factors influenced its transferability.

Context-specific findings: Since the study focused on the challenges of leading change during the energy transition within a specific Freight Company, the findings were highly contextual. Organizational structures, policies, and leadership approaches in other companies may differ, limiting direct applicability.

Rich descriptions for contextual understanding: The use of semi-structured interviews provided in-depth insights into leadership challenges and strategies in

energy transitions. By offering detailed descriptions of the research setting, participant roles, and processes, the study allows future researchers or practitioners to assess whether the findings apply to their contexts.

Limitations on access and confidentiality: Restrictions due to Non-Disclosure Agreements (NDAs) and the anonymization of company-specific data reduce the ability to generalize findings. However, the themes and patterns identified through the thematic analysis (Braun & Clarke, 2006) may still be relevant to other organizations facing similar energy transition challenges.

3.7.2 Credibility

In this specific research context, credibility refers to confidence in the truth of the findings, often considered the qualitative equivalent of internal validity (Creswell, 2012). Credibility was established by interviewing multiple participants per work function, except for senior management. In total, five operational staff members, three middle managers, one senior executive, and one additional participant (whose work function cannot be disclosed as per their request) were interviewed. To ensure and maximize the credibility of this case study research, where it was practically possible, the researcher invested in prolonged engagements with participants to gain a deep understanding of the context and dynamics. This helped the researcher to build trust with the respondents (Lincoln & Guba, 2004). Further, for most participants, a summary of findings and key takeaways was shared as a form of member checking and ensuring accuracy.

3.7.3 Dependability

This was reinforced through an audit trail, clear documentation, and the code-recode procedure (Heck, 2004; Lincoln & Guba, 2004). Detailed records of research activities, decisions, and procedures were maintained to allow for transparency and traceability (Lincoln & Guba, 2004). The methodology, including data collection and analysis procedures, was thoroughly documented, and data was re-analysed in certain instances to check for consistency in the coding and interpretation (Guba & Lincoln, 1989).

3.8 Ethical considerations

To ensure that the research was conducted ethically, the researcher adhered to the ethical guidelines prescribed by the University of the Witwatersrand. Approval was attained through the Freight Company's Talent Management department before accessing the participants. The following considerations were applied to ensure rigor throughout the research process (Sittrop & Crosthwaite, 2021):

Informed consent: Informed consent was obtained from all participants to ensure that they were provided with comprehensive information about the nature of the research, their role in it, and any potential risks. They were further informed that their participation was on a purely voluntary basis (Sieber, 2012). Informed consent hence ensured that the participants understood their rights, including the right to withdraw at any time (Emanuel, 2000; Israel & Hay, 2006).

Confidentiality and anonymity: This aspect ensured that the privacy of participants was protected by guaranteeing that their identities and personal information were kept confidential and anonymous at all times (Bryman, 2016). For the protection of the participant's identity, the researcher created pseudonyms for each participant. Further, the data collected was stored in secured and password-protected storage to limit access to unauthorized persons (Bryman, 2016; Djamba & Neuman, 2002).

Avoiding conflicts of interest: This aspect entailed the management and disclosure of any potential conflicts of interest that arose (Resnik, 2007). In this research case, the fact that the researcher was employed at the company where the research was being conducted presented a conflict of interest. To mitigate and minimize this conflict of interest the researcher disclosed his dual role as an employee and researcher to all relevant parties. The researcher also took full responsibility to ensure that the research findings and processes were not influenced by his personal or professional interests (Mecca et al., 2015).

Researcher bias and objectivity: Under this element, the researcher addressed potential biases that may have arisen from being an insider in the company and strove to maintain objectivity throughout the research process. Practical steps taken by the researcher to mitigate this included reflecting post each interview session and documenting any personal biases or preconceptions that may influence the research

outcome.

Transparency in reporting: This element involves the researcher being transparent about the research process, findings, and any potential limitations or biases that might affect the results. The researcher documented and disclosed the methodology, data analysis, and limitations in the research report (Kidder & Fine, 1987). To ensure transparency the researcher further acknowledged and provided honest and accurate reporting of the findings (Teddlie & Tashakkori, 2009).

Power dynamics and influence: The researcher had to manage power dynamics, especially as an employee within the company (Hammersley & Atkinson, 2019). Steps included briefing the participants before the semi-structured interviews to ensure that participants did not feel pressured to participate. These briefings ensured that a safe and neutral environment was created for data collection and thus mitigated power imbalances (Bryman, 2016).

Researcher Reflexivity: As an insider, the researcher had pre-existing familiarity with organisational culture and discourse. To mitigate interpretive bias, a reflective journal was maintained during analysis, and extra care was taken to code divergent perspectives.

3.9 Summary

In summary, this chapter outlined the research methodology used to explore the challenges faced by leaders at a Freight Company during its energy transition. A qualitative case study design was chosen, as it allows for an in-depth understanding of the leadership dynamics in this specific context. The qualitative approach was selected to gain rich, detailed insights into the leadership challenges, providing a comprehensive exploration of the issues within a real-life context. Semi-structured interviews with 10 participants facilitated the collection of diverse perspectives, while thematic analysis, supported by Dedoose software, helped identify key themes within the data.

The methods chosen were appropriate for addressing the research question, as they enabled the researcher to explore the complexities of leadership during the energy transition in a state-owned entity.

The next chapter will focus on presenting and analysing the findings from the data collected, highlighting the key leadership challenges and strategies identified during the research.

3.10 Consistency table

Table 3. Consistency table: research questions, propositions, data collection and data analysis

RQ #	State Research Question or Objective	Proposition #	State Analytical focus	Data collection detail	Data analysis method
1	What are the key challenges and leadership strategies involved in leading the energy transition at a state-owned Freight Company in South Africa?	1			
1.1	To explore the challenges of leading change during the energy transition at a state-owned Freight Company in South Africa.	1.1	This study explores the challenges faced by leaders during the energy transition and considers whether adaptive, transformational, and collaborative leadership practices emerge as relevant responses (Akoobhai, 2024; Jerab & Mabrouk, 2023; Mangondo & Thakhathi, 2021; Mirzania et al., 2023; Moleka, 2023; Murombo, 2016; Todd & McCauley, 2021; Xavier et al., 2017).	Interview guide questions: Question for Step1 to step 8 of Kotter's Eight Step Model.	Thematic analysis

1.2	To analyse leadership trends and strategies during the energy transition at a state-owned Freight Company in South Africa Freight, focusing on key challenges involved in shifting to renewable energy sources	1.2	The Freight Company uses adaptive, transformational and collaborative leadership practices focused on communication, stakeholder engagement, and strategic vision to drive energy transition (Islam et al., 2020; Mangondo & Thakhathi, 2021; Tamasiga, 2024; Van der Voet, 2013)	Semi-structure interview	Thematic analysis
1.3	To recommend leadership strategies for consideration during the energy transition at a Freight Company in South Africa.	1.3	Possible strategies to address the challenges may include, leadership structural changes, the use of structured framework, innovative funding and skills development(Jerab & Mabrouk, 2023; Joel & Oguanobi, 2024; Mangondo & Thakhathi, 2021; Ezeh et al., 2024; SANEA, 2024).	Semi-structure interview	Thematic analysis

CHAPTER FOUR: PRESENTATION AND DISCUSSION OF FINDINGS

4.0 Introduction

The purpose of this chapter is to present and discuss the key findings from the case study of the research titled, “The Challenge of Leading Change During the Energy Transition at a Freight Company in South Africa”. The research question that this section seeks to answer is:

What are the key challenges and leadership strategies involved in leading the energy transition at a state-owned Freight Company in South Africa?

The results are presented in alignment research objectives, which were:

- i. To explore the challenges of leading change during the energy transition at a state-owned Freight Company in South Africa.*
- ii. To analyse leadership trends and strategies during the energy transition at a state-owned Freight Company in South Africa Freight, focusing on key challenges involved in shifting to renewable energy sources*
- iii. To recommend leadership strategies for consideration during the energy transition at a Freight Company in South Africa.*

As a starting point, an overview of the Freight Company and the participant demographics will be presented. The findings and discussion will then be presented as relates to the study proposition and under five themes including Strategic and leadership deficiencies; Organisational and structural barriers; Human capital and cultural resistance; Stakeholder engagement and communication gaps; and Resource and financial limitations. Each of these themes will be examined in detail in this chapter, supported by key insights from participants and relevant literature. The interview guides were designed based on Kotter’s 8-Step Change Management Model, therefore the researcher will use this adopted model to guide the presentation of the findings and discussion. The quotes from participants will be used to support the findings and the discussion component will be used to interpret the results using Kotter’s model and relevant literature.

4.1 Company overview and participant demographics

Upon review of Freight Company's ESG strategy and Integrated report for 2023- the following was found:

4.1.1 Environmental, Social, and Governance (ESG) strategy and sustainability commitment:

The Freight Company was committed to embedding sustainability into its corporate governance and business operations. Its ESG strategy prioritized carbon footprint reduction through energy efficiency, shifting freight transport from road to rail, and investing in green technologies such as green hydrogen and battery energy storage systems that can cater for its needs (Freight Company, 2023). The company followed the King IV principles and the United Nations Global Compact, ensuring ethical leadership and long-term value creation. Additionally, the Freight Company supported socio-economic development initiatives to promote inclusivity and economic stability.

4.1.2 Environmental sustainability and carbon management:

Environmental sustainability was a key priority, with the Freight Company actively working towards net-zero carbon emissions by 2040 (Freight Company, 2023). This goal will be achieved through energy efficiency programs, renewable energy projects, and a green hydrogen strategy. The company was committed to regulatory compliance, transparency in emissions reporting, and adopting climate science-based resilience measures, aligning with Sustainable Development Goal 13 and South Africa's National Development Plan (Freight Company, 2023; Mthembu & Nhamo, 2022).

4.1.3 Carbon footprint and energy efficiency achievements:

In the 2023 fiscal year, the Freight Company recorded a 16.3% reduction in carbon emissions, decreasing from 3.27 million tons of carbon dioxide equivalent (mtCO₂e) in the previous year to 2.73 mtCO₂e. This reduction was largely due to an 11.38% decrease in energy consumption and a significant shift from road to rail transport (Freight Company, 2023). Between 2014/15 and 2022/23, this transition saved 3.2 million tons of CO₂e, with 80,490 tons saved in 2022/23 alone by shifting 3.75 million

tons of cargo off the roads, eliminating approximately 110,000 truckloads (Freight Company, 2023).

The Freight Company aligned with this momentum by optimizing energy consumption. Its electricity usage in 2022/23 was 2,159 GWh, representing a 12.9% decline from the previous year and a 38% overall reduction since 2014/15. This trend underscores the company's commitment to the Green Transport Strategy and achieving net-zero emissions (Freight Company, 2023).

4.1.4 Strategic positioning for South Africa's energy transition:

The Freight Company was strategically positioned to support South Africa's energy transition objectives, aligning with the national net-zero emissions target by 2050, with an internal goal of achieving net-zero emissions by 2040 (Freight Company, 2023). The company saw significant investment opportunities in sustainable finance, liquefied natural gas (LNG) infrastructure, and renewable energy integration under its reinvention strategy. With the gas sector projected to grow by 1.5% annually and LNG trade by over 4% per year (IEA, 2020), the Freight Company could capitalize on LNG terminals, gas infrastructure, and green hydrogen initiatives.

To ensure long-term sustainability, the company intended to focus on compliance with climate regulations, biodiversity conservation, and energy efficiency advancements (Freight Company, 2023). Further, by integrating ESG-aligned financial instruments such as green and transition bonds, the Freight Company aimed to contribute to South Africa's just transition while mitigating risks associated with stranded assets and workforce displacement (Freight Company, 2023).

4.1.3 Participants demographics:

The participants interviewed during the semi-structured interviews were ten professionals from a state-owned Freight Company in South Africa, representing diverse roles within the organisation. The group comprised nine males and one female, predominantly holding technical and engineering qualifications, including Electrical Engineers, Engineering Technicians, and Environmentalists.

Participants' roles ranged from operational staff in maintenance, quality management, and energy management to senior executive and middle management positions,

focusing on sustainability, infrastructure, and environmental management. Ages varied from 30 to 51, with professional experience spanning from 6.5 to 24 years. The majority identified as African, highlighting representation from various expertise levels within the organization. This diverse participant pool enabled comprehensive insights into leadership challenges, organizational barriers, and perspectives on energy transition strategies, reflecting a cross-sectional view of the company's workforce. Table 4 summarizes the profiles of each participant.

Participant ID	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Gender	Female	Male	Male	Male	Male	Male	Male	Male	Male	Male
Qualification	Electrical Engineer	Electrical Engineer	Electrical Engineer	Electrical Engineer	Engineering Technician	Principal Engineer	Electrical Engineer	Preferred not to disclose	Environmentalist	Electrician
Work Function	Operational Staff (Maintenance)	Operational Staff (Quality Management)	Operational Staff (Energy Management & Accounts)	Senior Executive Manager (Sustainability)	Operational Staff (Maintenance)	Middle Manager (Infrastructure Maintenance)	Middle Management (Sustainability-Specialist)	Preferred not to disclose	Middle Manager (Environmental Department)	Operational Staff (Substation maintenance)
Age	33	35	35	46	30	51	42	0	45	49
Years of Experience	7	11	10	6,5	7	24	10	0	16	14
Ethnicity	African	African	African	African	African	African	African	African	African	African

Table 4

Demographic profiles for interviewed participants.

4.2 Main findings on the study proposition

For this case study research, the proposition made was that leaders at the Freight Company face challenges such as **resistance to change**, **resource constraints**, and **skill gaps** during the energy transition. Effective navigation of these issues requires **adaptive**, **transformational**, and **collaborative leadership** practices focused on **communication**, **stakeholder engagement**, and a **strategic vision**. The following governing themes and sub-themes were developed from the outcome of the semi-structured interviews through thematic analysis (see Table 5):

Table 5*Themes from thematic analysis.*

Governing Themes	Sub-Themes
Strategy and leadership deficiencies	Lack of strategy and clear vision
	Leadership and governance challenges
Organizational and structural barriers	Bureaucratic and structural challenges
	Operational and organizational barriers
	Implementation and execution challenges
Human capital and cultural resistance	Training skills and knowledge gaps
	Resistance to change and cultural barriers
Stakeholder engagements and communication gaps	Stakeholder engagement and buy in
	Communication and information gaps
Resources and financial limitations	Financial and resource constraints

4.2.1 Step 1: Creating a sense of urgency

Based on participants' responses 6 out of 10, believed that the primary challenge hindering the establishment of a sense of urgency in a Freight Company was strategic and leadership deficiencies. These deficiencies were noted to manifest through a lack of strategy and a clear vision, as well as leadership and governance challenges.

4.2.1.1 Lack of strategy and a clear vision

One of the key barriers identified was the absence of a well-defined corporate strategy that translates into actionable steps at the operational level. Participants highlighted that while strategic objectives existed, they were vague and lacked specific targets or directives, making it difficult to align organizational efforts with the energy transition. Participant 8 was concerned that, “The corporate strategy includes broad objectives, but it lacks clear, actionable steps for implementation at the operational level”. Additionally, the lack of concrete targets and directives further weakens the ability to drive an effective transition. This challenge was articulated by Participant 3, who observed that ‘the lack of specific targets and directives makes it difficult to align efforts with the energy transition.’ Although this reflects an internal perspective, the

observation was corroborated through multiple viewpoints, consistent with the researcher's reflexive approach to enhancing credibility.

The findings further revealed that sustainability goals remained unclear, with no well-defined execution plan or timelines. This uncertainty created confusion among employees and stakeholders. This was echoed by Participant 2, "*The specifics of how and when the transition will be executed remain unclear.*" These findings align with Kotter (1996) who indicated that there was a need for emphasis on establishing a sense of urgency for the change the organisation has embarked on, which requires a compelling vision and clear, measurable goals. The lack of these elements results in inertia and resistance to change, as employees struggle to grasp the urgency and direction of the transition.

4.2.1.2 Leadership and governance challenges

Another major issue that was noted to affect urgency was weak leadership and governance structures. While a coalition exists to drive change in the Freight Company, evidence showed that it lacked the authority to enforce transformation, an observation echoed by Participant 9, "*A coalition exists, but it lacks the necessary authority to enforce change.*" Furthermore, leadership turnover and limited decision-making power created inconsistencies in strategic direction, Participant 2 admitted that "*Leadership turnover has been a major issue, making it difficult to maintain momentum resulting in limited authority to drive decisions, which in turn slows down the transition process.*" Kotter (1996) stresses that strong leadership support is essential in mobilizing teams and sustaining momentum. However, the findings suggest that low emphasis on urgency from leadership and the absence of a clear strategy may be hindering the company's ability to create an environment that is conducive to change. This was further emphasized by Participant 4, the only senior executive interviewed who voiced out that: "*There is a lack of clear strategy from leadership, which makes it hard to prioritize transition efforts.*"

These findings highlight the critical need for leadership to actively communicate a compelling case for change and ensure that strategies are translated into actionable plans palatable at all employee levels. According to Kotter (1996), urgency is the foundation for successful change; without it, the Freight Company will experience

challenges in gaining and sustaining momentum. The lack of urgency at this Freight Company may lead to delayed implementation of energy transition initiatives, ultimately affecting competitiveness and sustainability. These challenges and more are articulated in (Anku, 2025; Hanto et al., 2022).

4.2.2 Step 2: Creating a guiding coalition

From the findings, it was discovered that the effectiveness of guiding a coalition was hindered by stakeholder engagement and communication gaps, specifically a lack of stakeholder buy-in and communication barriers.

4.2.2.1 Lack of stakeholder engagement and buy-in

Participants highlighted that energy transition progress had been delayed due to limited stakeholder buy-in. This was highlighted by Participant 2, *“Delayed progress due to lack of stakeholder buy-in.”* Aligning multiple stakeholders with varying interests was also a challenge. This perspective was further reinforced by Participant 4, the sole executive interviewed in this study, who observed, *“Aligning various stakeholders to a unified approach has been difficult.”* This was further supported by Participant 6 who stated that, *“Difficulties in aligning multiple stakeholders with varying interests.”* Additional challenges that were found under this aspect included limited engagement at lower levels, awareness concentrated at the executive level, and shifting corporate priorities that negatively impact momentum.

4.2.2.2 Communication and information gaps

The findings revealed that there was poor communication, which weakened coalition-building efforts. The communication methods were ineffective thus not reaching the overall community at the Freight Company. Participant 8 stated: *“Communication has not effectively reached all staff levels.”* Technical complexity and inconsistent messaging were also created and strengthened these barriers. Participant 6 explained that: *“Technical complexity, lack of accessibility to non-specialist employees, and inconsistent communication channels are key barriers.”* Furthermore, the absence of a feedback loop left employees uninformed about the progress of the energy transition, as indicated by Participant 5: *“Meetings occur, but there is no feedback loop to update employees on progress.”*

According to Kotter (1996), a strong guiding coalition requires broad stakeholder engagement, clear communication, and active leadership support. The findings indicate that fragmented engagement, misaligned priorities, and poor communication were slowing momentum. Successful energy transition efforts depend on the collective participation of actors, including employees, management, regulators, and communities (Hanto et al., 2022). Transparency and effective communication are therefore crucial as an instrument to guide and validate the necessity for change and advocacy towards the energy transition, hence ironing out potential misunderstandings (Jerab & Mabrouk, 2023).

4.2.3 Step 5: Empowering broad-based action

Successful change requires removing obstacles and enabling employees to act (Anku, 2025); However, the findings revealed that human capital and cultural resistance, particularly training gaps and resistance to change, had limited energy transition progress in the Freight Company.

4.2.3.1 Training, skills, and knowledge gaps

Participants highlighted the lack of access to essential software and certification opportunities, which prevented employees from contributing effectively to the energy transition, Participant 6 expounded that *“Lack of access to proper software and certification opportunities limits the ability of engineers to contribute meaningfully.”* Additionally, insufficient technical expertise and minimal training opportunities hindered workforce readiness as highlighted by Participant 6 and Participant 10 respectively *“Insufficient technical expertise,”* and *“Minimal training opportunities are key challenges in aligning teams with the energy transition vision.”*

4.2.3.2 Resistance to Change and Cultural Barriers

Resistance to change is another significant challenge that was uncovered during the interviews with participants. Some employees perceived the energy transition as falling outside the company's core mandate, *“There is a perception that the energy transition falls outside the mandate of this company,”* Participant 3 revealed. Structural barriers, such as teams working in silos, further slowed progress as indicated by Participant 9, *“Many teams work in silos, which slows down collaboration and decision-making.”* Cultural resistance and the lack of tangible incentives also discouraged

employees from fully engaging in the transition mandate as echoed by Participant 9: *“Lack of tangible incentives for employees.”* These factors result in the implementation of energy initiatives losing the urgency they deserve, *“Energy initiatives are treated as secondary concerns”* Participant 3.

Kotter (1996) stresses the importance of removing barriers to action by providing necessary resources, fostering collaboration, and addressing resistance. The findings indicate that limited training, a lack of incentives, and cultural resistance were major obstacles to empowerment. Oladejo et al. (2025) unearthed the skills gaps, assessed skills needed, and articulated the required skills regarding renewable energy in South Africa.

4.2.4 Step 6: Generating short-term wins

To sustain momentum for change, it is crucial to achieve and communicate short-term wins (Bedard, 2025). However, organizational and structural barriers, particularly operational constraints and implementation challenges, have hindered progress in the Freight Company.

4.2.4.1 Operational and organizational barriers

Participants indicated that the focus remained on immediate operational challenges, making it difficult to prioritize energy transition efforts. Participant 5 highlighted that the *“Focus remains on immediate operational challenges.”* Heavy workloads further limited the attention given to sustainability initiatives, Participant 5 further acknowledged that *“Existing workloads prevent focused attention on transition efforts.”* Additionally, operational constraints often overshadowed long-term sustainability goals, reducing the emphasis on energy transition projects as stated by Participant 8: *“Operational constraints often overshadow long-term sustainability goals.”*

4.2.4.2 Implementation and execution challenges

A significant challenge in generating short-term wins was the difficulty in measuring the success of small-scale projects, leading to uncertainty about progress. Participant 8 indicated that: *“Measuring success for small scale project has been difficult.”* The main cause for this is the lack of adequate data collection mechanisms which makes it challenging to assess the impact of energy transition initiatives in the Freight

Company. Participant 8 further noted that *“Measuring the impact of these projects has been challenging due to inadequate data collection mechanisms.”*

Kotter (1996) emphasizes the importance of achieving visible short-term successes to maintain momentum and support for change. However, the findings reveal that immediate operational pressures, a lack of prioritization, and poor performance measurement are preventing meaningful short-term wins.

4.2.5 Step 7: Consolidating gains and producing more change

To sustain momentum and drive long-term transformation, organizations must build on early successes and address persistent challenges (Graves et al., 2023). However, in this Freight Company, resources and financial limitations, particularly financial constraints and personnel shortages, hindered sustained progress.

4.2.5.1 Financial and resource constraints

A key challenge was the conflict between sustainability commitments and short-term financial considerations, which made it difficult to prioritize energy transition investments. Participant 4 indicated that *“Sustainability commitments sometimes clash with short-term financial considerations.”* The high cost of energy transition projects creates further barriers, forcing the company to balance clean energy investments with financial stability. Participant 4 indicated that: *“The high cost of energy transition projects creates a conflict between investing in clean energy solutions and ensuring the company remains financially stable.”* Additionally, there was a shortage of dedicated personnel solely focused on energy transition initiatives, making it difficult to sustain momentum, as iterated by Participant 7: *“Shortage of dedicated personnel focusing solely on energy transition initiatives.”*

Kotter (1996) stresses the importance of sustained effort, resource allocation, and leadership commitment to consolidate gains and drive further change. The findings highlight that financial constraints, competing priorities, and personnel shortages were major obstacles that hampered the progress of energy transition initiatives.

4.3 Leadership trends during the energy transition

The transition to sustainable energy at the Freight Company highlighted the critical role of leadership and governance in driving change (Xavier et al., 2017). The findings

emphasize the importance of decisive leadership, oversight, and participatory decision-making (Wahlund & Palm, 2022) in ensuring successful implementation. This was evident at the case site and was echoed by Participant 4 “Shift towards inclusive and participatory leadership, with executives and board members taking a more active role in sustainability discussions”.

Research suggests that strong leadership oversight and ongoing progress reviews are essential to sustain momentum in the transition projects (Piwowar-Sulej & Iqbal, 2023). It was evident from the findings that, while collaborative leadership had enhanced transparency and stakeholder participation, it had also led to delays due to prolonged consultation periods, emphasizing the need for a hybrid approach that balances inclusivity with firm decision-making (Adeleke et al., 2022). This was shared by Participant 6 who stated that, *“Collaborative leadership has improved transparency but has also led to delays due to prolonged consultation periods, more decisive leadership is needed to drive action. Leadership fosters collaboration and transparency, employees feel more engaged and willing to contribute.”* Participant 3 touched on a hybrid approach, *“Hybrid approach combining collaboration with firm decision-making.”* These positive approaches have helped the Freight Company to gain momentum towards energy transition projects.

In addition, a shift from autocratic to collaborative leadership has been evident, yet concerns remain that without strong leadership buy-in, energy transition efforts risk being deprioritized as Participant 2 explained *“Without strong leadership buy-in, energy transition efforts risk being deprioritised.”* Literature reveals that transformational leadership inspires employees to achieve meaningful goals by enhancing motivation, morality, and awareness, encouraging them to prioritize collective success over self-interest (Khan et al., 2016; Li et al., 2021). This was validated in the findings when Participant 1 voiced out their belief in transformational leadership, *“I believe that transformational and collaborative leadership approaches are essential for successful energy transition.”* Participant 2 echoed a similar sentiment, *“Transformational leadership should be encouraged to foster innovation and inspire employees to actively participate in energy transition efforts.”* Another key trend identified from the data was the strategic shift toward structured change management and decentralized decision-making. Participant 5 articulated his view in

this regard, *“Decentralization of decision-making can improve implementation.”*

Research has further indicated that implementing structured change management frameworks and establishing a specialized energy transition task team with decision-making authority could accelerate implementation (Oladejo et al., 2025). This was confirmed by Participant 6, *“Specialized energy transition task force with decision-making authority is required to drive structured change.”*

A further leadership strategy proposed by Participant 5 included embedding the energy transition into the daily operational culture, similar to safety initiatives, to ensure long-term integration. It was further noted that challenges remained in tracking project success, securing adequate resources, and ensuring sustained awareness and training. Employees emphasised the need for continuous capacity-building programs and improved funding mechanisms to enable meaningful action.

Addressing these leadership challenges through decentralized decision-making, financial autonomy, and structured change management frameworks will be crucial in aligning the company's operations with South Africa's energy transition goals.

4.4 Summary of the findings

The study explored the leadership challenges encountered during the energy transition at a South African Freight Company. Using Kotter's Eight-Step Change Management Model as a framework, semi-structured interviews were conducted with key leaders, and thematic analysis identified ten recurring themes. These themes were further classified into five overarching categories: Strategic and leadership deficiencies; Organizational and structural barriers; Human capital and cultural resistance; Stakeholder engagement and communication gaps; and Resource and financial limitations.

The key challenges faced by leaders in implementing the energy transition included a lack of strategic direction and vision, leadership and governance issues, difficulties in stakeholder engagement, bureaucratic constraints, and resistance to change. Training and knowledge gaps were particularly evident among operational staff. According to the sole senior executive interviewed, financial and resource constraints appeared

more pressing at the executive level. Additionally, communication breakdowns and decentralized decision-making hindered implementation efforts.

The study further identified emerging leadership trends, including a shift from autocratic to collaborative leadership and the integration of structured change management frameworks. While participatory decision-making had improved transparency, it had also introduced delays, necessitating a hybrid approach that balanced inclusivity with decisive action. The research suggests that embedding energy transition strategies into daily operations, such as safety initiatives, could facilitate long-term integration. However, sustained capacity-building programs, financial autonomy, and stronger leadership oversight remain critical to ensuring successful energy transition efforts.

In figure 9 Operational staff emphasized training, skills, and knowledge gaps, while middle managers highlighted stakeholder engagement, governance, and resistance to change. The senior manager stressed financial and structural constraints, though further executive input would be needed to validate these insights. Notably, the chart reveals an imbalance in leadership contributions, with only one executive voice represented, limiting the breadth of perspectives at higher decision-making levels. In contrast, operational staff appear more prominently represented, which may skew findings toward technical and capacity-related issues while underrepresenting strategic and policy-level challenges. The distribution also suggests that middle management plays a bridging role, identifying both organizational and cultural barriers, underscoring their position between operational realities and executive oversight. The next chapter will focus on the conclusion and put forward the recommendations for consideration at a Freight Company.

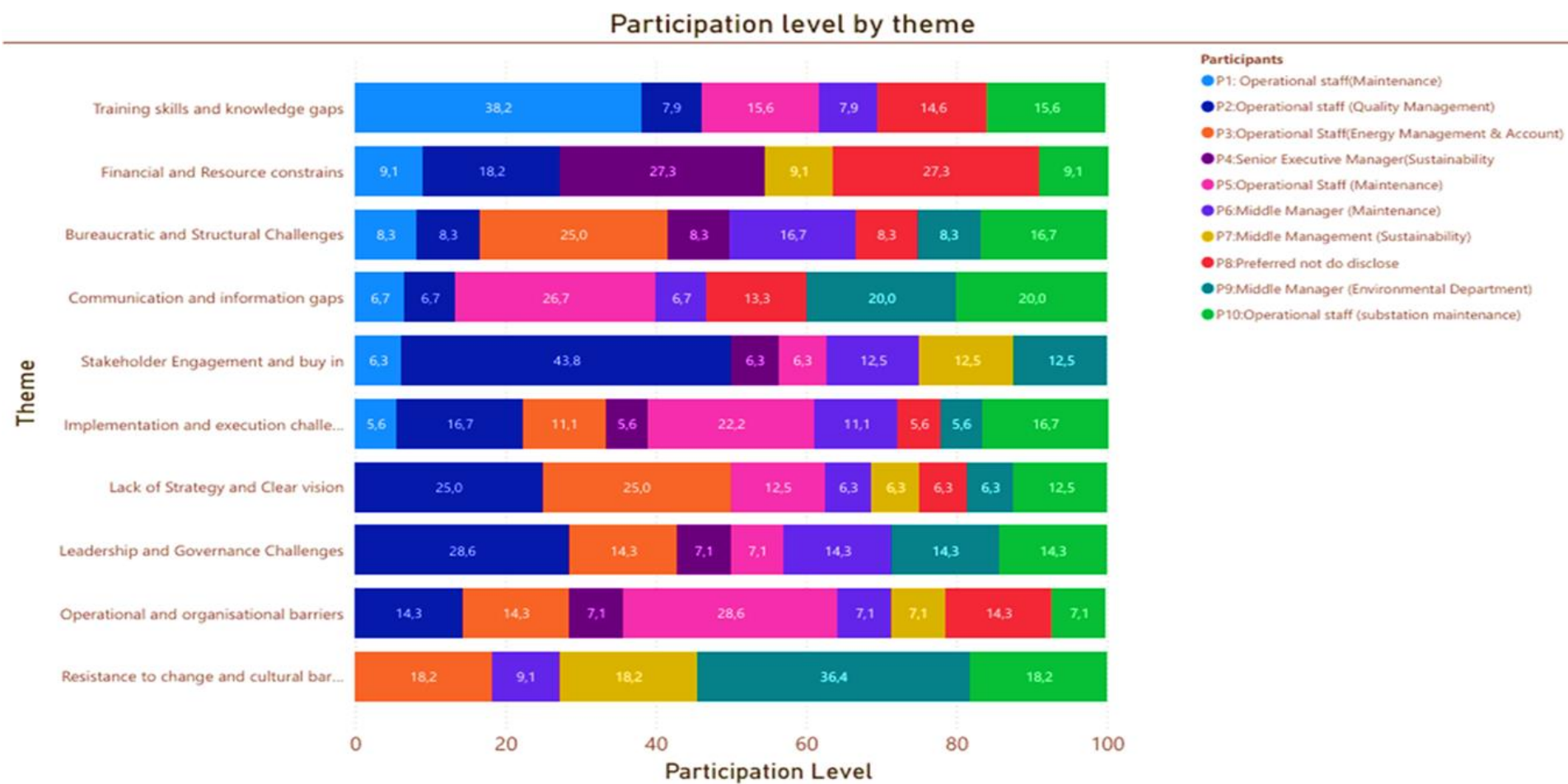


Figure 9

Illustration of how participation varied across themes and stakeholder levels.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The transition to sustainable energy presents significant challenges for leaders in the freight industry, as they must navigate complex organizational, structural, and cultural barriers. This study examined these challenges within a South African Freight Company, focusing on resistance to change, resource constraints, skills gaps, and governance issues. Using Kotter's Eight-Step Change Management Model as the guiding framework, the research offers insights into how leaders can balance strategic vision, stakeholder engagement, and operational execution to effectively drive change.

It is important to note certain limitations. Firstly the research was only conducted in one out of five divisions of this Freight Company due to time constraints for this Master's programme. Further, there was a restricted access (within this selected division) to stakeholders and organizational documents, coupled with NDA conditions and anonymity requirements, meant that findings relied primarily on participant perspectives without triangulation. Technical constraints with the Dedoose software required additional manual processing, and the researcher's role as an employee at the case site posed potential risks of bias. However, these risks were mitigated through objective analysis, careful participant selection, and strict adherence to ethical protocols.

Despite these limitations, the study underscores the importance of adaptive, transformational, and collaborative leadership in overcoming resistance and enabling sustainable energy transition. The findings point to the value of decentralised decision-making, structured change management frameworks, and continuous workforce development in ensuring long-term success. By adopting these leadership strategies, organizations can build resilience and agility, align with national and global sustainability goals, and address internal organisational challenges more effectively.

5.1 The Value of Kotter's 8-Step Change Management Model in This Research

The Kotter's 8-Step Change Management Model that was applied in this research has proven to be an invaluable framework for structuring both the design of the semi-structured interviews and the subsequent analysis of findings in this research on leadership challenges during the energy transition at a South African Freight Company. The model's step-by-step approach provided a systematic and clear pathway of investigating how change is managed at a Freight Company. It also helped in aligning and drawing insights in order to achieve the study's objectives of identifying leadership strategies to overcome the complexities of energy transition challenges at this Freight Company. The advantages and disadvantages of this change management model are as follows:

- **Advantages**

- Structured Framework:* Kotter's model allowed for a clear organisation of the findings into actionable steps, facilitating a structured reporting of leadership challenges and strategies. This clarity helped in breaking down the broad and often overwhelming nature of change management in the energy transition context, particularly in a bureaucratic and resource-constrained environment like in a state-owned Freight Company.
- Focus on Leadership Involvement:* The model's emphasis on senior leadership involvement ensured that the research aligned with the central role of leadership in driving the transition. This fit well with the study's findings, which highlighted the importance of strategic vision and active leadership in overcoming resistance and navigating stakeholder challenges.
- Stakeholder Engagement:* Kotter's step on creating a guiding coalition and communicating the vision for change provided a clear strategy for addressing one of the most significant barriers identified in the study—ineffective communication and poor stakeholder engagement. It helped frame the discussion around the need for transparent and ongoing communication mechanisms.
- Sustainability of Change:* The model's final step, embedding changes in the culture, mirrored the study's findings that integrating energy transition strategies into daily operations is crucial for long-term success at a Freight Company. The

importance of aligning energy transition initiatives with the company's culture and operational processes resonated with Kotter's focus on ensuring sustainability.

- **Disadvantages:**

- i. *Top-Down Approach:* One limitation of Kotter's model is its emphasis on a top-down approach, which, while beneficial in terms of strong leadership involvement, might be less adaptable in complex, decentralised environments where bottom-up engagement is also critical. This was a challenge in the study, as participants indicated that too much top-down direction could lead to delays due to the need for excessive consultations at lower levels. The research advocated for a hybrid approach combining strong leadership oversight with decentralised decision-making to maintain momentum.
- ii. *Linear Progression:* The model's linear step structure may oversimplify the iterative and often non-sequential nature of organisational change. In practice, change processes within the Freight Company were found to be cyclical, requiring flexibility and adaptation as new challenges arose. The rigid sequence of Kotter's model didn't always account for the need for revisiting earlier steps as resistance and barriers evolved during the transition.

Although Kotter's model has notable limitations, it nonetheless provided a valuable structure for this study, functioning both as a practical guide for leadership strategy and as a coherent framework for organizing findings. However, in the context of state-owned enterprises (SOEs), where regulatory and political constraints are pervasive, Kotter's underlying assumptions of clear authority and leadership autonomy may not be entirely applicable. Consequently, future applications of the model should incorporate adaptive elements that explicitly address bureaucratic resistance and the influence of state oversight. By applying this model to both the design of the interviews and the analysis of the results, this research contributed valuable insights into how freight companies can strategically manage leadership challenges during energy transitions, emphasizing the importance of adaptable, inclusive leadership while leveraging structured change management.

5.2 Conclusions regarding the research question

5.2.1 Addressing the research question

This study sought to explore the challenges of leading change during the energy transition at a Freight Company in South Africa and identify leadership strategies that can effectively address these challenges. The research was guided by the primary research question: What are the challenges of leading change during energy transition at a Freight Company, and what leadership strategies can address them?

Through a qualitative case study analysis, the study uncovered a range of leadership challenges and strategies necessary for navigating the energy transition within the Freight Company. The findings revealed that leaders at the company faced resistance to change, resource constraints, bureaucratic inefficiencies, skills gaps, and stakeholder engagement difficulties - all of which hindered the effective implementation of energy transition initiatives. However, the study also identified that adaptive, transformational, and collaborative leadership approaches, underpinned by strategic vision, communication, and stakeholder engagement, can potentially help leaders overcome these barriers and effectively drive sustainable change.

5.2.1.1 Key findings on the challenges of leading change

The thematic analysis of the qualitative data classified the challenges into five overarching themes:

- i. **Strategic and leadership deficiencies** – Many leaders struggled with a lack of clear strategic direction and governance structures required to steer energy transition efforts. Leadership inertia, ineffective oversight, and an absence of long-term planning hindered progress.
- ii. **Organizational and structural barriers** – Bureaucratic red tape, rigid hierarchical structures, and misalignment between departments created operational inefficiencies that slowed down the transition process. These factors exacerbated delays in decision-making and resource allocation.
- iii. **Human capital and cultural resistance** – A significant challenge arose from employees' resistance to change, stemming from fear of the unknown, lack of training, and cultural barriers. Without a workforce that is adequately prepared

and willing to embrace transition efforts, progress remains limited.

- iv. **Stakeholder engagement and communication gaps** – Ineffective communication strategies and insufficient stakeholder involvement resulted in disengagement and lack of buy-in. Many participants highlighted that energy transition efforts often failed due to poor coordination and inconsistent messaging.
- v. **Resource and financial limitations** – The study found that senior executives were most impacted by financial and resource constraints, as securing funding for transition projects remained a major hurdle. Without adequate investment, critical infrastructure and training programs could not be implemented effectively.

5.2.1.2 Leadership strategies for overcoming these challenges

To address these leadership challenges, the study identified several key strategies aligned with adaptive, transformational, and collaborative leadership models:

- i. **Structured change management and strategic vision** – Applying structured change management frameworks, such as Kotter's Eight-Step Change Model, can help leaders establish a clear roadmap for energy transition. A dedicated energy transition task force with decision-making authority was suggested as a solution to enhance oversight and execution, while also underscoring the need for leadership strategies that effectively navigate external accountability structures
- ii. **Decentralized decision-making and governance** – It was suggested that leaders should adopt a more participatory and inclusive approach, balancing collaboration with firm decision-making. While stakeholder engagement is crucial, excessive consultations can lead to delays; therefore, a hybrid model integrating strong leadership oversight with decentralized execution was recommended.
- iii. **Capacity building and workforce development** – To address skill gaps and resistance to change, it was recommended that continuous training and development should be institutionalized. Embedding energy transition aspects into the daily operational culture, such as safety initiatives, was identified as a best practice for long-term integration.

- iv. **Effective stakeholder communication** – Establishing clear and transparent communication mechanisms was noted to enhance stakeholder buy-in and alignment. This would include regular progress updates, participatory decision-making processes, and feedback loops to ensure ongoing engagement.
- v. **Financial autonomy and resource optimization** – It was found that addressing financial constraints would require innovative funding strategies, such as partnerships with government entities, private investors, and green financing institutions. Leaders would need to optimize existing resources by integrating energy transition efforts into broader operational goals.

In conclusion, the study highlights the importance of adopting leadership strategies that not only foster internal alignment but also effectively navigate external accountability structures.”

5.3 Contribution to existing research and addressing literature gaps

This study built on existing literature on leadership during energy transitions by providing practical insights into the specific challenges faced within the freight industry in South Africa. While a lot of research has focused on collaborative and transformational leadership (Anku, 2025; Mangondo & Thakhathi, 2021; Wahlund & Palm, 2022), this study introduced the need for a hybrid leadership approach, that balances inclusive leadership with strategic decision-making to sustain momentum in energy transition projects.

A key contribution of this study is the structured categorization of leadership challenges, which differs from the initial propositions that framed these challenges purely from a leadership strategy perspective. Instead, the research organizes challenges into thematic categories, providing a structured problem identification framework that is valuable for policymakers, organizational analysts, and sustainability experts seeking to address key obstacles in the energy transition.

This study further highlighted emerging leadership trends, including participatory leadership, structured change management, and decentralized decision-making, contributing to a deeper understanding of leadership evolution in the energy transition.

Unlike previous studies that focused mainly on policy and technical barriers, this research incorporates the role of organizational culture, leadership structures, and communication strategies, demonstrating how these factors influence the energy transition within a Freight Company.

Furthermore, this study addressed gaps in the existing literature by offering a comprehensive application of Kotter's 8-Step Change Management Framework to document, assess, and track change progress in the context of the energy transition. While earlier studies primarily emphasized top-down leadership approaches, this research advocates for a more decentralized and adaptive leadership style, a crucial factor in navigating complex and evolving transitions. By integrating empirical findings and directly referencing leadership practices observed within the Freight Company, this study offers context-specific, actionable strategies for energy transition leadership, which can influence both policy and strategic decision-making across industries.

Table 6

Consistency table: research questions, conclusions, and contribution to knowledge

RQ #	State Research Question or Objective	State literature-based analytical focus.	State conclusion or answer based on own research	Highlight key differences between your initial propositions / hypotheses and your findings – this is your contribution to knowledge
1	What are the key challenges and leadership strategies involved in leading the energy transition at a state-owned Freight Company in South Africa?			
1.1	To explore the challenges of leading change during the energy transition at a state-owned Freight Company in South Africa.	This study explores the challenges faced by leaders during the energy transition and considers whether adaptive, transformational, and collaborative leadership practices emerge as relevant responses (Akoobhai, 2024; Jerab & Mabrouk, 2023; Mangondo & Thakhathi, 2021; Mirzania et al., 2023; Moleka, 2023; Murombo, 2016; Todd & McCauley, 2021; Xavier et al., 2017).	The research identified several key challenges in the energy transition process. These include strategic and leadership deficiencies, where a lack of clear vision and direction hampers progress. Organizational and structural barriers, such as bureaucratic constraints,	The proposition that the researcher made frames challenges from a leadership perspective , emphasizing leadership strategies; However, the outcome from data provides a categorization of challenges thus providing a structured

RQ #	State Research Question or Objective	State literature-based analytical focus.	State conclusion or answer based on own research	Highlight key differences between your initial propositions / hypotheses and your findings – this is your contribution to knowledge
			further impede effective decision-making. Human capital and cultural resistance present additional obstacles, with employees and management often reluctant to embrace change. Stakeholder engagement and communication gaps create disconnects between key players, limiting collaboration and shared understanding. Lastly, resource and financial limitations restrict the implementation of sustainable initiatives, making it difficult to transition effectively.	problem identification - valuable for policymakers, organizational analysts, and sustainability experts seeking to understand key obstacles in energy transition.

RQ #	State Research Question or Objective	State literature-based analytical focus.	State conclusion or answer based on own research	Highlight key differences between your initial propositions / hypotheses and your findings – this is your contribution to knowledge
1.2	To analyse leadership trends and strategies during the energy transition at a state-owned Freight Company in South Africa Freight, focusing on key challenges involved in shifting to renewable energy sources	The Freight Company uses adaptive, transformational and collaborative leadership practices focused on communication, stakeholder engagement, and strategic vision to drive energy transition (Islam et al., 2020; Mangondo & Thakhathi, 2021; Tamasiga, 2024; Van der Voet, 2013)	The findings highlight key leadership trends in the energy transition, emphasizing a shift towards inclusive and participatory leadership , where executives and board members actively engage in sustainability discussions. There is strong leadership oversight with continuous progress reviews to maintain momentum. Collaborative leadership has improved transparency and stakeholder engagement but sometimes causes delays due to extended consultations. The transition from autocratic to collaborative leadership	The key difference is the findings highlights emerging leadership trends , such as participatory leadership, structured change management, and decentralization, highlights a shift in leadership styles , emphasizes on structured change management, decentralized decision-making, and leadership oversight to sustain momentum in energy transition projects, contributing to a deeper understanding of leadership in energy transition , that can

RQ #	State Research Question or Objective	State literature-based analytical focus.	State conclusion or answer based on own research	Highlight key differences between your initial propositions / hypotheses and your findings – this is your contribution to knowledge
			encourages engagement while balancing operational and energy transition goals. Transformational leadership is identified as essential for inspiring employees and fostering motivation. Additionally, a strategic shift towards structured change management and decentralized decision-making enhances efficiency at multiple levels. Lastly, leadership buy-in is crucial, as without strong support, energy transition efforts risk being deprioritized	influence policy and strategy across industries.
1.3	To recommend leadership strategies for consideration during the energy transition at a Freight Company in South	Possible strategies to address the challenges may include, leadership structural changes, the use of structured	The findings highlight key leadership strategies essential for driving energy	Offers detailed, specific leadership strategies , practical and action-

RQ #	State Research Question or Objective	State literature-based analytical focus.	State conclusion or answer based on own research	Highlight key differences between your initial propositions / hypotheses and your findings – this is your contribution to knowledge
	Africa.	framework, innovative funding and skills development(Jerab & Mabrouk, 2023; Joel & Oguanobi, 2024; Mangondo & Thakhathi, 2021; Ezech et al., 2024; SANEA, 2024)	transition. Structured change management frameworks provide a clear roadmap for implementation, while a hybrid leadership approach balances collaboration with firm decision-making to maintain transparency without causing delays. Decentralized decision-making empowers various organizational levels, improving efficiency, while a specialized energy transition task force accelerates project execution. Integrating sustainability into daily operations ensures long-term commitment, like safety initiatives. Additionally,	oriented, based on research findings, illustrating how leadership strategies are applied within the Freight Company. derived from empirical research findings, with direct reference to leadership practices observed within the study which are context-specific, addressing strategies directly linked to energy transition leadership within the Freight Company.

RQ #	State Research Question or Objective	State literature-based analytical focus.	State conclusion or answer based on own research	Highlight key differences between your initial propositions / hypotheses and your findings – this is your contribution to knowledge
			continuous capacity-building programs equip employees with the necessary skills, and financial autonomy for energy transition projects secures funding to sustain progress.	

5.4 Recommendations

The recommendations are based on the five main themes that were uncovered from interviews at the Freight Company as follows:

5.4.1 Addressing strategic and leadership deficiencies

To ensure a successful energy transition, organizations must define clear and measurable goals, setting specific targets, directives, and timelines (Anku, 2025). Leadership commitment should be strengthened through visible support from top executives and decision-making authority (Jerab & Mabrouk, 2023). Additionally, empowering the change coalition, within the constraints of government oversight and regulatory compliance, will help enforce initiatives and overcome bureaucratic resistance (Li & Strachan, 2019). A clear sustainability vision must be established, aligning with operational goals (Bedard, 2025; Kotter, 1996), supported by a detailed transition plan outlining execution steps (Essex & de Groot, 2019). To track progress effectively, measurable performance indicators should be implemented (Joel & Oguanobi, 2024).

5.4.2 Enhancing stakeholder engagement and communication

To foster greater engagement, organizations should increase stakeholder involvement at all levels, beyond executives (Anku, 2025). Strengthening communication channels through clear, accessible messaging and feedback loops will improve transparency and participation (Grubbs et al., 2006). Maintaining consistent priorities and commitment to the energy transition is essential for sustaining long-term momentum (Anku, 2025).

5.4.3 Overcoming human capital and cultural resistance

Investing in training and certification programs will equip employees with the necessary skills and expertise for energy transition initiatives (Anku, 2025; Jerab & Mabrouk, 2023). Encouraging cross-team collaboration will help break down silos and integrate sustainability goals into core business functions (Jerab & Mabrouk, 2023; Mangondo & Thakhathi, 2021; Rhodes et al., 2014). To enhance motivation, introducing performance-based incentives will create urgency and drive engagement at the operational level (Jerab & Mabrouk, 2023).

5.4.4 Addressing organizational and structural barriers

Sustainability should be fully integrated into daily operations, rather than being treated as an isolated concern (Murombo, 2016; Sull et al., 2015). This integration of sustainability into operations must align with state priorities and relevant regulatory frameworks. Implementing robust data collection and performance tracking mechanisms will help evaluate the success of energy projects (Parry et al., 2014). Additionally, communicating small wins effectively will boost confidence and engagement among employees and stakeholders (Graves et al., 2023).

5.4.5 Overcoming resource and financial limitations

A long-term financial strategy should be developed to align sustainability goals with business viability while leveraging innovative funding mechanisms for green energy projects (Anku, 2025; Kylili et al., 2021; Ram, 2010; Soumonni & Ojah, 2022). Organizations should also increase resource allocation, ensuring dedicated personnel and teams focus exclusively on energy transition initiatives (Joel & Oguanobi, 2024). Leveraging external partnerships, including government incentives and grants, can help mitigate high transition costs and provide additional financial support (Heldeweg et al., 2015; Horan, 2019). By implementing these strategies, organizations can strengthen leadership effectiveness, enhance stakeholder engagement, and ensure a financially sustainable energy transition.

5.5 Suggestions for further research

In conclusion, this study demonstrated that leading change during the energy transition at a Freight Company is a multi-faceted challenge requiring a strategic, people-centered, and adaptive leadership approach. By addressing structural barriers, improving stakeholder engagement, and fostering a culture of continuous learning, leaders can enhance the company's ability to transition toward sustainable energy solutions. Future research could explore how these leadership strategies evolve and assess their long-term impact on energy transition outcomes. Additionally, further studies could examine comparative leadership models across different industries, providing broader insights into best practices for leading complex transitions in the evolving global energy landscape. More suggestions for future research, managerial implications and practical implications are shared in table ?? below.

Table 7*Future research recommendations, managerial and practical implication*

Future Research	Managerial Implications	Practical Implications
1. Expand beyond a single case site to include multiple freight companies or sectors for comparative insights.	Adopt adaptive, transformational, and collaborative leadership approaches to overcome resistance and foster buy-in.	Embed continuous workforce development programs to align skills with sustainability and energy transition needs.
2. Use quantitative or mixed-method designs to provide measurable evidence of leadership's impact on energy transition.	Prioritize decentralized decision-making to empower employees, enhance accountability, and speed up problem-solving.	Integrate change management strategies into daily operations, making them part of organizational culture.
3. Explore the role of external accountability structures (regulators, government policies) in shaping leadership strategies.	Institutionalize structured change management frameworks (e.g., Kotter's model) as part of standard leadership practice.	Strengthen collaboration with external stakeholders—regulators, technology providers, and sustainability partners—to align with national and global goals.
4. Investigate the role of digital tools and innovation in managing technical, governance, and skills-related challenges.	Invest in continuous leadership and skills development programs to close capability gaps.	Establish resilience measures (e.g., cross-functional task forces or transition units) to manage complex change while maintaining operational stability.

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APPENDICES

Appendix A : The participant information sheet



Dear Sir / Madam

My name is Nzuzo Godfrey Sikhakhane. I am a Masters student in Masters of Management in the Field of Energy Leadership at the University of the Witwatersrand, Johannesburg. My supervisor is Dr Manamela Matshabaphala. I am conducting a research study about Change Management. The study title is: The Challenge of Leading Change During Energy Transition at Transnet Freight Rail in South Africa.

I am inviting you to take part in a once off semi structured interview where I will be asking you some questions on the challenges of leading change during energy transition at Transnet Freight Rail. If you decide to take part, your participation in this research study will last about 30 to 45 minutes. The interview will take place at your workplace (I have arranged one of the discussion rooms that will be used) at 12:45.

With your permission, I would like to record the interview. This data will be stored in a secure password protected drive and deleted after 2 years. Only the researcher will have access to the data.

During the research activity, I will need to ask for some personal information about you, including grade, education background and your involvement in the Transnet Freight Rail energy transition projects.

The interview will be confidential and anonymous. When I share the results of the research study, I will not include your name or anything else that could identify you.

If you decide to take part in the research study, it should be because you want to volunteer. You do not have to take part. You can stop being in the study at any time. You do not have to answer any questions if you do not want to. You will not get any direct benefits if you choose to join the research study. You will not lose any services, benefits or rights you would normally have if you decide not to join. Taking part in the research study will not cost you anything. You will not be paid for being in this research study.

The risks for this research study are no more than what happens in everyday life

This research study will be written up as a research report. The report will be available on the university library website. If you would like to receive a summary of this report, I will be happy to send it to you.

If you have any questions during or afterwards about this research study, feel free to contact me or my supervisor on the details listed below. If you have any concerns or complaints about the ethical procedures of this research study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,

Researcher:

Nzuzo Godfrey Sikhakhane. Email: 301077@students.wits.ac.za Cell: 0733256808

Supervisor: Dr Manamela Matshabaphala

Manamela.Matshabaphala@wits.ac.za

T: +27 11 717 3668

Appendix B: Participant consent form

Consent Form

Title of project: The Challenge of Leading Change During Energy Transition at Transnet Freight Rail in South Africa

Name of researcher: Nzuzo Godfrey Sikhakhane

I,, agree to participate in this research project.

I agree to the following:

(Please circle the relevant options below)

The research study was explained to me. I understand what this study is about.	YES	NO
--	-----	----

I understand that I can volunteer to take part in the study	YES	NO
---	-----	----

I agree that the interview may be audio recorded	YES	NO
--	-----	----

I agree that direct quotations from my interview may be used by the researcher in their research report	YES	NO
---	-----	----

I agree that my participation will remain anonymous (my name or other identifying data) will not be used by the researcher in their research report	YES	NO
---	-----	----

I agree that other researchers may use the information I provide in my interview (depending on their own ethics clearance being obtained) but my name and any personal information will not be used or passed on	YES	NO
--	-----	----

..... (signature)

..... (name of participant)

..... (date)

..... (signature)

..... (name of researcher/person seeking consent)

..... (date)

Appendix C: Research instruments- semi-structured interview questionnaire

The research instruments (Questionnaire 1 to 3 tailored for Operational Staff(Junior Engineers, Engineering Technicians and Electricians), Middle Managers (Engineers and specialists) and a Senior Manager) shown below are the interview guides that were designed to comprehensively investigate the underlying challenges that the leaders at a Freight Company encounter during the energy transition. The questionnaires were designed in line with Kotter's 8-Step Change Management Model for leading change. The questions were crafted to elicit detailed responses and provide insights from the selected participants in answering the research question and fulfilling research objectives (Kotter 1996). During the introduction, the purpose of the interview was explained to participants, emphasizing confidentiality and the voluntary nature of participation.

Background Information: Participants were given an opportunity to share their experience and roles in the energy transition. This was important and helped the researcher to ensure that during data analysis the insights captured can be linked or associated to the roles of the participants (Yin, 2009). The research instruments are provided below.

Questionnaire 1:

Semi-Structured Interview Guide - Senior Executives

Introduction: - This interview guide aims to gather comprehensive insights from Senior Executives about the leadership challenges and strategies associated with the energy transition at Transnet Freight Rail, using Kotter's 8-Step Change Management Model to frame the discussion.

- **Confidentiality:** Assure participants that their responses will be kept confidential and used solely for research purposes.
 - **Consent:** Obtain verbal or written consent for participation and recording.
-

1. Exploring the Challenges of Leadership During Energy Transition

Step 1: Create a Sense of Urgency

- a. How do you perceive the urgency of the energy transition at Transnet Freight Rail from a senior executive perspective?
- b. What challenges have you faced in creating and maintaining this sense of urgency among various levels of the organization?

Step 2: Form a Powerful Coalition

- c. Can you describe the process of forming a leadership coalition to support the energy transition? What challenges have you encountered in assembling and maintaining this coalition?
- d. How effective has this coalition been in supporting the transition, and what improvements might be needed?

Step 3: Create a Vision for Change

- e. How was the vision for the energy transition developed and communicated at the executive level?
- f. What challenges have you faced in crafting a clear and compelling vision, and how have you addressed these challenges?

Step 4: Communicate the Vision

- g. What strategies have been employed to communicate the vision for energy transition throughout the organization?
- h. What obstacles have you faced in ensuring that the vision is effectively communicated and understood at all levels?

Step 5: Empower Others to Act on the Vision

- i. How have you empowered other leaders and teams to act on the vision of the energy transition?
- j. What barriers have you encountered in empowering employees to implement changes, and how have you addressed these barriers?

Step 6: Create Short-Term Wins

- k. Can you provide examples of short-term wins achieved during the energy transition? What challenges have you faced in recognizing and leveraging these successes?
- l. How have these wins impacted the overall transition process and organizational morale?

Step 7: Consolidate Gains and Produce More Change

- m. How do you manage the process of consolidating gains from early successes and driving further change?
- n. What challenges have you faced in sustaining momentum and scaling successful changes throughout the organization?

Step 8: Anchor New Approaches in the Culture

- o. How have you worked to embed new practices into the organizational culture? What challenges have you encountered in making these changes a permanent part of the organizational fabric?
- p. What strategies do you believe are essential for ensuring that new approaches become ingrained in the organizational culture?

2. Presenting Leadership Trends During Energy Transition

- q. What significant trends in leadership have you observed during the energy transition at Transnet Freight Rail?
- r. How have these trends influenced the direction and effectiveness of the transition process?

3. Identifying Leadership Strategies to Address Challenges

- s. What leadership strategies have proven effective in overcoming the challenges of the energy transition?
- t. Are there any new strategies or approaches you believe could further enhance leadership effectiveness during the transition?

Conclusion:

- Is there anything else you would like to share about leading the energy transition at Transnet Freight Rail?
 - The researcher thanks the participant for their time and valuable insights.
-

Questionnaire 2:

Semi-Structured Interview Guide – Middle Managers

Introduction: This semi-structured interview guide aims to gather detailed insights from middle managers about the challenges they face and the leadership strategies they find effective during the energy transition at Transnet Freight Rail, using Kotter's 8-Step Change Management Model as a framework.

Confidentiality: Assure that responses will remain confidential and will be used only for research purposes.

Consent: Obtain verbal or written consent for participation and recording.

1. Exploring the Challenges of Leadership During Energy Transition

Step 1: Create a Sense of Urgency

- a. Can you describe any specific challenges you've encountered in creating a sense of urgency for energy transition initiatives at Transnet Freight Rail?
- b. How do you perceive the current level of urgency among middle management and staff regarding the energy transition?

Step 2: Form a Powerful Coalition

- c. What challenges have you faced in forming a coalition or team to lead the energy transition efforts?
- d. How effective do you think the current leadership coalition is in driving the energy transition?

Step 3: Create a Vision for Change

- e. How clear is the vision for the energy transition communicated to you as a middle manager?
- f. What difficulties have you encountered in aligning your team with this vision?

Step 4: Communicate the Vision

- g. Can you provide examples of how the vision for energy transition has been communicated to you and your team?
- h. What communication barriers have you experienced in this process?

Step 5: Empower Others to Act on the Vision

- i. What obstacles have you faced in empowering your team to act on the vision for energy transition?
- j. How do you handle resistance or lack of motivation among team members?

Step 6: Create Short-Term Wins

- k. What challenges have you faced in creating and celebrating short-term wins related to the energy transition?
- l. How have these wins impacted the overall transition process?

Step 7: Consolidate Gains and Produce More Change

- m. How do you manage the process of consolidating gains from initial changes and driving further change?
- n. What challenges have you faced in maintaining momentum for the transition?

Step 8: Anchor New Approaches in the Culture

- o. How do you address challenges in embedding new practices and approaches into the organizational culture?
 - p. What strategies have you found effective in ensuring these changes become part of the organizational culture?
-

2. Presenting Leadership Trends During Energy Transition

- q. What trends have you observed in leadership styles and strategies during the energy transition?
 - r. How have these trends impacted your role and the transition process?
-

3. Identifying Leadership Strategies to Address Challenges

- s. What leadership strategies have you found effective in overcoming challenges during the energy transition?
 - t. Can you suggest any new strategies that could enhance the effectiveness of the energy transition process?
-

Conclusion:

- Is there anything else you would like to add about leading change during the energy transition at Transnet Freight Rail?

The researcher will thank the participant for their time and insights.

Questionnaire 3:

Semi-Structured Interview Guide – Operational Staff

Introduction: This guide is designed to elicit detailed feedback from operational staff about their experiences, challenges, and perceptions regarding the energy transition at Transnet Freight Rail, in the context of Kotter's 8-Step Change Management Model.

Confidentiality: Assure that responses will remain confidential and will be used only for research purposes.

Consent: Obtain verbal or written consent for participation and recording.

1. Exploring the Challenges During Energy Transition

Step 1: Create a Sense of Urgency

- a. How do you understand the urgency of the energy transition at Transnet Freight Rail?
- b. What challenges do you face in recognizing or responding to the need for change?

Step 2: Form a Powerful Coalition

- c. Are you aware of any teams or groups formed to support the energy transition? How do you feel about their effectiveness?
- d. What challenges have you experienced in working with or interacting with these teams?

Step 3: Create a Vision for Change

- e. How clear is the vision for the energy transition communicated to you in your role?
- f. What difficulties have you faced in understanding or aligning with this vision?

Step 4: Communicate the Vision

- g. How has the vision for energy transition been communicated to you and your colleagues?
- h. What communication barriers have you encountered?

Step 5: Empower Others to Act on the Vision

- i. How have you been empowered to support the energy transition? What obstacles have you faced in implementing changes?
- j. Can you describe any difficulties in taking action or making decisions related to the transition?

Step 6: Create Short-Term Wins

- k. Can you identify any early successes or improvements related to the energy transition in your work? What challenges have you faced in achieving these wins?
- l. How have these successes influenced your perspective on the transition?

Step 7: Consolidate Gains and Produce More Change

- m. How do you see the process of consolidating gains from initial successes? What challenges have you faced in maintaining momentum?
- n. What additional changes do you think are necessary to build on these gains?

Step 8: Anchor New Approaches in the Culture

- o. How have new practices or changes been integrated into your daily work routine? What challenges have you encountered in adopting these practices?
 - p. What strategies do you think are needed to ensure these new practices become part of the organizational culture?
-

2. Understanding Leadership Trends During Energy Transition

- q. What changes in leadership styles or approaches have you observed during the energy transition at Transnet Freight Rail?
 - r. How have these leadership trends impacted your work and the transition process?
-

3. Identifying Effective Leadership Strategies

- s. What leadership strategies have you found effective in addressing challenges during the energy transition?
 - t. Are there any additional strategies or support you believe could improve the transition process?
-

Conclusion:

- Is there anything else you would like to add about your experience with the energy transition at Transnet Freight Rail?

The researcher shall thank the participant for their time and insights.

Appendix D: Software interface used for analysis

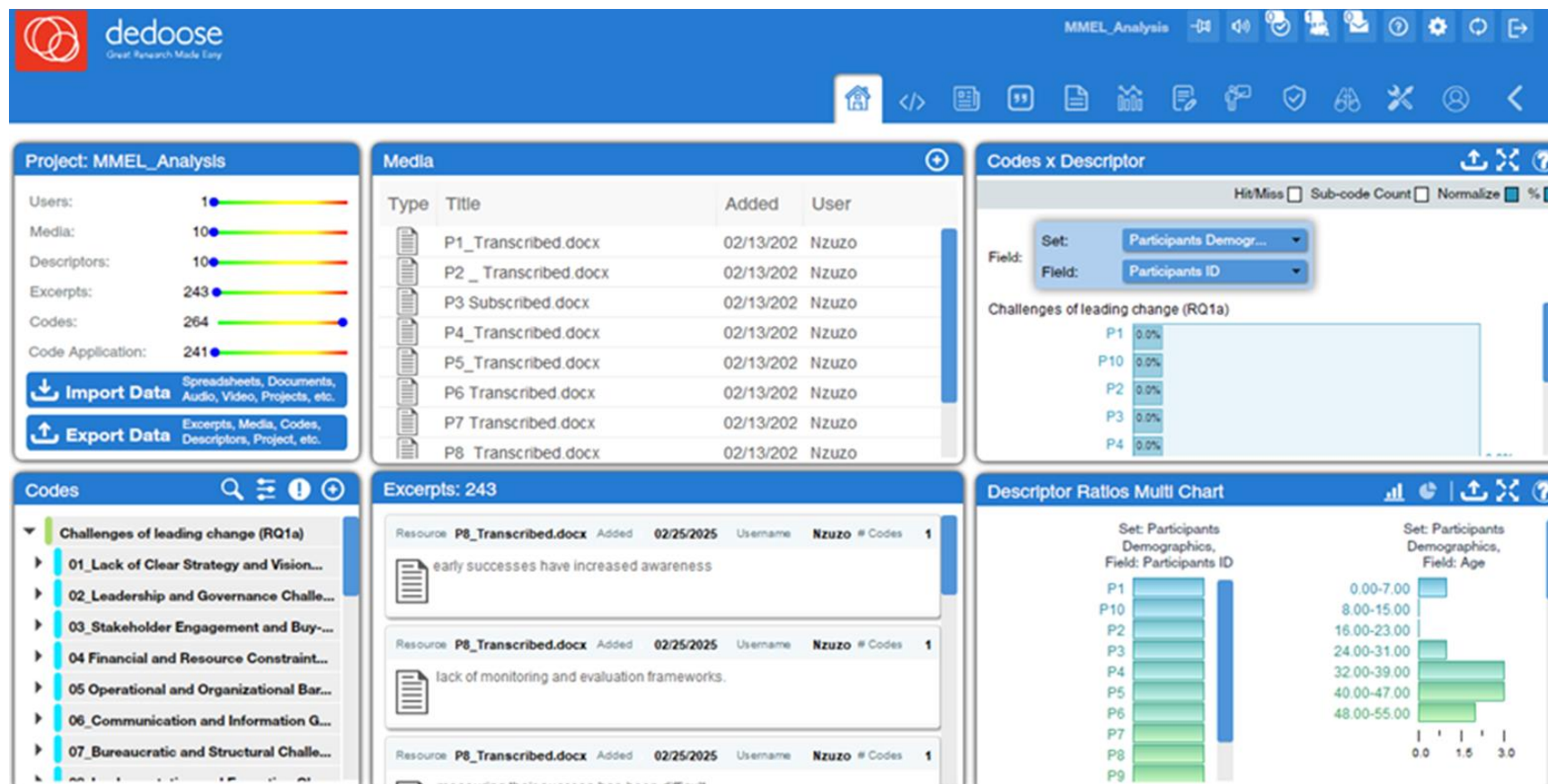


Figure D 1

Dedoose Software Graphic User Interfaces

Appendix E: Output results from thematic analysis

Table E 1

Output results for thematic analysis

Themes	Lack of Strategy and Clear vision	Leadership and Governance Challenges	Stakeholder Engagement and buy in	Bureaucratic and Structural Challenges	Training skills and knowledge gaps	Resistance to change and cultural barriers	Operational and organisational barriers	Communication and Information gaps	Implementation and execution challenges	Financial and Resource constraints
Codes	Vision broad and lacks clear implementation guidelines	Coalition exists but lacks necessary authority to enforce change	Difficult to align and unify stakeholders	Bureaucratic approval processes	Insufficient technical expertise	Cultural resistance	Operational constraints often overshadow long-term	Communication barriers	Slow decision-making	Budget constraints
	Broad vision, No clear roadmaps	Existing coalition lacks strong leadership support	Difficulty in securing buy-in from key stakeholders due to competing priorities	Bureaucratic processes	Heavy reliance on contractors	Employees accustomed to traditional energy sources	Operational demands often take precedence over long-term sustainability goals	Communication methods not reaching all staff	Slow practical and pace of implementation	Financial commitments
	No clear roles and responsibilities	Limited authority to drive decisions	Delay in progress due to lack of stakeholder buy-in	Centralized decision-making limiting agility	Lack of formal training	Energy transition treated as secondary not integral	Operational staff prioritize immediate operational challenges	Inconsistent communication	Poor monitoring systems	Financial constraints often overshadow long-term sustainability goals
	Corporate strategy lacks clear actionable steps for implementation at the operational level	Leadership turnover	Differing priorities	Extensive legal approvals	Lack of internal expertise	Lack of tangible incentives for employees	Employees accustomed to traditional energy sources	Inconsistent communication during project early stages	Slow project reporting lacking tangible results	High cost of energy transition projects
	Lack of specific targets and directives	Low emphasis of urgency from the leadership	Limited engagement with lower levels		Lack of necessary skills	Resistance to change	Employees struggle to see immediate benefits of transitioning to renewable energy	Vision alignment impacted by inconsistent communication and resource constraints	Lack of prioritization (No dedicated energy transition team)	Lack of sustainable investment
	Sustainability goals that lack clarity	Lack of clear strategy from leadership	Significant awareness only at the executive level compared to other levels		Lack of monitoring and evaluation frameworks	Resistance due to lack of awareness	Employees struggling to grasp long-term benefits of the transition	Key communication not reaching all employees	Lack of alternative infrastructure	Resource limitation
	Unclear Transition Execution plan and timelines	Reliance on top-down decision-making	Shifting corporate priorities impacts momentum		Minimal training opportunities	Perception that energy transition falls outside the mandate of this company	Employees unsure of how their roles align with energy transition efforts	Lack of clear communication and feedback	Lack of structured briefings	Securing funding for large-scale projects
	Vague goals and targets	Securing consistent leadership buy-in			No formal training or resources provided at the depot level		Energy transition practices not embedded into daily operations	Lack of follow-up discussions	Inconsistent implementation-initiatives handled on ad-hoc bases	

Appendix F: Ethics clearance certificate

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/EL301077/938

This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title The challenge of leading change during energy transition at a freight company in South Africa

Investigator / Researcher Mr Nzuzo Sikhakhane

Nature of Project MM (Energy Leadership)

Decision of the Committee Approved, provided stakeholders and participants are guaranteed confidentiality.

Issue Date of Certificate 05/12/2024

Expiry date Date of submission of the project / research report

Chairperson Dr Ayanda Magida
☎ +27 11 717 3953
✉ ayanda.magida@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

06/12/2005

Date:

Appendix G: Permission letter received from a Freight Company

10 October 2024
Mr. Nzuzo Sikhakhane
Central Design Office
138 Eloff Street
Braamfontein
2001

Sikhakhane9@transnet.net

Dear Nzuzo Godfrey Sikhakhane

Re: Request for permission to conduct research at Transnet SOC Ltd

Your email of request for permission to conduct research at Transnet on "The Challenge of Leading Change During Energy Transition at Transnet Freight Rail in South Africa" is acknowledged.

We note the conditions of the study for strict academic purposes, the results of the study will be submitted to Transnet, and the research will be confidential and that anonymity for both respondents and the organisation is guaranteed. Should you or University of the Witwatersrand want to publish the study in any other manner than the final assignment, Transnet will be approached for permission to do so.

Based on the above conditions, your request to conduct the research study in Transnet is granted. We are looking forward to the outcomes and recommendations of your study and the positive contributions towards the strategy of Transnet.

Yours sincerely,



Puleng Maseko

Head: Learning Enablement and Compliance

Transnet Academy

Date: 10/10/2024

Transnet SOC Ltd	138 Eloff Street	P.O. Box 72501
Registration Number	Braamfontein	Parkview, Johannesburg
1990/000900/30	JOHANNESBURG	South Africa, 2122
	2000	

Directors: A Sangqu (Chairperson) C Benjamin R Buthelezi M Debel B Jiya L Letsoalo FS Mufamadi D Patel B Sedupane MP Zambane
M Phillips* (Group Chief Executive) N Maphumulo* (Group Chief Financial Officer)

*Executive

Group Company Secretary: Ms S Bopape

WWV

"This letterhead contains personal information as defined in the **Protection of Personal Information Act, No. 4 of 2013** (the "Act"). The signatory consents to the processing of his/ her personal information and is obliged to handle other data subject's information in accordance with the requirements of the Act".

TRANSNET HAS A 'ZERO GIFTS' POLICY. NO EMPLOYEE IS ALLOWED TO ACCEPT GIFTS, FAVOURS OR BENEFITS

Appendix H: Editing report from Purelytic Insights



EDITING AND PROOFREADING REPORT FOR NZUZO GODFREY SIKHAKHANE

27 March 2025

K. Mlauzi

Master's research report: The Challenge of Leading Change During the Energy Transition at a Freight Company in South Africa

The completed document was received for final editing, specifically formatting issues and the reference list. This was done, including a correction of some typos and grammatical errors which came with the revised document. The following additions were made:

- A new table of contents was created.
- Some content was removed to improve flow and coherence.
- Substantive comments were provided for further consideration.
- The document was critically edited.
- All references and in-text citations were checked for accuracy.
- Formatting adjustments were made throughout.
- A list of figures and tables was created, including those in the appendix.
- A list of acronyms was compiled and added.

The editing process included:

1. Ensuring ideas are well-organized and logically presented.
2. Improving sentence structure, word choice, and overall flow.
3. Checking for consistency in tone, formatting, and terminology.
4. Correcting grammar, and punctuation, and ensuring adherence to a specific writing style (e.g., APA, Harvard).
5. Verifying references and factual accuracy where necessary.

The proofreading stage involved:

1. Identifying and correcting typos and minor errors.
2. Ensuring consistency in spacing, fonts, headings, and numbering.
3. Fixing small mistakes that may have been overlooked.
4. Reviewing in-text citations and the reference list for accuracy and consistency.

Appendix I: Similarity test report

NG Sikhakhane MMEL Submission_301077.pdf

ORIGINALITY REPORT

2%	1%	3%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Samuel Chukwujindu Nwokolo, Anthony Umunnakwe Obiwulu, Paul C. Okonkwo. "Africa's Propensity for a Net Zero Energy Transition", CRC Press, 2024 Publication	1%
2	wiredspace.wits.ac.za Internet Source	1%

Appendix J: Submission check list



THESIS/DISSERTATION/RESEARCH REPORT – FIRST SUBMISSION CHECKLIST (for Examination)

*** This checklist must be completed and included as part of the submission ***

Name of Candidate:	Nzuzo Godfrey Sikhakhane	
Person/Student Number:	301077	
Qualification:	MMEL	
Title:	The Challenge of Leading Change During the Energy Transition at a Freight Company in South Africa	
Supervisor(s):	Dr Manameia Matshabaphala	
Contact Details:	Cell number(s): 0733256808	Email: 301077@students.wits.ac.za

FIRST SUBMISSION CHECKLIST (for Examination)

Has this research been submitted with the consent of the supervisor? (Y/N)

Student to submit:	Electronic copy of research in PDF (Hard copy may be required upon request from the examiner)	Yes
	Full Turn-it-in Report (signed by Supervisor) ** For WBS – this report does not require the Supervisor's approval **	Yes
	Confirmation of Ethics (Clearance/Waiver certificate)	Yes
	Overall Supervisor Evaluation form (MBA candidates ONLY)	NA
Supervisor to submit:	University Clearance Certificate (Supervisor to complete and send directly to Faculty)	Yes
	Supervisor's Report (Supervisor to complete and send directly to Faculty)	Yes
Faculty to check on:	Approved title and supervisor(s)	
	Approved examiners	
	Registration status (students must be registered during the examination period)	

Please send your research submission to the correct email:

- [#Fac-MBAsubmissions@wits.ac.za](mailto:Fac-MBAsubmissions@wits.ac.za) – for MBA (ARP) research submissions
- Veli.Mongwe@wits.ac.za – for PhD and Full Research Masters students belonging to WBS
- [#Fac-MMsubmissions@wits.ac.za](mailto:Fac-MMsubmissions@wits.ac.za) – for MM research submissions belonging to WBS and WSG ✓
- Nasreen.Abdulla@wits.ac.za – for PhD and Full Research Masters students belonging to WSG
- Tshepo.Mohlakoane@wits.ac.za – for all research types belonging to Commerce and Law (SEF, SBS, SOA and SOL)

Please Note:

- Incomplete submissions will NOT be prioritised.
- Outstanding fees must be cleared to enable Awaiting Examiner's registration (upon submission).
- WBS submissions may undergo internal academic quality checks before the exam process may begin.
- There may be a delay in the examination process – for more information, click: [Exam Process](#)
- For more information on the graduation, click: [Graduation info.](#) and [Graduations Office](#)