

**Energy transitions: Business model innovations as a solution for incumbent
South African Small and Medium Enterprises**

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ABSTRACT

The Multi-Level Perspective (MLP) has been applied as a conceptual framework to describe the socio-technical transition in the energy sector in South Africa. The three levels of the MLP being the socio-technical landscape, socio-technical regime and niche provides an elegant framework for business to understand the energy transition that is unfolding.

Within the regime, are multiple incumbent actors with business models that are highly established and form an impenetrable barrier to a regime shift or infiltration of niches. The current energy regime has been weakened due to corruption and mismanagement thereby creating a window of opportunity for niche renewable energy producers to enter the regime and move it forward.

Within the network of actors in the socio-technical regime resides a group of often neglected Small and Medium Enterprises (SMEs) whose business models have been designed to function solely within the fossil-fuel energy regime.

This research study sought to discover the perceived risk of the energy sector SMEs, to understand their business models, and determine if they had enacted or intended to enact any business model innovation in response to the socio-technical landscape pressures exerted on them as incumbents of the existing energy regime.

Due to the porous literature on the confluence of business model innovation and transition theory, a qualitative research study was undertaken. Data was collected from a sample of SMEs within the existing regime and analysed to determine their perceptions on the energy transition and its potential effect on the successful continuation of their business models as they were currently devised.

The findings revealed that SMEs were highly aware of the environmental pressures that were being exerted on them, however, they did not foresee the complete abolishment of coal infrastructure. In addition, the sampled SMEs exhibited high levels of organisational inertia, and favoured efficiency modifications in contrast to business model innovation.

KEY WORDS

Energy transition, SME, South Africa, business model innovation, MLP

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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CHAPTER 1 INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction to the research problem

Human activity and the advancement of technology have had an adverse effect on climate globally. World leaders have recognised the need for urgent action and through initiatives such as the United Nations Sustainable Development Goals and the Paris agreement have implored countries to make policy changes to ameliorate the situation (UNFCCC, 2022). South Africa, as a member state of the United Nations, and on its own accord, has developed plans such as the Integrated Resource Plan (IRP2019) and the National Development Plan for an energy transition, that is, to transform the energy generation sector by a shift from dependence on fossil fuels to renewable energy sources by 2030 (Department of Mineral Resources and Energy, 2019).

South Africa, through state-owned enterprise (SOE) Eskom, possesses a fleet of coal-fired power stations that have been plagued by mismanagement resultantly plunging the country into darkness and creating a chasm whereby renewable energy could be the only solution, cementing itself as the new preferred means of energy generation (Baker et al., 2014). Baker et al. (2014) infer that South Africa has gone through a transition in energy already, being one from “energy opulence” to energy poverty and that the second transition from fossil fuels to renewable energy sources is being fuelled by social, environmental, and government policy shifts. The South African case is uniquely characterised by the treacherous history of apartheid leading to a very unequal society coupled with mammoth rates of unemployment; a balance must be achieved in the transition process (Baker et al., 2014).

Concurrently there exists a group of Small and Medium Enterprises (SMEs) whose core business model is concentrated on the provision of services for Eskom’s fleet of fossil fuel generating plants (International Finance Corporation, 2018). There are indeed lucrative opportunities that have been created in the renewable energy environment that many new entrepreneurs have harnessed, and incumbent organisations have chosen to redirect resources to. With an accelerating energy transition occurring alongside the existing struggles of the electricity generation industry, are incumbents aware of the internal strategic transformation that should be urgently considered to ensure their continued, and uninterrupted operability?

Transitions are not a new concept for South Africans. During the struggle era, a group of determined proponents overthrew the power and policies of a white-minority government to enable a free and democratic South Africa. The energy transition bears remarkable similarity to the transitional period whereby apartheid was abolished. The power is held by a monopolistic entity adamant about retaining this power. The shift in power or transition must be catalysed by a collective of new entrants or incumbents with a vision for a cleaner environment, efficient energy system, and a productive South African economy that creates value for all stakeholders.

1.2 Theoretical framework

(Geels, 2002) seminal work on the Multi-Level Perspective (MLP) has underpinned the exploration of technological transitions for the last 20 years since it was first published. A socio-technical transition refers to structural change that pursues social transformation through the alteration of deep-set regimes for the greater good (Baker et al., 2014).

The MLP provides a sound theoretical framework for the analysis of the South African energy transition. The elements comprising the framework are the socio-technical landscape, regime, and niche levels that are interrelated across the three levels (Geels, 2002). The South African energy industry exhibits elements that align perfectly with the framework. On the level of the landscape exists political, environmental, and global pressures.

Within the regime level is the incumbent system, that is Eskom and their related stakeholders that participate in the maintenance of the regime. On the niche level are Renewable Energy Independent Power Producers (REIPPs) who through radical innovation are attempting to penetrate the regime level. Aiding the penetration of niches into the regime is the destabilisation of the existing regime lowering the barriers of entry of niches into the regime and thus leading to the formatting of a new regime.

The existing energy regime in South Africa is plagued by inadequacies that have destabilised its position (de Vos, 2020). Besides the pressure imposed by the changing landscape, the regime has been weakened through institutional corruption and overall mismanagement (de Vos, 2020). A symptom of the weakened regime is the phenomenon of load shedding which has destabilised the South African

economy and been a major contributor to the decline in sovereign credit ratings (Fitch Ratings, 2021). The South African energy sector has been dominated by a single monopolistic actor. Years of financial mismanagement, avoidance of maintenance for the ageing fleet of power stations, and lack of investment into new generating capacity have resulted in a perforated structure that is fuelling the rapid innovation by Independent Power Producers and the infiltration of niche cumulations (de Vos, 2020).

Incumbent SMEs existing within the network of the existing regime face the risk of their continued existence being compromised as the regime shifts to external involvement of niches and the pressure of the changing landscape. Within the myriad of existing actors is a subset of organisations functioning as suppliers, either directly or indirectly within the network of the existing energy regime.

1.3 Business rationale

Being a highly industrial nation with one of the world's highest emissions of Greenhouse Gases (GHGs), South Africa has committed to joining the global community in the fight against climate change (World Bank, 2018). The South African landscape is however complex. Societal issues characterised by rampant unemployment and the world's highest income inequality require the consideration of a "just transition" wherein the societal impact of a shift in the energy mix from fossil fuels to renewable energy sources must be managed alongside the upliftment of the broader South African society in general.

The Quarterly Labour Force Survey (QLFS) for the fourth quarter of 2021 revealed an official unemployment rate of 35.3% and by the expanded definition of unemployment a rate of 46.2% (Statistics South Africa, 2022). Even more concerning was the shedding of 85000 and 25000 jobs in the last quarter of 2021 in the manufacturing and construction sectors respectively (Statistics South Africa, 2022). South Africa has a GINI coefficient of 0.63, making it the most unequal country in the world in terms of income inequality (World Bank, n.d.). Although the concept of the "just transition" was introduced in America by labour unions in the early 1990s, the principles conceptualised are extremely relevant to the South Africa case (Enel Green Power, n.d.).

South African SMEs in the energy sector find themselves amid an ideal interplay of forces to enable the advancement of their business models and the success of their

operations. There exists a “window of opportunity” for them to exploit created by the simultaneous shift in the technological landscape and by the weakening of the structures of the prevailing regime (Geels, 2002). A pathway has been created for their entry into the socio-technical realm, to first work alongside the existing regime and then for them to influence the transformation of the regime into congruence with the new landscape.

As the alignment of the elements within the incumbent energy regime diverges, an opportunity arises for actors within a group, supplier SMEs in this case, to migrate into the niche level, adjust their business models, and then re-enter the socio-technical regime level to disintermediate the regime in the transitional phase to a new mode of operation. The other scenario that exists for these actors is to enact a business model pivot and completely change the direction of their operations and strategy. The incumbents must consider their core capabilities within the energy sector and aim to capitalise on their existing networks and cognition when considering a business model pivot.

1.4 Academic rationale

The energy transition in South Africa is largely political and requires political intervention to ensure that all stakeholders are protected and benefit from the opportunities that are being created. To this end, Müller & Claar (2021) considered the construct of procedural justice within their analysis of the implementation of the Renewable Energy Independent Power Producers Programme (REIPPP). Although there have been significant strides in opening the South African economy to foreign investment, the concern is drawn to the incumbent and local suppliers who are unable to compete fairly when confronted with the expertise and financial backing that global companies have (Müller & Claar, 2021).

Baker et al. (2014) further highlight the politics and power relations that exist within the industry and suggest that the pace of the transition will only be accelerated if societal issues are addressed in conjunction with the technological and economic aspects of the transition. According to Baker et al., (2014) the “role of labour in transitions which must be addressed more systematically in transitions literature if the possibilities of a ‘just transition’ are to be understood and acted upon.” (p. 813).

Despite this, Ram et al. (2020) in their study that explores job creation resulting from the energy transition, conclude that the creation of jobs invoked by the transition to

renewable energy generation and storage far outweighs the losses that will be incurred due to the phasing out of fossil-fuel electricity generation. Ram et al. (2020) highlight that support programmes for incumbents and upskilling of resources are a priority to ensure that the myriad opportunities arising are exploited optimally.

Schaltegger et al. (2016) emphasises that “no consistent theoretical framework is available [...] that helps understand the dynamic role of business model innovation for sustainability transformations of markets.” Bidmon & Knab (2018) join this growing body of researchers who have exhibited interest in the confluence of business model research and transition theory.

The study by Bidmon & Knab (2018) of the effect of business models on socio-technical transitions are explored in the energy sector is of particular interest to this research due to the similarity in constructs, albeit within a different context.

This implies that the societal impact of executing a just transition needs more literary attention, especially concerning incumbents who must adjust their business models to remain relevant and capitalise on the opportunities that are being made available to them during the energy transition.

1.5 Research purpose

The purpose of this research will be to determine how the energy transition in South Africa will affect incumbent SMEs whose predominant client is the state-owned monopoly Eskom. Furthermore, with the business models of SMEs centred on the servicing of a sector where fossil fuels are the fuel source of the generation technology, it is necessary to understand the implications that a shift in generation technology to renewable fuel sources or renewable energy altogether may have on their terminal existence.

The research will be enhanced by understanding the SMEs knowledge of and attitude toward a potential business model pivot supplemented by their overall views of the energy transition. This research will add to a very sparse body of knowledge that currently exists in this context. Ultimately, it is hoped that the research will encourage SMEs in the sector to redesign their business models to mitigate becoming redundant amid a regime that has been disintermediated.

CHAPTER 2 LITERATURE REVIEW

2.1 Conceptual framework: The Multi-Level Perspective

The Multi-Level Perspective (MLP) is an appropriate conceptual framework for describing the energy transition in South Africa. Geels (2002) first introduced the MLP as a bridge between evolutionary economics and technology to describe technological transitions that have a broader societal impact. The heuristic framework outlines a socio-technological regime on the meso-level, a technological landscape on the macro-level, and agents of radical innovation and change, niches, on the micro-level (Geels, 2002).

The socio-technical regime consists of a network of industrial and societal elements linked and operating collaboratively usually under pressure from the technological landscape, which encapsulates the geopolitical environment within which the regime is situated (Geels, 2002).

Baker et al. (2014) explored the three dimensions of the MLP with a particular focus on the influence of power and politics. According to Baker et al. (2014), domestic policy is a major constituent of the technological landscape that must be accounted for when considering a socio-technical transition wherein multiple incumbent actors are resistant to a transition that will likely displace their powerful positions within the existing regime.

Radical innovations, either in response to a shifting landscape, or problems within the existing regime, are introduced into the system by actors referred to as niches, who through weakened pathways and network connections within the existing regime opportunistically penetrate the industrial boundaries to establish a new regime (Geels, 2002).

2.2 Small and medium enterprises

The SMEs are most vulnerable to external environmental shocks as they have limited resources available to adopt large-scale changes in operational strategy. Although anaemic in available resources and access to financing, their size enables them to be agile and quickly shift operating procedures and processes when faced with economic and external pressures.

In a developing country such as South Africa, SMEs account for 50-60% of GDP and create the most jobs (International Finance Corporation, 2022). The success of an SME is thus critical to national economic growth and progress.

Further, the literature focuses mainly on new entrants and early adopters of renewable energy technology, whilst marginalising incumbents in the sector. This study is therefore designed to focus on this group of organisations with a view to possible interventions that can be made by the organisations themselves, government organisations, and client Eskom, as the energy transition is further propelled.

Eggers (2020) argues that SMEs are the lifeblood of an economy, and strife within an economy is transferred to SMEs. This corresponds with the view of Devece et al. (2016) on the coexistence and vulnerability of an SME with their environment, and likewise on the postulation of Geels (2002) regarding the socio-technical landscape influencing incumbents within a regime and on the niche.

Drawing on the seminal work of Freeman et al. (1983) on the “liability of smallness”, Eggers (2020) theorises that although more susceptible to shocks in their environment, SMEs, due to their size, have the flexibility to adapt to changing environmental circumstances for survival. Consequently, SMEs incumbent in the existing energy regime are by virtue of their size able to exercise flexibility in decision-making and closeness to their stakeholders to navigate a new path through enacting a business model pivot (Eggers, 2020).

2.3 Socio-technical transitions

2.3.1 Context

Schot & Kanger (2018) provide clarity on the definition of a socio-technical system as one comprising an array of actors such as technology and institutions working together to deliver solutions to meet the needs of consumers and caution that a system should not be confused with a sector. Supporting Kanger et al. (2020) in their view of the interrelatedness of systems and the embeddedness of regimes, Schot & Kanger (2018, p. 1045) introduce the concept of a Deep Transition which they define as “a series of connected and sustained fundamental transformations of a wide range of socio-technical systems in a similar direction.”

The context within which a socio-technical transition occurs is very important, especially in South Africa where politics drives economics and the role of political

and economic elites has a wide impact on the social, economic, and technological advancement of the country (Baker et al., 2014).

According to (Baker et al. 2014), South Africa has undergone two major transitions, both highly political. The first was the abolishment of apartheid where a deeply political regime of minority white rule was displaced through a struggle that lasted decades, the effects of which still permeate the South African fabric (Baker et al., 2014). The second, and current transition is one from “energy opulence” to one of “energy poverty” (Baker et al., 2014).

Geels (2002) seminal work on the MLP has underpinned the exploration of technological transitions for the last 20 years since it was first published. The MLP provides a sound theoretical framework for the analysis of the South African energy transition through the alignment of the elements of the framework to the landscape, regime, and niche elements of the South African energy sector.

The global energy landscape has shifted. Driven by international policy, global attention has been drawn to the impact that highly industrialised nations have on the climate change crisis. Furthermore, global citizens are increasingly aware of the impact of their activities and consumption on the earth, and thus a mass shift in behaviour and consumption patterns is adding to the pressure on the energy sector to shift from fossil fuels to renewable energy.

2.3.2 Human capital development

Lenihan et al. (2019) combine both human capital and public policy intervention in exploring the relationship that the latter has on the productivity of the former. Lenihan et al. (2019) assert that to stimulate a country’s economy, and consequently growth, investment into the skills of the nation’s human capital is paramount. A skilled workforce both in soft and hard skills is a critical factor that enables a country to effectively advance technology and innovation (Lenihan et al., 2019).

Amankwah-Amoah et al. (2018) assert that the responsibility of fostering an entrepreneurial activity and innovation rests with the government implementing policy and infrastructure that provides quality education to the population, a responsibility that has been very poorly enacted in Africa. Technological adoption by SMEs helps to grow the economy through job creation and social upliftment, but this is only possibly when the human capital of a country is developed simultaneously (Amankwah-Amoah et al., 2018).

2.3.3 Employment

Ram et al. (2020) conducted an analysis whereby the effect of the global energy transition was measured against the number of jobs expected to be created. According to (Ram et al., 2020) the number of jobs to be created from the opportunities that the generation of electricity and the storage thereof will realise far exceed the number of jobs that will be lost because of the termination of electricity generation from fossil fuels.

2.3.4 Political trust and institutions

The institutions of a country are vital to the overall innovation culture within that country amongst entrepreneurs (Fuentelsaz et al., 2018). An enabling environment that protects the rights of entrepreneurs to enhance growth and innovation rests within institutions.

Fuentelsaz et al. (2018) suggest that trust in institutions by entrepreneurs is related to the level of innovative activity within the economy. In countries where corruption is rife, entrepreneurs are reluctant to take risks, as the return from such activity is not entirely for their benefit but with it comes an expectation of shared gain amongst opportunistic agents that exist within the ecosystem (Fuentelsaz et al., 2018).

Fuentelsaz et al. (2018) found that the supportive environment created by institutions for entrepreneurial activity and innovation far outweighed psychological traits and cognitive ability as qualifications for success of ventures.

Kanger et al. (2020) introduced the concept of policy intervention points as the loci which accelerate the pace of a transition and guide its directionality. Kanger et al. (2020) argue that of all the policy intervention points, the management of regime destabilisation has been largely neglected in recent literature.

Kanger et al. (2020) further argue that although Geels (2002) focussed on a single socio-technical system and the interplay of the pathways and networks that exist within that system, socio-technical systems exist within the scope of the broader environment, co-existing with and being influenced by other socio-technical systems. Therefore, incumbent actors within an existing regime are vulnerable to irrelevance as a new regime is formed, unless, as Kanger et al. (2020) imply, there are interventions in place to mitigate the societal repercussions of a transition.

Consequently, it can be concluded that there will be an abundance of opportunities available for SMEs who are embedded in the incumbent regime to pursue if they are

given the requisite support through policy interventions and are themselves actively searching for and exploring alternative models in which to engage.

2.4 Business model innovation in small and medium enterprises

2.4.1 Business model

A business model can be defined as how a business “operates and creates and captures value for stakeholders in a competitive marketplace” (Casadesus-Masanell & Ricart, 2011). Bidmon & Knab (2018) concur that a business model is the mode by which businesses capture and create value but go further in exploring the relational aspects of a business model. According to Bidmon & Knab (2018) the business model serves a mediating role in the creation of a network of actors from the consumer and supplier sides of the business. Furthermore, the business model connects incumbents with other actors within the regime.

2.4.2 Key roles

Fuentelsaz et al. (2018) highlight the role of entrepreneurs in being instrumental to the development of new products and services through innovation. This innovation arises from either psychological characteristics of the business owner or from human resources in key roles (Fuentelsaz et al., 2018). The education level and the level of experience of decision makers are critical antecedents to the degree to which they innovate (Fuentelsaz et al., 2018).

Hence, key roles as a component of the business model canvas are thus crucial to general business model implementation and to business model innovation (Osterwalder & Pigneur, 2010).

2.4.3 Networking and relationships

Adomako et al. (2022) describe the need for entrepreneurs in dynamic emerging markets to maintain networks and relationships. Dynamic emerging markets are characterised by high levels of uncertainty where customer preferences and market conditions change rapidly (Adomako et al., 2022).

Building strong networks and relationships can alleviate the burden on entrepreneurs of processing new information constantly arising in a rapidly changing environment (Adomako et al., 2022). Furthermore, strong network connections allow entrepreneurs to be aware of opportunities and capitalise on these (Adomako et al., 2022).

2.4.4 Government support and regulatory policy

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2.4.5 Financial support

Although institutions play a pivotal role in incubating an enabling environment in which SMEs can thrive, they alone are not completely responsible for motivating entrepreneurial activity and innovation (Kimmitt & Muñoz, 2017). Financial inclusion, particularly funding for small enterprises is a critical component of fostering innovative behaviour (Kimmitt & Muñoz, 2017).

However, the provision of funding for new ventures will not be effective in encouraging innovation if not implemented in parallel with other freedoms of entrepreneurial activity (Kimmitt & Muñoz, 2017). Similarly, in their study of angel investors in start-ups and SMEs, Hoyos-Iruarrizaga et al. (2017) highlight the lack of skills, business acumen, and expertise as collective area development that transcends the provision of finance.

Hence, even though lack of financing opportunities has been highlighted as an inhibiting factor to fostering activity amongst SMEs and engendering innovation, the support of institutions, and the development of the skill levels and business acumen of entrepreneurs must be advanced simultaneously for real innovation to emerge.

2.5 Business model innovation

Business models need to evolve, and many enterprises fail when they innovate without understanding the interrelationships between key components of their

models and attempt to introduce novel services and products where they should rather have re-examined internal efficiencies (Christensen et al., 2016). Devece et al. (2016) in their assessment of the success factors for entrepreneurs suggest that the economic environment in which entrepreneurs find themselves is an important factor in determining the success of their endeavours.

Within the emerging market context, an innovation does not necessarily have to encompass a new product or service and may include already operational ventures that have been applied to a new market (Fuentelsaz et al., 2018).

Businesses established in times of crisis due to push factors are much less likely to succeed than those established where pull forces are at play and the opportunities available drive entrepreneurial activity (Devece et al., 2016). Consequently, for the small and medium enterprises operating within the current energy regime, it would be prudent to assess their internal efficiencies timeously and explore available opportunities ahead of the market disintermediating to an extent that forces a change in the operating model due to the necessity of continued survival.

Morgan et al., (2020) postulate that although pivoting is trending amongst entrepreneurial circles, that not all pivots will lead to success. Pivots tend to arise out of either necessity or opportunity (Morgan et al., 2020). Pivots enacted out of opportunity are more likely to succeed and are better suited for innovation in established businesses than a complete deviation from the core capabilities of the company that would be required in the case of an arbitration-led pivot (Morgan et al., 2020).

Bidmon & Knab (2018) explored the concept of dominant regime logic through case studies of the German energy sector finding that this is a core idea to explaining how business models can serve as barriers to a socio-technical transition. According to the authors, actors within a regime have embedded rules of engagement that have worked for them and cement their positions in the market (Bidmon & Knab, 2018). Actors thus use the strength of their existing networks derived from their individual business models to resist change and prevent a regime shift confident that what has previously worked will be what works in the future (Bidmon & Knab, 2018).

Much of the existing literature explores business model innovation in the context of exogenous shocks with limited literature around socio-technical transitioning. An exogenous shock or crisis possesses different characteristics from a transition, especially in terms of the pace at which they are enacted. Therefore, a gap in the

knowledge exists in the literature pertaining to the action required by incumbents in response to a transition.

2.5.1 Opportunity recognition and development

Clausen (2020) explores the concept of opportunity development through the lens of a process model. Within the context of opportunity development are the constructs of ideas and agency (Clausen, 2020). Ideas are possibilities that are imagined having profitable outcomes and bare similarity to created opportunities in this regard (Clausen, 2020).

Emerging technologies present multiple opportunities for economic growth and development in Africa, but this is impeded by the skills gap due to highly corrupt and weak institutions who have failed to adequately develop infrastructure and enabling environments for growth (Amankwah-Amoah et al., 2018).

The energy transition resembles a discovered opportunity for the SMEs. For an opportunity that is discovered there is a market shift, but this requires an alertness, active searching, and superior cognition by key decision makers (Clausen, 2020; Fuentelsaz et al., 2018). As expressed by Clausen (2020) agency is critical factor to the development of opportunities for entrepreneurs alongside incremental testing and feedback.

The energy transition is an opportunity on which SMEs can capitalise, however, the extent to which the key decision makers are alert to these opportunities in their environments through active searching and sensing remains unknown.

CHAPTER 3 RESEARCH QUESTIONS

3.1 Research Question 1

How are the effects of the energy transition understood as a risk to organisational continuity for incumbent energy sector reliant SMEs?

This question was designed to explore the extent to which SMEs understand the environment in which they are situated. Geels (2002) outlines the levels at play and the network forces and pathways that exist between the landscape, regime, and niches. Without formal knowledge of the MLP, it would be difficult for an organisation to make sense of the multiple forces at play within their exogenous environment.

Gaining insight into the organisation's perception of the energy transition and the impending danger the transition may pose to the continued operability of the organisation is a key antecedent before business model innovation can be considered relevant.

Furthermore, the environment in which the business operates is an important contextual consideration that informs strategy and decision-making. It is expected that a thorough understanding of the economic, political and social environments that surround a business will be related to a business model that is more adaptable and leaner to enable rapid shifts.

3.2 Research Question 2

How are current business models structured in incumbent SMEs?

Understanding the current business model of the SMEs allows insight into the flexibility of decision-making within the business and the closeness of relationships maintained with stakeholders (Eggers, 2020). Additionally, insight into the current business model provides a basis on which the interactions of the business are understood and managed (Christensen et al., 2016; Devece et al., 2016).

It is with this research question that the focus shifts from extrinsic factors to intrinsic factors. Structure, culture, people, and processes, although partially influenced by environmental phenomena, are factors that a business determines in conjunction with consideration of profitability, sustainability, and competitive advantage.

3.3 Research Question 3

How has the SME pivoted its business model to deal with a changing landscape?

The relationship between the constructs of the socio-technical transition and business model innovation have been explored with this research question. This question was formulated to gain insight into the mechanisms employed, if any, by SMEs to alter their business models.

Furthermore, the driver of innovation will be explored to determine if the perceived threat of the socio-technical transition, or other factors, were responsible for the change. Lastly, this question provides insight into the level of organisational inertia being experienced by the business in the energy sector.

CHAPTER 4 RESEARCH METHODOLOGY

4.1 Choice of Methodology

The sections that follow outline the methodological decisions that the researcher has taken to ensure that the empirical findings and theoretical assumptions of this research study are well connected and interplay meaningfully.

Van Maanen et al. (2007) in their exploration of six different journals that discussed the interplay between theory and method postulated that the researcher must ultimately perform a balancing act that “serves two masters”. The authors further assert that researchers must be aware that the audience of their work differs, and based on the credibility of the output, and may lead to further theorising in the field and advancement of the concepts (van Maanen et al., 2007).

Considering these recommendations, the methodological choices made served not only the purpose of obtaining data that fit the theoretical assumptions of this research study, but to rather encourage a voyage of discovery in the field whereby new ideas are generated when the constructs of the energy transition and business model innovation duel.

The ontological assumption of this research study is that the energy transition is viewed with resistance from incumbent organisations who view renewable energy resources as a competitor to fossil fuels rather than as a complement (Bidmon & Knab, 2018).

This research was exploratory. Research on the effects of the energy transition on incumbent energy sector SMEs in South Africa have not been found in the literature and was identified as an important phenomenon to gain further knowledge in due to the important role that SMEs play in the economy of the country (Morgan et al., 2020). Literature on business model innovation is well developed, however the dichotomy of business model innovation and transition theory is still evolving (Bidmon & Knab, 2018; Schaltegger et al., 2016).

The constructs were explored using semi-structured interviews and the interrogation of academic sources where these constructs had previously been studied (Saunders & Lewis, 2018). Saunders & Lewis (2018) highlight the danger of conducting an exploratory study on phenomena that have been identified by the researcher as important and could prove to be obvious once the data has been collected and analysed.

The philosophy most appropriate to this research study is Interpretivism. Saunders & Lewis (2018) define Interpretivism as the study of “social phenomena in the natural environment” (p. 109). Saunders & Lewis (2018) further examine and present the notion of the social actor, wherein the roles of different social actors are compared to the roles of actors on a theatrical stage. This research study is in perfect alignment with interpretivist philosophy. The SMEs satisfy the role of the social actor that we are focussing the study on and their adaptation to the social phenomena of the energy transition.

An inductive approach is most suited to the constructs identified and the phenomenon of the energy transition that has been identified due to the limited theory available. The research questions that were defined in Chapter 3, were speculative and based on observations made in the academic literature and general observations made by the researcher in daily operations. This research study hence attempted to understand the mode by which incumbent SMEs in the energy sector interpret, perceive, and view the energy transition that is altering their main business environment.

A mono-method qualitative method was used to obtain rich data from sourced from semi-structured interviews. Adherence to the methods within the traditional qualitative toolbox enabled the data collection to be completed timeously and allowed the comparison of collected data items within the data set (Braun & Clarke, 2006).

The strategy of this research study was thematic analysis. Braun & Clarke (2006) developed the concept of thematic analysis which includes the identification, reporting, and analysis of patterns in qualitative data as an enrichment step in the analysis process. Pattern identification includes the assignment of meaningful codes and the identification of discrete units of data to which these codes can be assigned with resultant emerging patterns (Saunders & Lewis, 2018).

A cross-sectional time horizon was best suited for this research study due to the limitations imposed on the time available to complete the data collection and compile the research findings. Moreover, this research was not aimed at qualifying the effect of the energy transition phenomenon over a period, but rather to assess as a “snapshot” the overall experiences of the sample at discrete moment. The current period was an important one to monitor as organisations are emerging from two

years of a global pandemic, the government is supporting an accelerated transition and worldviews pertaining to the environment are peaking.

4.2 Population

The population identified for this research study were South African SMEs working within the current fossil-fuel electricity generation sector. The experiences, attitudes, and strategies of this cluster of organisations were of specific interest to the outcomes of this study.

The SMEs are most vulnerable to external environmental shocks as they have limited resources available to adopt large-scale changes in operational strategy. Although anaemic in available resources and access to financing, their size enables them to be agile and quickly shift operating procedures and processes when faced with economic and external pressures.

In a developing country such as South Africa, SMEs account for 50-60% of GDP and create the most jobs (International Finance Corporation, 2022). The success of an SME is thus critical to national economic growth and progress.

Further, the literature focuses mainly on new entrants and early adopters of renewable energy technology, whilst marginalising incumbents in the sector. This study was therefore designed to focus on this group of organisations with a view to possible interventions that can be made by the organisations themselves, government organisations, and client Eskom, as the energy transition is further propelled.

4.3 Unit of Analysis

The aim of this research study was to gain insight into organisational behaviour by probing and extracting the views of individuals involved in these organisations. The purpose and aim of the study attempted to understand the general organisational attitudes toward the energy transition and the views on potential business model innovation.

Individual executives and members of senior management of the organisation participated in the interviews, providing responses aligned with their personal beliefs about the energy transition alongside accounts of the initiatives, or lack thereof, of their organisation's response. The interviewer attempted to encourage honest and

truthful accounts from the respondents regarding the experiences in their organisation and the changing environment wherein their organisations are situated.

4.4 Sampling method and size

Purposive sampling with a homogenous sampling variety allowed greater depth in the understanding of what is currently being experienced by the South African SME population in the energy sector. The following criteria was used when selecting the sample as the research questions defined were thought to be best suited to this subset of the population:

- a. South African registered organisation.
- b. Core operations in the energy sector (primarily fossil-fuel electricity generation).
- c. Annual revenue of R 10 million to R 50 million.
- d. Number of years in business must be greater than 5 years.
- e. No international or corporate affiliations.

Kalnins (2007) work on sample selection and theory building provide inductive researchers in the qualitative domain a cautionary note concerning the deduction of causal relationships from emerging empirical data. Sample selection processes may result in erroneous causal relationships presenting, which are non-existent but have emerged due to the selection process and particular organisations opting into the study (Kalnins, 2007). The researcher thus noted this selection process as a possible limitation to the findings.

Saunders & Townsend (2016) and Guest et al. (2006) explored the number of interview participants that organisational research ought to contain and an examination of extant literature performed by the authors revealed limited empirical evidence and largely variant opinion on the standard to be adopted in the breadth of research strategies embarked on. Saunders & Townsend (2016) adopted a method that used only top-quality journals as a source of specifying the number of participants that were interviewed to produce high-quality qualitative research. The explicit number of research participants remains unclear through the study by Saunders & Townsend (2016) who ultimately provide a range of 15 – 60 interviews for qualitative studies with variation depending on the homogeneity or heterogeneity of the sample. The final recommendations by the author are that the research method and design must be clearly articulated, and the decisions used to select the

number of participants must be clearly articulated and linked to the research purpose (Saunders & Townsend, 2016).

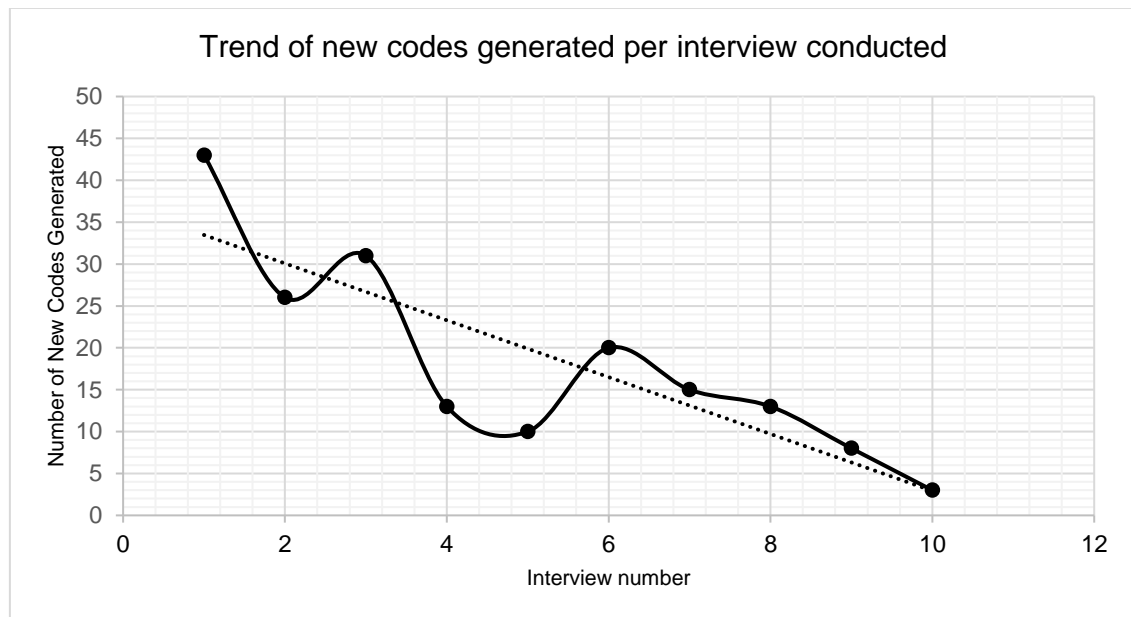


Figure 1. Data saturation curve (Generated by author during coding)

Although it was expected that as the research and literature review of this study progressed, expert opinion from top-tiered journal articles and the norms followed by credible sources in the field would be used to inform the final number of participants to be chosen for an interview, but these varied extensively.

The researcher thus decided to rather monitor number of new codes generated from the analysis of each interview transcript (Guest et al., 2006). When the data analysis commenced, analysis for data saturation was done to determine when no further interviews were necessary due to the number of new codes being generated in the analysis approaching zero (Guest et al., 2006). Therefore, informed by the data saturation trend, 10 interviews were completed to meet the objectives of this research and to fulfil the purpose of this study.

The data saturation curve generated did not exhibit the traditional hyperbolic trend but rather displayed an erratic trend ending with a sharp decline from interview 6. Extrapolation of the trendline would cross the number of new codes generated axis before interview 11, this confirming the cessation of data collection.

4.5 Measurement Instrument

The primary measurement instrument for this study was a semi-structured interview guide (see Appendix C) for use during interviews with executive-level

representatives of the chosen sample. A semi-structured interview guide is a useful tool in an exploratory study as it enables participants to share their experiences of chosen phenomena candidly and openly and for the researcher to deeply probe the participant for their views on the subject matter.

This research study explored perceptions, beliefs and the overall awareness of the sample about the energy transition phenomenon – variables that are not quantifiable by observation, hence the mono-method qualitative method was the most suitable.

4.6 Data gathering process

To proceed with the data gathering phase of the project, ethical clearance was obtained from the University of Pretoria. The ethical clearance process ensured that the study did not contravene the rules of the university, particularly regarding the retrieval of data from vulnerable groups. The process included the completion of an application and supervisor approval prior to review of the university's Masters Research Ethical Clearance Committee, and the attaching of this methodology section and the semi-structured interview guide (Appendix C). The approval to proceed with the data collection from the Masters Research Ethical Clearance Committee has been included in Appendix B.

After ethical clearance had been obtained, a list of potential participants, identified through the application of the sample criterion on the entire SME population, was contacted electronically or by telephone to request their participation in the interview.

Preparation for conducting semi-structured interview was critical in ensuring that the maximum amount of information was obtained within a limited duration. To understand the participant, desktop research was undertaken on participants who agreed to undertake the interview. This allowed rapport to be built during the interview, and made the participant feel more open and comfortable to share information as they reciprocated the time invested to understand them.

Once the participants had agreed to participate, the interviews were set up, conducted, the proceedings were transcribed, the data was analysed, and inferences were drawn (Saunders & Lewis, 2018).

The interviews were conducted remotely on Microsoft Teams and lasted approximately 45 minutes each. The interview proceedings were informed by the researcher's semi-structured interview guide which included a list of probing questions related to the study. All participants provided their consent to participate

on a confidential basis in the study verbally during the interview, which was recorded, and in writing

Numerous limitations exist for interviews, for example, participant bias, listening skills of the interviewer, interview bias, a rapport developed to encourage openness, etc. The researcher was cautious of these and not to interrogate the participant or allow the session to transform into a cross-examination.

To assist in the effective analysis of the data collected, all interviews were recorded with the consent of the participant. These were transcribed using transcribe.com. The recordings and transcripts have been stored both on the personal computer and cloud drive of the researcher. The raw data has also been supplied to the university.

4.7 Analysis approach

As this study followed an inductive design, the data collected was sorted into categories to inform the theory. As further data was collected and categorised, the theory developed further, and patterns emerged. Alvesson & Kärreman (2007) provide an alternative view on the interpretation of empirical findings and the relation of these to the proposed theory. Surprises, termed “breakdowns”, should be embraced as a form of mystery, informing new knowledge pathways that differ from the theory developed (Alvesson & Kärreman, 2007). The thematic development of codes must be approached with an informed openness that prevents rigidity within an inductive research design (Alvesson & Kärreman, 2007).

The codifying of data was an iterative process, the outcome of which was dependent on the framing and lens through which the researcher approached the data (Saldaña, 2013). Codes captured the essence and meaning of a section of data and was then categorised according to their similarity into a category (Saldaña, 2013). The relationship between categories informed concepts or themes which were then used as the basis of theorising (Saldaña, 2013). Saldaña (2013) emphasises that the codifying process is cognitive, and one must be aware of the paradox that sometimes differences observed are indeed similarities.

4.8 Quality Controls

Qualitative research, by nature, has a high degree of involvement from the researcher who immerses themselves into the data and experiences of the participants through close-contact interviews and observations (Golafshani, 2003).

As a result, the researcher's bias, was pronounced as the researcher has had experience with or in the phenomena that was being studied and was therefore an inevitable factor that may have distort the findings (Cope, 2014).

The credibility of the findings refers to the truthful interpretation and reporting of the participant responses and views (Cope, 2014). Cope (2014) suggests multiple methods by which the credibility of the study can be maintained, and these include method triangulation, reflexivity, member checking, and maintaining an audit trail. To ensure credibility semi-structured interviews with multiple respondents were conducted to gain insights from different participants to improve the validity and reliability of the findings (Golafshani, 2003).

The author acknowledges his bias on the subject through his involvement in the energy sector during the last decade and as a result, kept a reflexive journal to monitor his feelings during the process to limit the possible creep of his perceptions into the analysis. Once the themes emerged from the analysis, the author presented these to selected interview participants to member check that their views were correctly interpreted during the analysis process.

As a final step in the process of maintaining credibility in the study, an audit trail consisting of all the interview transcripts and the results of the analysis of the data was kept enabling other researchers to verify the data to replicate the conclusions if necessary.

Authenticity refers to the ability of the author to correctly convey the emotions and reactions of the participant in an accurate manner (Cope, 2014). The author ensured that authenticity was upheld by using verbatim quotations of the participant responses in reporting the findings of this study.

The selected measurement instrument of semi-structured interviews resulted in raw non-numerical qualitative data which by the nature of a semi-structured interview was obtained in a non-standardised manner. The raw data underwent transcription from recordings to convert audio into text data. Analysis of the data began once the first interview had been conducted. Firstly, this allowed for deepening of the questioning in subsequent interviews as insights were gained along the journey. Secondly, the concurrent analysis of the data during the interview phase signalled data saturation (Guest et al., 2006). Saunders & Lewis (2018) outline a guide for qualitative data analysis which encompasses data preparation, proposition development, and theory testing or pattern identification.

To ensure validity and reliability of the data, the preparation phase endeavours to standardise the form of data, applying standards to the punctuation of the data, assigning meaning to the use of parenthesis, capital letters, and italics for example. This phase was completed in the transcription phase on Microsoft Word to enable standardisation across the data inputs from all interviews that were conducted.

4.9 Limitations

The primary limitation of this study was the homogenous sample set probed in search of an explanation for the research questions developed. The selection criteria were developed to generate a homogenous, easily accessible sample, however, the full impact of the energy transition on incumbents was not explored. Further studies on larger organisations and their response to the energy transition will add to the knowledge generated in this research study to provide a more complete view of the stated phenomenon.

Additionally, South African SMEs are under regulatory pressure, both through codes such as Broad-Based Black Economic Empowerment (B-BBEE) and Employment Equity (EE), and stringent environmental laws, which contribute to growing apathy from the business community. Coupled with ailing state-owned enterprises (SOEs) and currency fluctuations, SMEs need to navigate a myriad of torrents to survive. These externalities could be factors that catalyse the adoption of business model innovation and result in distorted data when the energy transition is examined for attribution of the phenomenon.

The effects of the global COVID-19 pandemic on the perpetual operability of SMEs was a factor that had to be considered when business model innovations were explored. The post-COVID economy is vastly different from when it was business as usual pre-2020. SMEs were forced to change the lens through which their environments are analysed, and their strategies are implemented making innovation almost essential. To infer that the energy transition is the primary and not complementary force that encourages business model pivot implementation might be flawed. Scholars exploring the theory developed in this research study must therefore consider the interplay of all these forces when assessing business model pivoting, so as not to incorrectly ascribe the phenomenon stated as the sole contributor.

Also, future research in the field must account for the ontological assumptions of the researcher. The views in this study have assigned a negative and destructive character to the energy transition, with a blatant omission of the positive and socially beneficial nature of the phenomenon. There thus exists scope for future research to adopt an opposing ontological view, that is enact an ontological shift, on the energy transition to explore the advantages that the phenomenon could present to incumbent SMEs (Shepherd & Suddaby, 2017).

Finally, as a closing thought, the results of this study may not be generalisable to the wider community of SMEs in South Africa or other organisations or industries due to the rigorous sample selection process that has been used. Furthermore, the purpose of this study is focused on gaining an understanding of the perception of SMEs on the energy transition and illumination of their current business models and potential pivots without the intention of the results being used to explain causal relationships that may exist.

CHAPTER 5 FINDINGS AND RESULTS

5.1 Introduction

The analysis of the data collected from interviews of the 10 participants in this study are presented in this chapter. The chapter begins with an overview of the sample and is followed by a presentation of the findings structured according to the research questions.

Thematic analysis on the raw data collected from interview transcripts resulted in seven themes emerging. The themes are clustered corresponding to the research question to which they are most relevant. Supporting evidence in the form of verbatim quotations from the participants, and code frequency tables are used to provide an immersion into the rich data that was collected in the collection phase and the intricate thematic analysis that was undertaken.

The chapter concludes with a conceptual model that has been developed by imposing the emergent themes on the MLP framework.

5.2 Overview of the sample

The sample consisted of owners and executive management of South African SMEs whose operations were focussed primarily on product or service delivery related to electricity generation from fossil fuel.

To maintain homogeneity of the data, only businesses who had been in active operation for more than 5 years within a revenue range of R10 million to R50 million were included. These criteria for inclusion ensured that the sample contained only well-established businesses within the industry who could provide expert opinion on the general systems and challenges and of doing business in this industry.

Table 1 overleaf provides a summary of the participating businesses and interview data. It suffices not to detail the revenue range, or services offered by the individual businesses as these were standardised across the sample as described in the previous paragraph.

5.3 Approach to analysis

To maintain the inductive approach of this study, minimal reference to the research questions or developed literature was made during the analysis phase of the project by the researcher. As such, the opinions of the participants emerged with limited

researcher bias to understand the way incumbent SMEs in the energy sector interpret, perceive, and view the energy transition that is altering their main business environment.

Thematic analysis was performed on the raw data collected from interview participants utilising Atlas.ti software. Braun & Clarke (2006) formalised the idea of thematic analysis as means of interpreting and reporting patterns in a data set.

During the first phase of the analysis a code list of 201 initial codes were generated through the code assignment process across all ten interview transcripts. Once this phase was completed, redundancy was corrected for through a code merging exercise resulting in a final list of 184 codes.

The sub-themes, known as groups on Atlas.ti and referred to as categories in this chapter, were then developed from the codes. The 63 categories contained codes that exhibited an analogous pattern and related concepts. As a final step in the analysis, the categories were grouped according to their relatedness to an idea, and these are reported in this chapter as the seven themes.

Table 1. Participant and interview summary

Subject	Rank	Age of business	Location of business	Interview	Transcript word count
Participant 1	Owner	40+	Johannesburg	41:43	4380
Participant 2	Owner	20+	Johannesburg	45:09	3965
Participant 3	Owner	5	Johannesburg	38:40	3290
Participant 4	Director	30	Johannesburg	28:50	2341
Participant 5	Owner	17	Vaal Triangle	33:05	3058
Participant 6	Director	40	Johannesburg	48:22	5379
Participant 7	General Manager	10	Witbank	44:29	3657
Participant 8	General Manager	22	Vaal Triangle	39:23	3431
Participant 9	General Manager	30	Witbank	41:02	3623

Participant 10	CEO	40	Johannesburg	42:08	4457
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5.4 Research Question 1

How are the effects of the energy transition understood as a risk to organisational continuity for incumbent energy sector reliant SMEs?

5.4.1 Introduction

The findings for the first research question are presented in this section. The aim was to explore the extent to which SMEs understand the environment in which they are situated. The themes of *Contextual factors* and *Energy transition outlook* were the most relevant to providing evidence that the research question aimed to discover.

5.4.2 Theme 1: Contextual factors

The confluence of the environment of business and the landscape element of the MLP emerged in the theme of *Contextual factors*. Although respondents were not specifically asked for information pertaining to the environment or landscape, concerns arising from the contextual positioning of business within South Africa, and globally emerged strongly. As one respondent passionately declared:

“My thought is, yeah, South Africa is drowning. It's horrible! [...] in the context of prioritizing things, I would of course say this is not really an emergency and urgent thing.” **Participant 7**

Table 2 overleaf illustrates the categories of the *contextual factors* theme and corresponding code composition.

Many respondents thought that there are other more important concerns that need to be addressed with in the complexity of South Africa's economy and social structures than climate change.

“So, they're looking in the wrong direction, in my opinion. It's important, but it's not critical [...] South Africa seems to think it is first world. And unfortunately, quite frankly, it's not. They need to get the environment, right. They need to stop crime, poverty, famine, water. So, until you address those

problems, all this is just pie in the sky to me. Right. Okay. That's just my opinion.” **Participant 1**

Table 2. Category list for theme: Contextual factors

Theme	Categories	Number of codes
Contextual Factors	Climate change is not South Africa's biggest problem	9
	Corruption	3
	Economic stability	3
	Energy security	6
	Incapacity of current regime	1
	Infrastructure mismanagement	3
	Transition inputs and outcomes	4
	South African context differs from first world	6
	Unemployment	2

“I would prefer that they would look at the biggest issues. The most urgent issues is unemployment in South Africa, is in inequality in South Africa. The rich are very rich, and the poor are very poor. [...] So yes, I would say this can be kept as an idea, but there's no rush. There's no agency to put it into place unless this will guarantee giving more people work.” **Participant 7**

“However, I think that fossil fuel is something that you need, uh, that you can't stop abruptly because over and above the environmental impact, there's a social and economic impact as well, so that we need to take into consideration. We're still developing, unlike your European countries that are way ahead of, of us. I mean they can implement these things like now.”

Participant 9

Multiple direct references to the individual issues plaguing South Africa were made by most respondents. Particular attention was given to the levels of corruption in

South Africa that prevents growth in the country by deterring investment into the country.

“And, um, one of the biggest problems here, I mean, you look at one of the biggest reasons that our coal fired stations have collapsed is through corruption. Do you think renewable energy is going to be any different? As you've got in business, you need to score people from all walks of life, but you also need integrity. And a bit of honesty goes a long way. Not about to make the billions and steal 99% of it and leave the 1% left. And that's basically what's happening across all our major industries out here from mining to power to manufacturing.” **Participant 1**

“And then obviously look at the corruption. Where does that stop? But the problem is how far do they want to get involved in South Africa? Because when people invest here, nothing happens and the money disappears that's for me the biggest, biggest problem that South Africa faces is we've got everything, but people are scared to invest.” **Participant 6**

Participant 6 spoke of the level of trust that is lacking between the citizens of the country and the government.

“Yeah. So, I think a lot of people, when it comes to South Africa and the transition to renewable energy trust is a big thing. I think a lot of it be is because of investment and there's a lot of very wealthy people in South Africa that are sitting on the fence, not knowing what they should do because there's no trust. There's no trust.” **Participant 6**

One participant shared openly how corruption within SOE's affects their ability to fairly participate in activities in which they are the most experienced and skilled to perform.

“So, then you find that the people that are inside are the only people now that are being visible, and they are getting the job and considering the level of corruption that is already happening. We are now subcontractors, most of the time, when we are the people who have theory and all that stuff, and the experience. I mean, what is stopping them from coming directly to you? They will use an excuse of developing young, you know, local talent, eh, yes. Especially with Eskom you find there's a lot of undercutting and, and all this stuff. Which takes us back to corruption inside. Cause they get pricing, they

get the budget, the information, they get all this information inside.”

Participant 7

Related to the concept of corruption is crime in South Africa, which was highlighted by a respondent as a limiting factor to the effective implementation of renewable energy generation means within the country and the worsening of an already high crime rate.

“So, once you stop those industries, it’ll be worse. I mean, people are struggling even now. So, if you do that without a proper plan, it’ll just, uh, exacerbate the situation because people will lose their jobs and the crime rate will go up, you know, even now with 30 something percent of unemployment rate in the country, the crime rate is bad. I mean, people are trying to survive.” **Participant 9**

“When they start putting solar panels up, they’re going to start being stolen when they start putting batteries up, they’re going to get stolen. So, it’s going to be a very difficult thing for them to start putting up farms. So, the first thing they would have to do is select an area where they’re going to put up the solar farm and they’re going to have to secure it. They’re going to have to put a wall around it. They’re going to have to put their electric fence on solar. So, the biggest problem in South Africa is theft.” **Participant 9**

Unemployment was a concern for nearly all respondents, with most referring to the subject at least once during their interviews. Some felt that the existing regime provided more opportunities for employment, whilst others felt that the energy transition would be ideal only if it created more opportunities for employment.

“So yeah, I think 50/50 would be the best we’re going to see, but obviously this whole thing is also aimed at job creation due to our high unemployment rates, et cetera.” **Participant 2**

“We’ve got a lot of people working in the coal industry. So, to do a transition is going to have to be done very slowly and very carefully. And you must do it in a way that you don’t disrupt other people’s way of living. It’s because it can put a lot of people out jobs unless you’re going to change, start re-training people.” **Participant 5**

“I think that depends on if it can create jobs for people because that is their only source of income too, so it's not like they're going to be using robots anymore. So, I think it would work.” **Participant 7**

“We got to think in the long term how many jobs are going to be created. You're not going to create as many jobs on a solar farm on installation and building and all that. Yeah. Solar panels don't need many people, whereas on a coal-fired power station means 5,000 people say on a power station.”

Participant 10

Nearly half of the respondents who mentioned employment focused on the current state of unemployment in South Africa and the ramifications a new technology would have on job creation and retention.

“I think that ideas of what they're saying about renewable is a lot of smoke. I think it will happen, but due to our unemployment rates out here, to start closing all the stations and all of that, it's going to be too devastating to the economy. I mean, jobs out in this country now are scarce and few. So, I can't believe that they're going to start putting thousands and thousands of people out of work.” **Participant 1**

“There's a lot of factors specific to South Africa. Okay. Well, one of them is employment. The solar energy thing is a very good, it sounds like a big sector, but it's still a small sector which is not going to create masses of jobs.”

Participant 1

“And basically, that's going to end up in more load shedding and a lot of people losing their jobs unnecessarily, and, uh, yeah, basically it's going to be a great big knock for the economy.” **Participant 4**

“Obviously, it'll affect us. It'll affect other people's jobs, it'll affect mines. We have a lot of coal mines, which rely on supplying Eskom with the coal, so it will affect families. It will affect businesses that rely on supplying coal to Eskom for power generation.” **Participant 7**

“Yeah. But when you look at, uh, in terms of employment, when you consider how many people are employed in these sectors that are generating electricity through fossil fuels you will realise that even now the unemployment rate is bad in our country, in South Africa. So, once you stop those industries, it'll be worse.” **Participant 9**

Energy security was a concern for some respondents who identified the lack of a stable supply of electricity as one of the biggest risk factors for the country and its economy.

“You can't be going and trying to swap out fossil fuels for renewables when you don't have the basic commodity, which is a stable power supply.”

Participant 1

“No, gosh. I think right now in South Africa, I think there's more of a risk of us losing power. [...] I think the biggest risk right now is the current energy supply that we have.” **Participant 5**

“I mean, it, it is bad for the economy and is bad for everything. Nothing happens in the country without electricity. Even though we are encountering problems with electricity, Eskom cannot supply energy. Even now we are experiencing stage 4 loadshedding” **Participant 9**

One respondent felt that amidst the crisis the country is facing regarding energy supply and security, that the timing of the acceleration in renewable energy generation is perfect.

“I think there's a need for renewables looking at the state of energy. Like we've got an energy crisis in the country. So, I think this is the right time where you really need the renewables to come into the energy mix to try and solve this problem that we are facing of the shortage, of electricity.” **Participant 9**

The lack of maintenance of the current generation infrastructure was a problem for some of the respondents who attributed the inefficiencies in this area for the current state of electricity in the country.

“Same as the refineries, some of the bigger companies that it is easier for them to pay the fine than spend the money fixing it. So, it's all out of sync anyways.” **Participant 1**

“They're not efficient. The problem with the old stations is that their cost to generate one megawatt is X times more than a Medupi or a Kusile, because of the scale and it's new technology and they don't have spares and we know the issues.” **Participant 2**

“You know, if you look at the way Eskom is failing, and the ageing infrastructure that, you know, it is all on the news. I mean it just had 40 units

go down and we are back on load shedding. [...] So, I think, also at the same time we got problems with our coal power stations now. So, we are already sitting with a bit of a problem there, which we need to sort out.” Participant 5

“If they have been doing maintenance in the first place, we wouldn't be in the situation. The maintenance that is taking place now should have been done 15 years ago. But they wait until it breaks and then it's gets fixed instead of maintaining constantly. [...] So, because then they would've had their maintenance, but everything's just collapsing. And now they're jumping up and down. Now they're trying to do all the maintenance at one time, which is almost impossible. And that's why we got the loadshedding.” Participant 10

On the topic of inefficiency and mismanagement, one respondent voiced concern over how the existing government and decision-makers would fare in the renewable energy space.

“Because basically at the moment they can barely run the Eskom power stations. And so, I don't know how they plan on running renewable energies?”

Participant 4

The lack of transformative government policy and regulation was raised by a few of the respondents. When speaking of policy, the respondents expressed their concern at the limitations placed on the private sector to uninhibitedly implement renewable energy projects.

“If they actually allowed the private sector to come in here and cut some of the red tape and some of the policies, we can fix a whole lot in one go. [...] It's as simple as that, you know?” Participant 1

“I think in South Africa, because we are still a developing country, I think we are still not ready for the transition. Yes, we are at the early stages of implementing different types of renewables, but we are not yet there in terms of the policies. In terms of the infrastructure.” Participant 9

“I think I've one megawatt, so only recently in the last four to six months that they've gone up to a hundred megawatts. So, all the farmers in the Northern Cape and Free State, they've been capped at one megawatt. What can you do with one megawatt?” Participant 10

A frequency analysis on the most used words within the contextual factor theme revealed the highest occurrence of the word “people” as seen in Figure 2. Consideration of the effects of crime, unemployment, loadshedding, energy stability and economic growth on the people of South Africa was the greatest concern amongst the respondents.

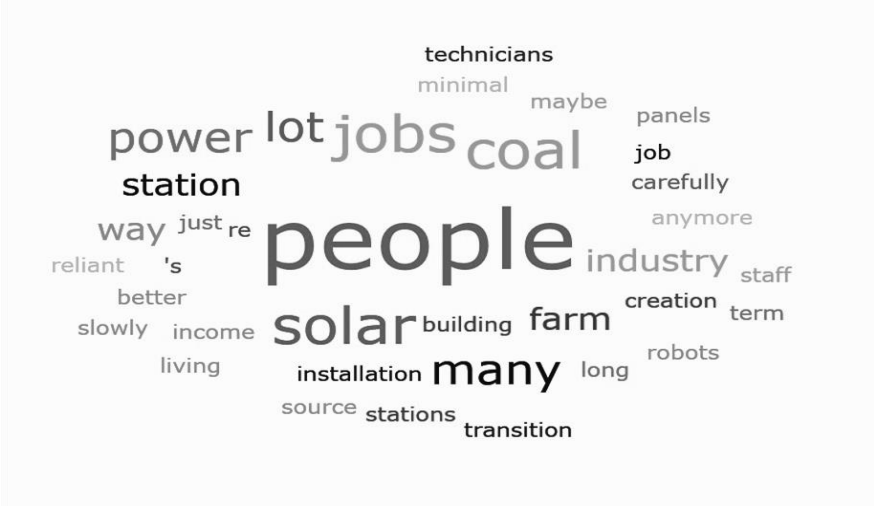


Figure 2. Frequency analysis of theme: Contextual factors. (Source: Atlas.ti)

5.4.3 Theme 2: Energy transition outlook

As the first of two themes that concern the energy transition explicitly, the theme *Energy transition outlook* emerged from the general sentiment of the respondents related to the energy transition. Findings constituting this theme illuminate the thoughts and attitudes of SMEs in general as they are confronted with this potentially disruptive phenomenon.

Table 2 below lists the 9 categories and the 35 codes from which this theme emerged.

Table 3. Category list for theme: Energy transition outlook

Theme	Categories	Number of codes
Energy transition outlook	Alternative fuel sources	2
	Capitalism over sustainability and growth	6
	Energy mix	7
	Energy transition barriers and challenges	2
	Energy transition inputs	1

Existing regime will remain	8
Geopolitical considerations	2
Long term view	3

The overall view of the respondents was that coal was too important a commodity for its use to ever cease completely. Most respondents expected electricity generation from fossil fuels and from renewable energy resources to coexist as a feasible solution to stabilise the electricity supply in South Africa. Moreover, certain contextual factors were mentioned as inhibitors to the pace of adoption of renewable energy technologies.

Most respondents concurred that fossil fuels will be actively used for a long time to come. This consensus was informed by factors such as the abundance of coal reserves, the fact that coal is cheap and attributed its continued usage to the fact that most infrastructure is built for processing coal.

“So, I think within our lifetime, we won't see coal completely shutting down. No.” **Participant 2**

“So, I can't see that we are going to be completely going away from coal.” **Participant 5**

“Yes. My understanding is that Eskom will not go away, but that coming up with a new system of, you know, using the renewable energy sources, like wind and solar. Yeah.” **Participant 7**

“So, in my understanding, that is the challenge. But not because I'm in the energy industry or the coal industry. I feel, or I think that fossil fuels are going to be here for a long time to come.” **Participant 9**

“We are still too reliant on coal. And, we've got a surplus of coal, although a lot of it is going to China. Um, I think we are so used to coal. We take it for granted. [...] There'll always be a need for coal.” **Participant 10**

Also, some respondents expressed their view that fossil fuels will be replaced by alternative fuel sources that are used in the existing infrastructure.

“But the burning of coal is only a portion of what those units fulfill. If they piped in gas or managed to run it on, I don't know, hydrogen or something like that...” **Participant 1**

“SASOL will just move to gas instead, instead of coal, if it becomes what's the word, socially irresponsible.” **Participant 2**

“So that's my understanding that shifting from using coal, towards using water and gas? Yes.” **Participant 7**

“We still have a lot of gas, so they start utilizing the gas. So, the coal goes out, the gas is more or less the same as the coal. But, uh, I don't think the power stations will close totally.” **Participant 8**

Related to the common belief that fossil fuels will be utilised for the considerable future, is the fact that renewable energy will coexist with fossil-fuel-derived energy resulting in a shift of the energy mix, but without the total elimination of fossil fuels from the mix.

“The thing is there's room for all of it. There's room for coal, there's room for solar, there's room for wind, everything's got to be positioned correctly. And have the best of all three worlds or four worlds of whatever is” **Participant 1**

“Eskom cannot supply energy. [...] I think the renewables can cater for the shortage. However, it doesn't mean that you need to get rid of, uh, of fossil fuels. It should be a combination because the fossil fuels, they play a huge role in maintaining the base load that you need.” **Participant 9**

“The transition can work. I believe it can work. However, it should coexist with, uh, the existing system that we have. Then it'll work perfectly.” **Participant 9**

Next an analysis of the different factors contributing to the effective implementation of renewable energy was performed. Participant 5 profoundly summed up the general opinion of the respondents overall: *“It is not a silver bullet. We're not going get there quickly, [...] because we've got a lot to take into account.”*

Most respondents, although expressing negative views about the country and the ruling government, displayed a positive outlook on renewable energy with hopeful optimism that it could help alleviate the country's energy woes.

"I believe at the moment renewable energy will come in on a, on a fairly large scale, which will take the pressure off, you know, fossil fuels as such."

Participant 1

"So, I don't think they'll ever get to a hundred percent renewable energy ever. Um, that's not going to happen. I think the best that I'll see is maybe 25 to 50% split."

Participant 2

Despite common positivity, capitalism was mentioned by most respondents as the key inhibiting force preventing the acceleration of the energy transition.

"But the powers that be refineries, governments, OPEC, and all of that, they seem to put the squeeze on it."

Participant 1

"That's a problem, new technologies are out there, but clients are just reluctant to pay the going rate."

Participant 2

"Yeah. And if they go alternative, then it's goes in competition to Eskom."

Participant 10

Accompanying this view, was the sentiment that because Eskom is an SOE, that political interference could be a factor that is thwarting faster adoption of renewable energy technologies.

"But I believe that in South Africa we are getting stopped from putting renewable energy on because the more people that use solar power, the less money Eskom receives and the less money the government receives."

Participant 6

"But it seems there's a lot of groups and faction, even amongst the people we are relying on. Unfortunately, cause remember this thing is being driven by politics."

Participant 7

"It's a South African problem and we're too reliant. Politics? Um, because it's an SOE. Eskom is an SOE. And they've never really wanted change."

Participant 10

Aside from the capitalist agendas of the big corporations and the government, some respondents voiced their lack of confidence in the government to effectively implement renewable energy as a solution to the country's electricity supply shortages given their track-record of poor service delivery.

“I think the government's incapable of doing anything quite frankly, um, they're not proactive. They're actually non-active. And it's as simple as that. If they start managing it and putting under SOEs and all of this, it'll be a disaster.” **Participant 1**

As an added complication to the factors delaying the energy transition in South Africa, some respondents alluded to the current geopolitical instability that has been brought about by the war in the Ukraine.

“If you look at what's happened now in the last six to eight months with Russia and the Ukraine, um, a lot of the countries that were avid, we've all got to go green are now considering bringing those stations back”
Participant 1

“The focus was to do more work in Mozambique. Um, but with the political situation there currently projects were put on hold. Also, another project is completely gone on hold because the steel piping that was supposed to come from the steel mill in Ukraine, which is the one that the Russians has bombed.” **Participant 2**

Some respondents felt that the transition would be successful if the task was transferred from the ineffective government to the private sector for implementation. Ideas around the inclusion of revered world leaders in the South African case also emerged from some respondents.

“I'm not saying that the power industry must concentrate on bringing in renewables, but I think the private sector needs to do it, not the government. If they change policy and they make it easier, businesspeople could go in there and sort it out.” **Participant 1**

“So, basically what's going to start happening, Nigel, because of Eskom's inefficiencies, I think that what's going to happen is that international companies are going to come in, buy some of the power stations and take them over as private entities. I think that would work to rescue the system.”
Participant 2

“I think if other world leaders got involved like the US, like they are starting to get involved with the renewable energy and the transition. Joe Biden is actually trying to speed up the renewable transition.” **Participant 6**

Some respondents felt that the energy transition as it is currently defined and being executed is misaligned and neglects other important technologies such as nuclear power which could function as a solution.

“So, I've done a survey on how many nuclear power stations they are in Ukraine. It's the highest concentration in Europe. And I don't think that's going to go away anytime soon. And personally, I'm fairly pronuclear”

Participant 2

“And as for nuclear, I'm not sure what the plan is for South Africa to do more. I mean, we've had problems in the past where they wanted to build nuclear, but they haven't.”

Participant 5

“If you look at the Ukraine now, they've got 10 nuclear power stations. We've got one. We can build 10 all the way down the coast and still have renewable energy. And the nuclear energy can supply our essential businesses and the solar can supply the non-essential.”

Participant 6

As a final consideration, some respondents felt that the only way to effectively execute a successful energy transition, is through a shift in stakeholder mindset, and for short-term reactivity to be replaced by long-term proactivity.

“And they're thinking short term, they're not thinking bigger picture.”

Participant 6

“So, to change from that to gas or solar, it's going to take a whole different mindset. A mind change, you know, and we're talking people in the older generation, uh, they are so set in their ways, don't fix what's not broken.”

Participant 10

5.4.4 Theme 3: Energy Transition: An opportunity?

The second theme related to the energy transition encompasses the thoughts of the respondents pertaining to whether opportunities for business expansion were recognised or not. *Energy transition: An opportunity?* emerged as a theme and the findings provide an overview of the general sentiment regarding the energy transition as an opportunity that is available to SMEs for further exploration and exploitation.

The theme emerged from 8 categories and a total of 29 codes, which are listed in Table 4 below and will be presented in this section.

Table 4. Category list for theme: Energy Transition: An opportunity?

Theme	Categories	Number of codes
Energy transition: An opportunity?	Climate change is a buzzword	5
	Energy transition is not a risk	1
	Opportunities exist in current regime	3
	Opportunities exist in new regime	5
	Pivot	1
	RE offers no opportunity	2
	Uncertainty	7
	Understanding of the energy transition	5

As discovered in the *Energy transition outlook* theme, most respondents believed that fossil fuels will continue to be the primary source from which energy is derived, while alternative fuel sources and renewable energy will slowly be introduced to create a *mutualistic energy symbiosis*.

The starting point in determining the consensus amongst the participants was to gauge their depth of understanding regarding an energy transition. The researcher attempted to determine where the respondents were in their knowledge of the energy transition.

The overall views and understanding of the energy transition differed amongst respondents. Some respondents had a basic understanding of the energy transition which was concerning considering that they were situated in the energy sector and should have displayed a more thorough knowledge of the environment in which they are situated.

“So now yes, I've been given it some thought and, uh, obviously listening to the media and things like this now. Um, the understanding is that yes, we want to move to, how can I say, we want to move to solar power and other forms of renewable energy and so forth.” **Participant 2**

“That's basically going from one type of energy to the next. So basically, going from coal to sun and wind and sea turbines and all that lot.”
Participant 4

“I don't really know. I've heard on the news. I've heard what is going on in Cape town is going out more on the, the wind and the solar systems. So, I'm not sure because we don't really hear what's going on.” **Participant 8**

“The big hydrogen farms going up in the Northern Cape or Free State now. But that's what I've seen on the TV and, is it Creamer Media? Engineering News?” **Participant 10**

Although the depth of knowledge related to the energy transition was shallow overall, most respondents accurately indicated that the energy transition entailed a regime shift.

“That's basically going from one type of energy to the next.” **Participant 4**

“When you transition from one type of fuel to another, like going from fossils to renewables and start using more solar wind hydroelectric or, you know, nuclear.” **Participant 5**

“Well, energy transition is quite obvious. We get away from coal pollution. We go straight to solar, go straight to solar and wind and wind generation.” **Participant 6**

“Shifting from using coal, towards using water and gas. Yes.” **Participant 7**

“My understanding of, uh, the energy transition is we need to move away from fossil fuels, as a means of generating electricity, obviously due to the impact they have on the climate.” **Participant 9**

“A change from coal-fired power stations to alternative sources as in gas, solar, hydrogen.” **Participant 10**

Some respondents were not fully convinced of the legitimacy of the energy transition process.

“I think it's a bit of a buzzword at the moment to be honest. Get the basics right. All this is just pie in the sky to me. [...] That's just my opinion.” **Participant 1**

Uncertainty around the outcomes that the energy transition would result in, and around the integrity of the process to effectively stabilise the South African electricity supply was also mentioned by some respondents.

“Sorry, I don't have a crystal ball. Otherwise, I would be billionaire.”

Participant 2

“Everybody is sitting on the fence. Do we stay here, or do we go? We don't know what we're going to do, you know?” **Participant 6**

Most respondents did not view the energy transition as a risk to their businesses.

“Um, at this moment I would say, no risk, to be quite honest with you.”

Participant 2

“I'm not really too concerned about it at the moment.” **Participant 5**

“So really, I don't think they will really be a problem for us.” **Participant 8**

“No, it's not going to affect us.” **Participant 10**

Some respondents believed that the abundance of renewable energy resources within the country should have been recognised and exploited long ago, alluding to the reactive nature of South Africa in now attempting to accelerate the transition when we are faced with a crisis.

“I think renewable energy has been around long enough to overtake fossil fuels a long time ago, right. With hydrogen and all of that for the motor industry that technology's been around for 20 years.” **Participant 1**

“Well, I think in South Africa, we are much more viable to be using renewables because of our sun, our space, which is probably what Europe is lacking.” **Participant 5**

“For the longest time, I believe that South Africa could have gone to renewable energy [...] we've got the coastlands, we've got the cold water for the nuclear power.” **Participant 6**

When probed on the decommissioning of old power stations, one responded mentioned that he believed that these sites were perfect for conversion into renewable energy generation and distribution sites as the infrastructure already existed.

“Use those facilities for battery storage and then hook it up into the existing grid because the infrastructures there to all these old power stations,”

Participant 2

As a final thought, the unemployment crisis in South Africa was at the forefront of most respondents' thoughts who believed that the transition should create employment as the only positive social construct apart from helping alleviate the effects of climate change.

"We've got a lot of people working in the coal industry. So, to do a transition is going to have to be done very slowly and very carefully because it can put a lot of people out jobs..." **Participant 5**

"I think that depends on if it can create jobs for people because that's their only using the source of income too..." **Participant 7**

"We got to think in the long term how many jobs are going to be created."
Participant 10

5.4.5 Conclusion

The findings of the first research question which aimed to decipher the perceptions of the sample regarding the energy transition revealed a high level of awareness of the political and economic environment in which they are situated. With regard to the energy transition participants were generally unphased by the shift of the regime from fossil-fuels to renewable energy source citing their lack of faith in the government and belief that South African infrastructure was too highly geared towards coal for its use to ever cease.

5.5 Research Question 2

How are current business models structured in incumbent SMEs?

5.5.1 Introduction

The findings of the second research question are presented in this section. The three themes that provided the most insight into this research question were: *Current business model*, *Business challenges* and *Change*.

It is with this research question that the focus shifts from environmental pressure to intrinsic business factors. Structure, culture, people, and processes, although moderately influenced by environmental phenomena, are factors that a business determines in conjunction with consideration of profitability, sustainability, and competitive advantage.

5.5.2 Theme 4: Current business model

The *Current business model theme* was developed from responses by research participants under the framework of the business model canvas (Osterwalder & Pigneur, 2010). This theme, although not emergent, is important in understanding the mechanics of business systems within SMEs. Furthermore, it provides insight into the processes, structures, and culture of the businesses within the sample.

The section will outline the respondents' overall understanding of a business model and highlight the differences and similarities in which the respondents approached the key elements of the business model canvas within their companies (Osterwalder & Pigneur, 2010).

This single theme contains 13 categories, both emergent and predefined, which were developed from a total of 66 codes. Table 5 below lists the categories that constitute the *Current business model* theme and the findings are reported in the remaining sections.

Table 5. Category list for theme: Current business model

Theme	Categories	Number of codes
Current business model	Business model understanding	7
	Current service offering	4
	Key roles	7
	Leadership	4
	Legacy	1
	Marketing and advertising	7
	Networking and exposure	5
	Pricing structures	6
	Profitability	3
	Revenue	7
	Strong culture, low attrition	4
	Uniqueness	8
	Wide market reach	3

5.5.2.1 Understanding of the business model

The respondents' depth of knowledge of a business model and the elements constituted within the framework of the model varied greatly. Some of the respondents in attempting to answer the question probing their understanding of the business model provided a vague and basic outline of what they thought the business model was.

"The business model... It's basically the way that you run the business. That's basically your business model. Well [...] is this a good field to be in? What else is viable that I think that's the main thing." **Participant 4**

"A business model is basically the type of services we deliver, what type of clients we have the need for us and that type of thing. Basically, what we do." **Participant 5**

"A business model? Look after your people and the people will look after you. I've never thought about it. Good people, Correct People, good staff, correct equipment. To be honest, I've not really thought about it in that way." **Participant 10**

Other respondents were more aligned to the overall concept that the business model contains all the elements that work together to generate profits for the shareholders.

"You well know the business model, you pick up slowly, then you start to get up and then you plateau, then you start tailing off and you've got to either kick in more money and new technology and new people. Yes. Uh, to kick it onto its next chapter. And that's where we are right now." **Participant 2**

"Yeah, basically, uh, in my mind, a business model is basically what do you do to make money. Because at the end of the day, you, don't open a business to give welfare to your guys and let them go hungry. I mean you open a business to make money and to make a future." **Participant 3**

"Business model. Oh, it's your, basic business plan? Nigel. So first, what is your end-product and how do you get your end-product. What do you need to get your end-product? Who's your key employees and, and who's your customers that you need to target." **Participant 6**

“A business model is basically I'm assuming our structure. What constitutes the business? What are we doing and for who? How we make profit and all that.” **Participant 7**

Respondents were asked to elaborate on elements of the business model to ascertain the general way their organisations are structured. This allowed the researcher to draw similarities in operational structures and contrast the differences in SMEs within the power sector.

The first element investigated was the key activities of a business. Most respondents confused activities for services and products. The researcher had to then provide further clarification to the respondents probing further whether the businesses were of a service, manufacturing, or retailer type business.

Single sentences were provided for this element, and hence did not provide sufficient depth for further analysis except for aiding in further classification of the respondents' companies into categories.

5.5.2.2 Key Roles

The next element investigated the key roles in the organisation. Probing of this element revealed the roles that were important to the organisation from the respondents' points of view. The conversations within this element revealed traditional thinking amongst most of the organisations where loyalty and length of service is revered. Thoughts on skills development and training, although not explicitly probed for, were shared generously.

Only one respondent felt that the sales and administrative functions were key to the successful operation of the business.

“I say the accounts department. I would say sales definitely because you need to bring in more business.” **Participant 8**

Most of the respondents expressed the view that all roles were regarded as key and that no single role in the organisation took precedence over the other. A strong sense of Ubuntu emerged from the responses in this category with general labour given high regard.

“[...] management is definitely one of your most important resources, but without your lower rungs, you don't have nothing, you know. I mean, you. You won't be in a management position. Right?” **Participant 3**

“They are the hard workers. They get inside the tank; they pickle and passivate inside the tank with acid suits and respirators. And so, I would say those are key employees.” **Participant 6**

“Of course, we can't function without the people that go to the site and actually do the work. Yes. That's my belief. My belief is those are the most important people.” **Participant 7**

“Correct managers. Correct people. Correct workforce. Everybody. Everybody is key to me. [...] We all play a role. Some may be a bit smaller role, some have a more important role, but everybody in the company is important to me.” **Participant 10**

A common finding amongst most of the respondents was that they valued loyalty amongst their employees, with key roles being occupied by the same person for long periods of time. This revealed the traditional nature of the business which exhibit strong, entrenched cultures that are averse to change and advancement.

“So, we rounded up like an old music band. We rounded up a lot of the guys that were actually on pension, but, uh, yeah, we did the job, and it was successful.” **Participant 2**

“And also, the fact that our guys [...] they've been with us in the game for about 30 years, we've got some of the old guys still going on.” **Participant 5**

“Most of our staff have been here for more than 15 or 20 years. The youngest member we've got is 5 or 6 years. Right. I've been in pickling in preservations to since 2007, so 15 or 16 years. [...] Lynn has been here since day one. So, she's been here for 39 years. She's still here and it doesn't look like Lynn's going anytime soon.” **Participant 6**

“People have done it for 30, 40 years. Uh, they have the skill and the experience. It's a combination of both.” **Participant 10**

Skills development emerged naturally amidst the conversations between the respondents and the researcher when key roles were being discussed. Some respondents believed that the availability of skilled labour was a limiting factor.

“But the resource pool has shrunk in terms of experience. [...] Just we're aging, so, we need to start training some more young engineers and so forth. But do they really want to get their hands dirty Nigel? [...] I've got BSC Chemical Engineers working for us and to go and operate the process, which is what we do, they can't. And they're very nervous and do lack confidence.”

Participant 2

“I don't know where they're going to get people from to do it. Firstly, there's not a lot of people in this country that can do it [renewable energy generation] now.” **Participant 4**

“Sometimes when I learn, I try to teach some of the youngsters, it's like, they don't really care.” **Participant 8**

“You, you struggle a bit to get people for your management positions. [...] Not that there are not people out there, it's just that it is not a lot of them.”

Participant 9

5.5.2.3 Costing structures and pricing strategies

Respondents were asked to elaborate on their costing structures and pricing strategies to ascertain the level of industry competitiveness within the power sector and to determine the entities response to their industry overall.

Most respondents cited the high rivalry within the industry as the driving consideration for their costing structures and pricing strategies. Some respondents also noted the pressure on them from clients to keep their pricing within certain bounds.

“It's a balancing act. You know, you want to try to make as much money as you can, but at the same time, you don't want to price yourself out of the market.” **Participant 5**

“So, you know we've got a lot of competition, but they are on a much smaller scale.” **Participant 6**

“Yes, we are driven by competition, but yes, we do have our pricing structure. Yeah. But sometimes you find that there is a lot of pressure on you from your clients to like cut prices, give discounts?” **Participant 7**

For some respondents, client retention was at the forefront of their pricing strategies.

“We don't really put a 30 or 50% markup on everything and are just here to make money, but we are also here to be in the business for many years to come. It will be nice getting rich overnight. But you might be rich overnight and you might be poor overnight” **Participant 3**

“But we charge a decent rate because, you know [...] you don't want to overcharge because there's a demand because you want to retain your clients. You want to retain your name.” **Participant 6**

For one respondent pricing had not been adjusted for the last seven years, indicating the absence of continuous market scanning and growth initiatives.

“We had the same prices for since 2015 up till this year, this year was the first time we increased our prices” **Participant 8**

5.5.2.4 Products and services

Respondents were asked to elaborate on the range of products and services that they offer. Probing this element of the business model allowed the researcher to determine the breadth of the product/service offering and market reach of the companies.

Most respondents reported that they offered a diverse range of products and services. These findings also highlight the placement of the research participants within the same industry thus rendering their views consistent for analysis.

“Power is only one part of the business.” **Participant 1**

“We're basically cleaning all the boilers condensers coolers at power stations and also in the paper industry and also on the refineries.” **Participant 4**

“It's always been, industrial cleaning, high pressure water jetting, vacuuming, and then chemical cleaning and waste handling.” **Participant 5**

“So, we've got a lot of activities because we manufacture, we sell it to customers that don't want us to do the job. We treat steel at our factory, or

if somebody wants a plant or a dipping tank, then we build that for them.”

Participant 6

“We specialize in industrial cleaning services such as vacuum cleaning. We do high pressure jetting services and we, the biggest part of it is the dredging part.” **Participant 7**

“Firstly, we are a plant rental company. Then we also do sales. Um, we also do have a civil department. We support civil construction. [...] We also, um, do the dredging that is now the dam cleaning.” **Participant 8**

“Okay, so we do industrial chemical cleaning and high-pressure water blasting and ultra-high pressure water blasting.” **Participant 10**

Only a minority of the respondents reported the choice to capitalise on their expertise in single service business model.

“So, you have a mixture of post-operative and pre-commissioning all in one circuit, Nigel. But that's our key business at the moment and that's basically our only business.” **Participant 2**

“Nigel, you can't just switch over to something else overnight. [...] it's the only thing you know and that you can perform to the best of your abilities.” **Participant 3**

“We just provide the cleaning services, basically.” **Participant 7**

In terms of market reach and target sectors, most respondents highlighted the different industries and markets that they offer their products and services to whilst only a single respondent expressed concern at how they operate on serving a single client industry.

“Eskom is one of our biggest clients. It is our biggest client and most work we do, we do for Eskom so yeah, if it were to close, it would be horrible.” **Participant 7**

“It's the plastic industry with the steel industry, the mining chemical industry, mining explosive industry. And we could do a lot of work for like small engineering companies that service the plants as well.” **Participant 5**

“So, in the mining sector and even in Cape town, we work more in the agricultural sector. We've also done a lot of, um, estates, you know, these fancy estates where people live...” **Participant 8**

“We supply the paper industry, your steel industry, the, the energy sector, [...] it's multiple sectors.” **Participant 9**

In terms of market reach and target sectors, most respondents highlighted the different industries and markets that they offer their products and services to whilst only a single respondent expressed concern at how they operate on serving a single client industry.

5.5.2.5 Marketing and advertising

Marketing and advertising in the business to business (B2B) sector of the power industry does not function with the same effectiveness as it does for individual consumer sectors and is therefore often omitted entirely or attempted without success by SMEs. Many of the respondents emphasised that traditional channels of reaching customers did not work for them despite numerous past, expensive attempts to do so.

“You know, you do not have to spend a lot of money to get your name out there. It does assist, but not in our line of work.” **Participant 3**

“No, we basically don't do any advertising” **Participant 4**

“People recommend us, but we don't really have much of a Facebook page or we don't really do any marketing.” **Participant 5**

“You're only as good as your last job. So, we've just got a website. Yeah. A basic website.” **Participant 6**

“We've used these electronic billboards where you pay, you pay so much to put it there, but yeah, you get nothing.” **Participant 7**

“We have tried the Engineering News and other different forms of advertising, but not much has really come of it. We don't really advertise. We used to in the yellow pages. <laugh>. Okay. <laugh>. But that was in the eighties.” **Participant 10**

Most respondents stated that their companies depended on word-of-mouth as the primary method of attracting new customers and in dispersing their brand through the industry.

“It's basically by word of mouth, basically just from the one client that whenever somebody's looking for somebody, they phone up a friend and get a number.” **Participant 4**

“You are only as good as your last job and it's all about word of mouth...”
Participant 6

It seems, it works more based on word of mouth. Someone has seen you do it somewhere [...] and then they recommend us. Who do you know? Who knows you? Now it's all about who knows who.” **Participant 7**

“But with these other things you have to do word of mouth goes just so far. Yes, we do a lot. Lot of our incoming sales is word of mouth.” **Participant 8**

“Word of mouth. And we have done for all these years, it's mostly word of mouth, do a good job. People have over 30, 40 years come to know us and that we do a good job. And then they recommend us...” **Participant 10**

The use of social media to connect with potential customers and increase brand awareness was mentioned vaguely by only a few respondents, with only one respondent clear on the importance of adopting these channels.

“Right. And Facebook. Okay. Because it's quick and easy.” **Participant 6**

We've got a website and then we tried even social media, Facebook.”
Participant 7

Things are changing so much. And especially with Facebook and WhatsApp and LinkedIn things like that. I learned last week, there was something we can work on WhatsApp to get more sales in. I have what, um, YouTube as well, I have a YouTube channel. Right. So that people can see what is going on. How do things work? What we are doing.” **Participant 8**

Related to the consensus of word-of-mouth being the most effective means of reaching new customers, some respondents outlined their belief in the value of forging new relationships and the difficulties experienced in maintaining contact with key stakeholders.

“We are also trying to join up with other people like doing mechanical works and stuff like that, and also like HP cleaning and looking into all other kinds of services.” **Participant 3**

“They [the clients] don't allow access anymore to the people you want, the ones that you need to advertise yourself.” **Participant 7**

“In this day and age, engineers come and go. So people who I used to know, [...] they've come and they've gone, then it's a new engineer and you've got to reintroduce yourself and your company.” **Participant 10**

5.5.2.6 Uniqueness

Respondents were invited to express what they felt were their companies' source of uniqueness and competitive advantage in a highly competitive industry such as the power industry. Responses varied considerably. Some respondents passionately believed that their company's uniqueness was derived from their people.

“It's basically that in the experience of the people in the company that sets us apart.” **Participant 4**

“So, the fact that if you take the people in our company, the majority of the people who work for me have been about plus minus 30 years in the game so that gives us the edge.” **Participant 5**

“I'll come back to the people. Everybody. It's, that's what makes us tick. I seriously believe in that. Because we all need each other. We all need each other.” **Participant 10**

A single respondent cited their trade secrets and intellectual property as their source of uniqueness.

“And, you know, it's just things like that, small little secrets that stay in house that, that we try not to share with people.” **Participant 6**

Most respondents believed that process efficiency complimented by an adequate fixed asset base was their source of uniqueness and added to their competitive advantage.

“I've learned this a long time ago, it relies on speed of response, and your equipment, and obviously your personal, those are the three pillars.” **Participant 2**

“Uh, basically we try and be the best out there in terms of customer service and customer satisfaction.” Participant 4

“You're going to need a good supply of decent equipment that you frequently replace and maintain.” Participant 5

“I think what makes us unique is of course we've got equipment, so that actually opens doors for us. Participant 7

“I think it's because of the service we give and of, of the equipment we have because we really go out there with equipment, which nobody else can afford.” Participant 8

“I think it is, uh, the type of processing plant that we have and the method of production that we do” Participant 9

Internationalisation strategies of two respondents emerged as the reason for them achieving uniqueness amongst their peers.

“Nigel, it's international experience” Participant 2

“A medium enterprise, but we've got a large footprint because we don't only service South Africa. We service worldwide. Now I'm in discussions with them for a worldwide solution, for pickling.” Participant 6

5.5.2.7 Legacy and leadership

Interestingly, the concepts of leadership and legacy were only briefly mentioned. Only a single participant spoke of the need to maintain the legacy left by his grandfather. Leadership amongst the respondents was implied when training and reinvestment of profits into the business was discussed. None of the respondents spoke explicitly about the importance of leadership when executing a successful business model.

We've always led from the front we've been in there and by rights, it's not really our function.” Participant 2

“Your grandfather maybe started the business, and you worked in it and it's the only thing you know [...]” Participant 3

“Mr Buvu put most of his money, I will say 90% of the money, back into the company to buy equipment.” Participant 8

5.5.2.8 Revenue and profitability

The final consideration in discussion around the current business model of the respondents dealt with the area of revenue and profitability. For one respondent profitability increased through process modification and altering the target market.

“Big time. Yes. Wow. I think that is the most, uh, source of income now for the organization. That's where most of majority of the revenues coming from that market.” **Participant 9**

Another participant spoke of the difficult with new technology adoption as during the initial phases of the implementation of new technology prices are much higher and the clients are unwilling to pay for this.

“It it's less much less profitable. It's double work and if it comes to double work to charge the clients double, it's going to reduce your profitability. They're not going to take it. No, they didn't take it.” **Participant 3**

One respondent shared candidly about the fear that is inherent in watching the revenues dwindle from year to year within their business.

“The unfortunate part is income has reduced drastically. Like I said, it's been dry. You have no guarantees that the next month we are going to have a project running. Yeah. So, it's, it's not as busy as it used to be. It's scary. You think about it sometimes.” **Participant 7**

For a handful of respondents, their revenue streams are highly diversified and multiple products and services work in synchronisation with the wide array of markets that are targeted.

“Everything is generating an income. And we are very lucky that sometimes it's busy everywhere, and sometimes it's quiet in that department, but then another department picks up the slack. So, yeah, we're very balanced.” **Participant 6**

For most of the other respondents, their revenue streams were dependent on a single client or industry.

“So, far for the last 40 odd years, we have had one main client, which has been basically the backbone of the business for its start and its growth.” **Participant 1**

“I would assign, okay, now we are getting better. We now going to the mines a little bit, we worked with a couple of mines, but a couple. So, I would say 80%.” **Participant 7**

“Our current reliance on Eskom as a percentage? 90%, maybe more. It is mostly power. Um, in fact it's all power...” **Participant 10**

5.5.3 Theme 5: Business challenges

Regardless of their individual characteristics, businesses face a plethora of challenges daily. Linked closely to the contextual factors theme which considered the challenges of doing business within the South African context, the theme of *Business challenges* emerged. Amidst conversations concerning the business and the environment in which it operates, the emergence of a theme such as *Business challenges* was inevitable.

The *Business challenges* theme moves beyond the situational factors that exist within the South African to focus on specific factors that impose restrictions and limitations on the ease of doing business for SMEs in South Africa. Both external and internal factors are considered together as factors which inhibit business growth and progress. The *Business challenges* theme was constructed from 9 categories and total of 32 codes. Table 6 contains the category listing and code frequency for the theme.

Table 6. Category list for theme: Business challenges

Theme	Categories	Number of codes
Business Challenges	Access to finance	2
	COVID-19	1
	Energy transition is a risk	1
	Government support and policy interventions	8
	Highly competitive industry	1
	Limited market reach	2
	Experts in a single service	1
	Political stability	2

5.5.3.1 Intrinsic challenges

The liability of smallness was highlighted powerfully by one respondent which summates the intrinsic challenges that an SME must overcome and lends voice to the probable thoughts of other small and medium business owners.

“We are a small business. Most of the time running a business, what most people don't quite understand is that you're fighting for your life. Nearly every single day, the business is one permanent headache, let alone coping with renewable energy. Just the day-to-day running of the company, getting work, sustaining the business, you know, you get lost in a lot of that.”

Participant 1

Some respondents cited an increase of costs and inflation as an important factor affecting their ability to be profitable. This, as stated by other respondents, was exacerbated by a decline in demand for their services.

“I think between fuel and wages, that's your biggest cost. [...] But even so, we are taking a knock on some projects. We've had to adjust our prices. We didn't go too high...” **Participant 5**

“As it is now, there's lack of projects anyway. It's bad. As calm as everything seems, there hasn't been much projects.” **Participant 7**

“So, everything has gone through the roof and that's, that's everything. Diesel, insurances. Chemicals, you name it, it's gone. We've absorbed, but we only have our 9% inflation increase per annum.” **Participant 10**

Adding to the woes of some respondents was the fact their product or service offering was very limited, with only a very narrow market reach.

“Nigel, you can't just switch over to something else overnight. [...] It's the only thing you know and that you can perform to the best of your abilities.”

Participant 3

“But you do them once. I mean, you treat the surface and you don't return. So, we are not going to redo those things ...” **Participant 6**

"It is our biggest client and most work we do, we do for Eskom so yeah, if it were to close down, it would be horrible. [...] It would badly, badly affect us"

Participant 7

Skills shortages in the country overall and particularly in the power industry was a challenge for most respondents. While most expressed negative views concerning the skill levels available to them, some respondents were more optimistic and highlighted the training that they constantly offer their workforce to compensate for the perceived lack.

"If I give it to one of the new guys, on a project then straight away he is on to Google. [...] He's got nothing. If the computers crashed tomorrow, he wouldn't be able to do, to do the work." **Participant 2**

"So, yes. I train a lot of people every day and I don't think we will ever stop learning." **Participant 8**

"We always bring in like your graduates from universities, your apprentices. We have internships and train people from your colleges to become artisans. And so yeah. We are covered in that, in that space." **Participant 9**

"Well, we are in a training program all the time. Really. I mean, we do so much training. It's ridiculous. I mean we, we permanently training - seven days a week." **Participant 10**

Two respondents thought that bringing in expatriates to fill the skills gap would be the most feasible solution to addressing the skills gap.

"You need a couple of hundred skilled people whether from within the country or from out of the country that have got the experience and put them in the right places and stuff will work." **Participant 1**

"And you know, what's going to happen? You're just going to get more highly qualified engineers coming in from overseas. That's what's going to happen. So that's what we're going to be forced to do." **Participant 2**

One respondent outlined the risk of poaching by bigger companies who can offer more attractive salaries to lure highly skilled and experienced resources.

“Because you get the big players in the industry and you cannot measure up to them sometimes unless you are willing to up your salaries and match those.” **Participant 9**

5.5.3.2 Extrinsic challenges

The perceived risk of the acceleration in the energy transition was a concern for most respondents when the risk to their perpetuity was considered.

“But, put it this way, some companies are more involved with Eskom than others and it's going to knock them” **Participant 2**

“So, it's definitely a big risk in our organisation because if they move over to renewable energy. [...] Look, we've always got other work, but it's not your larger income power stations.” **Participant 3**

“Uh, we will be losing a lot of work if they do go with like solar power and wind power [...] and it'll basically have a knock-on effect from this company to our company's suppliers and all that.” **Participant 4**

“Yes, of course. It would be a big risk. [...] It would badly, badly affect us” **Participant 7**

Some respondents mentioned how the COVID-19 pandemic had been destructive to their businesses and pointed out that the aftermath of the pandemic is a challenge to business at the current time.

“Apart from the fact that, since the COVID, we've gone down to more people on short term [...] because it's just not financially viable to have a large staff ...” **Participant 5**

“And because COVID, we are only feeling the effects of COVID now.” **Participant 6**

“Okay. Um, it was a big company until COVID of course. Right, so currently we still just picking ourselves up. [...] COVID really messed up South Africa. It did!” **Participant 7**

Access to finance was another challenge mentioned by some respondents as an inhibiting factor to the growth of their businesses within the current regime.

“Banks don't want to be associated with financing fossil fuel projects. Because they know if they do this now it's going to be with them for at least the next 50 years.” **Participant 2**

“But I'm sure there are a lot more products and services we can offer if we had more financial backing.” **Participant 10**

Most respondents expressed their disappointment with the ruling government and the support and policy interventions that were offered to SMEs. Uncertainty around whether to invest further into the country or to implement regulatory directives seemed to be stirred by the ineffectiveness of State-Owned Enterprises (SOEs) and the instability of public service delivery.

One respondent referred to government's involvement in the acceleration of the economy as the “*political handbrake*”. As stated by Participant 6: “*Let's call it the political handbrake. They're pulling that handbrake up.*”

“You know, having something on paper and actually putting into practice is two different things.” **Participant 1**

“God forbid, suddenly for whatever reason Malema becomes president, you know, what's going to happen then?” **Participant 2**

“Do we spend that money to save our electricity bill? Or is it that because we are not BEE, we are not going to get much work in the next five years' time and that money would be a waste.” **Participant 6**

“Like our government ever supports anybody but themselves honestly?” **Participant 7**

“If they have been doing maintenance in the first place, we wouldn't be in the situation.” **Participant 10**

5.5.4 Theme 6: Change

The theme of *Change*, although constructed from a smaller set of categories than the other themes, is an important idea that emerged from the data. The concept of change was permeated with multiple thoughts which implied a resistance to change within and by organisations and the frustration with which business viewed the slow pace of change in the South African landscape due to forces outside of their control.

This theme provides valuable insight into the views of the businesses sampled with regard to the levels of adaptability that they exhibit and provides a first glimpse into their thoughts around the energy transition.

Table 7 below lists the five categories that resulted in the emergence of the theme change. A total of 16 codes formed the foundation of the overall theme.

Table 7. Category list for theme: Change

Theme	Categories	Number of codes
Change	Adaptability	2
	Change is happening to slowly	5
	Change requires action	5
	Change will occur naturally	2
	Resistance to change	2

The preservation of traditional methods was mentioned by some respondents. This highlighted a resistance to embracing new ways of working and reluctance to deviate from known methods that have resulted in strong, impermeable business culture.

“Look, the thing is the old ways work, but also to say with that is at that time it was the best way to go” **Participant 3**

“We rounded up a lot of the guys that were actually on pension...”
Participant 2

“Because we’ve had a good business model for 40 years and it’s worked.”
Participant 10

One respondent complimented the views of the others who had mentioned their continued belief in sustaining traditional methods by the view that change will happen organically without the need for management or owner intervention.

“And the business will automatically change due to their [new staff] backgrounds and the way their future is because they’re going to be dealing with the new world order. The business will move in whatever direction it needs to move in.” **Participant 1**

The reactive nature of SMEs was revealed by some respondents suggesting that they would be roused to action only when a threat to their business continuity is felt.

“If we see the power sector changing and this is not going to be sustainable anymore, hopefully we pick it up way before the time and we diversify into something else.” **Participant 1**

“We did start getting problems at that stage. I think one time we waited about three or four months for payment. [...] So, we really had to make another plan.” **Participant 8**

In contrast, one respondent felt that continuous improvement and perpetual process innovation was necessary for growth and sustaining the life of the business.

“Finding ways to always do things better, planning the job and see how you can do it as fast as possible and the quality as good as possible. But that's if you are willing as a company to move into.” **Participant 3**

As a final consideration illustrating the resistance of SMEs to change, is the fact they revere long service amongst their employees. Some respondents discussed proudly, and at length, the loyalty of their staff, as if displaying a badge of honour that bears testament to their company. On the contrary, mentions of their newer recruits were almost always accompanied by negative sentiment, as was mentioned in section 5.5.3 of the report.

“The people that are working for us, they've been with us in the game for about 30 years, we've got some of the old guys still going on.” **Participant 5**

“Yeah, we have you know, like I said, in the beginning of the interview, most of our employees here for over 20 years, they've all got that experience.” **Participant 6**

“People have done it for 30, 40 years. Uh, they have the skill and the experience. It's a combination of both.” **Participant 10**

Now, considering that the discussions were based within the framework of the energy transition and the positioning of the companies within the existing landscape of the power sector, most respondents expressed a level of comfort in the fact that the energy transition will not be fully realised within South Africa. Accompanying these were sentiments related to the slow pace of change of the energy transition.

“But I can't see them come along in the next five years and flip a switch and there's no more fossil fuels or power stations in the country. I think it will

happen, but I don't think it's going to happen overnight. I think it's going to take a few years and technology's changing all the time.” **Participant 1**

“So, I don't think they'll ever get to a hundred percent renewable energy ever. Um, that's not going to happen. I think the best that I'll see is maybe 25 to 50% split.” **Participant 2**

“Well, I'm sure with time, it should eventually get to where it's going. It is not a silver bullet. We're not going get there quickly, but we have to do it very slowly obviously because we've got a lot to take into account.” **Participant 5**

“So, I don't think that it'll affect us too much because Eskom will always still be there. We will always still have them to rely on for the next 30 years. South Africa will never be completely renewable. We are not India.” **Participant 6**

“So yes, I would say this can be kept as an idea, but there's no rush.” **Participant 7**

“Yeah. I don't really think, um, the power stations will close totally.” **Participant 8**

“I think in South Africa, because we are still a developing country, I think we are still not ready for the transition. So, it's not something that will happen overnight.” **Participant 9**

“It's not happening quick enough, and I don't see it changing. It is coming, but it's going to take a good 15 to 20 years.” **Participant 10**

This led the researcher to believe that the respondents were thus satisfied with propelling their existing models into the future without fear of redundancy as the perceived risk to them was low.

5.5.5 Conclusion

Understanding of the business model varied from basic to those that were in alignment with the general scholarly definition. Interrogation of each of the elements of the business model canvas resulted in views that were either dispersed or relatively similar.

Business Challenges and *Change* were themes included in the findings for the second research question. *Business challenges* conveyed by the participants included both intrinsic and extrinsic barriers that are encountered that limit the ability of the SMEs to effectively execute their business models. The theme of *Change*

provided valuable insight into the views of the businesses sampled about the levels of adaptability that they exhibit and provides a first glimpse into their thoughts around the energy transition.

5.6 Research Question 3

How has the SME pivoted its business model to deal with a changing landscape?

5.6.1 Introduction

In this final section of the chapter, findings related to the third research question are presented. The relationship between the constructs of a socio-technical transition and business model innovation that were explored within the first two research questions is now evaluated. The themes that provided the most insight into this research question was *Business Model: The next frontier* and *Energy Transition: An opportunity?*

5.6.2 Theme 7: Business model: The next frontier

The theme of the Business model: The next frontier emerged from discussions around plans or modifications that have either been thought of or adopted by the respondents’ companies. This theme encompasses the general sentiment of respondents regarding alternatives and their quest to obtain competitive advantage.

Table 8. Category list for theme: Business model: The next frontier

Theme	Categories	Number of codes
Business model: The next frontier	Additional service offerings	1
	Business model innovation	13
	Future proof model	1
	Improve existing capabilities	3
	Motivation for business model innovation	3
	New sectors being explored	1
	Sustainability agenda for operations	4

Opinion varied amongst respondents for the reasoning behind initiating business model shifts. The key finding of this series of questioning revealed that the energy transition was not an antecedent for business model innovation. As Participant 10 so aptly mentioned: *“So, uh, the business needs to grow a lot more, seek new clients as well as we’ve still got the old clients. Um, it is not so much linked to green energy.”* For some respondents the energy transition was not an opportunity for shifting the business model.

“In terms of the future of our business for another 20 years or whatever the case may be, it’s very difficult to put a timeline on how badly we are going to get affected by renewable energy.” **Participant 1**

“Well, you know I don’t know. I don’t know if it’d be an opportunity for us. [...] Making money out of renewable energy for us at the moment, that’s a no.” **Participant 6**

Similarly, for many respondents, changes were implemented due to operational needs and shifts and not because of a direct perceived threat of reduced productivity due to the energy transition.

“Because it was something that we needed as you couldn’t rely on subcontractors to do the work.” **Participant 4**

“No, because certainly you got to also think about your opposition. [...] But it is a balancing act trying to remain competitive.” **Participant 5**

“I can definitely say in the last 17 years there’s been a lot more focus on the safety. We’ve improved on our safety.” **Participant 5**

“So most some of those services, we now outsource. We are consulting for them.” **Participant 7**

Although alternatives or compliments were being actively sought, they were largely random as stated by some respondents, without concrete justification of why diversification was necessary. None of the respondents could substantiate their choices with a financial forecast or could prove that the market demand existed.

“We are also looking into another special pot which actually uses sponge blasting.” **Participant 3**

“Yeah, basically what we did is we have expanded on our, service offering. We are trying to bring in, uh, different services as well.” **Participant 4**

“I’m seeing an opportunity in the waste removal sector, because I mean, when we have to rely on, because a lot of times we don’t have dump size.”

Participant 5

“... we are trying to move away from just being an Eskom supplier to get into the mines as well.” **Participant 7**

Only a sparse minority of the respondents mentioned that the change or intended changes in the business model were aimed at achieving alignment of the business with environmental shifts of which only one respondent stated the financial gain that was realised through tapping into the renewable energy market.

“To be quite honest with you [censored] has generated approximately R30 million out of the solar power industry in the last four years.” **Participant 2**

“Can you create something else that no one knows about to fit in with the new renewable energy and all of that? So, it’s a whole process and if you don’t do that, you will end up closing your doors.” **Participant 3**

“So, to align ourselves or the organisation with what is happening now or maybe with the transition is to change the way we operate.” **Participant 9**

Some respondents mentioned that the opportunities they were seeking were outside of the borders of South Africa in the greater African market. Here again, these were related to the current business model, and not to the potential markets that were being created with the expansion of renewable energy technologies in South Africa.

“Yes. Across the border, wherever there’s industry or wherever there’s a boiler that’s being fired, there will be, there will be chemical cleaning needed on it.” **Participant 4**

“Yes. There is still a lot of scope. Okay. There are places where I don’t even get to. There are still some mines that is available.” **Participant 8**

“The only thing is new projects throughout Africa, and I have been monitoring that. Still doing the same service.” **Participant 10**

When enquiring on the increase in profitability that was observed through the new products, services or markets, both positive and negative results were reported by those who had indeed made changes.

“Um, no, not really.” **Participant 4**

“Big time. Yes. Wow. I think that is the most, uh, source of income now for the organisation. That’s where majority of the revenue is coming from that market.” **Participant 9**

One respondent elaborated on how the new technology, although more environmentally friendly, was reducing process efficiency.

“New ways have been implemented or at least tried to implement other stages or different methods of doing our work, but it hasn’t come to a success yet and it hasn’t reached the production speed that we’ve got on our current way of doing things.” **Participant 3**

5.6.3 Conclusion

Opportunities explored by respondents in the sample were not motivated by the perceived threat to their continued perpetuity initiated by the energy transition. Although awareness of a multitude of environmental shifts and landscape pressures was high, this was not an antecedent of business model innovation or the enactment of a business model pivot. Opportunities identified and explored by participants in their businesses were of an operational nature and exhibited low levels of skill, expertise, and business acumen by decision makers. Inertial forces are high amongst SMEs in the energy sector who exhibit organisational behaviour linked to the retention of their power positions with disregard for the landscape pressures that are being exerted on the current regime.

5.7 Conclusion

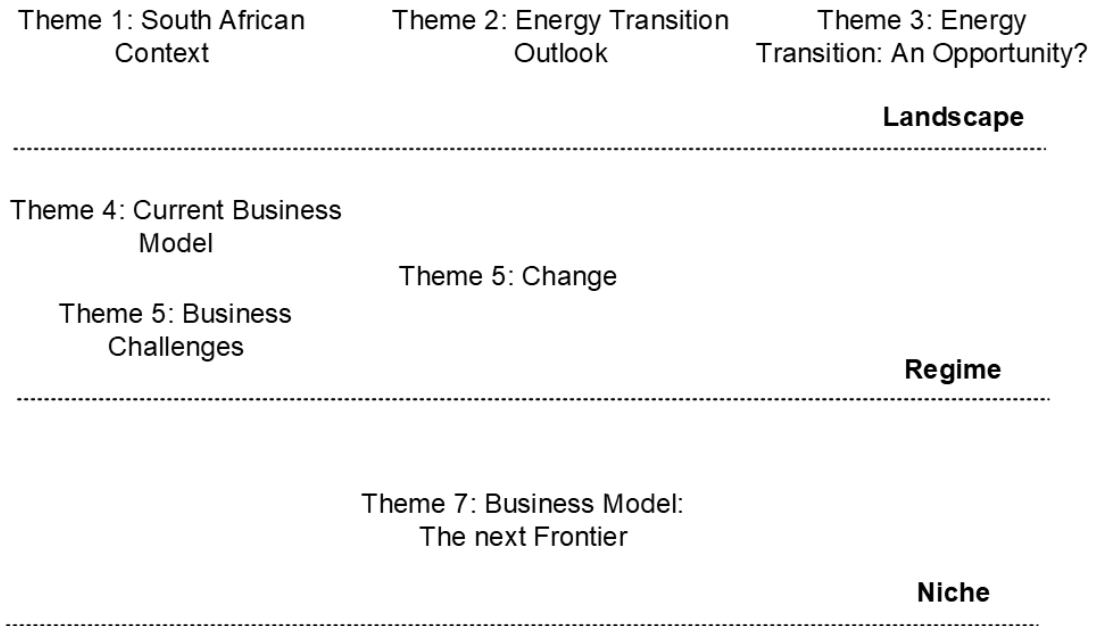


Figure 3. Conceptual model of the MLP and emergent themes (Generated by author)

Figure 3 above illustrates the alignment of the MLP with the themes generated from the findings of this study. To address the organisational inertia of incumbent energy sector SMEs, interventions, by policymakers and business is necessary to facilitate the shift from the current regime to the new regime. In addition, change needs to be managed, again by both business and policymakers to ensure that a smooth and swift energy transition is realised.

CHAPTER 6 DISCUSSION OF RESULTS

6.1 Introduction

Challenges are rife within the South African context, both for the smooth transition of energy from fossil-fuels to renewable sources, and for business alike. An ailing energy utility that is struggling to meet electricity demand, coupled with high unemployment, the world's highest levels of income inequality, crime, corruption, and low literacy rates are but some of the main issues that are plaguing the South African economy and society.

Within the last three years alone, the global COVID-19 pandemic and the war in the Ukraine have disrupted global supply chains and fuelled economic uncertainty globally. South Africa is not immune to these geopolitically induced upsets and must cope with these alongside the intrinsic South African challenges listed.

The South Africa energy sector is currently undergoing a socio-technical transition. This transition, which characterises the shift of an existing regime through external pressure exerted by a changing landscape or the infiltration of growing niche participants, has been slow. Positioned within the regime are incumbent SMEs whose business models are in homeostasis with coexisting actors within the regime.

Amidst the changing socio-technical landscape, a shifting energy regime and the myriad of business challenges that SMEs face, their perception of the energy transition as an opportunity for expansion, or a threat to survival, is key when assessing the progress of the transition and the associated socio-economic repercussions.

Critical to understanding the SMEs and their propensity for change is analysis of their business models. The business model by which value is created and the potential for innovation of these models as a direct result of pressure from a changing landscape is the subject of this research.

This chapter explores extant literature on the topics of the socio-technical transition, the business models of incumbent SMEs and conjecture of these constructs to each other and the findings obtained from interview participants. This discussion is organised according to the research questions that have been established and have been central to every aspect of this project.

6.2 Research Question 1

How are the effects of the energy transition understood as a risk to organisational continuity for incumbent energy sector reliant SMEs?

Investigation into the understanding of the environment in which SMEs are situated forms the basis of this section. Although the MLP offered an appropriate conceptual framework for describing the energy transition in South Africa academically, the constituents of the model were not expected to be functional knowledge amongst interview participants.

The understanding of the economic, political, and social environments that surround the SMEs will be related to a business model that is more adaptable and leaner to enable rapid shifts.

The context within which a socio-technical transition occurs is very important, especially in South Africa where politics drives economics and the role of political and economic elites has a wide impact on the social, economic, and technological advancement of the country (Baker et al., 2014).

Overall participants expressed the general sentiment that the issues plaguing the South Africa's economy and social structures were far more important than climate change.

6.2.1 Socio-technical systems

According to Schot & Kanger (2018), a socio-technical system contains an array of actors such as technologies and institutions working together to deliver solutions to meet the needs of consumers. Schot & Kanger (2018, p. 1045) supplemented transition theory by introducing the concept of a Deep Transition which they define as "a series of connected and sustained fundamental transformations of a wide range of socio-technical systems in a similar direction."

The participants view of the socio-technical system, although omitting the network effects of fellow actors, were vastly cohesive to the presumption of the coexistence of different electricity generating technologies in tandem with each other to stabilising the energy supply in South Africa. This aligned with the predominant finding that fossil-fuel usage was expected to continue long into the future and that new technologies that emerged would cohabitate with fossil-fuel-generation in an ecosystem.

This consensus was informed by factors such as the abundance of coal reserves, the fact that coal is cheap and attributed its continued usage to the fact that most current infrastructure is built for processing coal.

The reference by Schot & Kanger (2018) to an array of technologies can be equated to the energy mix whereby multiple generation methods and fuels work together in the energy system to supply the need for electricity. This aligned with the general consensus amongst participants that renewable energy will coexist with fossil-fuel-derived energy resulting in a shift of the energy mix, but without the total elimination of fossil fuels from the mix.

6.2.2 Socio-technical landscapes

The technological landscape exists on the macro-level and exerts pressure onto the socio-technical regime through social, environmental, and political forces. (Geels, 2002).

According to Baker et al. (2014), domestic policy is a major constituent of the technological landscape that must be accounted for when considering a socio-technical transition wherein multiple incumbent actors are resistant to a transition that will likely displace their powerful positions within the existing regime.

Although the participants did not explicitly state that they were holding onto the power that they had in their current industries, their affinity for the preservation of tradition and high esteem for loyalty and long-service amongst staff indicated that they were holding onto a legacy that gave them stability and certainty amidst a plethora of ambiguity and newness.

Whilst some participants exhibited a high-level of awareness of their carbon footprint and the climatic repercussions of continuing with business as usual, most participants did not deviate outside the negativity and discontent with the government.

Social impacts were discussed at length, with discussions traipsing between the high levels of unemployment in the country, to government mistrust and the abuse of power.

6.2.2.1 Contextual factor 1: Human capital development

Lenihan et al. (2019) combine both human capital and public policy intervention in exploring the relationship that the latter has on the productivity of the former. Lenihan

et al. (2019) assert that to stimulate a country's economy, and consequently growth, investment into the skills of the nation's human capital is paramount. A skilled workforce both in soft and hard skills is a critical factor that enables a country to effectively advance technology and innovation (Lenihan et al., 2019).

Amankwah-Amoah et al. (2018) assert that the responsibility of fostering an entrepreneurial activity and innovation rests with the government implementing policy and infrastructure that provides quality education to the population, a responsibility that has been very poorly enacted in Africa. Technological adoption by SMEs helps to grow the economy through job creation and social upliftment, but this is only possibly when the human capital of a country is developed simultaneously (Amankwah-Amoah et al., 2018).

Comparable to the assertion Amankwah-Amoah et al. (2018) skills shortages in the country overall and particularly in the power industry was a challenge for most participants as relayed in the findings. While most expressed negative views concerning the skill levels available to them, some respondents were more optimistic and highlighted the training that they constantly offer their workforce to compensate for the perceived lack. The introduction expatriates to fill the skills gap would be the most feasible solution to addressing the skills gap.

It was also found that technical skills shortages increased the level of industry competition for skills increasing the risk of poaching by bigger companies who can offer more attractive salaries to lure highly skilled and experienced resources.

6.2.2.2 Contextual factor 2: Unemployment

Ram et al. (2020) conducted an analysis whereby the effect of the global energy transition was measured against the number of jobs expected to be created. According to (Ram et al., 2020) the number of jobs to be created from the opportunities that the generation of electricity and the storage thereof will realise far exceed the number of jobs that will be lost because of the termination of electricity generation from fossil fuels.

The findings revealed that unemployment levels in the country were a concern for nearly all participants, with most referring to the subject at least once during their interviews. Some felt that the existing regime provided more opportunities for employment, whilst others felt that the energy transition would be ideal only if it created more opportunities for employment.

In contrast to the assertions of Ram et al. (2020) half of the participants who mentioned unemployment focused on the current state of unemployment in South Africa and the ramifications a new technology would have on job creation and retention. The unemployment crisis in South Africa was at the forefront of most respondents' thoughts who believed that the transition should create employment as the only positive social construct apart from helping alleviate the effects of climate change.

6.2.2.3 Contextual factor 3: Political trust and institutions

The institutions of a country are vital to the overall innovation culture within that country amongst entrepreneurs (Fuentelsaz et al., 2018). According to Fuentelsaz et al. (2018) trust in institutions by entrepreneurs is related to the level of innovative activity within the economy as entrepreneurs are not conflicted between the derived benefit being shared between them and unscrupulous opportunistic actors.

The findings discovered that most participants were vocal in their discontent with the levels of corruption in the country, citing it as the main reason deterring investment by locals and foreigners alike. Participant's dissatisfaction with the government was evident in their responses, and this translated into a lack of faith in the ruling government to implement renewable energy initiatives effectively and truthfully.

The lack of transformative government policy and regulation was raised by a few of the respondents. When speaking of policy, the respondents expressed their concern at the limitations placed on the private sector to uninhibitedly implement renewable energy projects.

The pervading sentiment was that because Eskom is an SOE, that political interference could be a factor that is thwarting faster adoption of renewable energy technologies. Some respondents felt that the transition would be successful if the task was transferred from the ineffective government to the private sector for implementation.

Kanger et al. (2020) introduced the concept of policy intervention points as the loci which accelerate the pace of a transition and guide its directionality. Kanger et al. (2020) further argue that although Geels (2002) focussed on a single socio-technical system and the interplay of the pathways and networks that exist within that system, socio-technical systems exist within the scope of the broader environment, co-existing with and being influenced by other socio-technical systems.

In agreement with the concept introduced by Kanger et al. (2020) it was found that an added complication to the factors delaying the energy transition in South Africa, participants believed to be the current geopolitical instability that has been brought about by the war in Ukraine.

6.3 Research Question 2

How are current business models structured in incumbent SMEs?

The findings of the second research question are presented in this section to understand the current business model of the SMEs allows insight into the flexibility of decision-making within the business and the closeness of relationships maintained with stakeholders (Eggers, 2020).

6.3.1 Business model

Business models encompass the capture and creation of value for stakeholders (Bidmon & Knab, 2018; Casadesus-Masanell & Ricart, 2011). According to Bidmon & Knab (2018) the business model serves a mediating role in the creation of a network of actors connecting incumbents with other actors within the regime.

Differences and similarities with which the respondents approached the key elements of the business model canvas within their businesses were explored (Osterwalder & Pigneur, 2010). The findings revealed that respondents' depth of knowledge of a business model and the elements constituted within the framework of the model varied greatly.

While the findings revealed that some participants were more aligned to the overall concept that the business model contains all the elements that work together to generate profits for the shareholders, other participants provided a vague and basic outline of what they thought the business model was.

Participants focused on value creation, in terms of shareholder returns, without consideration for their social and environmental responsibilities. Additionally, the importance of the relatedness of the elements was limited in the findings. The only relationship that emerged was that of their revenue streams working in synchronisation with the wide array of target markets.

Findings regarding the discussion of elements of the business model to ascertain the general way their organisations are structured allowed the researcher to draw

similarities in operational structures and contrast the differences in SMEs within the power sector.

6.3.2 Key roles

Fuentelsaz et al. (2018) highlight the role of entrepreneurs in being instrumental to the development of new products and services through innovation. This innovation arises from either psychological characteristics of the business owner or from human resources in key roles (Fuentelsaz et al., 2018). The education level and the level of experience of decision makers are critical antecedents to the degree to which they innovate (Fuentelsaz et al., 2018).

Hence, key roles as a component to the business model canvas is thus crucial to general business model implementation and to business model innovation (Osterwalder & Pigneur, 2010). Through the findings the roles that were important to the organisation from the respondents' points of view were revealed. The conversations within this element revealed traditional thinking amongst most of the organisations where loyalty and length of service is revered. Thoughts on skills development and training, although not explicitly probed for, were shared generously.

Only one respondent felt that the sales and administrative functions were key to the successful operation of the business.

Contrary to the views of Fuentelsaz et al. (2018) it was discovered that all roles were regarded as key and that no single role in the organisation took precedence over the other. A strong sense of Ubuntu emerged from the responses in this category with general labour given high regard.

6.3.3 Networking and relationships

Adomako et al. (2022) describe the need for entrepreneurs in dynamic emerging markets to maintain networks and relationships. Dynamic emerging markets are characterised by high levels of uncertainty where customer preferences and market conditions change rapidly (Adomako et al., 2022).

Building strong networks and relationships can alleviate the burden on entrepreneurs of processing new information constantly arising in a rapidly changing environment (Adomako et al., 2022). Furthermore, strong network connections allow entrepreneurs to be aware of opportunities and capitalise on these (Adomako et al.,

2022). It was revealed through the findings that marketing in the business to business (B2B) sector of the power industry does not function with the same effectiveness as it does for individual consumer sectors and is therefore often omitted entirely or attempted without success by SMEs. Many of the respondents emphasised that traditional channels of reaching customers did not work for them despite numerous past, expensive attempts to do so.

In agreement with the postulations of Adomako et al. (2022) it was discovered that word-of-mouth was the primary method of attracting new customers and in dispersing their brand through the industry. Through this relational and network-based means of brand propulsion, it was found that difficulties were experienced in maintaining contact with key stakeholders and building new relationships in a highly dynamic industry of energy.

6.3.4 Government support and regulatory policy

The institutions of a country are vital to the overall innovation culture within that country amongst entrepreneurs (Fuentelsaz et al., 2018). An enabling environment that protects the rights of entrepreneurs to enhance growth and innovation rests within institutions.

Fuentelsaz et al. (2018) suggest that trust in institutions by entrepreneurs is related to the level of innovative activity within the economy. In countries where corruption is rife, entrepreneurs are reluctant to take risks, as the return from such activity is not entirely for their benefit but with it comes an expectation of shared gain amongst opportunistic agents that exist within the ecosystem (Fuentelsaz et al., 2018).

Fuentelsaz et al. (2018) found that the supportive environment created by institutions for entrepreneurial activity and innovation far outweighed psychological traits and cognitive ability as qualifications for success of ventures. Through the findings a sense of disappointment with the ruling government and the support and policy interventions that were offered to SMEs emerged. Contrary to the assertions of Fuentelsaz et al. (2018), institutions in South Africa were perceived by participants as unsupportive. It was further discovered that the uncertainty around whether to invest further into the country or to implement regulatory directives seemed to be stirred by the ineffectiveness of State-Owned Enterprises (SOEs) and the instability of public service delivery.

6.3.5 Financial support

Although institutions play a pivotal role in incubating an enabling environment in which SMEs can thrive, they alone are not completely responsible for motivating entrepreneurial activity and innovation (Kimmitt & Muñoz, 2017). Financial inclusion, particularly funding for small enterprises is a critical component of fostering innovative behaviour (Kimmitt & Muñoz, 2017).

However, the provision of funding for new ventures will not be effective in encouraging innovation if not implemented in parallel with other freedoms of entrepreneurial activity (Kimmitt & Muñoz, 2017). Similarly, in their study of angel investors in start-ups and SMEs, Hoyos-Iruarrizaga et al. (2017) highlight the lack of skills, business acumen, and expertise as collective area development that transcends the provision of finance.

Hence, even though lack of financing opportunities has been highlighted in the findings as an inhibiting factor to fostering activity amongst SMEs and engendering innovation, the support of institutions, and the development of the skill levels and business acumen of entrepreneurs must be advanced simultaneously for real innovation to emerge.

6.4 Research Question 3

How has the SME pivoted its business model to deal with a changing landscape?

The findings associated with the relationship between the constructs of a socio-technical transition and business model innovation that were explored within the first two research questions is now evaluated. This question was formulated to gain insight into the mechanisms employed, if any, by SMEs to alter their business models. Furthermore, the driver of innovation will be explored to determine if the perceived threat of the socio-technical transition, or other factors, were responsible for the change.

6.4.1 Business model innovation

Devece et al. (2016) in their assessment of the success factors for entrepreneurs suggest that the economic environment in which entrepreneurs find themselves is an important factor in determining the success of their endeavours.

The findings revealed that participants were acutely aware of the environment in which they were situated, but the focus was largely political in nature. Most respondents were very negative when discussing the context of South Africa and focussed on issues such as corruption, unemployment, and government failure.

According to Christensen et al. (2016) many businesses fail when they innovate without understanding the interrelationships between key components of their business model and attempt to introduce novel services and products where they should rather have re-examined internal efficiencies.

Morgan et al., (2020) postulate that although pivoting is trending amongst entrepreneurial circles, that not all pivots will lead to success. Pivots tend to arise out of either necessity or opportunity (Morgan et al., 2020). Pivots enacted out of opportunity are more likely to succeed and are better suited for innovation in established businesses than a complete deviation from the core capabilities of the company that would be required in the case of an arbitration-led pivot (Morgan et al., 2020).

The awareness of the environmental factors affecting business was high, however, the interrelationships of the elements of the business model were not considered when participants enacted any innovations by participants. Many of the participants described the ideas around possible ventures that could be undertaken, but these were not informed by either landscape pressures exerted or by knowledge of the business model elements. The respondents could not substantiate their choices with financial forecasts or could prove that they had undertaken any market research.

Only a sparse minority of the respondents mentioned that the change or intended changes in the business model were being made from a sustainability lens.

Market exploration was discussed briefly and included internationalisation agendas; however, these were decisions not related directly to opportunities created with the expansion of renewable energy technologies in South Africa.

According to Bidmon & Knab (2018) incumbents capitalise on the strength of their existing networks derived from their individual business models to resist change and prevent a regime shift confident that what has previously worked will be what works in the future.

The findings revealed that participants were content with pursuing the models that they had established over a long period of time but did not comment on the networks that they had built within the regime that has assisted in stabilising them. It was found that participants believed that old methods proved to work for them and hence they did not see the need to innovate and take any further risks.

6.4.2 Opportunity recognition and development

Emerging technologies present multiple opportunities for economic growth and development in Africa, but this is impeded by the skills gap due to highly corrupt and weak institutions who have failed to adequately develop infrastructure and enabling environments for growth (Amankwah-Amoah et al., 2018).

The energy transition resembles a discovered opportunity for the SMEs. For an opportunity that is discovered there is a market shift, but this requires an alertness, active searching, and superior cognition by key decision makers (Clausen, 2020; Fuentelsaz et al., 2018). As expressed by Clausen (2020) agency is critical factor to the development of opportunities for entrepreneurs alongside incremental testing and feedback.

The energy transition is an opportunity on which SMEs can capitalise, however, the extent to which the key decision makers are alert to these opportunities in their environments through active searching and sensing did not materialise in the findings.

Radical innovations, either in response to a shifting landscape, or problems within the existing regime, are introduced into the system by actors referred to as niches, who through weakened pathways and network connections within the existing regime opportunistically penetrate the industrial boundaries to establish a new regime (Geels, 2002). Participants were not actively pursuing the opportunities that the renewable energy sector offered to them. The new regime of renewable energy would be a lucrative venture for most incumbent SMEs as they possess the industry knowledge and have well established relationships with other key actors in the sector. This represents a missed opportunity that could prove fatal for these businesses if they do not act now when the niche presents an opportunity as opposed to if they act later out of necessity.

CHAPTER 7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Principal conclusions

The purpose of this research aimed to determine how the energy transition in South Africa affected incumbent SMEs whose predominant client is the state-owned monopoly Eskom. In addition, the business models of the incumbent SMEs were of interest to determine if they deem a business model innovation relevant to the growing pressure on their existence by environmental, social and political forces.

Three research questions were developed with the energy transition as the first construct and subject of the first research question. The second research question aimed to gain an understanding of the business model that the SMEs were employing. The final research question aimed to combine both constructs explored to determine if the energy transition was a driving force for the SMEs to innovate their business models.

The principal findings of this research study is presented below.

7.1.1 Research Question 1

How are the effects of the energy transition understood as a risk to organisational continuity for incumbent energy sector reliant SMEs?

The context within which a socio-technical transition occurs is very important, especially in South Africa where politics drives economics and the role of political and economic elites has a wide impact on the social, economic, and technological advancement of the country (Baker et al., 2014). Within the MLP the socio-technical regime which consists of a network of industrial and societal elements linked and operating collaboratively usually under pressure from the technological landscape, which encapsulates the geopolitical environment within which the regime is situated (Geels, 2002).

Thus, the importance of business awareness of the social, environmental and political landscape the operates in their environment is critical to driving long-term success.

The findings of the first research question which aimed to decipher the perceptions of the sample regarding the energy transition revealed a high level of awareness of the political and economic environment in which they are situated. With regard to the energy transition participants were generally unphased by the shift of the regime

from fossil-fuels to renewable energy source citing their lack of faith in the government and belief that South African infrastructure was too highly geared towards coal for its use to ever cease.

Respondents believed that fossil fuels will continue to be the primary source from which energy is derived, while alternative fuel sources and renewable energy will slowly be introduced to create what the researcher has termed a *mutualistic energy symbiosis*.

7.1.2 Research Question 2

How are current business models structured in incumbent SMEs?

Differences and similarities with which the respondents approached the key elements of the business model canvas within their businesses were explored (Osterwalder & Pigneur, 2010).

Business models encompass the capture and creation of value for stakeholders (Bidmon & Knab, 2018; Casadesus-Masanell & Ricart, 2011). According to Bidmon & Knab (2018) the business model serves a mediating role in the creation of a network of actors connecting incumbents with other actors within the regime.

The principal finding of this research question was that SMEs in general possessed only a basic understanding of the business model and a very informal approach to its implementation, even when a higher level of knowledge was evident.

The focus for most SMEs were people and the data revealed that SMEs were plagued by various intrinsic and extrinsic challenges that warranted the majority of their efforts over and above focus on exercising the key elements of the business model.

The interplay of the different elements of the business model did not present as a finding across the sample and limited attention to social networks of actors coexisting in the regime was not a consideration.

7.1.3 Research Question 3

How has the SME pivoted its business model to deal with a changing landscape?

The energy transition resembles a discovered opportunity for the SMEs. For an opportunity that is discovered there is a market shift, but this requires an alertness, active searching, and superior cognition by key decision makers (Clausen, 2020; Fuentelsaz et al., 2018). As expressed by Clausen (2020) agency is critical factor to the development of opportunities for entrepreneurs alongside incremental testing and feedback.

Opportunities explored by respondents in the sample were not motivated by the perceived threat to their continued perpetuity initiated by the energy transition. Although awareness of a multitude of environmental shifts and landscape pressures was high, this was not an antecedent of business model innovation or the enactment of a business model pivot.

Opportunities identified and explored by participants in their businesses were of an operational nature and exhibited low levels of skill, expertise, and business acumen by decision makers. Inertial forces are high amongst SMEs in the energy sector who exhibit organisational behaviour linked to the retention of their power positions with disregard for the landscape pressures that are being exerted on the current regime.

7.2 Theoretical contribution

Schaltegger et al. (2016) emphasises that “no consistent theoretical framework is available [...] that helps understand the dynamic role of business model innovation for sustainability transformations of markets.” Bidmon & Knab (2018) join this growing body of researchers who have exhibited interest in the confluence of business model research and transition theory.

The study by Bidmon & Knab (2018) of the effect of business models on socio-technical transitions in the energy sector is of particular interest to this research due to the similarity in constructs, albeit within a different context.

This research study is at the forefront of research including South African SMEs in the energy sector whose principal business model is designed around servicing the fossil-fuel generating industry.

The findings provide insight into the high level of organisational inertia that prevails amongst the SME population in the country and provides insight into the overall dissatisfaction of business with government intervention and policy.

7.3 Implications for management and other relevant stakeholders

For South African SMEs in the energy sector there is an ideal interplay of forces to enable the advancement of their business models and the success of their operations through the “windows of opportunity” that have been created for them to exploit by the simultaneous shift in the technological landscape and by the weakening of the structures of the prevailing regime (Geels, 2002). A pathway has been created for their entry into the socio-technical realm, to first work alongside the existing regime and then for them to influence the transformation of the regime into congruence with the new landscape.

For policy makers, the general sentiment amongst SMEs is one of dissatisfaction and lack of faith the government to support them. As the majority contributor to the country’s GDP, policy makers should ensure that SMEs receive better access to financing, networking and skills development opportunities. The creation of opportunities for SMEs to exploit, will drive economic growth and may help curb the runaway unemployment rates

7.4 Limitations of the research

The primary limitation of this study was the homogenous sample set probed in search of an explanation for the research questions developed. The selection criteria were developed to generate a homogenous, easily accessible sample, however, the full impact of the energy transition on incumbents was not explored.

Finally, as a closing thought, the results of this study may not be generalisable to the wider community of SMEs in South Africa or other organisations or industries due to the rigorous sample selection process that has been used. Furthermore, the purpose of this study is focused on gaining an understanding of the perception of SMEs on the energy transition and illumination of their current business models and potential pivots without the intention of the results being used to explain causal relationships that may exist.

7.5 Suggestions for future research

Further studies on larger organisations and their response to the energy transition will add to the knowledge generated in this research study to provide a more complete view of the stated phenomenon.

The effects of the global COVID-19 pandemic on the perpetual operability of SMEs were a factor that had to be considered when business model innovations were explored. The post-COVID economy is vastly different from when it was business as usual pre-2020. SMEs were forced to change the lens through which their environments are analysed, and their strategies are implemented making innovation almost essential. To infer that the energy transition is the primary and not complementary force that encourages business model pivot implementation might be flawed. Scholars exploring the theory developed in this research study must therefore consider the interplay of all these forces when assessing business model pivoting, so as not to incorrectly ascribe the phenomenon stated as the sole contributor.

South African SMEs are under regulatory pressure, both through codes such as Broad-Based Black Economic Empowerment (B-BBEE) and Employment Equity (EE), and stringent environmental laws, which contribute to growing apathy from the business community. Coupled with ailing state-owned enterprises (SOEs) and currency fluctuations, SMEs need to navigate a myriad of torrents to survive. These externalities could be factors that catalyse the adoption of business model innovation and result in distorted data when the energy transition is examined for attribution of the phenomenon.

Also, future research in the field must account for the ontological assumptions of the researcher. The views in this study have assigned a negative and destructive character to the energy transition, with a blatant omission of the positive and socially beneficial nature of the phenomenon. There thus exists scope for future research to adopt an opposing ontological view, that is enact an ontological shift, on the energy transition to explore the advantages that the phenomenon could present to incumbent SMEs (Shepherd & Suddaby, 2017).

REFERENCES

- Action on Climate and SDGs*. (2022). United Nations Framework Convention on Climate Change. <https://unfccc.int/topics/action-on-climate-and-sdgs/action-on-climate-and-sdgs>
- Adomako, S., Mole, K. F., Franklin, R. J., & Murnieks, C. Y. (2022). Entrepreneurial passion and venture profit: Examining the moderating effects of political connections and environmental dynamism in an emerging market. *International Small Business Journal: Researching Entrepreneurship*. <https://doi.org/10.1177/02662426221085182>
- Alvesson, M., & Kärreman, D. (2007). Constructing Mystery: Empirical Matters in Theory Development. *The Academy of Management Review*, 32(4), 1265–1281. <http://www.jstor.org>URL:<http://www.jstor.org/stable/>
- Amankwah-Amoah, J., Osabutey, E. L. C., & Egbetokun, A. (2018). Contemporary challenges and opportunities of doing business in Africa: The emerging roles and effects of technologies. *Technological Forecasting and Social Change*, 131, 171–174. <https://doi.org/10.1016/j.techfore.2018.01.003>
- Baker, L., Newell, P., & Phillips, J. (2014). The Political Economy of Energy Transitions: The Case of South Africa. *New Political Economy*, 19(6), 791–818. <https://doi.org/10.1080/13563467.2013.849674>
- Bidmon, C. M., & Knab, S. F. (2018). The three roles of business models in societal transitions: New linkages between business model and transition research. *Journal of Cleaner Production*, 178, 903–916. <https://doi.org/10.1016/j.jclepro.2017.12.198>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Casadesus-Masanell, R., & Ricart, J. E. (2011). *How to design a winning business model*. Harvard Business Review. <https://hbr.org/2011/01/how-to-design-a-winning-business-model>
- Christensen, C. M., Bartman, T., & van Bever, D. (2016). The hard truth about business model innovation. *MIT Sloane Management Review*, 58(1), 31–40. <http://mitsmr.com/2cBmhTk>

- Clausen, T. H. (2020). Entrepreneurial thinking and action in opportunity development: A conceptual process model. *International Small Business Journal: Researching Entrepreneurship*, 38(1), 21–40. <https://doi.org/10.1177/0266242619872883>
- Cope, D. G. (2014). Methods and meanings: Credibility and trustworthiness of qualitative research. *Oncology Nursing Forum*, 41(1), 89–91. <https://doi.org/10.1188/14.ONF.89-91>
- de Vos, D. (2020). *To solve our electricity supply crisis, we must break the Eskom myth*. Daily Maverick. <https://www.dailymaverick.co.za/opinionista/2020-03-16-to-solve-our-electricity-supply-crisis-we-must-break-the-eskom-myth/>
- Department of Mineral Resources and Energy. (2019). *Integrated Resource Plan (IRP) 2019*.
- Devece, C., Peris-Ortiz, M., & Rueda-Armengot, C. (2016). Entrepreneurship during economic crisis: Success factors and paths to failure. *Journal of Business Research*, 69(11), 5366–5370. <https://doi.org/10.1016/j.jbusres.2016.04.139>
- Eggers, F. (2020). Masters of disasters? Challenges and opportunities for SMEs in times of crisis. *Journal of Business Research*, 116, 199–208. <https://doi.org/10.1016/j.jbusres.2020.05.025>
- Enel Green Power. (n.d.). *The just transition*. Retrieved May 29, 2022, from <https://www.enelgreenpower.com/learning-hub/energy-transition/just-transition>
- Fitch Ratings. (2021). *Fitch Revises South Africa’s Outlook to Stable; Affirms at “BB-.”* <https://www.fitchratings.com/research/sovereigns/fitch-revises-south-africa-outlook-to-stable-affirms-at-bb-15-12-2021>
- Freeman, J., Carroll, G. R., & Hannan, M. T. (1983). The liability of newness: Age dependence in organizational death rates. *American Sociological Review*, 48(5), 692–710.
- Fuentelsaz, L., Maicas, J. P., & Montero, J. (2018). Entrepreneurs and innovation: The contingent role of institutional factors. *International Small Business Journal: Researching Entrepreneurship*, 36(6), 686–711. <https://doi.org/10.1177/0266242618766235>

- Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case-study. *Research Policy*, 31, 1257–1274.
- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, 8(4), 597–606. <http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf>
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough?: An experiment with data saturation and variability. *Field Methods*, 18(1), 59–82. <https://doi.org/10.1177/1525822X05279903>
- Hoyos-Iruarrizaga, J., Fernández-Sainz, A., & Saiz-Santos, M. (2017). High value-added business angels at post-investment stages: Key predictors. *International Small Business Journal: Researching Entrepreneurship*, 35(8), 949–968. <https://doi.org/10.1177/0266242616686401>
- International Finance Corporation. (2018). *The unseen sector: A report on the MSME opportunity in South Africa*. www.ifc.org
- Kalnins, A. (2007). Sample selection and theory development: Implications of firms' varying abilities to appropriately select new venture. *Academy of Management Review*, 32(4), 1246–1264.
- Kanger, L., Sovacool, B. K., & Noorkõiv, M. (2020). Six policy intervention points for sustainability transitions: A conceptual framework and a systematic literature review. *Research Policy*, 49(7). <https://doi.org/10.1016/j.respol.2020.104072>
- Kimmit, J., & Muñoz, P. (2017). Entrepreneurship and financial inclusion through the lens of instrumental freedoms. *International Small Business Journal: Researching Entrepreneurship*, 35(7), 803–828. <https://doi.org/10.1177/0266242617700699>
- Lenihan, H., McGuirk, H., & Murphy, K. R. (2019). Driving innovation: Public policy and human capital. *Research Policy*, 48(9). <https://doi.org/10.1016/j.respol.2019.04.015>
- Morgan, T., Anokhin, S., Ofstein, L., & Friske, W. (2020). SME response to major exogenous shocks: The bright and dark sides of business model pivoting. *International Small Business Journal: Researching Entrepreneurship*, 38(5), 369–379. <https://doi.org/10.1177/0266242620936590>

- Müller, F., & Claar, S. (2021). Auctioning a 'just energy transition'? South Africa's renewable energy procurement programme and its implications for transition strategies. *Review of African Political Economy*, 48(169), 333–351. <https://doi.org/10.1080/03056244.2021.1932790>
- Osterwalder, A., & Pigneur, Y. (2010). *Business Model Generation*. John Wiley and Sons,.
- Ram, M., Aghahosseini, A., & Breyer, C. (2020). Job creation during the global energy transition towards 100% renewable power system by 2050. *Technological Forecasting and Social Change*, 151. <https://doi.org/10.1016/j.techfore.2019.06.008>
- Saldaña, J. (2013). *The coding manual for qualitative researchers* (J. Seaman, Ed.; 2nd ed.). SAGE. www.sagepublications.com
- Saunders, M., & Lewis, P. (2018). *Doing research in business and management* (2nd ed.). Pearson.
- Saunders, M. N. K., & Townsend, K. (2016). Reporting and justifying the number of interview participants in organization and workplace research. *British Journal of Management*, 27(4), 836–852. <https://doi.org/10.1111/1467-8551.12182>
- Schaltegger, S., Lüdeke-Freund, F., & Hansen, E. G. (2016). Business models for sustainability: A co-evolutionary analysis of sustainable entrepreneurship, innovation, and transformation. *Organization and Environment*, 29(3), 264–289. <https://doi.org/10.1177/1086026616633272>
- Schot, J., & Kanger, L. (2018). Deep transitions: Emergence, acceleration, stabilization and directionality. *Research Policy*, 47(6), 1045–1059. <https://doi.org/10.1016/j.respol.2018.03.009>
- Shepherd, D. A., & Suddaby, R. (2017). Theory Building: A Review and Integration. *Journal of Management*, 43(1), 59–86. <https://doi.org/10.1177/0149206316647102>
- Statistics South Africa. (2022). *Quarterly Labour Force Survey (QLFS) – Q4:2021*. *Total greenhouse gas emissions (kt of CO2 equivalent)*. (2018). World Bank. https://data.worldbank.org/indicator/EN.ATM.GHGT.KT.CE?most_recent_value_desc=true&view=chart

van Maanen, J., Sørensen, J. B., & Mitchell, T. R. (2007). The interplay between theory and method. *Academy of Management Review*, 32(4), 1145–1154.

World Bank. (n.d.). *Gini index - South Africa*. 2022. Retrieved May 29, 2022, from https://data.worldbank.org/indicator/SI.POV.GINI?locations=ZA&most_recent_value_desc=true

APPENDIX A - CODEBOOK

Code	Code Groups/Categories
A mindset shift is necessary to advance the transition	Access to finance
Acquisitions to increase capabilities	Access to finance
Adapting to changing environment by operational means.	Energy transition inputs
Additional service offering is not to form part of the core	Improve existing capabilities
Administrative functions identified as key	Improve existing capabilities
Advanced understanding of the business model	Additional service offerings
Affordability of RE technology is a barrier to faster adoption	Key roles
Alertness to what people are saying and the environment is doing	Business model understanding
All labour viewed as key	Energy transition barriers and challenges
Alternative fuel sources, but power stations will remain	Motivation for business model innovation
Alternatives are being actively sought	Key roles
Alternatives are not being actively sought	Alternative fuel sources, Opportunities exist in current regime
And they're thinking short term, they're not thinking bigger picture.	Business model innovation
Basic understanding of a transition	Business model innovation
Basic understanding of the business model	Long term view
Belief in traditional and the known	Understanding of the energy transition
BM: High quality and drives efficiencies	Business model understanding
BM: What you do to make money	Resistance to change
Business and its staff will evolve with the world	Business model understanding
Business has been struggling due to increasing costs	Business model understanding
Business has been struggling due to reduction of work	Change will occur naturally
Business is at risk if transition accelerates	Challenges facing business
Business model innovation understood deeply.	Challenges facing business
Business model is susceptible to environmental shocks	Energy transition is a risk
Business will outgrow the owner.	Business model understanding
But trust me, it's even worse after COVID. COVID really messed up Sout	Challenges facing business
Buzzword.	Change will occur naturally
Capitalism prevents acceleration of environmental agenda	Challenges facing business
Capitalism prevents implementation of available new technology	Climate change is a buzzword
Change is inevitable for growth and continuity	Capitalism over sustainability and growth
Changes are resulting in reduced expenditure	Capitalism over sustainability and growth
Clients pressure to reduce prices	Change requires action
Coal is here to stay.	Challenges facing business, Revenue
Coal-derived energy as a compliment to RE	Challenges facing business, Revenue
Coal-fired regime dependant	Climate change is a buzzword, Energy transition barriers and challenges, Existing regime will remain
Coexistence of all power generation means	Energy mix, Existing regime will remain
Cognition and aptitude of new entrants is sub-par.	Limited market reach
Company must adapt to suit it's environment	Energy mix, Existing regime will remain
Competitive advantage is being sought	Skills development and training
Competitive advantage is being sought through sustainability	Adaptability
Complexity of the country's problems not fully grasped.	Business model innovation
Conservative costing structures due to high rivalry	Business model innovation

Code	Code Groups/Categories
Corruption is a major concern	Climate change is not South Africa's biggest problem, South African context differs from first world
Costing is done with client retention in mind	Highly competitive industry, Pricing structures
Creating a new model in line with RE trend	Corruption
Crystal ball	Pricing structures
Demand for the service is wide and future-proof	Business model innovation, Pivot
Diverse potential market sectors are being explored.	Uncertainty
Diverse range of activities and services	Future proof model
Diverse sectors are serviced	New sectors being explored
Economic stability is highly dependent on electricity	Current service offering
Economic stability is highly uncertain	Wide market reach
Energy transition is not viewed as a short or medium risk to continuity	Economic stability
Equip people with skills instead of giving them handouts	Economic stability, Uncertainty
Ethics and Integrity in business is essential	Energy transition is not a risk
Everybody is sitting on the fence	Skills development and training
Experience and skills go hand-in-hand	Corruption
Expertise in a single area that has been focussed on for entire career	Uncertainty
Finance is difficult to obtain for fossil fuel projects	Skills development and training
Financial limitations to expanding service offering	Current service offering, Experts in a single service
Fixation on idea of continuation of coal	Existing regime will remain
Forex risks	Economic stability
Full transition not anticipated	Change is happening too slowly, Energy mix, Existing regime will remain
General labour viewed as key resource	Key roles
Geopolitical instability may reverse traction of transition	Geopolitical considerations
Globally significant business model with a wide reach	Current service offering, Wide market reach
Government does not adequately support it's citizens and businesses.	Government support and policy interventions
Growth is the driver for change not a sustainability agenda	Capitalism over sustainability and growth, Motivation for business model innovation
High appreciation for all employees	Key roles
High awareness of impact of industry on climate	Sustainability agenda for operations
High level of uncertainty around the future	Uncertainty
Highly experienced resources. Have worked for many years	Key roles, Resistance to change, Strong culture, low attrition
If we see the power sector changing and this is not going to be sustain	Change requires action
Importance of continuous improvement	Adaptability, Business model innovation, Change requires action, Motivation for business model innovation
Important but not critical in the South African context	Climate change is not South Africa's biggest problem, South African context differs from first world
Increasing uncertainty due to unclear political future of SA	Political stability, Uncertainty
Incumbents are aging and with them their valuable skills are exiting the industry	Key roles, Skills development and training, Strong culture, low attrition
Industry contribution to pollution is muted	Climate change is not South Africa's biggest problem
Industry in South Africa is diverse and can be tapped into	Wide market reach
Inefficiencies in current regime infrastructure and processes	Energy security
Inequality in SA is a concern	Climate change is not South Africa's biggest problem

Code	Code Groups/Categories
Costing is done with client retention in mind	Highly competitive industry, Pricing structures
Creating a new model in line with RE trend	Corruption
Crystal ball	Pricing structures
Demand for the service is wide and future-proof	Business model innovation, Pivot
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Diverse range of activities and services	Future proof model
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High appreciation for all employees	Key roles
High awareness of impact of industry on climate	Sustainability agenda for operations
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Incumbents are aging and with them their valuable skills are exiting the industry	Key roles, Skills development and training, Strong culture, low attrition
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Industry in South Africa is diverse and can be tapped into	Wide market reach
Inefficiencies in current regime infrastructure and processes	Energy security
Inequality in SA is a concern	Climate change is not South Africa's biggest problem

Code	Code Groups/Categories
Intellectual capital and diversity is a source of uniqueness	Uniqueness
Intellectual capital is a source of uniqueness	Uniqueness
International business for uniqueness and diversity	Uniqueness
Involvement of other world powers to accelerate the transition	Geopolitical considerations
Lead from the front	Leadership
Learning is a part of everyday operations	Skills development and training
Legacy to be maintained	Legacy
Let's call it the political handbrake. They're pulling that handbrake	Change is happening too slowly, Government support and policy interventions, Political stability
Limited exposure through professional associations and website	Marketing and advertising, Networking and exposure
Limited use of social media	Marketing and advertising, Networking and exposure
Long term view with regard to activities	Long term view
Low staff turnover rates.	Strong culture, low attrition
Maintenance is avoided	Energy security, Government support and policy interventions, Infrastructure mismanagement
Market related pricing is not exercised	Pricing structures
Marketing and advertising non-existent	Marketing and advertising
Marketing function is outsourced	Marketing and advertising
Mergers and partnerships to strengthen offering	Networking and exposure
Mismanagement within current regime renders state incompetent in future developments and technological advancements	Infrastructure mismanagement
More opportunities in current regime not niche	Opportunities exist in current regime
New generation of employees are ineffective and work differently	Skills development and training, Strong culture, low attrition
New methods attempted with production challenges	Business model innovation
No faith in government to implement RE successfully	Private sector involvement
Nuclear power should be expanded and explored	Alternative fuel sources, Energy mix
Opportunities are recognised if action is taken	Change requires action
Other urgent problems should take precedence	Climate change is not South Africa's biggest problem
Own green energy initiatives as part of responsible business	Sustainability agenda for operations
People and processes as key elements of the business model	Business model understanding
People, equipment and efficiency as competitive advantage	Uniqueness
Pie in the sky	Climate change is a buzzword, Climate change is not South Africa's biggest problem
Policy and infrastructure is lacking in SA for effective RE implementation	Change is happening too slowly, Government support and policy interventions, South African context differs from first world
Political and capitalist agendas take precedence over sustainability	Capitalism over sustainability and growth
Positive outlook on transition through climate lens	Government support and policy interventions
Post-pandemic effects of COVID-19 are being felt now	Challenges facing business, COVID-19
Potential of reform by RE is restrained	Climate change is a buzzword
Power is essential, regardless of how it is produced.	Energy mix, Energy security
Price differentiation strategy	Pricing structures
Pricing is stagnant	Pricing structures
Pricing is volume dependent.	Pricing structures
Private sector should implement RE, not the government	Private sector involvement
Privatisation may improve the regime instability	Private sector involvement
Process modification to align with shifting market demand.	Sustainability agenda for operations
Productivity above protection of the environment	Capitalism over sustainability and growth
Profitability increased through process modification and altering the target market	Business model innovation, Profitability
Profitability not realised through market sector and service additions	Business model innovation, Profitability

Code	Code Groups/Categories
Profitability restricting adoption	Capitalism over sustainability and growth, Profitability
Reduction in supply of electricity to consumers through loadshedding	Energy security
Regulatory burden on SME's adds to hesitancy to further invest	Government support and policy interventions
Reinvestment into the business	Leadership
Relationship building in the industry is difficult.	Networking and exposure
Relationships are essential to survival	Networking and exposure
Reliance on Eskom reduced due to payment issues	Challenges facing business, Change requires action, Current service offering
Reliance on word-of-mouth and reputation	Marketing and advertising
Reluctant to share future plans.	Uncertainty
Renewable energy is not viewed as an opportunity on which to capitalise	Business model innovation, RE offers no opportunity
Renewable energy is viewed as an enemy rather than opportunity	Business model innovation, RE offers no opportunity, Uncertainty
Renewable energy is viewed as an opportunity on which to capitalise	Business model innovation, Opportunities exist in new regime
Renewables as an aid not a replacement	Energy mix, Existing regime will remain
Resources are increased to improve internal firm capabilities	Improve existing capabilities
Resources are reduced and existing staff are taking on more	Challenges facing business
Revenue can be extracted from customers on an on-going basis	Revenue
Revenue is diminishing.	Revenue
Revenue reliant on single client	Revenue
Revenue streams highly diversified	Revenue
SA is rich in renewable energy sources	Opportunities exist in new regime
SA Skills gap to be addressed through hiring of expatriots.	Skills development and training
Services include once-off projects	Challenges facing business
Silver bullet	Long term view
Single client focus	Limited market reach, Revenue
Skilled labour is available but unemployed	Climate change is not South Africa's biggest problem, South African context differs from first world, Unemployment
Skilled labour is not available	Skills development and training
Skills can fix the problems	Skills development and training
Slow pace of change for transition	Change is happening too slowly
SME's face skills migration to larger companies that can offer better packages and benefits.	Challenges facing business, Skills development and training
So, I don't think they'll ever get to a hundred percent renewable ener	Existing regime will remain
So, yes. I train a lot of people every day and I don't think we will e	Energy mix, Skills development and training
South Africa has the renewable energy sources to have long adopted RE.	Change is happening too slowly, Opportunities exist in new regime
Stability of the existing power supply is more important	Energy security, Existing regime will remain
Succession planning actively used and in alignment with changes in the environment	Skills development and training
Talk is cheap	Climate change is a buzzword, Government support and policy interventions
That's why I said the private sector.	Private sector involvement
The busyness of business prevents focus and attention on other issues in the broader environment	Challenges facing business
The resource pool has shrunk in terms of skills.	Key roles, Leadership, Skills development and training
The transition in the South African Context	South African context differs from first world
The transition is an operational plan with a climate focus	Sustainability agenda for operations, Understanding of the energy transition
There are problems with coal-fired regime	Incapacity of current regime, Infrastructure mismanagement
Timing of renewable energy expansion is perfect to deal with energy supply crisis	Energy security, Opportunities exist in new regime

Code	Code Groups/Categories
Reduction in supply of electricity to consumers through loadshedding	Energy security
Regulatory burden on SME's adds to hesitancy to further invest	Government support and policy interventions
Reinvestment into the business	Leadership
Relationship building in the industry is difficult.	Networking and exposure
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The transition is an operational plan with a climate focus	Sustainability agenda for operations, Understanding of the energy transition
There are problems with coal-fired regime	Incapacity of current regime, Infrastructure mismanagement

Code	Code Groups/Categories
Traditional advertising methods do not work in this industry	Marketing and advertising
Training and development of fututre skills recognised	Skills development and training
Transition in terms of a regime shift	Understanding of the energy transition
Transition is viewed from the consumer lens	Understanding of the energy transition
Transition should create employment	Climate change is not South Africa's biggest problem, Opportunities exist in new regime, Transitions inputs and outcomes
Transition to be operationalised according to essential and non-essential uses	Understanding of the energy transition
Transition to benefit land owners as the requirements for space are enormous	Transitions inputs and outcomes
Transition will benefit some and be detrimental to others	Transitions inputs and outcomes
Trust in the government is low, hence, free investment is impeded.	Corruption, Government support and policy interventions
Unemployment in SA is a concern	Challenges facing business, Climate change is not South Africa's biggest problem, South African context differs from first world, Transitions inputs and outcomes, Unemployment
Uniqueness defined by exceeding expectations	Uniqueness
Uniqueness defined by fixed asset base	Uniqueness
Uniqueness derived from revolutionary processes	Uniqueness
Uniqueness derived from service offering	Uniqueness
Use of existing infrastructure to effect the transition	Opportunities exist in current regime
Uses technology widely to improve service offering	Business model innovation
Various channels of advertising have been attempted	Marketing and advertising
Works by philosophy of Ubuntu	Leadership

The codebook above contains 185 unique codes which were categorised into 63 categories. The categories were then summarised into seven themes.

APPENDIX B – ETHICAL CLEARANCE

Gordon Institute of Business Science University of Pretoria	Ethical Clearance Approved
<p>Dear Nigel Pillay,</p> <p>Please be advised that your application for Ethical Clearance has been approved. You are therefore allowed to continue collecting your data. We wish you everything of the best for the rest of the project.</p> <p>Ethical Clearance Form</p> <p>Kind Regards</p>	
<p>This email has been sent from an unmonitored email account. If you have any comments or concerns, please contact the GIBS Research Admin team.</p>	

APPENDIX C – INTERVIEW GUIDE

Interview Guide

1. Request an introduction to the company, its operations, size, and history.
2. What is your understanding of an energy transition?
3. What is your view on the transition of electricity from coal (fossil fuels) to renewable energy?
4. In your opinion, is the energy transition risk to your organisation for the foreseeable future?
5. Please describe your business model. And then probe further with aspects from the business model canvas:
 - a. What are some of the key activities of the business?
 - b. Who are the key resources in the business?
 - c. Who are your key customers/sectors that you serve? What channels are used to reach them?
 - d. What is your product/service offering?
 - e. Describe the revenue streams. Costing/pricing structure?
 - f. What is unique to your business that is difficult to replicate?
6. Considering changing circumstances, have you made any changes to the business model? What were these changes?
7. Have you seen an improvement in profitability because of the change?
8. Have you identified any potential opportunities that may be attractive for expanding the business? What are they?