

The Relationship between Renewable Energy Products and Cost-Effective Electricity among Middle-class consumers in Gauteng

Sheldon Ludick

Student number: 2512119

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Declaration

I, Sheldon Ludick, declare that this business venture proposal is my work except as indicated in the references and acknowledgments. It is submitted in partial fulfillment of the requirements for the degree of Master of Business Administration in the Graduate School of Business Administration, University of the Witwatersrand, Johannesburg. It has been submitted before for any degree or examination in this or any other University.

Sheldon Ludick

Signed at Johannesburg

On the 29th of February 2024

Dedication

I dedicate this paper to my spiritual fathers and mentors, the Apostle Edgar Hill Roscoe, Pastor Jonathan Roscoe and Pastor Jude Roscoe, thank you Pastor Jonathan for asking me “what next?” after I graduated as a CA(SA). It is based on this prompting that I began my MBA journey. Thank you, Men of God. Your words prayers, words of encouragement, and sermons kept me going.

To my wife and children, Jolene Ludick, Aviel Ludick, and Eliel Ludick, thank you for standing by and supporting me and for always understanding and encouraging me to complete the task at hand.

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My classmates and cohort appreciate the support and time spent growing together in this MBA after completing assignments together. I wish you all the best in your future endeavours.

Thank you to Wits Business School. The experience and learnings I gained from the course were genuinely life-changing and irreplaceable.

Supplementary Information

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- Research Instruments (Questionnaires)

† Including Executive Summary, References

Executive summary

This executive summary presents a business venture proposal to address the need for stable electricity in South Africa, by offering renewable energy solutions to middle to upper-income households. The proposal focuses on charging customers per kilowatt basis, thereby eliminating the initial capital outlay typically required for setting up renewable energy systems in homes by providing renewable energy infrastructure at no upfront cost to the consumer. A pay-as-you-use model stands as the unique selling proposition of Renew Able Technologies, giving it a distinct competitive advantage.

By partnering with residents in the target living standards measure LSM bracket, the business aims to provide long-term electricity supply through renewable energy technologies at a competitive per-unit or kilowatt cost, creating a monthly income stream, while creating a long-term partnership with consumers. Additionally, renewable energy is environmentally friendly, and contributes to a greener, cleaner, and sustainable future.

As a consequence, this proposal is not purely based on the current supply issues of electricity in South Africa, but instead, it aims to create a profitable business, at once contributing to the planet's sustainability.

The business venture proposal will calculate the average daily usage of kilowatt hours to determine the appropriate solution for each household. Implementation costs will vary based on individual household needs; correspondingly, larger households will incur higher charges based on their monthly usage.

Estimates suggest that by 2030, there will be over 100 million homes globally equipped with solar energy or other renewable energy sources, a significant increase from 25 million homes in 2020. This proposal aims to support this growth, by enabling households with limited upfront resources to access renewable energy through a per-unit supply model.

The proposal suggests offering an affordable monthly electricity bill to attract customers who desire to switch to renewable energy but are put off by the upfront expenses. This proposal presents a solution to the current lack of renewable energy accessibility for households.

The pricing strategy will adopt a competition-oriented approach, ensuring that the shift to renewable energy minimizes household monthly spending for electricity while promoting long-term self-sufficiency.

Our marketing efforts will be geared towards middle- to upper-income homeowners through promotions at various events, roadshows, and advertising agencies. We will ensure that product and pricing information is easily accessible to everyone through radio and television channels. By doing so, we aim to reach as many potential customers as possible and provide them with the best possible service.

To finance the venture, we plan to seek equity and loan funding. Specifically, we are proposing a split of 60% equity and 40% loan.

In summary, this business venture proposal aims to capitalise on the growing demand for renewable energy, by offering households an affordable alternative to traditional electricity. In eliminating the initial capital outlay, the proposal seeks to tap into a market segment that desires renewable energy solutions but is hindered by cost constraints.

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Chapter 1 Introduction and scope of the business venture proposal

1.1 Overview

Renewable energy technologies (RET) have become a part of our daily lives, leading to social and environmental changes that we must confront (Kupers & Batel, 2022). Studies have shown that residents' acceptance of RET and their understanding of the resulting social change are essential research (Kupers & Batel, 2022). However, there needs to be more examination of how individuals think, act, and feel about these technologies (Sardianou & Genoudi, 2013).

Adopting RET in South Africa is an essential consideration for addressing persistent problems with the electricity grid. However, caution must be taken in approaching society's transition to RET. The rolling blackouts that first occurred in 2007/2008 (Masike & Vermeulen, 2021) highlight the importance of understanding the attitudes and perceptions of residents towards RET and effectively communicating the benefits while addressing any concerns or barriers.

During the period spanning from 1994 to 2010, the South African economy sustained itself by relying on pre-existing energy infrastructure established prior to 1994 (Seymore, Akanbi, & Abedian, 2012) without allocating resources towards expanding its capacity to accommodate the burgeoning demands of the economy. However, more recently, South Africa has been plagued by constant power outages and load-shedding for several years and is currently experiencing power outages daily for several hours a day.

Thus, consumers have had to deal with higher prices and less electricity in the form of load shedding. According to the Cape Business News, in 10 years, electricity increased by 173%. If one paid R1000 10 years ago for the writing of this report, one would have to pay R2736. (CBN, 2021).

The cost of load shedding for retail businesses for the first six months of 2015 amounted to a loss in revenue of 13.72 billion rand. (Goldberg, 2015). This amount is now much more in real terms 10 years on. This is only one part of the economy, and more than seven years ago,

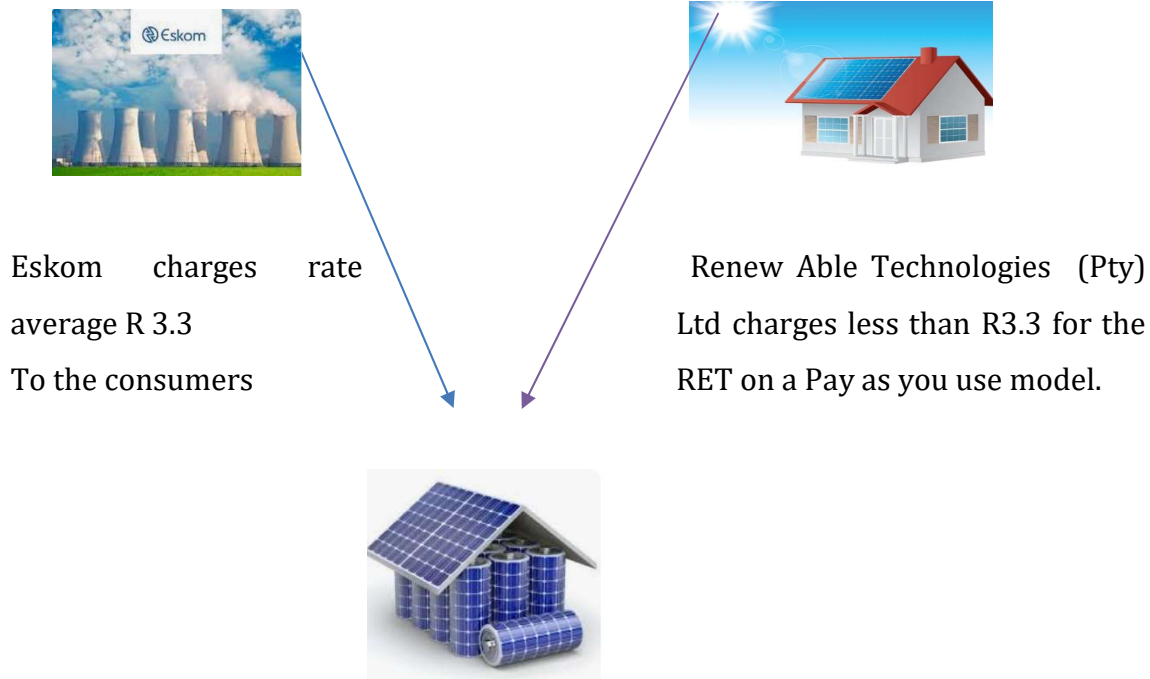
load-shedding hours already surpassed those hours of 2018 – 2020, and therefore, the loss of revenues increased.

1.2 Purpose of the study

The primary objective of this business venture study is to investigate the existence of a viable market segment among middle to middle-upper -income class South African residents who would be interested in a service provider rate per watt payment model similar to the billing structure employed by municipalities or Eskom but tailored explicitly for renewable energy. The study explores the feasibility of a business model that facilitates the provision of capital infrastructure for households while generating revenue through a favorable rate of return based on a kilowatt-hour pricing system.

One potential solution to these challenges is adopting sustainable energy sources, specifically wind and solar power. The advantages of sustainable energy sources are abounding in a global scale (Maradin, 2021). The implementation of Renewable Energy Technologies (RET) should serve as a sustainable and environmentally friendly option for South African households and as a crucial measure to ensure a consistent and reliable electricity supply for individual households. Moreover, it is imperative to establish a fixed pricing structure for a specified duration.

This could be illustrated as follows:



1.3 Background of Renewable Energy Technologies in households.

The technology and capabilities exist and are ready to meet supply. There are several advantages of installing solar PV for households. (Maradin, 2021) For instance, land acquisition is not required as most solar panels are on rooftops; residential buildings are already connected to the grid, and it is easy to connect the system to the household. And households may experience satisfaction from consuming clean energy generated from their own homes (Shimada & Honda, 2022)

Another advantage to having solar PV to supply electricity to homes is that you can still have electricity in times of emergency or disaster (Shimada & Honda, 2022). South Africans face a disaster with electricity supply and constant load shedding Figure 1. This would be the most advantageous for South Africans now based on the current condition; however, the other advantages mentioned should be considered.

The adoption of residual solar PV is expected to proliferate (Spillias, 2020) However, the factors that affect households' decisions to install solar PV are Revenue and costs generated by installations, Peer adoption behavior, and household environmental concerns (Shimada & Honda,

2022). This business proposal will address these factors, such as a detailed analysis of upfront costs and mitigating these huge layouts by charging monthly rates plus small rentals.

1.4 Scope of the proposed business venture

The proposed business venture, Renewable Technologies Pty Ltd, explores opportunities for the application of RET, such as solar PV on household rooftops and in gardens for middle-class income households and where households would not go into debt by installing RET infrastructure but rather a partnership where households will pay business rate per watt Pay per use and business covers the cost of infrastructure. Customers will not pay any upfront costs for solar system instead they will sign a 10 year contract and pay for each KHW produced and used in their homes, with a minimum charge base on what they currently using. The unique selling proposition would be clean, constant energy at a similar cost to what households are currently paying without capital outlay. The assessment will look mainly at middle to high-income bracket homeowners based on socio-economic measure (SEM)

1.5 Objective of the proposed business venture

The proposed business venture seeks to identify the opportunities within renewable energy technologies for individual households by supplying the RET infrastructure and charging a rate per watt for electricity consumed. Through qualitative interviews and business case with valuation to ascertain if this is a viable business case.

Chapter 2: Literature Review

2.1 Introduction

Renewable energy technologies such as solar photovoltaic (PV) have contributed to the sustainability of countries adopting these technologies with added environmental and socioeconomic benefits (Aliyu, Modu, & Tan, 2018). From a South African perspective, this is particularly true, given the need to adopt RET because of high levels of air pollution (Olufemi, Bello, & Mji, 2018) due to coal mining areas and socio-economic unrest for households without electricity.

Decarbonizing the energy sector means replacing fossil fuels with renewable energy, and solar photovoltaics will play a pivotal role in this transition (Shimada & Honda, 2022). As the world moves towards a more sustainable energy approach, more and more companies are focused on research and development (RD) of such technologies, and more suppliers have entered the market, pushing down prices and giving more options to the local market.

At the center of lowered carbon emissions are renewable energy technologies, and these are tangible and concrete infrastructures entering people's lives. Therefore, people are confronted with social and environmental change. (Batel & Devine - Wright, 2015).

Solar panels have the potential to both reduce electricity expenditure and reduce insecurity (Best, Marrone, & Linnenluecke, 2023). In South Africa's current environment, individuals are living in a crisis with current blackouts, and having a household RET system will reduce insecurity and expenditure.

There is, however, a potential inequality in society as most solar PV adoption is taken up by higher income brackets (Best, Marrone, & Linnenluecke, 2023). however, this will have to be mitigated by policymakers and should be considered not to divide the rift even more. In normal circumstances where there is no load shedding and energy crisis, this will be minimal, but in South Africa's context, this will be amplified.

Some obstacles hinder the adoption of renewable energy initiatives, including the need for more

appreciation of the technology, willingness to change, lack of policies or regulatory frameworks, subsidies, and, of course, initial capital cost. (Aliyu, Modu, & Tan, 2018). Looking at the problem or hindrance, this business venture proposal will look at both assisting with initial cost layout, as well as marketing and advertising in such a way as to educate the target market to RET with a view for them to accept the technology as a sustainable method.

2.2 Renewable energy technologies adoption and mitigating load shedding.

Many studies have researched grid-connected systems; however, only a few have studied these systems during load shedding (Bakht, et al., 2021). The impact of planned outages and weather conditions in a particular area impacts the effectiveness of renewable energy systems (RES) compared to countries where there are no planned outages. In countries where there is no load shedding, batteries are charged during the day and used at night, where there are planned and constant outages. Batteries will be depleted in the evening should there be load shedding during the day. Thus, proper systems should be implemented so the consumer does not feel the impact of load shedding while using RET.

Among RET, Solar PV is viewed from a global standpoint as the most favorable technology for several reasons: it is simple to have installed, once installed, maintenance is considered low , it operates in silence, quietly generating electricity to homes compared to diesel generators, and it is environmental friendly (Bakht, et al., 2021). This business venture proposal will seek to install units with the lowest possible maintenance to keep the customer as happy as possible. This is not a once-off sale but more of a lifetime partnership selling electricity to customers.

There is a downside to PV, which is the weather; on days when the sun does not shine, the PV system will not generate as much electricity; however, batteries are essential to a RES. Thus, off-grid systems need sufficient batteries to handle electricity variations. (Bakht, et al., 2021).

2.3 The price of electricity in South Africa: a comparison of Eskom and renewable energy technologies.

South Africa's price of electricity decreased from 1983 to 2005 from 50c/KWH to 31c/KWH and started increasing in real terms from 2006 (Masike & Vermeulen, 2021). This increase has escalated to 83c/KWH by 2018, a 168% increase in 13 years. (Masike & Vermeulen, 2021).

This price increase was necessitated by the fact that Eskom required generation capacity expansion, however the price increase has other consequences mainly consumers moving away from Eskom to RET (Masike & Vermeulen, 2021). This business venture proposal consider the price point at which middle to upper income consumers will consider moving to other energy sources based on the price per kilowatt hour.

The more Eskom increases tariffs for capacity expansion and servicing debt the more this price will move consumers away from Eskom to other energy sources, this will affect Eskom revenues and cash thus more increase tariffs to cover costs (Masike & Vermeulen, 2021). Will people with low incomes or those who cannot afford electricity bear the brunt of higher electricity while those who can afford the switch to other sources does so? This business venture proposal will meet clients' price and supply needs and help them switch to other resources - mainly solar PV.

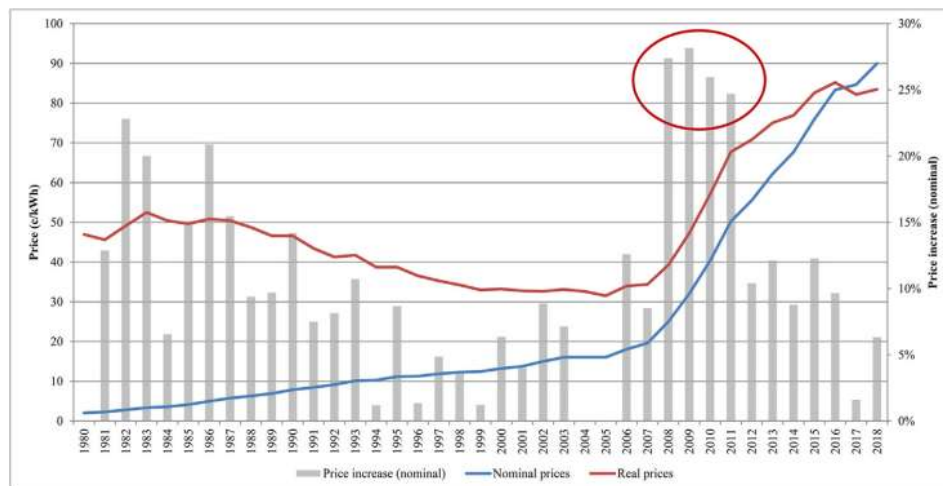


Figure 1 – price increase, real and nominal. (Masike & Vermeulen, 2021)

Masike and Vermeulen (2021) (Masike & Vermeulen, 2021) further concluded that consumers are price-sensitive when it comes to electricity, and such policymakers should take this into account when increasing tariffs; previously, it was suggested that in South Africa, the price increase would not affect demand; however, this is not the case.

As price is a sensitive point, this business venture proposal will focus on price and ensure we meet at a point feasible to customers. While still having the added benefits of constant electricity from a greener environmental energy generation.

2.4 Pay as you use Model

Renew Able Technologies Pty Ltd will adopt a pay-as-you-use (PAYU) Model to charge consumers for our solar products. Using PAYU model constitutes a new source of competitor advantage in product-oriented businesses. (Gebauer, Saul, Haldimann, & Gustafsson, 2017). Therefore, Renew Able Technologies Pty Ltd will use this model as part of its selling proposition and will also have a competitor advantage.

Three organizational capabilities identified in the PAYU is as follows: “Financing pay per use services, aligning costs to product usage and collaboration with customers. (Gebauer, Saul, Haldimann, & Gustafsson, 2017) PAYU is a alternative to renting, leasing and outright sale. (Gebauer, Saul, Haldimann, & Gustafsson, 2017) Renew Able Technologies will therefore use its model as a unique selling proposition.

In order to succeed with PAYU the actual cost of the product such as solar panels and batteries ect.. must be linked to actual usage costs. (Gebauer, Saul, Haldimann, & Gustafsson, 2017) Our company will assess the useful live of the RET and thus make the contract match this time frame which is 10 years.

When using PAYU model usage patterns is front of mind by the consumers (Bocken, Mugge, Bom, & Lemstra, 2018). Thus, based on past utility bills, a system of the average KHW of the household will be used to set up the home system. Therefore, through digital application, homeowners can monitor how much electricity is being produced and manage usage.

The Pay as you Go (PAYG) is herald in solar off grid industry as a solution making renewable energy affordable. (Riedke & Adelman, 2022). From literature review it is noted that most people have not adopted renewable because of cost we as a business will address this by intruding PAYU model in our offering. The PAYG is a prepaid system with technologies to block or switch the solar

home system (SHS) remotely if nonpayment. (Riedke & Adelman, 2022). Renew Able Technologies will charge after the month end using similar technologies to track usage and also bill customers, while having the power to switch the SHS off in case of nonpayment.

2.5 LSM – Middle income consumers

Renew Able Technologies will target Middle- or upper-income consumers, looking at those who can afford to pay monthly electricity utility bill but cannot afford RET systems and not willing to go into debt.

There has been a constant increase in different LSM groups in South Africa, especially amongst the black African middle class. (Wesso & Robertson, 2015). With a growing target market in South Africa, Renew Able Technologies Pty Ltd will focus on the Middle to upper LSM Market.

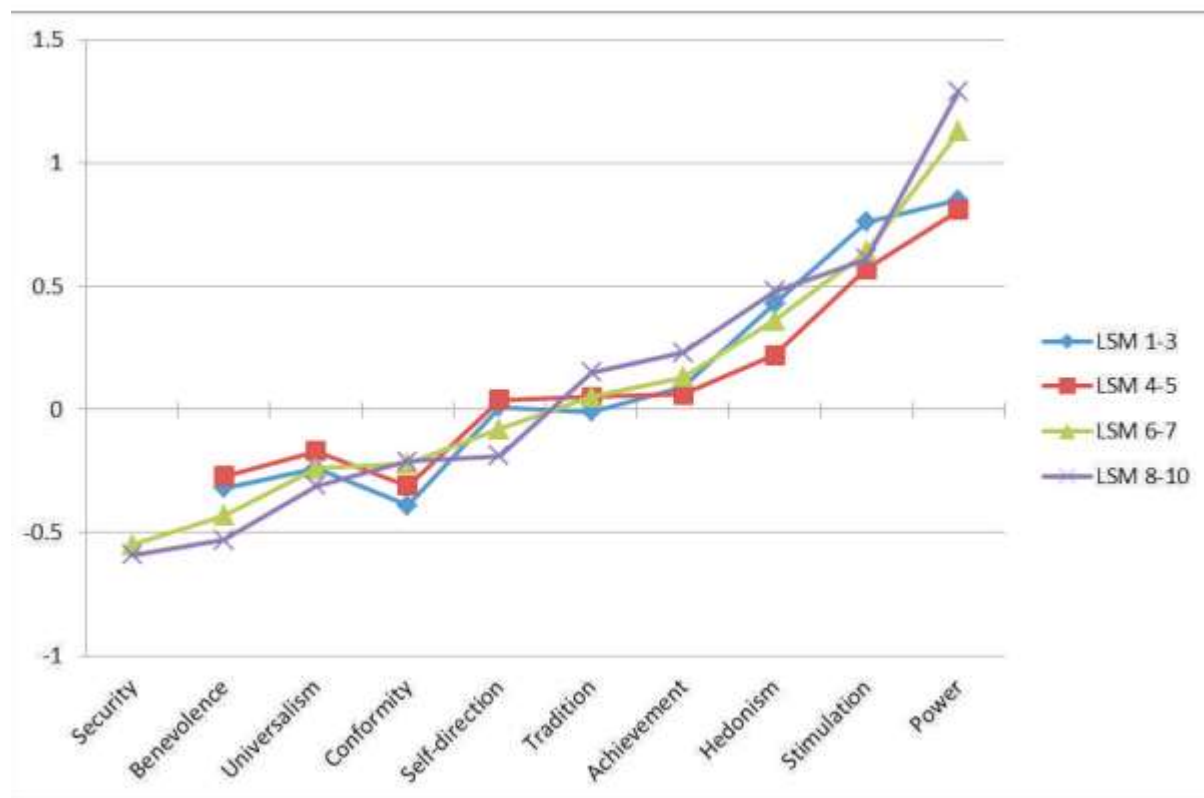


Figure 2 : Relation of LSM segments to the rest of South African population regarding Schwartz's Values (Wesso & Robertson, 2015).

Focusing on the correct market segment is important, and time will be taken to assess areas and to market more than others.

2.6 Loading shedding impact on society.

Any country's energy supply is critical to social and economic development (Ayamolowo, Manditereza, & Kusakana, 2021). In the current state of the globe, with technology and the 4th industrial revolution, energy is critical to competing in the global environment. However, at a more micro level, households on a social level depend on energy like no other time or era. Electricity supply started in South Africa in 1882 the first power supply in Kimberly was coal-fired generator, and few homes had power supply (Ayamolowo, Manditereza, & Kusakana, 2021). Almost 150 years have passed since then, and South Africa has grown into an energy-dependent country with almost all residents connected to the grid.

From a social perspective, living without power can be challenging for the local population. Most recently, there has been a protest of prolonged power outages, as written in the SRM article (Hunt, 2023) . Anger is increasing, and unfortunately, no solution or quick fix is in sight from a government perspective.

This business venture proposal will look at alleviating some of that pressure by having energy supplied to households uninterrupted and constantly for households to carry on as if no load shedding existed.

From a South African perspective, we also have our security we pay for, our own medical aid and private schools, etc. There is a supply of services from the government that is not to the standard of South Africa's many. The business venture proposal will look at the benefit to consumers in the instance of energy at a minimum financial impact while still having the same benefit of uninterrupted energy through a pricing model of per watt charge of electricity.

Electricity production in South Africa 2018

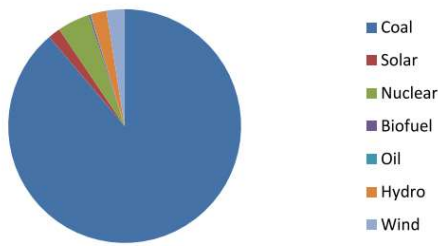


Fig. 1. Showing energy production in South Africa, 2018 [17].

Figure 3

(Ayamolowo, Manditereza, & Kusakana, 2021)

Based on the graph above, there is a huge opportunity to grow the business in South Africa as so many depend on coal.

This proposal will focus on a business that is customer-centric and quality is driven to drive sales while focusing on customer needs.

2.7 Business Model

This business venture seeks to charge customers per kilowatt charge for electricity used and focus on the maintenance and life cycle of the renewable energy technology infrastructure. Pay-per-use as a business model is often associated with an increase in environmental performance (Bocken, Mugge, Bom, & Lemstra, 2018)

This is because consumers worry and focus on consumption while the business looks after the product (Bocken, Mugge, Bom, & Lemstra, 2018). This business venture start-up will do precisely that, with consumers focusing on their electricity consumption while the business installs and maintains the product.

Eskom is already using this model as consumers pay for every unit of KWH used, so the concept is familiar. However, the benefit to the consumer is electricity at a lower cost, constant electricity, and sustainability.

A company that adopted this business model is Homie – which allows consumers to order washing machines; dishwashers have them installed and set for free, and charge a price per use. (Wauters, 2021)

The benefits of such a model are product evolution, increased market share, and customer loyalty. (Wauters, 2021). Product evolution because, as a business venture start-up, we will be able to understand and gain data from consumers' month-on-month usage and build future products based on this data. The increased market share directly results from lowering the entry barrier (Wauters, 2021). In this case, the barrier will be lowered per this business model for renewable energy technologies infrastructure to allow consumers to participate in RET. Customer loyalty is not a once-off business or once of sale but a partnership with consumers for the long run.

The distribution would be contracted for this business proposal, and a commission would be paid to electricians for each house where renewable energy products are installed. This will lower fixed costs while the business is in the start-up to growth phase.

Products will be sourced from around the world at the best quality and price and after-service compliments. There are many providers of such products, thus reducing the barrier to entry in supplying such products to consumers.

2.8 Conclusion

There is both demand and opportunity for this business venture proposal to succeed. South Africa is in a challenging environment regarding energy supply, and social unrest is on the rise. Price tariffs have also increased again in 2023 by 18%, per the literature review, pushing those who can afford electricity to go greener while leaving those who cannot pay the burden of higher electricity prices. Based on the literature review, the number one determinant of RET is the initial cost; the business venture proposal seeks to eliminate this hurdle by providing solar panels and systems to customers at a per KHW price without the consumer paying for infrastructure. Therefore, without initial cost, more households should adopt RET. Secondly, per the literature review, peer adoption is essential for residential household acceptance – therefore, an increase in households based on price will lead

to more peers adopting and, again, increased sales.

Therefore, as a proposition residential households will adopt more frequently solar panels should there be no upfront cost layout. Furthermore, the price per KHW, though novice, should also lead to a unique selling proposition for middle to higher-income residential households.

Chapter 3: Methodology

3.1 Introduction

We will discuss in this chapter the research design, population and sampling, data collection method, and data analysis method for this business venture proposal. The proposal used formal interviews, literature review, site visits, and ethnography.

3.2 Research design

The research approach of this business venture proposal focused on the viability of selling electricity per kilowatt hour rate to individual households instead of initial capital outlay. It further assess why individuals have yet to move to a RET model as outlined in the literature review. This investigation is people oriented and seek to unravel perceptions and behaviours of the research subjects (Page & Meyer, 2000). Hence the focus on why South Africans in Gauteng have yet to adopt RET and what will motivate them towards this move. This research approach will be qualitative research, as good qualitative research is practical, interesting, rigorous, and aesthetic. (Tracy, 2013) Qualitative research gathers the words, feelings and experiences of the research participants, these insights produces qualitative knowledge about RET adoption (Tracy, 2013).

This business venture research will focus on semi-structured interviews based on open-ended questions. The use of open-ended question addresses key concepts that go further than specific instruction defining content (Husain, Bais, Hussain, & Samad, 2012). Furthermore, open ended questions assist to build confidence as it is viewed as a natural way to solve problems around renewable energy (Husain, Bais, Hussain, & Samad, 2012). Through qualitative research one could study context of personal interest and never had valid reason for entering (Tracy, 2013).

Further observations from news outlets and website will inform the inductive approach offering

further insights based from objective evidence derived the recorded experiences of South African residences.

Through the interviews of semi structured question theory can be built and conceptual thinking leading to thematic analysis. Thematic analysis allows for freedom and flexibility as a research tool (Creswell & Poth, 2018) (Garbers, 1996) and therefore can account for the data as detailed, rich, and complex (Braun & Clarke, 2006). Qualitative analysis often use thematic analyses for various data such as healthcare, social research and beyond. (Fugard & Potts, 2015)

By understanding and familiarizing oneself with the data and transcribing audio files into a transcript, identifying patterns and consistent themes in the data sets. For this business venture proposal research will assess if households change to renewable energy based on price compared to Eskom and not paying for the initial capital outlay, are they willing to partner with a company for the long term as they do with Eskom. What do customers feel about the adoption of RET and why have they yet to move further than price and peer adoption. Understanding themes in data sets, we will first code the data and then assign the codes to different themes. By capturing something important from the data relating to research question and finding meaning a theme is then captured (Braun & Clarke, 2006)

3.3 Population and Sampling

3.3.1 Population

The research population comprises of households in South Africa

3.3.2 Sample

Qualitative research looks at depth of understanding rather than breadth (Creswell & Poth, 2018) Based on the exposition from Boddy, a single participant can be important and provide significant insight to the researcher (Boddy, 2016).

In a single country or market, a qualitative sample size with more than 30 interviews is considered too large and would require the researcher to provide justification (Boddy, 2016).

A sample of 13 participants was selected from Gauteng residences who were willing to answer semi structured questions. Even though saturation could be reached before all interviews were conducted, a total of 13 participants proved sufficient. (Kaiser, 2021)

3.4 Data collection

Data was collected using semi structured interviews. An interview guide was beneficial in providing structure to the interview while simultaneously assisting the researcher in analysing data (Bowen, 2005; Saunders, 2019; Morse, 1995).

Interviews were recorded on devices such as cellphone to tablets, as well as notes taken during the interview. Interviews will be conducted at the closest convenient meeting place.

I will note and watch out for any body language cues while taking the interviews. Interviews should take at most 1 hour. It is essential to build trust therefore a short write up will be sent to them before hand to build trust (McGrath, Palmgren, & Liljedahl, 2019).

Other data collection will include observations from South African communities and relevant documents related to this business venture proposal.

3.5 Data Analysis

The data for this business venture startup was collected through semi-structured interviews as guided by the literature review. This will be the main source of data for this proposal. This semi structured interviewers' answers will be used as to understand the adoption of residential household on RET to be applied to their homes, using a pay for use model and understand the correct price point and long-term contract understanding. The interviews will be recorded on a recordable device such as tablet or cellphone and transcribed. Data will be analyzed through Atlas

ti software.

A read through of the whole transcript, notes and other sources documents or recordings will be listened to in its entirety first to be reminded of the depth of the content (Bazeley, 2013).

This research data analysis will be inductive, thus analyzing sets of empirical data sets, then. looking for specific patterns and theorizing from those same patterns. (Graue, 2015).

Patterns will be identified during data analyses based on inductive approach using thematic codes. Inductive is a matter of coding the data so that it is not put in a pre-existing coded frame (Braun & Clarke, 2006).

Thematic analyses are widely used in qualitative analytic methods (Braun & Clarke, 2006).

Chapter 4: Key findings

4.1 Interviewee analysis

The Interviews were held with participants, recorded on cellphone and transcribed to capture the participants responses and create code and themes. The transcription was uploaded in Atlas Ti and code and themes identified which was rich and detailed.

The participants were a good mix of ages (Fig 5) and almost equal in gender(Figure 6). Therefore, a good mix of participants in the Gauteng area.

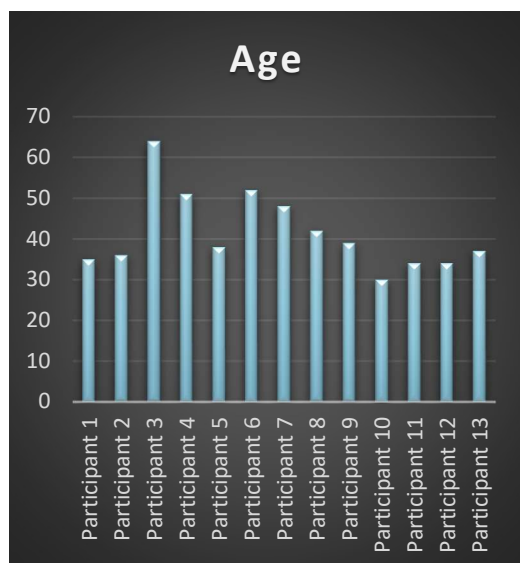


Figure 4 – Interview Age

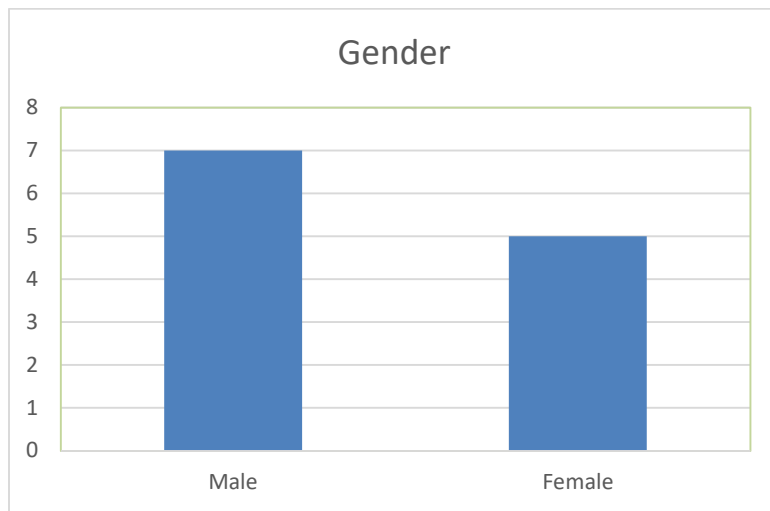


Figure 5 Interviewee gender split

The key finds from study found that many participants were frustrated with the currently rolling black outs in South Africa, furthermore most participants found that the most inconvenient time is in the morning when preparing breakfast and getting ready for school runs and work and in the evening around supper time. Those working from home was also frustrated during the daytime, as it meant they had to go into the office or travel to places with power and Wi-Fi to continue working. Furthermore, many participants also did not see a reduction in cost from Eskom in their utility bill even though in periods of high load shedding, this could be attributed to the increase in price matching the percentage of electricity which is load shed. For instance, 20% increase in electricity and 20% less electricity would hypothetically mean same or relatively same monthly cost – but further studies on this topic should be analyzed.

Participants also acknowledged the main reason for not adopting renewable energy technologies was almost always relating to affordability and cost. They would want to refrain from taking out loans to have full renewable energy at their homes. The business venture proposal sorts to address this problem by setting up the renewable energy system at no upfront cost to consumers but instead charge a pay as use cost. Below are participants responses to why they have not adopted renewable energy products.

Participant 1	I learned some hard lessons... after buying the system. 'cause mine has a, a power, an output, power restriction on the battery. So even though I've got ... an inverter, which is five kilowatts rated at like five kilowatts, the, the battery itself has, uh, an output power of 2.5 kilowatts. So effectively, because I've only got one battery . Now, my output power for the system is 2.5 kilowatts. So I'm restricted to 2.5 kilowatts at a time. Which, you know, was, was a, a bit of a disappointing thing for me.	Energy Sustainability / Technology Acceptance / Affordability	Cost- benefit Analysis
Participant 2	because of the cost of it. Okay. Um, that's, that's simple, simple answer.	Energy Sustainability / Technology Acceptance	Cost- benefit Analysis
Participant 3	Expensive.	Energy Sustainability / Technology Acceptance / Affordability	Cost- benefit Analysis
Participant 4	Yes. Yes. In my homelands, yes. We're using solar there. Okay. And also the water supply bore hole using the solar then to the village. Okay, okay. It also comes out very handy for the government because sometimes supplying water is sort of costly. Yeah. And it with power also outages. It sometimes gets affected. Now, alternative sources like solar bore holes to your house.	Energy Sustainability / Technology Acceptance / Affordability	Cost- benefit Analysis
Participant 5	I'm, I'm not totally off the grid, but I, the size is good enough. Um, Inver five kilo kilowatt. Okay. So it can power most of my appliances, uh, I, I run, uh, what you call a pool pump. Of course, the, the Geyers a, um, currently is not solar, so I'm looking at options of going other, going gas. Okay. Um, as a, as a backup option for the geyers the geyers can be totally off grid	Energy Sustainability / Technology Acceptance / Affordability	Cost- benefit Analysis

Participant 6	The main reason we, I have not adopted a full, um, renewable energy system is the cost that that comes with it. Um, and like I said, you know what, uh, um, to lay out 200 k and that, that would just be your at least 10 15 panels and five ki per lithium, two lithium batteries, um, you would have to have, I don't have 200 0000 so I would have to make a loan.	Energy Sustainability / Technology Acceptance / Affordability	Cost-benefit Analysis
Participant 7	. So there's, there, there really wasn't a need to change, uh, or maybe go, go off the <inaudible> and get renewal power. Uh, only when Covid stuck and we were all forced to work from home did the problem really start hitting home. So, I mean, looking at the, in the last, since 2020, since the hard lockdown, a lot of people were not worried about putting in, uh, solar and installing solar	Energy Sustainability / Technology Acceptance / Affordability	Cost-benefit Analysis
Participant 8	Well, with me, it's because I've only been in my house for four months. Okay. It's a new house. Okay. So it's a plan that I'm working on to now budget and do it, but I definitely know that's the route I'm going. So for me it's just that. But it's something that I know I've always wanted to do, even when I had moved from where I come from, which is home.	Energy Sustainability / Technology Acceptance / Affordability	Cost-benefit Analysis
Participant 9	It's purely because of the cost. Okay. So, I know that there are quite a few financial institutions, including the one that I'm working for . That do now offer solar credit, um, offerings. Um, but like, you also think, do I want to take a loan?	Energy Sustainability / Technology Acceptance / Affordability	Cost-benefit Analysis
Participant 10	Currently definitely be because of affordability. Affordability. But if, if there was that affordability, be having a backup solar in my house, a backup power and generators and stuff. Okay. So it's only because of affordability.	Energy Sustainability / Technology Acceptance / Affordability	Cost-benefit Analysis

Participant 11	Okay. So, um, okay. I do have a solar geyers, so those, those are one of my adaptations. Um, the only reason why I probably haven't, um, adopted having an inverted because I said, um, look, load shedding is not that bad for me. I can manage without it. And I, you know, you look at the cost versus the benefit. Um, right now it's not a priority for me.	Energy Sustainability / Technology Acceptance / Affordability	Cost-benefit Analysis
Participant 12	Number one is cost. Um, so, so far I haven't seen, I haven't seen it being, you know, um, affordable. Mm-Hmm. I haven't seen, it's not, it's not in the public space. So it's not promoted that, okay, this is what you can get. So the communication of, of, you know, the, the, the messaging around it is not, is not out in the public to say, Hey, this is how cheap it is, this is how much you can get. And then, um, also apart from the cost of it is also the, I, I don't know much about it.	Energy Sustainability / Technology Acceptance / Affordability	Cost-benefit Analysis
Participant 13	personally have a, uh, uh, let me say a, uh, a backup storage system together with a solar PV system at home. So that created a bit of an issue. But I've put a solar and a backup system since, uh, uh, let me say January of last year.	Energy Sustainability / Technology Acceptance / Affordability	Cost-benefit Analysis

The study also showed that participants in Gauteng had limited knowledge about renewable energy technologies. One participant even suggested that renewable energy companies advert more and explain to consumers the benefits to the environment in conjunction with the constant supply of electricity in South Africa. At the same time many participants felt that they and, in their opinion,

South Africans in general do not regard going green and sustainability as a main reason to move towards renewable energy technologies. Therefore, when asked if there was no load shedding would they have adopted renewable energy technologies many replied not and that if they government sort out Eskom they will not move to renewable energy. They believe there is so many problems in the country that going green not a priority. However, the caveat in this proposal was that the energy price lower in proposal then Eskom which was accepted and willing to accepted on price not withstanding that we are at load shedding currently.

Below table shows the participants responses to the question in the interview asking the proposed question of the business model.

	Quotation	Code	Sub-theme
Participant 1	So, so for me personally, that's an important consideration because whenever I look at like, investing in something that's gonna save me energy, I consider the fact that the rates at which energy, uh, uh, prices go up is, is beyond inflation. So it compounds quite nicely if you, if you, if you, uh, can save, right? So if this solution doesn't go up at the same rates, then yes, that, that does sound attractive.	Financial Concern	Acceptance of Business Proposal
Participant 2	Yes, if you're telling me I'm gonna save money and I'm gonna put money back into my pocket, um,Um, and in the days of load shading is in the past basically ..	Financial Concern	Acceptance of Business Proposal
Participant 3	definitely. On What Um, well obviously if it's cheaper and it's going to work, we would definitely do it. We actually, as a, as I said to you as a community, we're all investigating at the moment, what can we do?	Financial Concern	Acceptance of Business Proposal
Participant 4	attractive. Oh, yes. Yeah. For me it'll be attractive. I tell what Yes. Yeah. Because it's reliable. Yeah. That's,	Financial Concern	Acceptance of Business

	that's a reliability side of it. Okay. Yes, I will definitely.		Proposal
Participant 5	Yes, I believe so. Um, I believe it's, it, it, it will be attractive. Um, uh, and, and, and this is attractive from to say, uh, what's in for me as a, as a customer. Yeah. Yeah. So the customer would be always be willing to say, if I'm paying, if I'm, I'm putting, let's say my, my bill is one point thousand 200 today. Yeah. Right? And if I allow someone to come in and put some form of a system in my house, Yeah. And, and they, they say I must pay, let's say 800 in a discussion as a argument's sake, but then I end up now my bill, my cost will then increase to say 800, uh, to 200 because I still need to buy it from, from, from, from, uh, the miss pallet or esco. Yeah. So overall it doesn't feel like a saving because now my course has increased. Yes. Yeah. So I think people, my view, or I believe if I were to be paying someone else to provide me with the infrastructure, it should, it should equate to what I'm just using. Um, you know, in terms of the power, it should not exceed what I'm currently using. Yeah.	Financial Concern	Meduim Acceptance of business proposal
Participant 6	Yeah, it would definitely be, it would definitely be, um, something that I will, will adopt, you know. Okay. I won't even say I, look, I will adopt it because I think that's the main problem is that right now we're paying almost one rand 60 Yeah. Kilowatt hour depending on the, on your, on your power usage, on the, on the up upside scale. Yeah. So if we are, if I can get supplied, or I can hire a system that will generate electricity lower per kilowatt than what I'm	Financial Concern	Acceptance of Business Proposal

	currently paying for in South Africa, then I will definitely grab with both hands		
Participant 7	definitely makes sense to, to actually avoid upfront, you know, costing and only pay per usage. Okay. That actually makes very, very good sense. And, and that will actually be a very good model for majority of the population as well. It could be a very good model for that.	Financial Concern	Acceptance of Business Proposal
Participant 8	I think it would be, I think it could work. I mean, if it's less than what we are paying with the electricity, you wouldn't mind it because then still it, it will still alleviate from your budget costs. . And then, at the same time, you'll know that you're already officially on a system that works long term.	Financial Concern	Acceptance of Business Proposal
Participant 9	Yes, if you're telling me I'm gonna save money and I'm gonna put money back into my pocket, um,Um, and in the days of load shading is in the past basically ..	Financial Concern	Acceptance of Business Proposal
Participant 10	Well, uh, I feel like, isn't it that the main issue of not us not, um, being able to acquire this, it's affordability and not having the option. . But now, when we have the option, it'll definitely give us a chance to consider whether we can adopt it or not. And I mean, renewable energy is good. Uh, there's nothing wrong with renewable energy and if it, it helps the, the bio, uh, diversity of the, of the country, then most definitely.	Financial Concern	Acceptance of Business Proposal

Participant 11	Look, I think it would definitely be an attractive solution for me. Number one, I know I would, I would know that, you know what, I don't have to bear the cost of maintaining the system or whatever the case is. And, um, basically I would substitute, um, my, my what the electricity, uh, fee that I pay. Yeah. Um, you know, towards them paying whatever per usage per kilowatt or whatever the case is. Yeah. So for me, it will definitely be useful and also the whole schlep of having to get that installed. Yeah. Finding somebody reputable, the admin of it, you know.	Financial Concern	Acceptance of Business Proposal
Participant 12	absolutely. I mean, I, I think, I think it would be attractive because now you're only paying for usage.	Financial Concern	Acceptance of Business Proposal
Participant 13	Okay. I mean, that sounds like a really good system. I mean, you, uh, let me say arbitraging from one supplier to another supplier who's kind of guarantee your supply,	Financial Concern	Acceptance of Business Proposal

12 out of the 13 positively accepted the proposed business model, looking at affordability as the main reason for adopting the Proposed PAYU model to adopt the RET. This was a positive outcome and key finding while conducting research. The business case will therefore be further assessed to confirm viability and sustainability of such a model.

The study further found that participants were willing to accept the business proposal to install renewable energy at their homes where they do not pay for the upfront costs but rather partner with a company who charges per a kilo watt rate lower than Eskom.

However, the term proposed in the interview of 10 to 15 years was accepted with mixed emotions

and responses, some felt they were in a bond while other were happy if they had constant supply of electricity and price lower than Eskom.

The benefits in the view of participants were price lower than Eskom and contributing to going green, even though going green was not a priority. While the challenges foreseen from most participants was on the maintenance of the product and after service.

All participants were willing to share in profit sharing agreement should the government allow selling back electricity back to the grid, the median in responses was around 50 -50 share in any benefit.

The perception of renewable energy providers was not bad, but neither was it great, many viewed them as small players on a big market and some as very expensive - but with limited knowledge of what it all entails, furthermore everyone's perception of RET providers would not stop them from adopting this proposed business venture proposal.

All participants viewed themselves as middle to higher income individuals in South Africa and were working earning good salaries. Participants mostly all regarded themselves as tech savvy and embracing new technological innovations.

Thus, through the research the business venture proposal would be a good business and will focus on price PAYU, maintenance and building long term relationships given the end customer a experience beyond the product only.

Chapter 5: Business venture proposal – Renew Able technologies Pty Ltd

5.1 Strategic review and plan

5.1.1 Vision, mission, and objectives

5.1.1.1 Vision

To supply cleaner energy in South Africa by providing accessible and sustainable renewable energy solutions to individuals, fostering a greener and more resilient future for in South Africa

5.1.1.2 Mission

To empower individuals across South Africa with affordable access to clean and renewable energy through a pay-as-you-use model, enabling economic and environmental sustainability while enhancing energy security and independence.

5.1.1.3 Organizational objectives

To establish Renew Able Technologies as a comprehensive solar power supplier ensuring reliable and affordable electricity access for households and businesses throughout South Africa, while promoting energy efficiency and reducing reliance on non-renewable resources.

5.1.2 Situational analysis (environmental, industry and competitor analysis)

5.1.2.1 Macro environmental analysis

Pestel	Analysis	Action
<i>Political</i>	South Africa's government has committed to renewable energy through various policies and initiatives.	Renew Able Technologies (Pty) Ltd will comply with existing regulations to mitigate regulatory risks - Opportunity.
	Assessment of policies supporting renewable energy and their stability	Renew Able Technologies will also Advocate for favorable policies through industry associations and lobbying efforts – Opportunity.
	Analysis of political environment and its impact on long-term business planning	The business will have to diversify investments and partnerships to mitigate political instability risks – Threat.
	Evaluation of legal frameworks governing energy sector contracts and agreements	Our business will ensure compliance with all applicable laws and regulations to mitigate legal risks – Threat as noncompliance could be have possible penalties and close the business until compliant. Such as having Certificate of Compliance

		(COC) signed of on all jobs.
	Stable governance is crucial for long term investment in interest rate percentage and renewable energy products	Invest in legal expertise to navigate regulatory requirements effectively - Threat
<i>Economical</i>	The availability of financing and investment opportunities significantly impacts the growth of renewable energy in South Africa	The business will seek investment opportunities from local and international sources including banks, crowd funding , including government grants, venture capital and private equity - Opportunity.
	The cost of renewable energy technologies compared to traditional fossil fuels is a crucial economic consideration	The business is focused on delivering renewable electricity as a affordable price to the end customer – Opportunity.
	Examination of economic trends and growth rates affecting consumer spending power	Renew Able Technologies will conduct market research to understand consumer purchasing behavior and affordability. Trough the Pay as you use model give access to RET to consumers wanting to contribute to the environment and also have

		constant supply of electricity especially during high periods of load shedding – Opportunity.
	Exchange Rates: Evaluation of currency fluctuations and their effect on imported component costs	The company would have to hedge against currency risks especially when importing solar products from other regions in the world - Threat
	Consumer Confidence: Analysis of consumer confidence levels and their impact on discretionary spending	Renew Able Technologies would have to Invest in marketing and branding to build trust and credibility with potential customers. – Opportunity.
		Through the offering of PAYU our company will demonstrate the long-term cost-effectiveness of solar energy compared to fossil fuels – Opportunity.
Social	Public awareness and acceptance: Social attitudes towards renewable energy, including public perception and acceptance, influence the pace of adoption	Through different marketing campaigns and platforms help educate the public about the benefits of solar energy, including job creation, energy independence, and environmental sustainability. –

		Opportunity. This is a definite requirement as per the interviews there was a certain lack of knowledge on RET.
	Analysis of technological proficiency among target demographics.	Our Company will offer user-friendly interfaces and intuitive designs for renewable energy systems. These IT applications are already in place – Which will help the customer manage energy supply and make them more conscience on their energy usage. Opportunity
	Consideration of demographic shifts and their influence on consumer preferences.	Our study of LSM and also understanding the increase in black middle class per the literature review will help the company Customize marketing and product offerings to appeal to specific demographic segments. - Anticipate future demographic trends to proactively adjust business strategies and product development. - Opportunity.

	Assessment of societal attitudes towards sustainability and green initiatives.	Our company will Collaborate with environmental organizations to amplify messaging and reach wider audience. attend events and expos held in the country on greener energy. - Opportunity
	The renewable energy sector has the potential to create employment opportunities, particularly in rural areas	The company will definitely look at job creation in the installation and maintenance of provide, up skilling workers and cross skilling them between different functions. – Opportunity.
		The company will look at partnering with local vocational training institutions in the skills and developmental areas to develop workforce in the renewable space. – Opportunity.
Technological	Power generation improvements, impact the efficiency of renewable energy projects.	Keep abreast as a company in the increase's changes in technology to better the offerings to customers. – Opportunity.

	Consideration of intellectual property rights and their impact on innovation protection	The company through legal advise will also consider IP of other companies - Threat
	Evaluation of latest developments in solar technology and their accessibility.	Keep abreast as a company in the increase's changes in technology to better the offerings to customers. - Opportunity.
Environmental	Review of climate change concerns and their influence on regulatory frameworks.,	Our company will engage in industry collaborations and partnerships to advocate for stronger climate policies. - Opportunity
	Analysis of local resource availability, such as sunlight and land for installations	Renew Abale Technologies will assess the current power generated by the sun in all seasons, and tie this in to capacity system to customers. - Opportunity
Legal	Evaluation of laws governing renewable energy adoption and compliance	Renew Able Technologies will Establish compliance management systems to ensure adherence to all

		regulatory requirements and strive to stay informed about changes in regulations and proactively adjust business practices and strategies - Threat
	Assessment of taxation policies impacting renewable energy investments and operations	Through tax or Legal advisor Renew Able technologies will seek tax incentives and exemptions for renewable energy projects to reduce operational costs. - Develop tax optimization strategies in collaboration - Opportunity

5.1.2.2 industry analysis (Porter's 5 forces)

Threat of New Entrants:

- The threat of new entrants into the renewable energy market in South Africa is relatively moderate. While the sector offers attractive growth opportunities due to increasing demand for clean energy solutions, significant barriers to entry exist, including high initial capital requirements, regulatory complexities, and the need for specialized technical expertise. There are no big players in the individual home consumer space in South Africa.
- Renew Able Technologies startups leveraging pay-as-you-use model this will also lower the barrier to entry in this market.

Bargaining Power of Suppliers:

- The bargaining power of suppliers in the renewable energy sector would be moderate again as there are multiple suppliers of solar panels, inverters, and other equipment, specific specialized components or materials may be controlled by a limited number of supplies. Many countries globally have many suppliers such as the Chinese etc...
- Additionally, fluctuations in global supply chains and commodity prices can impact supplier costs such as the war in the middle east and Ukraine. The blocking of routes through the main shipping straits will also influence price, but this does not change the number of suppliers to RET products.

To leverage the moderate position of suppliers, Renew Able Technologies will bargain hard to reduce cost with the many suppliers.

Bargaining Power of Buyers:

- The bargaining power of buyers, particularly individual households and businesses in South Africa is in our opinion a business lower. However, this can change by influencing factors such as the availability of alternative energy sources, government incentives, and consumer preferences. While the prevalence of load shedding and rising electricity costs may increase demand for renewable energy product. Households in the category LSM our business targets have already identified cost of RET product as an issue, leveraging the PAYU model we will have target buyers who will adopt our proposal with little power of bargaining the rate per Kilowatt.

Threat of Substitutes:

- The threat of substitutes in the renewable energy market in South Africa is relatively moderate to high. From our research many participants would not adopt green energy because of environment and sustainability in South but purely to have constant electricity so substitute would be traditional fossil fuel-based energy sources remain dominant, diesel generators, or off-grid solutions powered by alternative fuels and of flooded market of RET products.

Renew Able Technologies however unique selling proportion should give it the competitor advantage while not having the consumer look at product only but affordability.

Competitive Rivalry:

- Competitive rivalry within the renewable energy sector in South Africa is intensifying as more players enter the market and vie for market share. Established companies, startups, and international players compete on price, technology, service quality, and brand reputation.
- Renew Able Technologies will differentiation through price innovation, customer-centric business models, and strategic.

5.2 SWOT analysis

Swot	Analysis	Description
Strength	Business Model	Renew Abal Technologies offering a pay-as-you-use solar power service differentiates it from other business and appeal to consumers seeking affordable renewable energy solutions
	Strong Market Potential	With increase in electricity cost per KHW from Eskom and municipalities and power outages, there is a strong market in the middle-income to upper consumers in South Africa and later smaller units to lower income individuals.
Weakness	Initial Funding Needs	Lack of sufficient capital for products and operation set up may pose challenges in scaling up the business and meeting market demand.
	Regulatory Compliance:	Navigating complex regulatory requirements and making sure we comply with all laws and regulations such as signing of the COC when done with installing RET products on households.
	Limited Brand Recognition	As a new entrant in the market, building brand awareness and establishing credibility among consumers and stakeholders may take time and investment.
Opportunities	Access to Funding	Renew Able Technologies will explore financing options such as government grants, venture capital, and partnerships. Relationships with suppliers to receive favorable terms.
	Rising Energy Costs	Increasing electricity prices and concerns about energy security create a favorable environment for the adoption of alternative energy solutions like solar power and matching the PAYU like current grid providers.
	Strategic Partnerships:	This is important for growth of our new business and collaborating with local communities, businesses, and government agencies can expand market reach, enhance

		brand visibility, and access additional resources and support
	Technological Advancements:	Leveraging advancements in solar technology and energy storage solutions can drive efficiency improvements and cost reductions. Using of Application to monitor household usage etc...
Threats	Economic Uncertainty	Fluctuations in the economy, exchange rates, and interest rates can impact consumer spending and investment decisions, affecting demand for renewable energy services and also negatively affecting the cost of products.
	Regulatory Changes:	Changes in government policies, tariffs, and regulations governing the renewable energy sector can create uncertainties and disrupt business operations and profitability. Eskom Decides to reduce rates, or government passing law to tax those with full renewable product.
	Competition:	Intense competition from established players and new entrants in the renewable energy market may pose challenges in acquiring and retaining customers and market share

Strategic Implementations to address threats and weaknesses while leveraging on strengths and opportunities.

Strategic Implementation for Funding:

- Our Company will explore diverse funding sources such as government grants and venture capital and investors to secure the necessary capital for business expansion and infrastructure development. Possible source will be crowd funding. While products are expensive boot strapping to a certain level will also happen to fund initial stage of the business

Regulatory Compliance Strategy:

- Invest in legal expertise and regulatory consultants to navigate complex compliance requirements efficiently, ensuring timely acquisition of permits and licenses for business

operations. Renew Able Technologies will source a good reputable law firm at initial stage and look to hire internal once the business is established.

Brand Building Initiative:

- The Company will develop a marketing and branding strategy to increase brand visibility and credibility among target customers through digital marketing, social media, and Radio. When looking at digital platforms marketing on Ad's on Facebook marketplace and YouTube ad's. Companies like Ad reach

Cost Reduction Tactics:

- Our Company will implement cost-saving measures such as bulk purchasing, supply chain optimization, and operational efficiency improvements to reduce overheads and enhance profitability amidst economic uncertainties and rising energy costs.

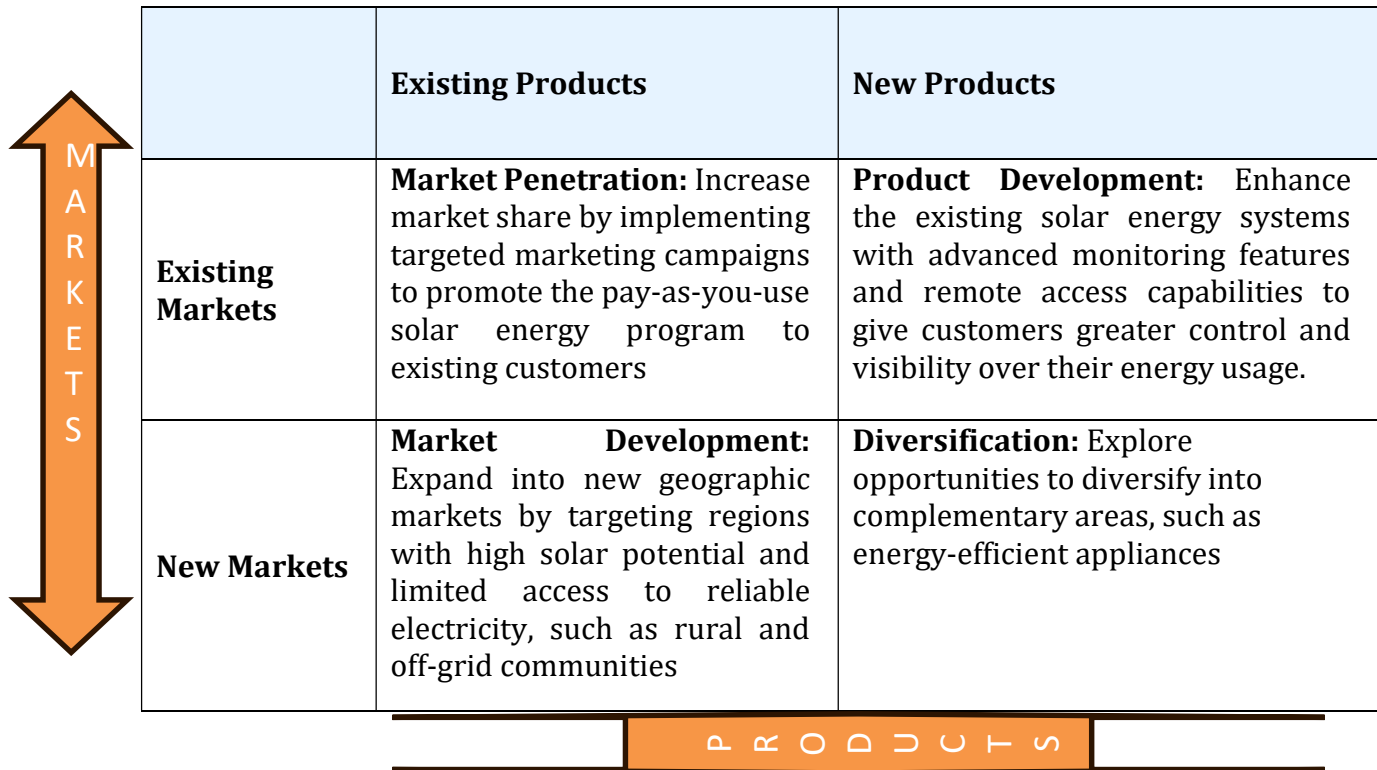
Customer Satisfaction Initiative:

- Our Company believes customer satisfaction is a huge part of growing a successful as the added benefits of up selling and referrals is priceless. Therefore, Renew Able Technologies will prioritize customer satisfaction and service quality through personalized customer experiences, prompt issue resolution, and ongoing support and maintenance services to build long-term customer loyalty and retention.

Training and Development Program:

- As the business grows Renew Able Technologies will Invest in employee training and development programs partnering with local accredited training institution linked to SETA to enhance technical expertise, customer service skills, and regulatory compliance knowledge, This will entail empower employees of Renew able Technologies to deliver exceptional customer service and value.

5.3 Ansoff Matrix



	Existing Products	New Products
Existing Markets	Market Penetration: Increase market share by implementing targeted marketing campaigns to promote the pay-as-you-use solar energy program to existing customers	Product Development: Enhance the existing solar energy systems with advanced monitoring features and remote access capabilities to give customers greater control and visibility over their energy usage.
New Markets	Market Development: Expand into new geographic markets by targeting regions with high solar potential and limited access to reliable electricity, such as rural and off-grid communities	Diversification: Explore opportunities to diversify into complementary areas, such as energy-efficient appliances

5.4 Market and strategic analysis

Assessing the 3 C's in marketing customer, company and the competitor to get a better understanding of the different facets which make up the business and through assessing these different components we understand the environment the company is operating in, which helps in decision making such as advertising, focused marketing and enhancing product and service offerings.

5.4.1 Customer

- Our company acknowledges the mixed sentiments among South African consumers regarding renewable energy adoption. While there may be some reluctance or lack of enthusiasm towards renewables, our research indicates a growing awareness and interest-driven primarily by the prevalent issue of load shedding in South Africa.

- Understanding this nuanced customer perspective, our company is poised to capitalize on the opportunity presented by the necessity-driven adoption of renewable energy solutions to mitigate the ongoing rolling black outs. By addressing customers' immediate needs and concerns related to energy reliability and affordability, we aim to gradually shift perceptions and foster greater acceptance of renewable energy as a viable and sustainable alternative.

As most participants in the survey regard themselves as tech savvy – The company solution will include power monitoring services with notifications when usage high or when battery reach a certain level. This tool will make the customer feel in control while also connecting with the customer as they already embrace applications and technologies on a daily basis.

- Through targeted marketing campaigns and educational initiatives, we seek to raise awareness about the benefits of renewable energy, emphasizing its role in addressing energy challenges and enhancing energy security and independence for households and businesses in South Africa.

5.4.2 Competitor

- Considering the research findings our company recognizes the need to adapt and differentiate our approach in a competitive market environment. While competitors may also be vying for market share, the prevailing issue of load shedding presents a unique opportunity for innovation and market leadership.

There are no real big players in the individual household environment. Mostly small players with limited advertisements on radio and billboards.

- Through continuous innovation, customer-centricity, and agility, we aim to differentiate ourselves from competitors and capture a significant share of the growing renewable energy market.

- Additionally, we recognize the potential for collaboration and partnerships with competitors who share similar goals and values. By leveraging collective expertise and resources, we can drive industry-wide initiatives to accelerate renewable energy adoption and address common challenges, ultimately benefiting customers.

5.4.3 Company

- As a nascent player in the South African renewable energy market, our startup is driven by a vision to revolutionize energy access and sustainability in South Africa. While we acknowledge this is a startup business we plan to scale swiftly as both the product and technical expertise is present in the country. With a focus on affordability, innovation, and environmental stewardship, we aim to democratize access to clean energy solutions for households and businesses across South Africa.
- We strive to deliver superior solar power solutions that empower customers to embrace renewable energy and reduce their carbon footprint
- Committed to transparency, integrity, and social responsibility, we are dedicated to forging meaningful partnerships with local communities, businesses, and government agencies to drive positive change and foster sustainable development in South Africa.

5.5 Product

Our solar renewable energy solution for individual households in South Africa is designed to provide reliable, affordable, and sustainable electricity access while offering flexibility and convenience to customers. The product comprises solar panels, inverters, and energy storage systems tailored to meet the specific energy needs of households.

Key features of our solar product include:

1. Scalable System Design: Our modular system design allows customers to scale their solar installations according to their energy requirements, providing flexibility to accommodate varying household sizes and electricity consumption patterns.
2. Battery Storage Options: Besides grid-tied solar systems, we offer battery storage options for customers seeking energy independence and resilience against power outages, allowing them to store excess solar energy for use during periods of low sunlight or grid instability.
4. Pay-as-You-Use Pricing Model: Our innovative pricing model enables customers to pay for electricity usage per kilowatt-hour, eliminating the need for large upfront investments and providing cost transparency and control to customers. This pay-as-you-use approach aligns with households' evolving energy consumption patterns and promotes affordability and accessibility of renewable energy.

5.6 Promotion

Our promotional strategy focuses on raising awareness, educating consumers, and driving demand for our solar renewable energy solution through targeted marketing campaigns and outreach initiatives. Key promotion tactics include:

- Digital Marketing: Leveraging online channels such as social media, search engine optimization, and targeted advertising to reach and engage with our target audience effectively.
- Content Marketing: Developing informative and educational content, such as blog posts, articles, and videos, to showcase the benefits of solar energy, address common misconceptions, and empower consumers to make informed decisions.
- Community Engagement: Participating in local events, workshops, and community outreach programs to connect with potential customers, build trust, and foster positive relationships within the community.
- Referral Programs: To incentivize existing customers to refer friends and family, expand our customer base, and drive word-of-mouth marketing.

5.7 Price

Our pricing strategy is centered around affordability, transparency, and value for money, aiming to make solar energy accessible to households. Key pricing elements include:

- **Competitive Rates:** Offering competitive per kilowatt-hour solar electricity consumption rates comparable to or lower than traditional grid electricity tariffs to attract and retain customers.
- **Transparent Pricing:** Ensuring transparency in pricing and billing processes, with clear breakdowns of usage charges, fees, and savings, to build trust and confidence among customers.
- **Promotional Discounts:** Offering promotional discounts, rebates, or incentives to encourage early adoption and reward customer loyalty, thereby driving uptake of our solar renewable energy solution.

By integrating these elements into our marketing mix, we aim to effectively communicate the value proposition of our solar product, generate customer interest and inquiries, and ultimately drive conversions and sales in the competitive South African renewable energy market

5.8 Place

- **Distribution Channels:** We leverage a multi-channel distribution strategy to ensure broad accessibility and availability of our solar products across South Africa. This includes partnering with local distributors, retailers, and contractors.
- **Online Platform:** we offer an online platform where customers can explore our product offerings, receive personalized recommendations, and schedule consultations or installations conveniently from the comfort of their homes. This online presence enables us to reach customers nationwide and facilitate seamless transactions.

5.9 Market Segmentation

Market Segment	Demographic	Physiographic	Behavioural
Primary	High - Income Individuals and Households	Urban and Suburban areas with high solar exposure	Environmentally conscious consumers seeking sustainable and innovative solutions to reduce their carbon footprint and contribute to renewable energy adoption.
Secondary	Middle - Income households	Urban and suburban areas with moderate solar exposure	Cost-conscious consumers looking for practical and affordable ways to reduce their energy bills and achieve long-term savings
Tertiary	Low - Income households	Rural or remote areas with limited infrastructure	Energy-insecure consumers facing challenges accessing reliable electricity, seeking affordable and accessible energy solutions to meet their basic needs and improve their quality of life.

5.10 Valuation

The Companies valuation will be based on the following key assumptions.

1. Cash inflows from customers will be received at the same time cash out flows to repayment of loan on capital goods i.e. the renewable energy products.
2. The weighted average cost of capital (WACC) used will be based on the below article (Erdogan & Sarazola, 2023) which is a WACC of 11 % and this rate will be used to discount the cashflow for the different periods. Renew Abale Technologies agrees that this rate of return is fair for the business.

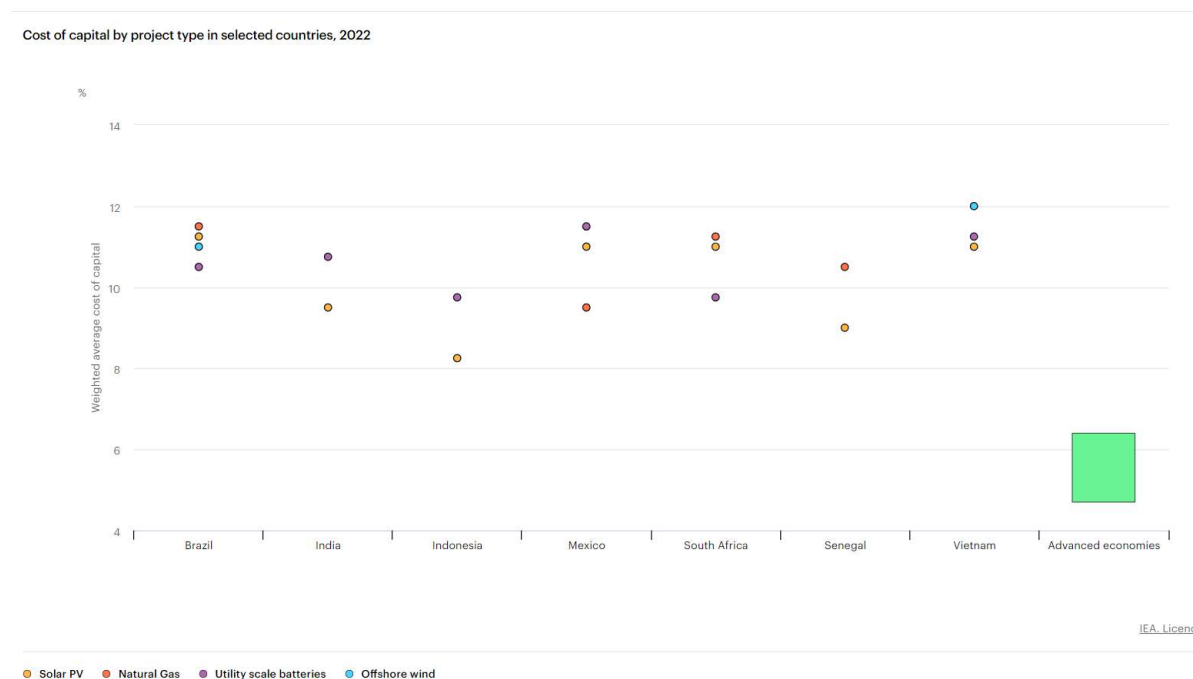


Figure 6 Cost of Capital by project in selected countries.

(Erdogan & Sarazola, 2023)

3. The cashflow period will be for a period of 10 years based on two factors, firstly the batteries useful life is roughly 10 years and secondly based in interview held most participants were willing to sign an agreement between 7 – 10 years.
4. There will be a 50% Share CAP raised by equity investors and 50% loan to fund the business.
5. In the first year of operations 50 units will be sold and installed on households, this figure will grow by 100 the next year and remain constant at 100 households for a year for the

- next 6 years then in the final 3 years grow to 200 units sold and installed for this period.
- Any fluctuating risk will be neutralized based on cashflow hedges which cost if included in other expenses.
 - Bank will match the repayment term to the agreement with individual households.
 - Inflationary increase in revenues year on year of 8%
 - Costs to increase in this same period by 7 % mainly based on goods being repaid at a fixed percentage over the period.
 - The cost of the full installation system will be 160 000 rand per unit averaging 30KHW a day per home.
 - The full KHW per a day will be utilized.

Valuation

Years	1	2	3	4	5	6	7	8	9	10
	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2024-25	2025-26	2026-27	2027-28
	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Sales	1 674 000,00	1 807 920,00	1 952 553,60	2 108 757,89	2 277 458,52	2 459 655,20	2 656 427,62	2 868 941,83	3 098 457,17	3 346 333,75
Other Income	50 000,00	54 000,00	58 320,00	62 985,60	68 024,45	73 466,40	79 343,72	85 691,21	92 546,51	99 950,23
Total Revenues	1 724 000,00	1 861 920,00	2 010 873,60	2 171 743,49	2 345 482,97	2 533 121,60	2 735 771,33	2 954 633,04	3 191 003,68	3 446 283,98
Growth	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
COGS	710 552,82	760 291,52	813 511,93	870 457,76	931 389,81	996 587,09	1 066 348,19	1 140 992,56	1 220 862,04	1 306 322,39
GM %	41%	41%	40%	40%	40%	39%	39%	39%	38%	38%
Personnel costs	120 000,00	128 400,00	137 388,00	147 005,16	157 295,52	168 306,21	180 087,64	192 693,78	206 182,34	220 615,11
Operating and other exp.	80 000,00	85 600,00	91 592,00	98 003,44	104 863,68	112 204,14	120 058,43	128 462,52	137 454,89	147 076,74
0	-	-	-	-	-	-	-	-	-	-
EBITDA	813 447,18	887 628,48	968 381,67	1 056 277,12	1 151 933,96	1 256 024,16	1 369 277,07	1 492 484,18	1 626 504,40	1 772 269,75
EBITDA %	0,47	0,48	0,48	0,49	0,49	0,50	0,50	0,51	0,51	0,51
Depreciation & Amortisation	400 000,00	400 000,00	400 000,00	400 000,00	400 000,00	400 000,00	400 000,00	400 000,00	400 000,00	400 000,00
0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EBIT	413 447,18	487 628,48	568 381,67	656 277,12	751 933,96	856 024,16	969 277,07	1 092 484,18	1 226 504,40	1 372 269,75
Finance Costs	310 552,82	310 552,82	310 552,82	310 552,82	310 552,82	310 552,82	310 552,82	310 552,82	310 552,82	310 552,82
PBT	102 894,35	177 075,65	257 828,85	345 724,30	441 381,13	545 471,34	658 724,25	781 931,35	915 951,58	1 061 716,92
Tax Provision	17 492,04	30 102,86	43 830,90	58 773,13	75 034,79	92 730,13	111 983,12	132 928,33	155 711,77	180 491,88
PAT	85 402,31	146 972,79	213 997,94	286 951,17	366 346,34	452 741,21	546 741,12	649 003,02	760 239,81	881 225,05
EBITDA	813 447,18	887 628,48	968 381,67	1 056 277,12	1 151 933,96	1 256 024,16	1 369 277,07	1 492 484,18	1 626 504,40	1 772 269,75
Net Working capital movement	(700 000,00)	0,79	(4,67)	(0,01)	(7,86)	(1,57)	-	-	-	-
Free Cashflow	113 447,18	887 629,27	968 377,00	1 056 277,11	1 151 926,10	1 256 022,59	1 369 277,07	1 492 484,18	1 626 504,40	1 772 269,75
Factor		0,901	0,812	0,731	0,659	0,593	0,531	0,473	0,419	0,369
Discount rate	11%									
NPV before terminal value		799 666,01	785 956,50	772 340,72	758 809,40	745 388,28	1 111 335,99	1 091 291,57	1 071 428,83	1 051 755,84
Terminal value						21 980 395,38				(37 217 664,70)
							Terminal Value = (FCF ₁₀ x (1 + g)) (WACC - g)			
NPV of FCF	3 862 160,90	799 666,01	785 956,50	772 340,72	758 809,40	745 388,28	1 111 335,99	1 091 291,57	1 071 428,83	1 051 755,84
Discounted Terminal value	13 044 294,83									
Equity value	16 906 455,73									

This is a positive valuation based on the WACC and therefore this business model is profitable and should be pursued. For each year the Net present value is positive and business will be in the money during the next 10 year period.

Chapter 6 Operational Plan

6.1 Business Implementation Plan

1. Market Research and Analysis (Months 1-2)

During the first two months, we will conduct extensive market research and analysis to gather insights into the renewable energy market in South Africa, customer preferences, competitor landscape, regulatory environment, and technological trends. We will analyze demographic data, assess competitor offerings, review regulatory requirements, and gather customer feedback to inform our strategy.

2. Business Model Development (Months 3-4)

Based on the findings from our market research, we will refine and finalize our business model for the pay-as-you-use solar energy program. We will define our value proposition, pricing structure, and revenue streams, and establish partnerships with solar panel manufacturers, installation contractors, and financing institutions. Additionally, we will develop a comprehensive financial model to forecast revenue projections and operating expenses.

3. Product Development and Testing (Months 5-6)

We will focus on product development and testing to ensure the viability and scalability of our pay-as-you-use solar energy program. This includes collaborating with technology partners to design and customize solar energy systems, conducting pilot installations to test system performance and user experience, and implementing billing and monitoring systems to track energy usage.

4. Marketing and Branding (Months 7-8)

As we near the launch phase, we will focus on marketing and branding efforts to generate

awareness and interest in our program. We will develop a strong brand identity and messaging, create marketing materials and collateral, launch targeted advertising campaigns, and host informational events to educate consumers about the benefits of renewable energy and our pay-as-you-use model.

5. Launch and Rollout (Months 9-10)

With the groundwork laid, it is time to officially launch our pay-as-you-use solar energy program and begin customer acquisition. We will execute a coordinated launch campaign, deploy field sales teams, implement referral programs, and provide comprehensive onboarding and support services to new customers.

6. Expansion and Scaling (Months 11-12)

As our program gains traction, we will focus on expanding and scaling operations to meet increasing demand. This includes evaluating program performance, exploring opportunities for geographic expansion, scaling up production and distribution capabilities, and investing in technology infrastructure to support growth.

We will prioritize continuous improvement and optimization throughout the implementation process and beyond to enhance customer satisfaction and drive revenue growth. We will monitor key performance indicators, analyze data and feedback from customers, and iterate on our product offering, pricing strategy, and marketing tactics to stay ahead in the market.

Following this detailed implementation plan, we can effectively launch and scale our renewable energy business with a pay-as-you-use model, driving sustainable growth and impact in the South African market.

Chapter 7 Conclusion:

Based on the valuation, interviews, and current energy crisis in South Africa this business proposal is set to succeed

The data collected through interviews supports this case as many participants only reason for non-adoption was mainly the up-front cost.

By eliminating this hurdle and generating income for the long term after initial investment the business will certainly flourish and be sustainable.

In conclusion this business venture should be perused as a detailed and sufficient business case has been made to support actioning of this business.

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9 Interview Guide

Interview Guide – Qualitative research (Sheldon Ludick 2512119)

Introduction:

- Introduce myself, who I am, my qualifications, and the purpose of the interview (Name, qualification, what I am studying where I work, and what I am doing).
- Explain the format and what will be done during interview to the interviewee. Let the Interviewee know that this interview will be recorded and transcribed to find codes and themes between participants. The primary objective of this study is to ascertain the underlying factors contributing to participants' reluctance in transitioning towards renewable energy technologies. Furthermore, it aims to determine their inclination towards adopting a monthly kilowatt-based billing system, instead of upfront capital expenditure.
- There is confidentiality regarding this interview – we will not use your name or personal identifying information about the interviewee. Everything that is answered regarding the questions will be used for research purposes.

Interview Guide:

Understanding how interviewee feels and copes during the rolling blackouts:

- How does the power outages effect you and your schedule?
- Can you explain your level of frustration during load shedding?
- Are there certain times which are particularly worse than other times and why?
- Did you notice a reduction in your utility bill during high load shedding periods – or how do you track the usage of electricity if any?

Renewable energy technology adoption and use acceptance of business venture proposal.

- What do you know what renewable energy technologies?
- Where do you believe society will be in the next 5 -10 years regarding renewable energy technologies as a primary energy source?
- Why have you yet to adopt a full renewable energy technologies system currently?
- Do you know whether close friends and family they have adopted renewable energy technologies yet? If not, why do you think they have not?
- Would you have considered renewable energy if there were no load shedding? Why or why not
- Does going green and clean energy matter, or is adoption purely or mostly motivated by load shedding for yourself and society in South Africa?
- Do you believe that a solution where you do not have to pay upfront initial cost for the renewable energy technology system and rather a per usage kilowatt with minimum Per kilowatt lower than Eskom can be attractive solution to adopt? Why or why not?
- Would you be happy to adopt such a solution for 10 -15 years? Why or why not?
- If the price remains below the price of Eskom or municipality in the contract will this be more accepting and attractive to you? Why or why not?
- What benefits do you envisage from a partnership like this?
- What challenges do you foresee from a partnership like this?
- Should we be allowed to sell surplus electricity back into the grid, would you want to participate in an associated profit-sharing scheme? Why or why not?
- Should there be an end to load shedding, would you continue to adopt renewable energy technology in the interests of sustainability and addressing climate change? Why or why not?
- Would your answer be the same if there were cost savings? Why or why not?
- What is your perception of current solar energy providers?
- Would your perception stop you from adopting the module proposed or renewable energy technologies in general?

Personal Information for research purpose

- Please provide year of birth.
- Would you regard yourself as middle to higher income individual in South Africa?
- Can you provide your approximate income range?
- Do you embrace new technological innovations such as applications like Uber / Airbnb etc...
please elaborate?

Closing

- Thank you for participating in the interview.
- Information will be confidential and only used for my business venture research proposal.
- This will be published and available to the public.

10 Participant Information Sheet (PIS)

Dear Sir / Madam

My name is Sheldon Ludick I am a master's student in Master of Business Administration at the University of the Witwatersrand, Johannesburg. My supervisor is Dr Robert Venter I am conducting a business venture about consumers paying a rate per kilowatt hour using renewable energy setup at their homes without paying the initial cost for the renewable energy system. The business venture title is the The Relationship between Renewable Energy Product and Cost-Effective Electricity among middle class consumers in Gauteng.

I am inviting you to take part in an interview. If you decide to take part, your participation in this research study will last about 1 hour. The interview will take place at a convenient place after working hours.

With your permission, I would like to audio record the interview. This data will be stored in password protected PC. Only the researcher will have access to the data.

During the research activity, I will need to ask for some personal information about you, including salary range.

The interview will be confidential and anonymous. When I share the results of the research study, I will not include your name or anything else that could identify you. With your permission, other researchers may use the data collected from this research study, but your name and any personal information will not be used or passed on.

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

The risks for this research study are no more than what happens in everyday life / some of the questions asked may make you feel sad or upset. If this happens, I will stop the interview and continue another

time.

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

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

Yours sincerely,
Sheldon Ludick

Researcher:

Sheldon Ludick, 2512119@students.wits.ac.za, 0833998228

Supervisor:

Dr. Robert Venter, Robert.Venter@wits.ac.za, 011 717 3544

Wits Business School Ethics Committee

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

Ethics Clearance Certificate

Ethics protocol number: WBS/BA2512119/893

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

This certificate is only valid if permission has been granted by the Registrar's Office of Wits University.

Project title	Renewable energy products and cost-effective electricity among middle-class consumers in Gauteng
Investigator / Researcher	Mr Sheldon Ludick
Nature of Project	MBA (Business Venture Proposal)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentiality.
Issue Date of Certificate	2023/10/04
Expiry date	Date of submission of the project / research report
Chairperson	Dr Pius Oba  +27 11 717 3976  +27 82 733 6587  pius.oba@wits.ac.za 

Declaration by Researcher

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

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



Signature

4 October 2023

Date:

11 LIST OF ACRONYMS

ACRONYMS	
RE	Renewable Energy
RET	Renewable Energy Technologies
IEA	International Energy Agency
PV	Photovoltaic
C/ KWH	Cents per kilowatt hour
KWH	Kilowatt hour
LSM	Living Standards Measure
RES	Renewable Energy Systems
PPU	Pay per Use
UPS	Uninterrupted Power Supply
SHS	Solar House System
PAYU	Pay As You Use
PAYG	Pay As You Go