Gordon Institute of Business Science
University of Pretoria

Sustainable business models for the energy sector: Value creation for the energy community and deployment of energy community projects

23690918

A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Philosophy (Corporate Strategy)

27 November 2023

ABSTRACT

The United Nations General Assembly (UNGA) introduced the Sustainable Development Goals (SDGs) in 2015, aligning with its Agenda 2030 strategy for sustainable development. SDG 7 specifically addresses global energy objectives, emphasizing universal access to affordable, reliable clean energy, an increased share of renewables in the global energy mix, and accelerated energy efficiency advancements. The global energy sector's transformative shift towards innovative solutions has birthed new business models driven by innovation. Consequently, businesses are urged to adapt their energy models to these changes (UN DESA, 2017).

The main research question reflects the primary objective of this research, which was to investigate SBMs and their potential to enhance value creation within the energy community, therefore influencing the deployment of energy community projects. The objective of this study was to explore and seek multiple perspectives and understandings about the creation of value by sustainable business models (SBMs) in the energy sector. The study aimed to answer the main research question by acquiring new perspectives and understanding of the role of SBMs in creating value within energy communities and the deployment of ECPs. The aim was to offer managerial and stakeholder guidance on aligning and adapting their business models due to the global energy transition and to contribute economically, environmentally, and socially within communities through ECP deployment.

This research study was exploratory in nature and sought to gain understanding, multiple perspectives, and new insights, and to identify social actions from energy communities, therefore the research methodology was qualitative and includes ideals of interpretivism that are exploratory in nature. Data gathering process was undertaken through 18 semi -structured interviews. The research setting was the energy sector, and the research aimed to draw on the experience, knowledge, and expert opinion of business professionals in Southern Africa (specifically in South Africa, Namibia and Zimbabwe) as well as other countries internationally (specifically in France and Indonesia).

The research project aimed to provide contribution to the body of literature n business literature and energy literature as well as value creation outcomes for communities. The literature was expanded to include contributions within the energy literature on grid value, energy democratisation, quality of life, monopolistic renewable energy business models, and community self-sufficiency. The study also discovered insights especially within the energy literature, which were then included into the body of literature.

KEYWORDS

Sustainable business models; energy community business models; value creation, energy community; deployment, energy community projects.

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 Philosophy in Corporate Strategy 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.

23690918 **27 November 2023**

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

AEOBM	Alternative Energy Ownership Business Model
B2U	Battery Second Use
DER	Distributed Energy Resource
EC	Energy Community
ECBM	Energy Community Business Model
ECP	Energy Community Project
EU	European Union
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
MREBM	Monopoly Renewable Energy Business Model
NGO	Non-Governmental Organisation
RE	Renewable Energy
SBM	Sustainable Business Model
SDG	Sustainable Development Goal
UK	United Kingdom
UN	United Nations
UNGA	United Nations General Assembly
USA	United States of America
WEF	World Economic Forum

CHAPTER 1: INTRODUCTION

This study explored how sustainable business models (SBMs) within the energy sector enhance value creation for energy communities and the deployment of ECPs. The research was based on the review, collection, and analysis of recent literature from credible scholars and academic papers. This led to the identification of research gaps and the qualitative study that explored the existing academic theory on the enhancement of value creation by SBMs (Freudenreich et al., 2020; Bocken et al., 2014), for energy communities (Blasch et al., 2021) and the deployment of ECPs (Reis et al., 2021).

1.1 Contextual Background to the Research Problem (Business Relevance)

The Intergovernmental Panel on Climate Change (IPCC) synthesis report for 2023 reveals that global warming, which is primarily caused by human activity, has led to a significant increase in global surface temperature. To quantify this increase, according to the IPCC (2023), since 1970, the global surface temperature has risen faster than in any 50-year period in the last two thousand years. The cumulative human-caused global surface temperature increases from 1850–1900 to 2010–2019 range between 0.8°C and 1.3°C. Human-caused warming, which is dominated by greenhouse gases (GHGs), has negative effects on food and water security, human health, economies, and society, and causes "losses and damages" (p. 42) to nature and people.

The synthesis report further states that GHG emission has grown persistently, which the report attributes to unsustainable energy consumption patterns and disparities in contributions across and within countries. The situation has had severe consequences for food and water security, human health, economies, society, and nature, causing significant losses and damage to nature and people (IPCC, 2023).

This has increased the urgency of the need for transformative measures to reduce climate change and achieve energy transition goals. According to the Renewables Global Status Report (2022), many countries have begun to re-invent their energy systems considering technological advancements and the need to reduce carbon emissions drastically. This is pertinent to and a part of the global current agenda.

As part of its Agenda 2030 plan for sustainable development, the United Nations General Assembly (UNGA) adopted the Sustainable Development Goals (SDGs) in 2015. These

goals provide a foundation for global collaboration to establish sustainable initiatives that address the impact of global warming. SDG 7 is the global goal for energy and this goal consists of three main objectives: ensuring everyone has affordable, stable, and widespread access to clean energy; boosting the share of renewable energy in the global energy mix; and tripling the global rate of energy efficiency improvement. Sustainable energy is a crucial component and top priority for achieving the UNGA Agenda 2030 objectives.

This research study is underpinned by the climate change agenda, and the objectives in the setting of the global energy transition (International Renewable Energy Agency, 2023). Globally, the energy sector faces a technological and organisational transition because of the implementation of innovative solutions, resulting in the emergence of new business models that are innovation driven (Brzóska et al., 2022).

The World Economic Forum (WEF, 2022) identifies new business models as a critical enabler of the global energy transition journey, while Brzóska et al. (2022) ascribe the emergence of new business models in the energy sector to innovative solutions and a shift in the way the global energy sector thinks about and approaches energy transition to reduce GHGs.

According to the WEF 2022 report, "collaborative models" (p. 23) have emerged within energy-industry pioneers and can be replicated and scaled to accelerate net-zero initiatives. The types of collaboration models listed in WEF report fit the definition of the energy community by Mlinarič et al. (2019) as “associations of actors engaged in energy system transformation for reduced environmental impact, through collective, participatory, and engaging processes and seeking collective outcomes” (p. 13).

Blasch et al. (2021) refer to new business models for energy, which they call “energy community business models” (p. 5) and posit that they can be classified as a type of SBM that offers social, economic, and environmental benefits to the stakeholders involved. Further, they offer an in-depth understanding of how an SBM builds on and contributes to diverse capitals. According to the Institute of Directors in Southern Africa (2016), capitals consist of “financial, manufactured, intellectual, human, social and relationship, and natural capital” (p. 10).

Diverse capitals can aid businesses in developing innovative solutions that transform environmental and social challenges into market opportunities (Lüdeke-Freund et al., 2016). Further, Kennedy and Bocken (2020) point out that managers have observed the climate change challenges and consider the pursuit of innovative technologies and the implementation of sustainable business models as playing a crucial role in facilitating the

transition to sustainability. It is against this backdrop that the business needs for and relevance of the study proposed here are established.

1.2 Research Problem (Theoretical Relevance)

Research on SBMs in the energy sector is part of the global climate change agenda, as discussed Section 1.1, and of current debate. The Anthropocene, which is an age marked by significant human activity, necessitates a shift towards sustainable development to ensure the long-term health of interdependent earth ecosystems (Steffen et al., 2018). The transition to sustainable development is a critical task, and businesses play a pivotal role in this process by introducing new business models (Bocken, 2023).

According to Blasch et al. (2021), the new business models being adopted by the energy community are a form of SBM that provides stakeholders with social, economic, and environmental benefits, with Blasch et al. (2021) referring to the new business models as “energy community business models” (p. 5). Added to this, Kennedy and Bocken (2020) define SBMs as “how an organisation creates, delivers and captures value for its stakeholders in a way that supports a safe and just operating space for humanity and all living entities to flourish” (p. 2*).*

Considering the above definitions, Blasch et al. (2021) suggest that "understanding the breadth and diversity of business model activities being pursued by energy community requires work" (p. 4) and invite scholars to conduct “future research on four avenues” (p.1) that they list in their study. This research study accepts this invitation and seeks to conduct research, selecting as an initial focus the question posed by Blasch et al. (2021): “How could new business models enhance the economic viability and future deployment of more distributed energy resources?” (p. 4).

The initial research question for this study is thus derived from and anchored in Blasch et al.’s (2021) invitation for researchers to join the conversation on the scope and range of the energy community’s business model activities (p. 5).

Related to this, in the business-strategy literature, Bocken et al. (2013) and Bocken et al. (2014) write that business models that pay attention to reducing carbon emissions and shift from conventional to renewable energy sources are a type of SBM. In addition, these authors argue that such business models go beyond economic viability and focus on value creation by “prioritising delivery of social and environmental benefits rather than economic profit”

(Bocken et al., 2014, p. 53). These business models “seek to go beyond delivering economic value and include a consideration of other forms of value for a broader range of stakeholders” (Bocken et al., 2013, p. 484).

Combining the perspectives of Blasch et al. (2021) and Bocken et al. (2014), the research question for this study is restated as: “How could sustainable business models enhance value creation and deployment of more distributed energy resources?”

Concerning the definition of distributed energy resources (DERs), in an earlier publication by Ackermann et al. (2001) and later studies by Chicco et al. (2021) and Burger et al. (2019), these resources are described as technologies within the electricity distribution network that are technical in nature and exist within energy communities. However, Seyfang et al. (2013), together with Hicks and Ison (2018), do not write about DERs, referring instead to ECPs. These authors posit that such projects have multiple aspects and rarely focus on just one technology or behaviour in isolation. They mix social efforts with energy efficiency measures and both with micro-generation in a holistic approach.

The energy literature discusses the technical DERs, energy communities and ECPs. As a business study, this research focuses on ECPs within the energy community as the organisational collectives that deploy DERs. In addition, the holistic approach described by the scholars above has similarities to the approach by Bocken et al. (2014), which incorporates sustainability as an economic, environmental, and social aspect of business models.

Following the preliminary review of the relevant literature fields to identify calls for participation, the main research question is finally restated as: “How could sustainable business models enhance value creation for the energy community and deployment of energy community projects?”

1.3 Research Questions

The main research question was derived from the identified research opportunities and calls for participation from Blasch et al. (2021), Bocken et al. (2014), Seyfang et al. (2013), and Hicks and Ison (2018) on how SBMs within the energy sector can enhance value creation for the energy community and the deployment of its projects.

Main Research Question: How could sustainable business models enhance value creation for the energy community and deployment of energy community projects?

To respond to the research question, two research sub-questions were crafted to break down and further explore aspects of the main research question. The sub-questions were derived from the views of Reis et al. (2021) and Blasch et al. (2021) within the energy literature and from Freudenreich et al. (2020) within the business literature. The research sub-questions were phrased as follows:

Research sub-question 1: How is value created for the energy community? (See Freudenreich et al., 2020; Blasch et al., 2021.)

Research sub-question 2: How are the energy community projects deployed? (See Reis et al., 2021; Hicks & Ison, 2018.)

Research Outcomes provided the overall value creation outcomes for the research study and provides a deeper understanding and insights of the value creation for the energy community and the deployment of ECPs using the SBMs.

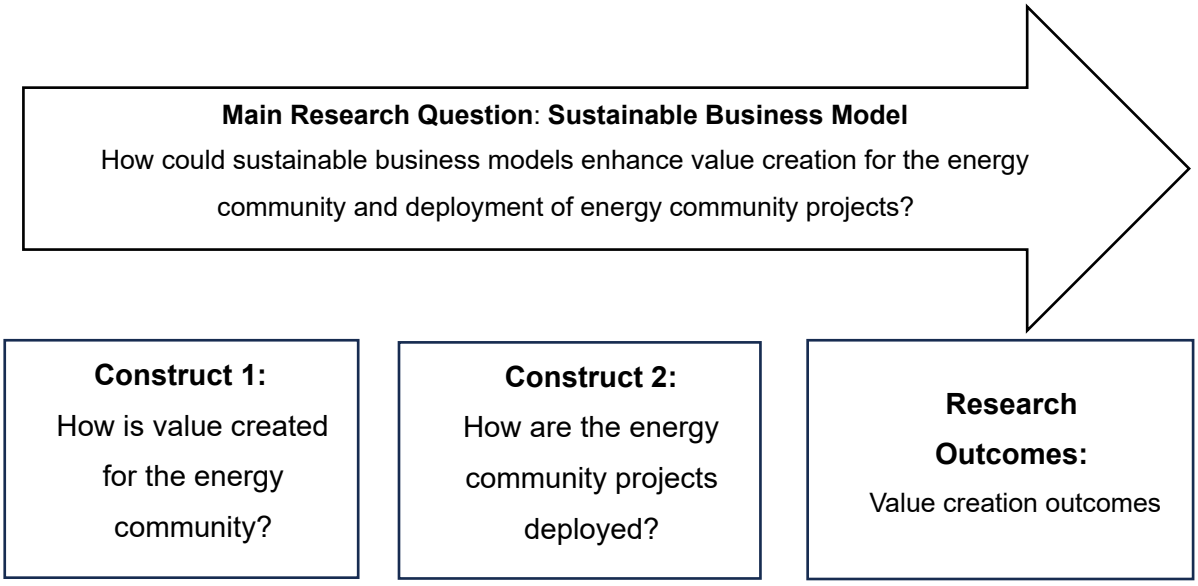


Figure 1: Research questions and anticipated outcomes

Source: Author's own diagram, adapted from Freudenreich et al. (2020); Blasch et al. (2021); Reis et al. (2021); Bocken et al. (2014); Seyfang et al. (2013); and Hicks and Ison (2018)

1.4 Research Purpose

The purpose of the study was to explore and understand how SBMs could enhance value creation within the energy community, in this way influencing the deployment of ECPs. The focus of the study was on understanding and generating new perspectives on and insights

into value creation by SBMs by understanding the energy community and its project deployment.

1.5 Research Aims

The main objective of this research was to investigate sustainable business models (SBMs) and their potential to enhance value creation within the energy community, therefore influencing the deployment of energy community projects. The objective of this study was to explore and seek multiple perspectives and understandings about the creation of value by sustainable business models (SBMs) in the energy sector.

Specifically, the research focused on gaining a deeper understanding of energy communities and the deployment of projects. The research focused on learning about and understanding the way by which Sustainable Business Models (SBMs) contribute to the creation of value within energy communities, while also investigating their influence on the deployment of projects. Through an investigation of the role of SBMs in this particular context, the study aimed to provide insights into potential enhancements in both the creation of value and effectiveness of energy community projects deployment.

1.6 Research Contributions

1.6.1 Business relevance

The research study was grounded in the context of the climate change agenda, with a focus on the goals related to the global energy transition as outlined by the International Renewable Energy Agency (2023). The energy industry is undergoing a worldwide technological and organisational shift due to the adoption of innovative solutions, leading to the emergence of innovation-driven business models (Brzóska et al., 2022).

In 2015, the United Nations General Assembly (UNGA) established the Sustainable Development Goals (SDGs) as a component of its Agenda 2030 strategy for sustainable development. These objectives serve as a basis for international collaboration in developing sustainable projects aimed at alleviating the impacts of global warming. SDG 7 pertains to the worldwide purpose of energy and has three primary aims: guaranteeing universal access to clean energy that is both cheap and reliable; augmenting the proportion of renewable energy within the global energy composition; and doubling the global pace of development in energy efficiency. The energy sector is undergoing a technological and organisational transition on a global scale due to the adoption of innovative solutions. This transition has led to the emergence of new business models that are driven by innovation. Consequently, businesses are compelled to transform and adapt their energy business models to align with these changes (UN DESA, 2017).

Based on this, the study focused on how SBMs could enhance value creation for the energy community and the deployment of ECPs. This was aimed at providing guidance to managers and stakeholders on the transforming and adapting their business models to contribute economically, environmentally, and socially within communities through the deployment of ECPs.

1.6.2 Theoretical relevance

The study of sustainable business models (SBMs) within the energy sector is an important aspect of the global climate agenda and remains a topic of ongoing debate. The Anthropocene era, characterised by significant human influence on the environment, calls for a transition towards sustainable development in order to safeguard the enduring well-being of interconnected earth's ecosystems (Steffen et al., 2018). The need of transitioning towards sustainable development is a crucial undertaking, whereby businesses assume a key position by providing novel business models (Bocken, 2023).

The theoretical relevance of the study was to contribute to the existing body of literature on energy and business models by providing insights and understanding, with the potential to make a useful addition to the body of literature. Specifically, the study focused on exploring how business models in the energy sector may provide value for the energy community. The study also made valuable contributions to the existing body of literature in the fields of energy and business.

1.7 Research Scope

The study focused on exploring and understanding the value creation within the energy community and the deployment of ECPs using SBM lens. Moreover, the research was based on the integration of business literature and the energy literature. This study integrates recent fields of focus in scholarly research, namely energy community business models (Blasch et al., 2021; Reis et al., 2021) as discussed in the energy literature, and sustainable business models (Bocken, 2023; Geissdoerfer et al., 2018) in the business literature.

Both bodies of literature provide the necessary background and framework for this research study. The concepts of value creation and the deployment of ECPs were derived from the energy. Furthermore, the business literature and energy literature business models were further explored together with the value creation outcomes.

The study was conducted within the energy sector setting and especially targeted at Independent Power Producers (IPP), Energy Regulators, and Energy Experts in three

distinct geographical regions: Southern Africa (primarily Zimbabwe, South Africa, and Namibia), Indonesia, and France.

1.8 Research Structure

This thesis is structured into the following chapters:

Chapter 1 introduced the study by providing the background to the research problem, before describing the research problem, and presenting the research questions addressed by the study. The chapter then sets out the research purpose and aims. This is followed by the research contributions and the chapter concludes by specifying the scope of the research and outlining the research structure.

Chapter 2 presented the literature reviewed conducted to explore value creation for energy communities and the deployment of energy community projects (ECPs) using sustainable business models (SBMs) within the energy sector setting. The literature review focused on the literature conducted in the past five years by credible scholars from business literature and energy literature. Based on literature reviewed, the researched derived an adapted conceptual framework from credible scholars.

Chapter 3 presents research questions based on the research gaps identified from the literature reviewed from scholars, namely, Freudenreich et al. (2020); Blasch et al. (2021); Reis et al. (2021); Bocken et al. (2014); Seyfang et al. (2013); and Hicks and Ison (2018).

Chapter 4 presents the research methodology and design choices such as research paradigm, research methodology, research setting, sampling method, research instrument, data gathering process, data analysis process, and research quality and rigour. The selection of research methodology and design choices aimed at responding to the explorative nature of the research question.

Chapter 5 presents the findings from the analysis of data collected form the semi-structured interviews with the aim of responding to the main and sub research questions as well as providing the research outcomes outlined in Chapter 3.

Chapter 6 presents a comparative analysis to see if the findings presented in Chapter 5 can be revised and/or confirmed with the current literature.

Chapter 7 presents the outcomes of the research study obtained derived from Chapter 6 during the analysis of comparing findings and literature. This chapter provides conclusions

for each question from Chapter 6 and provides the final conceptual framework, recommendations for management and stakeholders, limitations of the research.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The study conducted a literature review to explore value creation for energy communities and the deployment of energy community projects (ECPs) using sustainable business models (SBMs) within the energy sector setting. To achieve this, energy communities and their project deployment were analysed from the perspective of SBMs, to understand how these models could enhance value creation within energy communities. The study examined the potential contributions of SBMs to value creation for energy communities and the deployment of their projects.

This chapter begins by outlining the literature-review approach, process and roadmap followed in the study. It then delves into the literature on the theoretical constructs of the study and outcomes directed at answering the main research question, which concerns how SBMs could enhance value creation for the energy community and deployment of ECPs. The chapter concludes by presenting the conceptual framework derived from the literature review and used in the study.

The following sub-sections consider the literature-review approach, the process adopted, and the roadmap followed.

2.1.1 Literature review approach

The literature-review approach chosen for this study focused on sourcing relevant theoretical literature from credible scholars within the business-strategy literature and energy literature. The business relevance of this study, as discussed under Chapter 1, describes the context of the study, and positions the study at the intersection of energy literature and business literature.

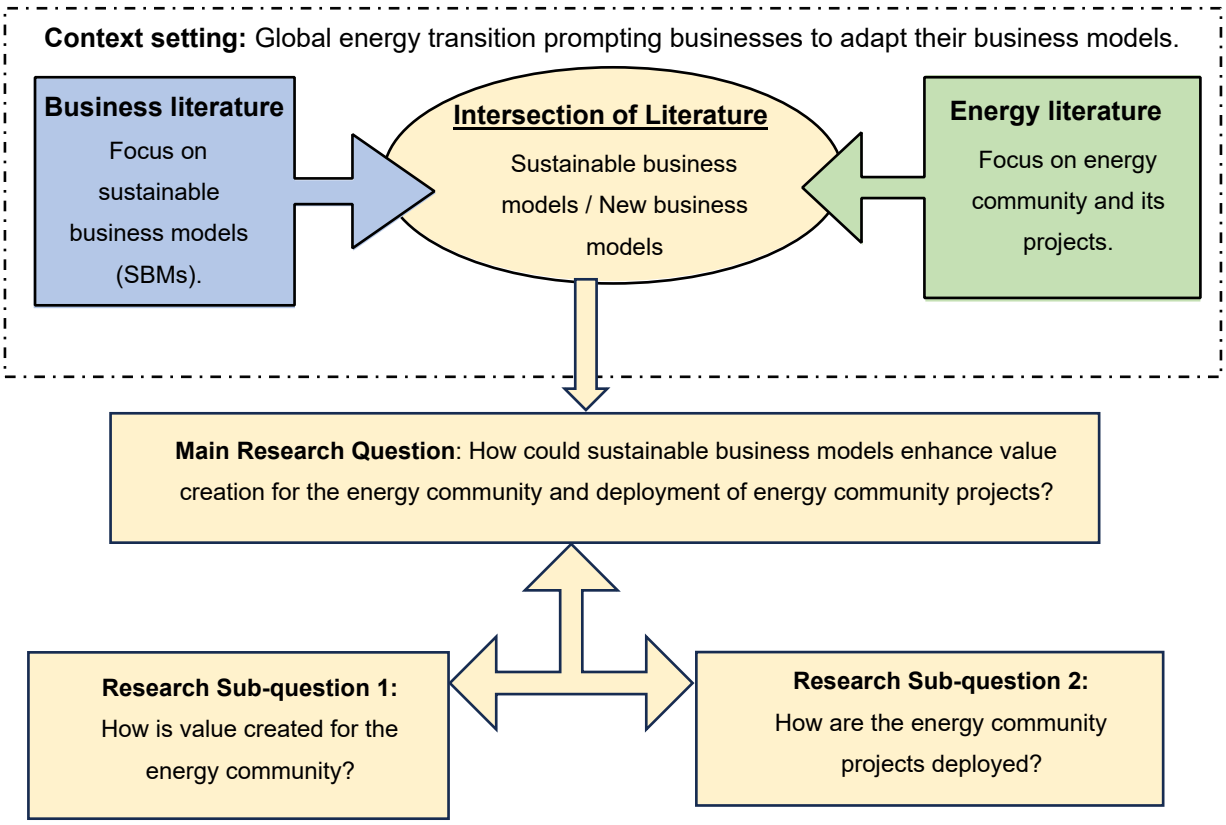


Figure 2: Intersection of business literature and energy literature
Source: Drawn by author

In reference to Figure 2 above and brings together energy literature and business-strategy literature. As part of the energy literature, Blasch et al. (2021) identified new business models within the energy community as a form of SBM. In the business-strategy literature, Bocken et al. (2014) introduced SBM archetypes for value creation, in which "non-renewables can be replaced with renewable energy sources" (p. 48) and "low carbon emission solutions as initiatives towards zero emissions initiation" (p. 48). At the intersection of these two literature fields, energy literature refers to a new business model while the business literature refers to an SBM. The next section discusses the literature-review process.

2.1.2 Literature review process

The literature-review process adopted by the study is set out in Figure 3 below.

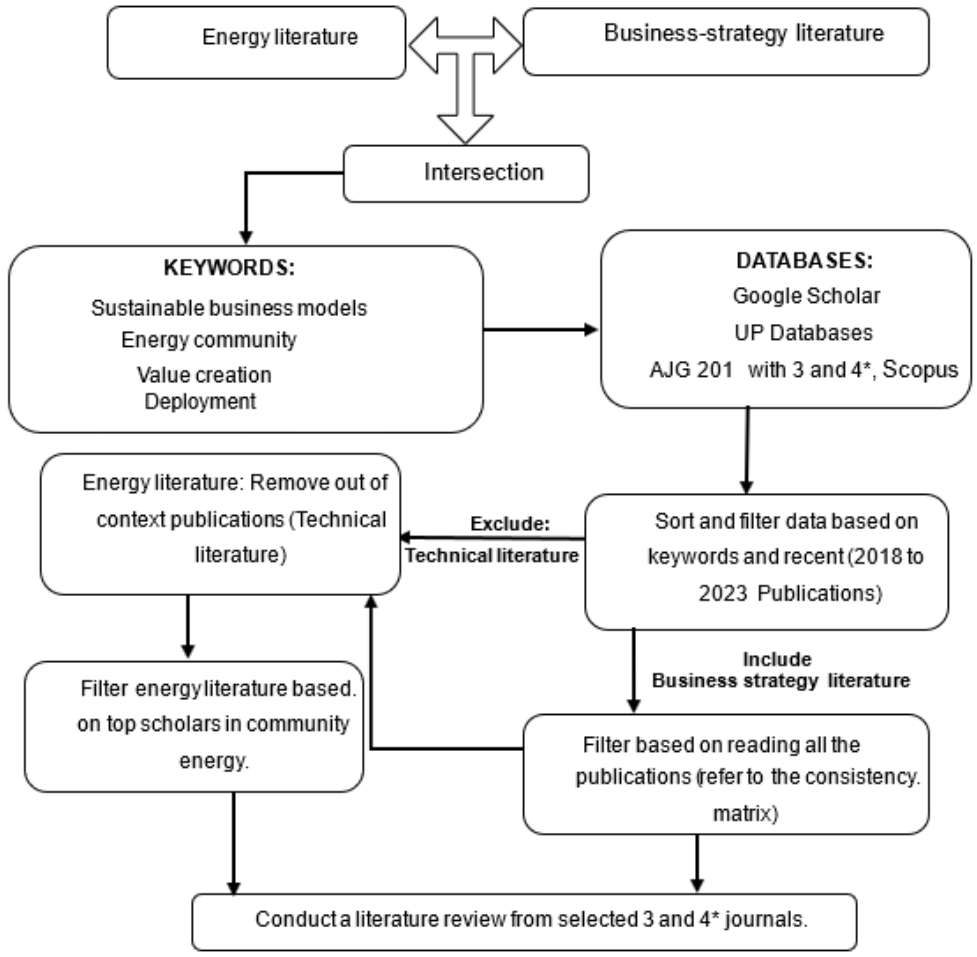


Figure 3: Literature-review process
Source**:** Drawn by author

Building on the approach to the literature review, as set out in Figure 2, the literature-review process followed the approach, as illustrated in Figure 3, of intersecting the energy literature with business literature. The literature review sought to provide an overview of the pertinent theory base related to the research question. The emphasis was placed on theoretical analysis and argument, based on different perspectives by credible peer scholars in the field of SMBs. Consequently, the literature-review process focused on identifying theoretical articles for review.

As shown in Figure 3, the literature-review process focused on research from the fields of energy and business. Reviewed literature research from both fields allowed the researcher to gain an overview of the context and to identify the main research question and sub-questions for the study. The research question was derived and adapted from both the energy

literature and business literature. Further to that, in alignment with GIBS Business School requirements for the integrated research project, the literature-review process ensured that the research was within the business management sciences and theoretically relevant, as opposed to solving a business problem.

In reference to Figure 3, it should be noted that the majority of the energy literature was not rated under the Association of Business Schools listing and focused on engineering science. However, it was situated within the current academic conversation on the global energy transition (e.g., Bohnsack et al., 2021), with sustainability and the new business model as one of the agendas, focused on the quest to create a low-carbon energy mix (Hafner & Tagliapietra, 2020).

In addition to the characteristics described above, this research was also exploratory and sought multiple perspectives and understandings. Consequently, in line with the exploratory nature of the research, while some of the energy journals consulted were not highly ranked, they contained articles by prominent scholars, and these were used as supporting material.

The energy literature also provided a variety of publications that were not business related but rather technical in nature. These publications were excluded, as shown in Figure 3, with the focus on energy-community publications instead. The next sub-section discusses the literature-review roadmap.

2.1.3 Literature review roadmap

In line with the main and sub-research questions, the literature review focused on the topics of SBMs, value creation for the energy community, the deployment of ECPs, and value creation outcomes for SBMs. In examining these topics, the literature review was divided into three sub-headings – literature overview of the topic, literature analysis of the topic, and conclusions reached about the topic – to facilitate a theoretical examination by scholars of each topic. This enabled a comparison of the literature, in which similarities and differences were found as valid evidence and reasoning to substantiate the research topic.

A comparative analysis was conducted of the literature reviewed using sub-headings and focusing on five specific elements: the definitions of constructs and concepts; relevant constructs and concepts; the research setting or context; the type of research methodology; and the research gaps. These five elements were chosen to facilitate the comparison of literature and in this way add to the credibility of the evidence provided.

Table 1: Literature review roadmap

Headings	2.2 Sustainable Business Models	2.3 Value Creation for Energy Community	2.4 Deployment of Energy Community Projects	2.5 Value-Creation Outcomes
Sub-headings	2.2.1 Literature overview of sustainable business models	2.3.1 Literature overview of value creation for energy community	2.4.1 Literature overview of the deployment of energy projects	2.5.1 Literature overview of the value-creation outcomes
	2.2.2 Literature analysis and understanding of sustainable business models	2.3.2 Literature analysis and understanding of value creation for energy community	2.4.2 Literature analysis and understanding of the deployment of energy projects	2.5.2 Literature analysis and understanding of value-creation outcomes
	2.2.3 Conclusion on sustainable business models literature	2.3.3 Conclusion on value creation for energy community	2.4.3 Conclusion on the deployment of energy projects	2.5.3 Conclusion on the value-creation outcomes
2.6 Conclusion				

Source: Compiled by author

2.2 Sustainable Business Models

2.2.1 Literature overview of sustainable business models

In reference to Section 2.1.1, the study was positioned at the intersection of energy literature and business literature. Both literatures write about business models within the context of sustainability. The majority of the scholars in the business field refer to "sustainable business models" (Bocken, 2023; Evans et al., 2017; Geissdoerfer et al., 2018), apart from Schaltegger et al. (2016) who prefer the term "business models for sustainability". The energy literature highlights new business models for energy communities, also referred to as "energy community business models" (ECBMs), which is viewed as a form of SBM (Blasch et al., 2021). Both literatures are reviewed in this section.

What does business literature write about sustainable business models?

In order to understand the concept of a sustainable business model or SBM, it is necessary first to present a brief description of a business model. According to Teece (2018), a company's "business model" is the strategy or blueprint in which it specifies how it utilises value creation, value delivery, and value capture. It also sets out how the company will

provide value to customers, get them to pay for that value, and then turn those payments into profit.

Against this backdrop, Geissdoerfer et al. (2018) write that SBMs are an extension of the traditional business model concept that includes specific attributes and objectives. These models either 1) integrate sustainability-oriented concepts, principles, or objectives; or 2) incorporate sustainability into their value proposition, value delivery and creation activities, and value capture. In the same way, Bocken (2023) defines SBMs as strategic approaches adopted by organisations to create, deliver, and capture value for customers and stakeholders to create a safe and fair operating environment that fosters the well-being and prosperity of both people. Bocken (2023) writes about key resources, key activities, and key stakeholders through the lens of the business model canvas as part of the value creation process for businesses. Bocken (2023), as part of the SBM canvas, talks about “reusing and refurbishing products” and “product take back for recycling” (p.6) linking the transformation of products into other useful sources

While scholars have put forward a myriad of definitions, and developed concepts, tools, and methodologies for SBMs, the widespread adoption of these models in the mainstream is limited (Bocken, 2023). However, most definitions emphasise the importance of considering stakeholders beyond shareholders and fostering social and environmental value alongside economic value (Kennedy & Bocken, 2020). In addition, Bocken et al. (2014) have introduced an SMB typology, consolidating existing literature to understand various models that promote environmental, societal, and economic sustainability.

Businesses are promoting sustainability through innovations and transitioning to renewable energy (Bocken, 2023) to address global ecological disasters such as climate change and biodiversity loss that lead to poverty (Bocken & Geradts, 2020), while promoting a secure and equitable environment for all living things (Bocken, 2023). Considering climate change, resource depletion, social inequality, and shifting consumer values, SBMs have emerged as a response to these challenges (Bocken, 2023).

A review by Geissdoerfer et al. (2018) provides examples of SBM strategies. These include replacing non-renewable resources with renewable alternatives and utilising natural processes; implementing inclusive value creation strategies that prioritise delivering value to previously underserved stakeholders and involving them in the value creation process; utilising resources and skills to benefit society and the environment; and optimising energy efficiency to create benefits for society and the environment.

From a different perspective, Bocken and Short (2021) investigated unsustainable business models. They define the term "unsustainable" (p. 2) as involving actions or practices that are detrimental to the environment, such as waste generation, pollution, climate change, and biodiversity loss. Additionally, unsustainability encompasses activities that are unsustainable for society owing to their contribution to inequalities, exploitation, and the undermining of health, safety, and well-being. However, it is important to note that these actions may not necessarily be economically unsustainable, at least in the short term.

Among the various industrial sectors, the energy sector is receiving substantial scrutiny owing to its direct involvement in climate change and its perceived lack of sustainability. Notably, it stands as the primary contributor to GHG emissions, accounting for approximately 35% of total anthropogenic GHG emissions. This further substantiates the relevance of this study and the intersection of business literature and the energy literature (Bocken & Short, 2021).

The above scholars were selected for their diverse and insightful viewpoints regarding SBMs. The paragraphs below discuss the business models within the energy literature and how they intersect with SBMs in the business literature.

What does the energy literature state about new business models in the energy sector?

Blasch et al. (2021) discuss new forms of clean energy business models that are accelerating the energy transition. In their paper, they use a number of terms interchangeably, such as “emerging community business models” (p. 2); “energy community business models” (p. 2); and “new business models” (p. 4).

Furthermore, Blasch et al. (2021) consider energy community business models (ECBMs) as a form of SBM that provides “social, economic, and environmental benefits” (p. 5) to the relevant stakeholders. In their conclusion, they use the term “energy community business models” and express the need for further understanding of why and how these models emerge. In addition, Blasch et al. (2021) write that the development of ECBMs necessitates demonstrating their financial and non-monetary value creation for members and society, while also providing clear instructions on how to achieve this value creation while addressing challenges.

Conversely, Reis et al. (2021) write that the literature on ECBMs is in its early stages of development, that it is dispersed, and that it is not systematically defined. In their paper, Reis et al. (2021) posit that ECBMs are initiatives created by citizen groups that are primarily focused on renewable energy generation and on options to select technologies for energy

generation. Other value propositions of ECBMs include the social innovation that results from consumers assuming the roles of customers; asset proprietors; and company shareholders' supply, storage, consumption, trading, aggregation, grid administration, and provision of energy-related services at the local level (Reis et al., 2021). These models involve external financial participation through partnerships and are obligated to ensure that shareholders receive a return on their investment.

Reis et al. (2021) provide several emerging ECBM archetypes, with value created at different levels, and identify economic value creation, in which, for example, "Belgian Ecopower cooperative received 6% of its profits on an annual basis" (p. 16). In addition, these authors suggest that ECBMs not only create economic value but also promote societal change, environmental awareness, and community-shared experiences. Implemented by local businesses, they generate local employment opportunities and support transformative initiatives and technology innovations (Reis et al., 2021).

In their review, Iazzolino et al. (2022) attempted to understand the value created by the business model for energy communities by employing the framework canvas and identifying the critical elements that influence such models. Their findings revealed that a business model for the energy community is influenced by three distinct categories of reasons: (i) financial considerations aimed at achieving economic savings; (ii) environmental factors associated with safeguarding the environment, minimising emissions, and serving collective interests; and (iii) community-oriented factors that promote a sense of belonging and networking opportunities. The following section aims to analyse and provide an understanding of SBMs.

Blasch et al. (2021) talks about new technologies and social structures to encourage energy user participation, which generates new energy communities, such as those engaged in distributed renewable energy generation. Reis et al. (2021) talk about energy generation, on-site and off-site, as a key activity and a "unique value proposition of ECBM" (p.16) and one of the customer side business models.

2.2.2 Literature analysis and understanding of sustainable business models

An interesting intersection between business literature and energy literature is observed when comparing definitions by scholars. According to Blasch et al. (2021) and Bocken (2023), ECBMs can be regarded as new forms of clean energy business models aimed at accelerating energy transition through the use of renewable energy sources. This reveals similarities between ECBMs and SBMs, as substantiated by Geissdoerfer et al.'s (2018) examples of SBM strategies of replacing non-renewable resources with renewable

alternatives as a response to the challenges of climate change and resource depletion (Bocken, 2023).

The extension of business models (Teece, 2018) to incorporate sustainability-oriented objectives (Geissdoerfer et al., 2018), such as generating renewable energy (Reis et al., 2021; Geissdoerfer et al., 2018); minimising emissions; and addressing climate change (Bocken, 2023; Iazzolino et al., 2022), are notable similarities between ECBMs and SBMs. It is these objectives that result in value proposition, value creation, and value capture for a broader range of stakeholders beyond shareholders (Kennedy & Bocken, 2020).

Differences were noted in that while both models are anchored within the context of sustainability, unsustainable business models are found within the energy sector that embrace practices that are detrimental to environmental health, with these practices leading to the generation of waste, pollution, and climate change (Bocken & Short, 2021). These models encompass activities such the use of fossil fuel and of non-renewable resources and further contribute to GHG emissions (Bocken & Short, 2021).

2.2.3 Conclusion on sustainable business model literature

The above analysis discusses the similarities and differences between ECBMs and SBMs from the business-strategy and energy literature. In conclusion, although Bocken and Short (2021) point to unsustainable business models within the energy sector, they identify positive developments in this area, some of which are the result of industry and entrepreneur initiatives, government policy support, and consumers' growing demand for alternatives (Bocken & Short, 2021). In their review, Reis et al. (2021) discuss initiatives such as renewable energy generation, options to select technologies for energy generation, and social innovation as responses to unsustainability in the energy sector.

On the basis of the progress being made towards the global energy transition to address the differences between the literature fields and to obtain a definition that contributes to responding to the research question, Bocken's (2023) definition of SBMs was considered suitable for the study. This definition encompasses three elements aimed at achieving sustainable outcomes for the energy community: value proposition, value creation, and value capture. In the energy literature, ECBMs (Reis et al., 2021), new business models (Blasch et al., 2021), and renewable energy business models (Reis et al., 2021) are a form of SBMs, according to Blasch et al. (2021). These models help to answer the research question in identifying how SBMs could enhance value creation for the energy community.

2.3 Value Creation for Energy Community

2.3.1 Literature overview of value creation for the energy community

Definition of an energy community

According to Lowitzsch et al. (2020), energy communities have a longstanding history. In regions that are geographically isolated or located on islands, where the availability and affordability of fuel sources are limited, the use of decentralised renewable energy generation has been prevalent even prior to the widespread adoption of the energy transition. However, because of the increasing prevalence of decentralised renewable energy generation and the emergence of different consumer ownership models in the renewable energy sector, energy communities have the capacity to establish themselves as a mainstream framework within energy markets.

The global energy transition is a challenge for all industries (Bohnsack et al., 2021), and the high-speed development and adoption of renewable energy technologies over the past few decades are rapidly altering the global energy industry landscape (Gui & MacGill, 2018). As a result, the energy community has come into existence (Mihailova et al., 2022; Gjorgievski et al., 2021). According to Blasch et al. (2021), the definition of the energy community has been an evolving topic, with a variety of definitions proposed. These include clean energy community (Gui & MacGill, 2018); community energy as projects with collective benefits (Seyfang et al., 2013); ambiguous and not clear (Reis et al., 2021); community renewable energy (Hicks & Ison, 2018); and the theoretical linking of the energy community with the decentralised and renewable generation of energy such as solar, wind, and combined heat (Brummer, 2018).

Brummer (2018) defines an energy community as an activity that involves renewable energy sources such as solar, wind, or heating, with participatory decision-making and community engagement. This activity leads to community mobilisation, improvement, and a shift towards a more sustainable way of life, ultimately promoting a more sustainable lifestyle.

Hicks and Ison (2018) point out that despite the increasing use of partnerships between communities and others, the categories, and functions of actors in various configurations are currently not well understood. Hicks and Ison (2018) argue that the diverse ways in which energy communities manifest themselves can also be explained by analysing the context and motivations of actors involved, and this may be considered a key attribute in defining the energy community. As examples, municipalities and other state actors have contributed to the development of energy communities; energy utilities have sought to

diversify their business models (Burger et al., 2019); and new entrants have sought to profit from emerging market opportunities (Brown et al., 2019; Reis et al., 2021).

Reis et al. (2021) write that these actors are likely to interpret the concept of the energy community differently and have dominated the energy landscape of the European Union (EU) for decades. Reis et al. (2021) investigated business models within the energy community and identified barriers and strengths within energy community development. Energy communities are anticipated to boost local economic growth, create employment opportunities, improve smart grid infrastructure, and expedite the transition towards a low-carbon economy by forming alliances with other industries and prioritising private and local investment (Reis et al., 2021).

Additionally, energy communities have the capacity to effect significant social change in disadvantaged communities that are frequently overlooked during energy transitions as a result of lack of funding, expertise, and interest. By means of public and private entities, including social entrepreneurs, energy communities have the capacity to foster engagement and consciousness within their immediate surroundings. This can have substantial implications in the fight against energy poverty (Reis et al., 2021).

According to Iazzolino et al. (2022), the term "energy community" encompasses a wide range of configurations, types of actors, and technologies in use, and its administration is complicated because of the nature of network infrastructures. As a result, its meaning is extremely variable and diverse. Iazzolino et al. (2022) argue that the idea behind an energy community is to optimise shared energy consumption in order to achieve environmental, economic, and social advantages. However, in the present market, economic and financial goals must also be taken into account.

Iazzolino et al. (2022) identify three main reasons for joining an energy community: economic savings, environmental concerns, and community motivations. Economic considerations aim to achieve cost savings, while environmental concerns focus on safeguarding the environment and minimising carbon emissions.

With such diverse definitions of the energy community and in accordance with the aim of this research study, the study combined the definitions of Blasch et al. (2021) and Brummer (2018) to reach a comprehensive definition of an energy community. Blasch et al. (2021) define the energy community as a stakeholder association working towards transforming energy systems through collaborative, interactive, and engaging procedures to achieve shared outcomes. Brummer (2018) defines the energy community as an activity

that involves renewable energy sources such as solar, wind, or heating, with participatory decision-making and community engagement leading to community mobilisation, improvement, and a shift towards a more sustainable way of life that promotes a more sustainable lifestyle. Both definitions are relevant to the research question as they cover the key features of the energy community and stakeholders' mission.

Value creation for the energy community through a sustainable business model lens

According to Lüdeke-Freund et al. (2016), "business models are developed and managed to create value" and the concept of value is central to SBMs (Neesham et al., 2023). Despite the need for additional research on the impact of SBMs and the creation of value (Lüdeke-Freund et al., 2016; Schaltegger et al., 2016), diverse literature demonstrates that the focus of business model research is the creation of value (Zott et al., 2011; Richardson, 2008). Nonetheless, Schaltegger et al. (2016), Bocken et al. (2013), and Stubbs and Cocklin (2008) share the view that business models with a focus on sustainability frequently characterise value creation as a process that generates various outcomes for multiple stakeholders.

Having adopted the definition and understanding of SBMs as set out in Section 2.2, the study obtained evidence on traditional business models and business models for the energy community from the literature, with the aim of understanding and exploring value creation for the energy community using an SBM lens that incorporates Bocken's (2023) value proposition, value creation, and value capture framework.

In his research, Brummer (2018) undertook a comparative literature review in the United Kingdom (UK), Germany, and the United States of America (USA) on the energy community and identified seven distinct categories of value creation within the energy community: economic benefits, education and acceptance, participation, climate protection and sustainability, community building, renewable energy generation targets, and innovation. This research also provided insights into barriers to value creation in such communities, such as scepticism about renewable energy initiatives by the energy community, the absence of institutional and political backing, and "lack of resources such as funding, time and expertise" (p. 193).

A range of literature has explored the involvement of prosumers in emerging energy business models. Brown et al. (2019) define a prosumer as a "customer operating within its premises who generates renewable electricity for its own consumption and may store and sell self-generated renewable electricity" (p. 2). Brown et al.'s (2019) study delves into prosumer business models and pinpoints seven models that are currently being used in the UK.

Additionally, the PROSEU project under the EU examined several projects to analyse the different business models being employed to support the shift towards renewable energy, as discussed by Hall et al. (2020).

Mlinarič et al. (2019) have developed a typology of new clean-energy community business models that identifies five types of business models adopted by new clean energy communities. These models are local renewable energy generation and supply; innovative contracting and community-based products (including e-mobility); community energy storage; peer-to-peer energy trading platforms; and community energy aggregator businesses.

In their study, Reinhardt et al. (2020) found that participants in the battery second use (B2U) market have begun to engage in sustainable value-creation activities, which are now an integral part of their innovative and environmentally sustainable business processes. Electric vehicle companies and energy storage or B2U service and system suppliers appear to innovate at no level, one level or a combination of all three SBM archetype levels, which encompass environmental, social, and economic sustainable strategies. However, since the B2U industry is still emerging, the scarcity of available data was a constraint in Reinhardt et al.'s (2020) study.

Literature on innovative energy business models facilitates knowledge of the evolving relationships and transactions within a conventional business model. Hall and Roelich (2016), Bryant et al. (2018), and Gauthier and Gilomen (2016) failed to address adequately the value creation of the global energy transition and its impact on the energy sector and community. On the other hand, conventional business models emphasise profits and revenue, and the business strategies of energy utility companies neglect the potential impact of renewable energy projects.

The case study carried out by López et al. (2023) defined several classifications of energy communities, including a range of new business models. Their findings indicated that being a member of an energy community consistently resulted in an economic benefit. The extent of this advantage was primarily determined by two factors: the available surface area for installing renewable energy generation systems and the characteristics of the consumer. The analysis indicated that the integration of energy storage systems leads to the most significant cost reductions for electricity bills. The energy community has the ability to offer a viable alternative to combat climate change, with advancements in technology and price reductions making renewable energy systems more affordable and economically beneficial.

Evidence from Hall et al. (2020), Mlinarič et al. (2019), and Reinhardt et al. (2020) acknowledges that transactions flow in both directions and that business models are innovative, with the adoption of new economic, social, and environmental value creation.

2.3.2 Literature analysis and understanding of value creation for the energy community.

The diverse studies and scholars reviewed were found to have a range of scopes and focuses. As an illustration, Brummer (2018) devotes his main attention to the identification of value creation categories within energy communities. In contrast, Brown et al. (2019) explore prosumer business models, Mlinarič et al. (2019) construct a typology of business models specific to clean-energy communities, and López et al. (2023) provide several classifications of energy communities, including a range of new business models. These varied focuses are indicative of the scholars' diverse research interests.

Another difference that was observed was the geographical context. The studies researched encompass a variety of regions, such as Germany, the EU, the UK, and the USA. This is due to variations in the regulatory environments and contexts in which these energy communities and SBMs function.

Researchers utilise a variety of methodologies and approaches in their investigations. For example, a comparative literature review is undertaken by Brummer (2018), while the definition of prosumers and their business models is provided by Brown et al. (2019). The differences in methodology are factors that contribute to the variability of findings and insights.

Scholars and research focus on particular subjects that are associated with energy communities and SBMs. As an illustration, the sustainable value-creation activities of the battery second use (B2U) market are the subject of Reinhardt et al.'s (2020) research. Every research study contributes a distinct viewpoint to the wider subject of SBMs in energy communities.

Despite the differences in the research studies described above, a similarity among these studies is their shared focus on value creation. Regardless of the factor researched – innovation, economic benefits, or renewable energy generation – every study investigates and recognises the value creation within energy communities. This collective emphasis points to the importance of value creation within SBMs.

Innovation within SBMs is emphasised by several scholars, including Hall et al. (2020), Mlinarič et al. (2019), and Reinhardt et al. (2020). These authors highlight the innovative ways in which companies that operate within the energy community sector generate value at an economic, social, and environmental level. This emphasis on innovation suggests that the development of SBMs has followed a recurring pattern.

Various researchers, such as Brummer (2018) and Reinhardt et al. (2020), have identified obstacles and difficulties within the energy community sector. Scepticism, the lack of political and institutional support, and resource constraints are some of these. The acknowledgment of these obstacles is a recurring theme that emphasises the practical difficulties encountered by energy communities.

Although certain scholars (Hall & Roelich, 2016; Bryant et al., 2018; Gauthier & Gilomen, 2016) have faced criticism for their perceived failure to examine value creation in the global energy transition sufficiently, all scholars make an indirect contribution to the comprehension of how the energy transition influences the evolving relationships and transactions within conventional business models. This underscores the significance of the energy transition for the energy community and the energy sector as a whole.

Wahlund and Palm (2022) introduced many collaborative business models, including jointly owned micro-production and distribution, as well as community or individual ownership of energy production which are considered as alternative business models.

According to Gui and MacGill (2018), households and communities are increasingly not limited to solely engaging as passive consumers of electricity services. Instead, they are progressively taking on roles as producers/prosumers, investors, and asset owners, thereby assuming responsibility for crucial investment choices either individually or collectively as "clean energy communities" and this gives rise to alternative forms of ownership of the energy system (Kubli and Puranik, 2023)

2.3.3 Conclusion on value creation for the energy community

In conclusion, the multitude of scholarly investigations and articles cited in this study suggest that energy communities not only facilitate the shift towards sustainable energy sources, but also create economic, social, and environmental value. Brummer's (2018) study expands on various classifications of value creation, which encompass social and environmental advancement, renewable energy generation objectives, community development, education and approval, and innovation.

This diverse range of value creation types not only offers benefits to the members of the community but also has the ability to provide environmental benefits such as mitigating climate change and advancing sustainability on a greater scale. Furthermore, the results of the studies reviewed highlight the economic benefits linked to energy community membership, which are propelled by elements such as the generation of renewable energy and the integration of energy storage. The social benefits such as community development and education are also evident from Brummer (2018).

Furthermore, the novel characteristics of clean-energy community business models and prosumer business models, as identified by scholars such as Brummer (2018) and López et al. (2023), emphasise the ways in which energy communities are adjusting to a constantly changing energy environment and creating value. Amidst the global shift towards cleaner energy sources, the use of the energy community for creating value seems crucial, as it provides environmental, social, and economic benefits. The scholars investigated provided insight through their definitions of concepts, and through their case studies and literature reviews that were relevant to the research question.

2.4 Deployment of Energy Community Projects

2.4.1 Literature overview of the deployment of energy community projects

According to Hughes et al. (2018), deployment is influenced by the configuration of resources within an organisation, with the aim of maximising the desired return for the organisation and its executives, considering a wide range of resources, and recognising interdependencies beyond individual impacts to achieve outcomes. When seeking an understanding of project deployment, Kristoffersen et al. (2021) write that as an extension of the resource-based view, a resource orchestration view has been put forward to address the processes for developing abilities by defining the role that businesses play in turning resources into skills. The concept of resource orchestration has attracted considerable scholarly interest in recent times, emerging as a promising field of study aimed at understanding the most effective ways for businesses to manage their resources effectively to enhance their market competitiveness (Kristoffersen et al., 2021).

According to Kristoffersen et al. (2021), recent studies have shown that being able to coordinate resources effectively is key to boosting innovation when responding to shifting market conditions and supporting the adaptable skills needed to encourage green innovation. One such example is the global energy transition, which is resulting in a shift from fossil fuel-based energy generation to renewable energy-based generation (Bohnsack et al., 2021). Consequently, the theory argues that the internalisation of resource orchestration

competence is a crucial competency for firms to use to optimise performance via optimal organising, combining, and using both current and new resources (Kristoffersen et al., 2021).

Understanding the definitions of deployment from these two studies provides a base for examining the deployment of ECPs. Hicks and Ison (2018) define “energy community projects” as initiatives in which the local or interested communities demonstrate a significant level of ownership and influence over the energy initiative, while also collectively benefiting from its results. Owing to their diverse ownership structures, technologies employed, deployment, policy contexts, number and types of actors, and motivations, community renewable energy initiatives cannot be defined by one term (Hicks & Ison, 2018). However, owing to its relevance to the research question, ECP, as defined above, is used in this research study.

The proposition is made by Hicks and Ison (2018) that the development of ECPs is impacted by two primary factors: first, the emergence of ECPs from diverse contexts and locations, occurring at varying times and involving different sets of individuals; and second, the motivation of the actors involved in the development of distinct ECPs, which is driven by unique factors. This proposition presents a range of spectrums that provide the foundation for understanding the deployment of ECPs. It also enables the examination of the issues that arise from this deployment, its outcomes, and the variety of actors or stakeholders engaged in the deployment.

Iazzolino et al. (2022) investigated the deployment of ECPs by using the framework canvas designed by Luca Mendicino for the modelling of an Integrated Community Energy System (ICES). The framework canvas provides an overview of all actors involved and their interest in achieving the intended community energy projects to be deployed. The framework has features such as key partners, key activities, offered value, customer relations, customer segments, key resources, communication channels, cost structure, and revenue streams.

2.4.2 Literature analysis and understanding of the deployment of energy community projects

These features are considered an advantage in exploring value creation within the energy community and for gaining insights into the deployment of ECPs. Business models are essential for successful deployment of ECPs and, according to Freudenreich et al. (2020), business models are “developed and managed to create value” (p. 3).

Hicks and Ison (2018) explain the aspect of the development of ECPs. They provide an understanding of the factors and motivators related to the deployment of ECPs by

stakeholders, whom they refer to as a “range of actors” (p. 523) who play a key role in the deployment of such projects. Iazzolino et al. (2022) discuss the aspect of key activities within the deployment of ECPs, while Kristoffersen et al. (2021) explain the important factor of effectively managing resources to achieve an outcome such as deployment of ECPs (cf. Hicks & Ison, 2018).

2.4.3 Conclusion on the deployment of energy community projects

For the effective deployment of ECPs, Hicks and Ison (2018) point to the critical aspect of understanding the stakeholders involved and present the motivators and factors used by these stakeholders when deploying ECPs. This aspect emphasises the role and importance of understanding the stakeholders who deploy such projects. Kristoffersen et al. (2021) bring in the aspect of effectively managing resources when stakeholders (Hicks & Ison, 2018) deploy ECPs. Iazzolino et al. (2022) explain the key activities within the deployment of an ECPs. The three important dimensions of stakeholders (Hicks & Ison, 2018), key resources (Kristoffersen et al., 2021), and key activities (Iazzolino et al. (2022) provide the researcher with an understanding and lens from which the deployment of ECPs can be explored and understood.

2.5 Value Creation Outcomes for Sustainable Business Models

2.5.1 Literature overview of value-creation outcomes for sustainable business models

Freudenreich et al. (2020) describe the goal of business models as creating value. They highlight the collaborative aspect of stakeholder interactions in achieving this, in which stakeholders engage as both beneficiaries of and active contributors to value creation outcomes. Geissdoerfer et al. (2018) support this perspective, arguing that organisations can foster the creation of social, economic, and environmental value outcomes for their stakeholders through the cultivation of customer benefits, shareholder value, and economic development.

Both of the studies mentioned above emphasise economic value creation as a crucial element in determining the financial value of businesses. Freudenreich et al. (2020) emphasise the key financial resources that are necessary for the establishment of SBMs, namely revenue streams and cost structure, while Geissdoerfer et al. (2018), in their review, emphasise the value of profitability. Laukkanen and Tura (2020) argue that from a practical viewpoint, certain business models prioritise profit generation while others focus on the improvement of societal welfare. However, to meet the criteria for sustainability, a business model must exhibit a net-positive value. This necessitates not only the potential

creation of economic value but also the demonstration of its capacity to yield broader net-positive environmental and social benefits (Laukkanen & Tura, 2020).

In their study, Gregori and Holzmann (2020) investigated the integration of digital technology by sustainable entrepreneurs to improve social and environmental value creation within their business models. Gregori and Holzmann (2020) conducted a study with the primary objective of enhancing integrative value creation. This concept incorporates various initiatives, including co-creation, community development, and stakeholder engagement expansion, all of which are facilitated through the implementation of project initiatives and digital technology. While the study primarily focused on entrepreneurs, the findings pertaining to the generation of social and environmental value may offer advantages to other organisations adopting a sustainability-oriented approach. The efforts described by Gregori and Holzmann (2020) emphasise promoting community growth and collaborative creation via the inclusion of a wide array of stakeholders that extends beyond the traditional scope of customers and suppliers. The authors cite the effective management of a water supply project as an example of this approach.

The concept of sustainable value, according to Evans et al. (2017), encompasses social and economic factors in addition to environmental sustainability. The promotion of sustainability is driven by various factors, including the reduction of environmental impact, the alleviation of poverty, the equitable distribution of resources, the reduction of waste, and the promotion of transparency (Bocken et al., 2014; Kennedy & Bocken, 2020). These drivers are in line with several business strategies, such as the adoption of clean technology, the integration of sustainability as a guiding principle, the prevention of pollution, and the assurance of responsible product stewardship. These many methodologies jointly drive the creation of sustainable value inside business (Evans et al., 2017).

2.5.2 Literature analysis and understanding of value creation outcomes for sustainable business models

The academic debate surrounding value creation outcomes demonstrates the collaborative role that stakeholders assume in the process of value creation within business models. As noted by scholars including Freudenreich et al. (2020) and Geissdoerfer et al. (2018), stakeholders occupy a dual role in value creation, functioning as both beneficiaries and contributors. Businesses can promote social, economic, and environmental value for stakeholders, according to their value proposition, by adding shareholder value, customer benefits, and economic development.

The significance of economic value creation is made clear by Freudenreich et al. (2020) and Geissdoerfer et al. (2018), who place particular emphasis on profitability, cost structure, and revenue streams. The importance of business models that demonstrate a net-positive value through the creation of economic value in addition to wider net-positive environmental and social benefits for sustainability is emphasised by Laukkanen and Tura (2020).

Gregori and Holzmann (2020) examine the application of digital technology by sustainable entrepreneurs to further the creation of social and environmental value, with a particular emphasis on integrative activities such as stakeholder engagement and community development. They emphasise the ways in which these initiatives, although aimed at entrepreneurs, have consequences for more extensive sustainability-oriented enterprises, fostering community development and cooperation that extend beyond conventional stakeholder positions.

The concept of sustainable value is further elaborated upon by Evans et al. (2017), who integrate environmental, social, and economic dimensions. They observe that environmental impact reduction, poverty alleviation, equitable resource distribution, waste reduction, and transparency are the driving forces behind sustainability. Business strategies that are in line with these objectives, including the incorporation of clean technology and the responsible stewardship of products, collectively contribute to the creation of sustainable value within businesses.

2.5.3 Conclusion on the value creation outcomes for sustainable business models

Scholars such as Freudenreich et al. (2020) and Geissdoerfer et al. (2018) point to economic value creation as an important component of SBMs. These concepts reinforce the importance of revenue sources, cost structures, profitability, and the enhancement of shareholder value. This result shows the need for creating economic benefits for stakeholders, in this way ensuring the financial sustainability and prosperity of the business. The concept of economic value creation comprises more than just traditional financial gains, as it also incorporates the development of sustainable income while maintaining long-term profitability and financial stability.

Laukkanen and Tura (2020), along with other scholars, propose the adoption of business models that demonstrate a net-positive value, encompassing not just economic profits but also larger social benefits that are net-positive in nature. Laukkanen and Tura's (2020) study examines the incorporation of social goals into business strategies, emphasising the significance of societal well-being in conjunction with economic benefits. This result illustrates

the need to include societal needs, such as poverty reduction, community development, and improved well-being, as essential components of SBMs aimed at creating social value outcomes.

Evans et al. (2017) emphasise the importance of integrating environmental sustainability into the notion of value creation. Their study considers the environmental impact reduction, waste reduction, and responsible resource management as crucial factors for value creation. Strategies such as the adoption of clean technology, minimising the impact of pollution, and the practice of responsible product stewardship are proposed in accordance with these environmental factors. These strategies demonstrate the significance of reducing ecological footprints and promoting the sustainable utilisation of resources.

The significance of achieving a balanced approach in business models can be seen in the three value creation outcomes: economic, environmental, and social. These outcomes emphasise the need for businesses not only to prioritise economic gains but also to integrate social welfare and environmental sustainability as essential components for long-term success and societal well-being (Evans et al., 2017).

2.6 Conclusion of the Literature Review

The literature review was structured in accordance with the research questions of the study, as set out in Chapter 1, and with the aim of exploring and seeking an understanding of value creation for energy communities and the deployment of ECPs using an SBM lens.

For the literature review, credible scholars were selected from both the energy literature and business literature for their contribution to the body of knowledge in the past five years and for the key insights they provided for the current study. The analysis of and conclusions derived from the literature reviewed were used in the formulation of a conceptual framework, which is outlined in the following section. The conceptual framework was adapted from scholars within the business literature and energy literature reviewed in this section and provided a compass that was used to guide the current study.

2.7 Conceptual Framework derived from the Literature Review

The establishment of a conceptual framework by the researcher was aimed at offering a theoretical basis for the organisation and comprehension of the pre-existing knowledge and ideas pertaining to the research study. The conceptual framework facilitated the understanding of the interconnections among different concepts, variables, and ideas for the researcher.

The use of a conceptual framework aided in situating the research within a wider theoretical and conceptual framework. This enabled the researcher to situate the research within the context of established ideas, theories, and concepts, in this way highlighting its importance and relevance. The use of a conceptual framework, as set out in Figure 4 below assisted the researcher to analyse the findings effectively (refer to Chapter 5), draw reasoned deductions, and put forward informed suggestions by leveraging existing theories and models.

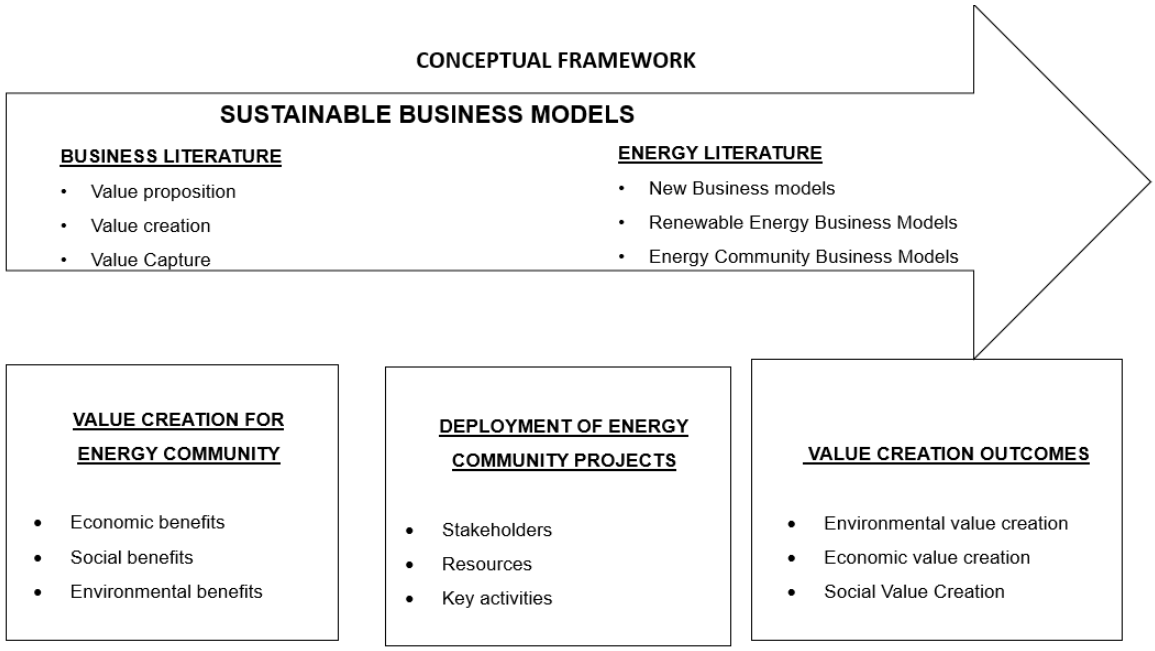


Figure 4: Conceptual framework for value creation for energy community and deployment of ECP through an SBM lens that intersects energy literature and business literature.

Source: Drawn by author, with information from Geissdoerfer et al. (2018); Bocken (2023); Blasch et al. (2021); Reis et al. (2021); Brummer (2018); López et al. (2023); Kristoffersen et al. (2021); Hicks and Ison (2018); Iazzolino et al. (2022); Laukkanen and Tura (2020); Freudenreich et al. (2020); Gregori and Holzmann (2020); and Evans et al. (2017)

CHAPTER 3: RESEARCH QUESTIONS

The study aimed to address three research questions – a main research question and two sub-questions – and present findings in relation to these questions. The research questions were drawn up on the basis of the literature review presented in Chapter 2.

3.1 Research Questions

3.1.1 Main research question

How could sustainable business models enhance value creation for the energy community and deployment of energy community projects?

The main research question reflects the primary objective of this research, which was to investigate SBMs and their potential to enhance value creation within the energy community, therefore influencing the deployment of energy community projects. The objective of this study was to explore and seek multiple perspectives and understandings about the creation of value by sustainable business models (SBMs) in the energy sector. The study aimed to answer the main research question by acquiring fresh perspectives and understanding of the role of SBMs in creating value within energy communities and the deployment of ECPs.

3.1.2 Research sub-question 1

How is value created for the energy community?

Research sub-question 1 was drawn up and addressed to gain an understanding of and explore various factors that contribute to value creation within the energy community. Additionally, the study aimed to explore how valuable insights and SBMs can be utilised to identify new opportunities for value creation.

3.1.3 Research sub-question 2

How are the energy community projects deployed?

Research sub-question 2 was drawn up with the aim of obtaining an understanding of the deployment of ECPs through exploring the factors linked to their deployment. To address this question, the particular roles and responsibilities of every stakeholder engaged in the

deployment of projects were explored, along with the challenges that were experienced during the deployment process to derive meaningful value creation from the deployment experiences.

3.2 Value-Creation Outcomes

As the overall research outcome, the study aimed to provide value creation outcomes to offer insights, conclusions, and findings derived from a systematic research study. These outcomes serve to contribute to the body of knowledge, address the research objectives, potentially fill gaps in existing literature, and provide insights for practice. outcomes are thus used as the basis for the recommendations provided in Chapter 7 to the management and stakeholders within the energy sector.

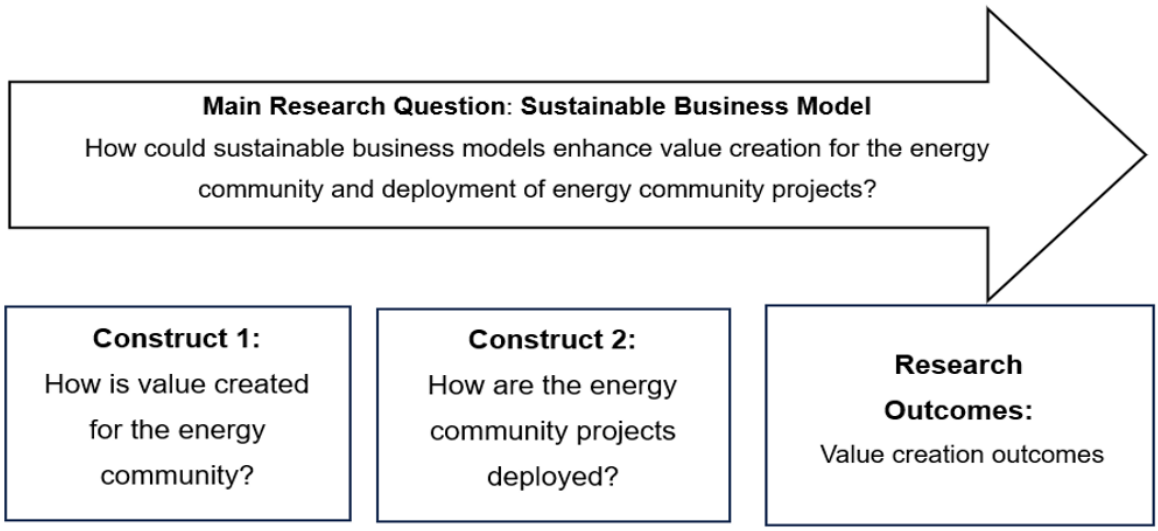


Figure 5: Formulation of research questions and anticipated research outcomes

Source: Drawn by the author

The following chapter outlines the research methodology and design adopted by the research study.

CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN

4.1 Introduction

Research methodology is defined by Kothari (2004) as “a way to systematically solve the research problem” (p. 8) and may be viewed as the study of how scientific research is conducted. This chapter outlines how the current research study was undertaken and its methods and approaches. The chapter covers the research design, population, unit of analysis, sampling method, research instrument, data-collection procedure, data analysis strategy, methods used to ensure research quality and rigour, and the limitations of the research design and methods.

The research methodology selected, and design choices made were all connected and aimed at responding to the research question about how an SBM could enhance value creation for the energy community and deployment of ECPs. This research study was exploratory in nature and sought to gain understanding, multiple perspectives, and new insights, and to identify social actions from energy communities. The following sections are presented in detail to support and defend the research choices made for this research study.

4.2 Research Paradigm

Rehman and Alharthi (2016) refer to research paradigms as the shared ontological assumptions and epistemology of researchers. These include distinct perspectives on reality, theoretical frameworks, research questions, and methodologies used by researchers in the development of knowledge. The authors present positivism and interpretivism as types of business research paradigms, amongst others.

Bell et al. (2019) describe positivism as a paradigm that seeks the single truth that holds that “reality exists objectively and externally” (p. 14). In the positivist paradigm, the research question is explanatory and closed-ended in nature and seeks a causal relationship to explain things. In contrast, as explained by Bell et al. (2019), interpretivism is a paradigm that seeks understanding “based on the experience of those who work in organisation” (p. 19) and with “social actors” (p. 9) to obtain insights and multiple perspectives. This paradigm is exploratory in nature and “concerned with the ‘how’ and ‘why’ of social action” (p. 15).

The main research question of the study: “How could sustainable business models enhance value creation for the energy community and deployment of energy community projects?” was exploratory and open-ended in nature. It was concerned with the understanding of multiple perspectives from the energy community and how SBMs create value. As such, it was interested in responding to the “how” and “why” of this particular social action (cf. Bell et al., 2019).

The focus of the study was therefore not on explaining but rather on exploring the multiple perspectives of these actors. The research question for the study aligned with the interpretivism research paradigm description, and this research paradigm was used to respond to the research question. For these reasons, interpretivism was the selected research paradigm for the study.

4.3 Choice of Methodology

According to Bell et al. (2019), quantitative and qualitative research represent two separate methodologies when it comes to conducting business research. Bell et al. (2019) define the quantitative research methodology as a strategy that places emphasis on quantification in data collection and analysis and includes ideals of positivism that are explanatory in nature. The qualitative research methodology, on the other hand, is a research strategy that focuses on words and images rather than on quantitative data collection and analysis. This research methodology includes ideals of interpretivism that are exploratory in nature and places emphasis on how individuals interpret their surroundings in society (Bell et al., 2019).

Proceeding from Section 4.2 and maintaining the “golden thread” of the study, the research methodology was selected in accordance with the interpretivism paradigm. This paradigm was chosen to allow the study to explore and understand how SBMs could enhance the value creation of the energy community and deployment of ECPs. Specifically, the study used the paradigm in its attempt to understand the SBMs within energy communities, their value creation, and the deployment of ECPs. Following the explorative research context set by the interpretivism paradigm, the study selected the qualitative research methodology as appropriate for responding to the main research question, owing to its explorative and interpretative approach.

4.4 Population and Research Setting

Etikan et al. (2016) refer to a study population as the number of individuals or total quantity of things or cases that are the primary objective of the research. The population for this research study was made up of business professionals, energy regulators, and experts with experience and knowledge of SBMs in the energy community and of the deployment of ECPs. The research setting was the energy sector, and the research aimed to draw on the experience, knowledge, and expert opinion of business professionals in Southern Africa (specifically in South Africa, Namibia, and Zimbabwe) as well as other countries internationally (specifically in France and Indonesia).

4.5 Unit of Analysis and Level of Analysis

According to Agle and Caldwell (1999), business research analysis can be conducted at the individual, organisational, institutional, societal, and global level. The chosen definition of the energy community for this research study, which was adopted from Blasch et al. (2021), defined the energy community as an "association of actors engaged in energy systems transforming through collective, participatory and engaging process, seeking collective outcomes" (p. 3). In addition, Scott (2003) defines "organisations as social structures created by individuals to support the collaborative pursuit of specified goals" (p. 11).

In alignment with these definitions, the selected level of analysis that matched the type of data to be collected was the organisational level, where the understanding, knowledge and experience of energy communities' business professionals could be obtained through semi-structured interviews.

The research question explored and sought understanding of how SBMs could enhance value creation for the energy community and deployment of ECPs. In line with the research question, the unit of analysis was business professionals and energy regulators with knowledge and experience and expertise concerning SBMs and the deployment of ECPs.

4.6 Sampling Method, Sampling Frame or Criteria, and Sample Size

This section discusses the sampling method adopted for the research study. The sampling method and the reasons for its selection are explained in relation to the research question.

Table 2: Sampling method

Sampling Method						
Data	**Research Instrument**	**Participants**	**Sample Criteria**	**Setting**	**Number of Interviews**	**Participants**
	Semi-structured Interviews	Business Professionals	Knowledge and experience	Southern Africa	1	**P10**
					1	**P5**
					1	**P1**
					1	**P3**
					1	**P6**
					1	**P7**
					1	**P14**
					1	**P16**
					1	**P4**
					1	**P2**
				Indonesia	1	**P9**
					1	**P12**
				France	1	**P15**
					1	**P11**
		Energy Regulators	Knowledge and experience	Southern Africa Energy Regulators	1	**P8**
					1	**P13**
Separate data set with different questions		Experts (Researchers in Sustainable Business Models and Energy	Expert opinion	Southern Africa Energy Experts	1	**E2**
					1	**E1**
				Sample Size	**18**	

Source: Drawn up by the author

4.6.1 Sampling method

Table 2 above lists the participants interviewed and outlines the sampling method adopted for the research study. This section describes the sampling method used and supports and defends the choices made regarding the selection of the sample. The research choices were made in alignment with the explorative and interpretative approach of the research study. They also responded to the research question that sought understanding, multiple perspectives and to identify social actions regarding how SBMs could enhance value creation within the energy community and deployment of ECPs.

A sample is a subset of the population that is selected for investigation, with the method of selection based on probability or non-probability (Bell et al., 2019). Bell et al. (2019) define purposive sampling as a “non-probability form of sampling” (p. 110) that strategically selects participants that are relevant “to the research question” (p. 110).

The primary objective of purposive sampling in qualitative research is to study a select group of people or specific instances whose study produces an abundance of detailed information and an in-depth understanding of the people, programmes, cases, or situations studied (Yilmaz, 2013). From this understanding, purposive sampling was adopted for the research study as the sampling method best suited for obtaining understanding, knowledge, and experience of business professionals within energy communities and of energy regulators. It was also considered the best method for obtaining expert opinion from researchers. This is illustrated in Table 2. This sampling method enabled the study to draw diverse and multiple perspectives in alignment with the explorative, interpretative, and purposive nature of the research question.

Further to this, expert sampling required that the subjects of the purposive sampling be experts in a specific field (Kothari, 2004). As shown in Table 2, the study included experts in SBMs and the energy community among the participants that were sampled, with the objective of seeking expert opinion to gather diverse findings for comparison. This assisted in ensuring trustworthiness (cf. Bell et al., 2019) as a way of establishing the quality of the research study. This is discussed in detail in Section 4.10, which deals with the research quality and rigour.

4.6.2 Sampling frame or criteria

According to Kothari (2004), a sampling frame is a list of items from which a sample will be drawn, which is the basis for the sampling procedure. In reference to Table 2 above, the sampling frame for this research study was constructed in alignment with the interpretative and purposive nature of the research question and considering the population expected to provided knowledge to answer the research question.

The sampling frame for the study, as depicted in Table 2, listed organisations within the energy sector represented by business professionals involved in energy sustainability initiatives and business strategy; people with knowledge and experience of SBMs, energy communities, energy community project deployment, and value creation; and experts in SBMs and energy. The participants were divided into two groups and two sets of interviews were drawn up that sought the experience and understanding from independent power producers (IPPs) and regulators, and expert opinion from experts who were researchers in academia.

The sampling criteria did not consider participants' seniority, age, or tenure within an organisation, as this was seen as a limit to the explorative and interpretative nature of the

study. The critical component was that participants possessed the understanding, knowledge, and experience necessary to provide responses to the research question.

4.6.3 Sample size

Kothari (2004) defines sample size as the quantity of items that must be selected from all possibilities to form a sample. Bell et al. (2019) state that the sample size of a research study should neither be too small nor too large such that data saturation is unachievable. An optimal sample size is one that meets the criteria for efficiency, representativeness, dependability, and adaptability.

The sample size selected as optimal for this research study was 18 participants from diverse backgrounds who were business professionals (IPPs), energy regulators, and experts who were researchers in the field of SBMs and the energy community for the credibility of the study (cf. Bell et al., 2019). With the sample size of 18, two interviews were held with experts, two interviews with energy regulators, and 14 interviews with business professionals. This was considered adequate, as the study placed emphasis on seeking multiple diverse perspectives and aimed to achieve in-depth understanding and rich data to respond to the research question.

4.7 Research Instrument

Interviews have become a prominent research instrument for data collection (Aborisade, 2013) and are aimed at documenting people's experience and self-understanding, and working models of society, so that the researcher can later analyse these events to make meaning of them (Josselson, 2013). Bell et al. (2019) write that the "interview is probably the most widely used method in qualitative research" (p. 148). These authors describe two types of qualitative research interviews: the semi-structured interview and the unstructured interview.

The unstructured interview has an interview guide with a list of topics and issues that are explored. This type of interview is characterised by an informal manner of questioning (Bell et al., 2019), a flexible approach to questioning (Kothari, 2004), and questions that are closed-ended in nature (Aborisade, 2013). The semi-structured interview is distinguished by a series of enquiries that can differ in sequence and are exploratory and open-ended in nature (Aborisade, 2013). For this research study, the semi-structured interview was used as it provided the researcher with the flexibility to explore, gather diverse perspectives, and seek in-depth understanding from participants.

***Table 3**: Overview of the research instrument*

Participants	Research instrument	Interviews
Business professionals from independent power producers	Semi-structured interview with the same interview protocol for participants	14
Energy regulators		2
Experts (researchers in SBMs and energy communities)	Semi-structured interview with a different interview protocol	2

Source: Drawn up by the author

Table 3 above provides an overview of the participants considered, the type of research instrument applicable, and the number of interviews that were undertaken for this research study. For business professionals and energy regulators, the study aimed to interrogate their knowledge and experience of SBMs and ECPs from the business and regulator point of view. For this reason, the same interview protocol was used for these two groups. However, as the experts were interviewed for their expert opinion and analysis, for the research study's credibility and trustworthiness (cf. Bell et al., 2019), a different interview protocol was used. In using one interview protocol for the participants of each group, the study followed the example of Hall and Roelich (2016), who used the same research instrument with 12 semi-structured interviews with diverse local suppliers.

4.8 Data-Gathering Process

According to Aborisade (2013), qualitative researchers have access to a variety of datacollection methodologies, such as field notes, interview transcripts, transcribed recordings, documents, photographs, and other graphic representations. Data can take a variety of forms and structures, and there is no singular method for collecting it. Against this backdrop, this section specifies the approach adopted for the data collection in this study.

Continuing the narrative from Table 3, three sets of participants from diverse professions were selected for the data-gathering process: business professionals from IPPs, energy regulators, and experts who were researchers. This approach was adopted to obtain a rigorous research design that allowed the researcher to compare results across the three groups, explore the research question in depth, and improve research data and quality (cf. Bell et al. 2019). Dzwigol (2020) refers to this approach as data-source triangulation and explains that it entails consulting two or more sources of data to obtain extensive and

comprehensive information with the use of visual (projective images) and verbal (responses to specific questions) data. Dzwigol (2020) suggests that this is a typical occurrence in qualitative research.

In alignment with this explanation, data-source triangulation was adopted by collecting data from business professionals, regulators within the energy sector, and experts, with a special focus on the use of verbal data. Different sets of interview protocols were crafted to obtain expert opinion from experts who were researchers and experience and knowledge from business professionals and energy regulators. According to Bell et al. (2019), this approach contributes to enriching multiple perspectives and attaining an in-depth understanding of participants' knowledge and experiences, which may result in "greater confidence in findings" (p. 91) and in this way improve research quality. However, Dzwigol (2020) states that triangulation is dependent on the "professional competencies and experience of the researcher" (p. 7), and this may be a limitation if the researcher is inexperienced.

The data-collection interviews with participants took place over a period of a month in the second semester of 2023. The duration of each interview was between 45 minutes and 1 hour.

4.9 Data Analysis Approach

The data analysis for this research study followed the thematic analysis approach proposed by Braun and Clarke (2020), which recognises the potential of coding and theme-development processes, along with some flexibility in relation to the theory that underpins the research. This enabled the researcher to become familiar with the data transcribed from audio recordings of the semi- structured interviews and to edit the data once all identifiers had been removed to ensure the anonymity of the participants.

According to Braun and Clarke (2020), the thematic analysis aims to discover themes and significant patterns within the dataset. This data-analytical strategy is flexible enough to analyse a variety of qualitative data, which makes it a preferred method for providing insights into qualitative data (Bell et al., 2019). This approach is also suitable for an inexperienced researcher to adopt and further provides flexibility in relation to the theory that underpins the research (Braun & Clarke, 2020).

According to Bell et al. (2019), the thematic analysis allows for a comparison of findings that provide insights and depth of understanding in responding to the research question as the researcher interviews diverse participants. In the current study, the comparison of data from

business professionals and energy regulators, and from experts allowed for greater trust in the research quality and for the findings to be considered credible.

The researcher generated first-order codes according to the research questions and based on the researcher's interpretation. In the thematic analysis coding, the researcher adopted inductive and deductive coding in a process referred to as a "conceptual leap" by Klag and Langley (2013). This is a process of transitioning from an inductive to a deductive methodology, thus establishing a connection between empirical research findings and the underlying theory. This methodology consists of a deductive approach of discovering patterns in the dataset from a conceptual framework lens. The conceptual framework used in this study was derived from the literature review and is set out in Chapter 2. The literature review covered the topical academic discussions and arguments in alignment with the research question.

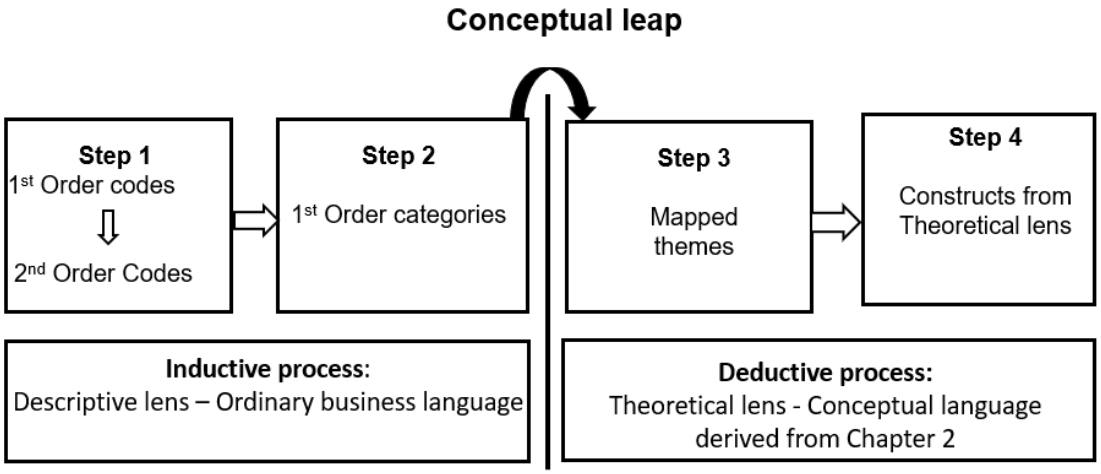


Figure 6 *Data analysis process using the Conceptual Leap Framework*

Figure 6 outlines the data analysis process adopted by the study, which was a four-step process. In Step 1, 347 first-order codes were identified. These then underwent a process of evaluation, refinement, and merging, guided by their similarities, to develop a revised set of 194 second-order codes. For the coding Atlas.ti was applied to interview transcripts using the inductive process. This coding process was undertaken by highlighting relevant sections of quotations and allocating first-order codes to these quotations. This step used the exact language used by the participants during the interview process to collect the meaning of data from the participants. The second step was also inductive, using the ordinary language by participants and grouping the second-order codes into first-order categories.

The third step considered the "conceptual leap" by Klag and Langley (2013), which transitioned to a deductive approach using the conceptual framework lens to map first-order

categories into themes, based on the conceptual framework derived from the literature review set out in Chapter 2. The literature review analysis focused on the past five years to ensure that topical and relevant discussions and arguments from scholars were covered.

The deductive process was adopted to map the categories to the conceptual framework and associate them with the themes. Certain themes aligned with the existing themes from the conceptual framework, while new themes and sub-themes also emerged from the dataset. The new themes were incorporated into the updated conceptual framework. These were considered as new insights in understanding how SBMs could enhance value creation for the energy community and the deployment of ECPs.

The thematic analysis approach selected was suitable for this research study as it enabled the researcher to look for understanding and insights. Its potential for some flexibility and the usefulness of theme development in responding to the research question (cf. Braun & Clarke, 2020), and seeking understanding from participants also made it a useful approach.

4.10 Research Quality and Rigour

The research study explored and sought understanding from multiple perspectives and diverse participants on how SBMs could enhance value creation for the energy community and deployment of ECPs. Table 4 summarises the methodology and design options selected for this research study, with the aim of illustrating the “golden thread” of the research design.

***Table** 4: Illustration of research golden thread*

Methodology and Design	Selected Options	Reason
1. Research paradigm	Interpretivism	Research question is explorative and seeks multiple perspectives
2. Research design	Qualitative	Focuses on understanding, exploring, and interpreting social actions (Bell et al., 2019)
3. Population/Research setting	Energy sector: Southern Africa and internationally	Diverse multiple perspectives from multiple countries and participants
4. Sampling methodology	Purposive sampling	Non-random, variety in participants, and specific to the research question (Bell et al., 2019)
5. Research instrument	Semi-structured interviews	Exploratory and open-ended in nature (Aborisade, 2013)
6. Data-gathering process	Semi-structured interviews of with 18 participants, using data-source triangulation	Multiple data sources, diverse participants to enhance credibility of the research findings (Bell et al., 2019)
7. Data analysis approach	Thematic analysis	Coding and theme-development processes, flexibility, and extraction of significant information applicable to the research question (Braun & Clarke, 2020)

Source: Drawn up by the author

Yilmaz (2013) posits that, in qualitative research, achieving credibility, trustworthiness, and authenticity means that the findings are accurate from both the researcher's and participants' perspectives. Yilmaz (2013) defines credibility to mean "that the participants involved in the study find the results of the study true or credible" (p. 320).

Yilmaz (2013) writes that "the credibility of a qualitative study is affected by the extent to which systematic data collection procedures, multiple data sources, triangulation, thick and rich description, external reviews or member checking, external audits, and other techniques for producing trustworthy data are used" (p. 321).

On the basis of this understanding, the selected options of data-source triangulation, multiple sources of data, diverse participants in different countries, and the inclusion of experts were all evidence of the desire to achieve credibility and trustworthiness for the research study.

In reference to Table 4 above, the research study was undertaken solely to respond to the research question that sought an in-depth understanding of how SBMs could enhance value creation and deployment of ECBMs. The nature of the research question meant that to answer the question, the study sought to understand the “how” and “why” (cf. Bell et al., 2019) from multiple diverse participants. All the selected options and reasons for these options provided for the research study in Table 4 is linked by a common “golden thread” that illustrates the interpretative, purposive, qualitative, non-random, explorative, and diverse approach considered for the study that was aimed at responding to the research question.

4.11 Limitations of Research Design and Methods

According to Yilmaz (2013), purposive sampling, the sampling method selected for the current study, restricts the ability to generalise research findings to other contexts or situations, i.e., it does not provide sufficient statistical power to generalise the findings. Identification of themes in thematic analysis may also be unclear (Bell et al., 2019). The study also did not cover the economic viability of ECPs, which may be a critical component for investors, and other stakeholders of such projects.

CHAPTER 5: RESEARCH FINDINGS

The results of the analysis of the data obtained from the semi-structured interviews are presented in this chapter. The purpose of this analysis is to address the primary and secondary research questions that were outlined in Chapter 3. The findings are obtained through the analysis of the data that was gathered, categorised, and analysed in alignment with the research approach and framework described in Section 4.9 of Chapter 4. A total of 18 energy sector participants participated in the semi-structured interviews; these individuals included two energy experts, two energy regulators, and fourteen business professionals with experience and knowledge and were IPPs. The interviews were conducted with the participants in accordance with their field within the energy sector and geographical location, as detailed in Table 5.

***Table 5**: Summary of participants and their groupings*

GEOGRAPHICAL LOCATION	FIELD IN THE ENERGY SECTOR	NUMBER OF PARTICIPANTS
Southern Africa	IPPs	10
	Energy Regulators	2
	Energy Experts	2
Indonesia	IPPs	2
France	IPPs	2
TOTAL		**18**

Source: Compiled by the author

The 18 participants were selected in terms of geographical area and their field within the energy sector to extract diverse insights and understandings. The region of Southern Africa included three groups: IPPs, energy regulators, and energy experts. This facilitated the intersection of data across several geographical areas, enabling more nuanced insights within the Southern African region, since it included a variety of participants with distinct specialisations.. A summary of the number of codes, categories, themes, and sub-themes generated is provided in Table 6.

Table 6:Summary of number of codes, categories, themes, and sub-themes generated.

Step 1: First codes and second-order codes	354 and 194
Step 2: First-order categories	87
Step 3: Themes and sub-themes	22 (inclusive of three new themes and four new sub-themes)
Step 4: Theoretical constructs	4

Figure 7 below presents the revised conceptual framework that emerged from the deductive analysis conducted during the mapping process, in which themes were mapped with theoretical constructs in Steps 3 and 4 of the data-analysis procedure using the conceptual framework. After a thorough study of the data had been conducted, a total of 22 themes were mapped and distinct themes and sub-themes were identified and categorised.

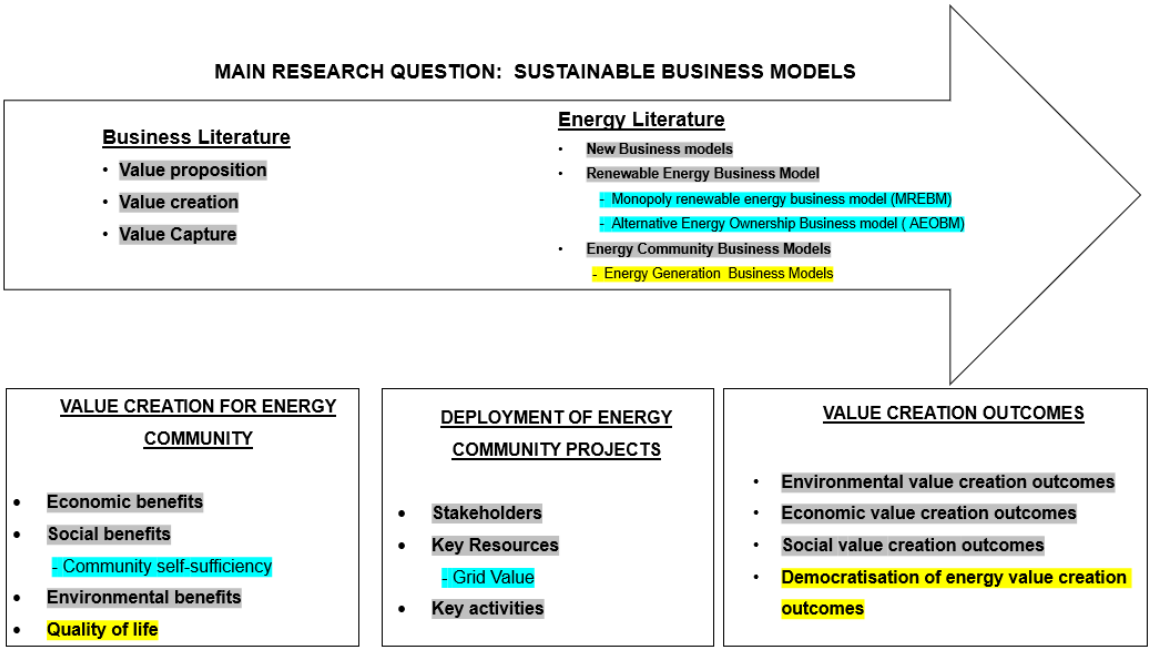


***Figure 7**: Revised conceptual framework with a summary of themes from the literature review and new themes and sub-themes determined from the mapping process.*
Source: Drawn by the author

In Figure 7 above, the blue highlight indicates new sub-themes while the yellow highlight indicates new themes that emerged from the research findings. The existing themes from the conceptual framework derived from extant literature in Chapter 2 are highlighted in grey. Details of findings are presented in the next section, set out according to the study research questions.

5.1 Presentation of Findings

To begin this section, Table 7 below provides a summary of the existing themes, and new themes and sub-themes identified for the research study. It categorises the similarities to and differences from the existing themes and confirms the themes that are discussed in this section. Not all existing themes are discussed. Of a total of 22 themes identified, 11 themes, which include three new themes, four new sub-themes, and four existing themes are discussed in this section. The researcher meticulously selected these 11 themes as they were deemed to offer understanding and additional key insights for the research study. The last

column of Table 7 indicates the research questions' themes and sub-themes for discussion, and these are denoted with a **Yes.**

Table 7: *Roadmap of the research study, indicating similarities and differences of themes and sub-themes to be discussed according to the research questions*

Theoretical Constructs		Theme / Sub-Themes	Similarities	Differences	Discussed
SBM	Business Literature	1. Value propositions	Yes	No	No
		2. Value Creation	Yes	No	**Yes**
		3. Value Capture	Yes	No	No
	Energy Literature	1. New Business models	Yes	No	No
		2. Renewable Energy Business models	Yes	No	No
		2.1 New sub theme	No	yes	**Yes**
		2.2 New sub-theme	No	Yes	**Yes**
		3. Energy Community Business models	Yes	No	No
		4. New Theme	No	Yes	**Yes**
Value Creation for Energy Community		1. Economic benefits	Yes	No	No
		2. Social benefits	Yes	No	No
		2.1 New sub-theme	No	Yes	**Yes**
		3. Environmental benefits	Yes	No	No
		4. New Theme	No	Yes	**Yes**
Deployment of ECP		1. Stakeholders	Yes	No	**Yes**
		2. Key resources	Yes	No	No
		2.1 New sub-theme	Yes	Yes	**Yes**
		3. Key activities	Yes	No	No
Value-Creation Outcomes		1. Environmental value creation outcomes	Yes	No	No
		2. Social value creation outcomes	Yes	No	**Yes**
		3. Economic value creation	Yes	No	**Yes**
		4. New theme	No	Yes	**Yes**
TOTAL OF THEMES/SUB-THEMES TO BE DISCUSSED					**11**

5.2 Main Research Question: How could sustainable business models enhance value creation for the energy community and deployment of energy community projects?

The main research question intersected the energy and business literatures. For this question, the analysis of the data from the literature and interviews provided seven themes and two sub-themes in total. The three themes of value proposition, value creation and value capture were identified within the business literature and were included as part of the

conceptual framework presented in Chapter 2. The conceptual framework from the energy literature identified three themes, as shown in Figure 8 below. During the data mapping process, the additional theme of energy generation business models was identified and incorporated into the conceptual framework. Two additional sub-themes were subsequently identified under the renewable energy business model theme: Monopoly Renewable Energy Business Model (MREBM) and Alternative Energy Ownership Business Model (AEOBM). These were also incorporated into the conceptual framework.

As the aim of the research study was to seek understanding and generate insights, only four themes (one existing theme, one new theme, and two new sub-themes) were selected for discussion. These themes were selected as they were considered particularly promising in terms of providing insights and new understanding for the research study. The themes selected in relation to the main research question are reflected in the Figure 8 below.

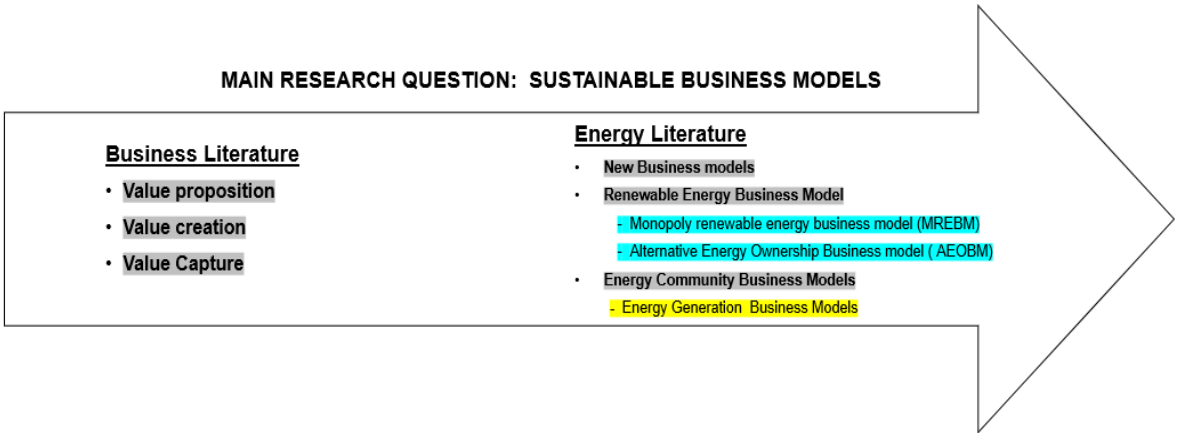


***Figure 8**: Four themes selected for the main research question denoted as: Existing theme, new theme, and new sub-themes.*

Source: Drawn by the author (part of the revised conceptual framework presented in Figure 7)

The themes highlighted in Figure 8 are discussed and analysed below.

5.2.1 Value-creation theme (business literature)

The value-creation theme was identified in the literature review and incorporated into the conceptual framework presented in Chapter 2. The theme was selected for discussion based on the in-depth and varied experiences observed from the participants as well as the cross-case analysis that presented the frequency in percentages of the mentions of this theme by the participants and which participants mentioned it more often. These figures are presented in Table 8 below. The inclusion of a wide range of individuals with varying backgrounds and

perspectives provided valuable insights pertaining to this issue, which enhanced the understanding of value creation.

Table 8: The percentage of comments by participants

Theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulator	IPPs	IPPs
Value creation	52%	13%	12%	15%	8%

Source: Compiled by the author

The percentage representation of mentions in the various fields within the energy sector across the three geographical locations does not indicate the significance or importance of a specific geographical area or the theme as a whole.

The following section presents the evidence of value-creation theme in the interviews conducted.

5.2.1.1 Evidence of the value-creation theme in participant responses

Table 9: Evidence of value creation

Quotations from the Dataset	Geographical Location and Field in the Energy Sector
"Value is created by identifying those key projects that can be created in those communities, whether it's setting up biomass plants, whether it's setting up wind farms, solar plants, we have green hydrogen projects, in those particular communities that have extensive abundance of those resources, value created by setting up those projects in those particular communities"	Southern Africa – IPP
"The kind of project we're developing is really mixing renewable energy with community levels, to understand that a good solution should replace a diesel genset"	Indonesia – IPP
"First, there is a reduction of the greenhouse gas emission, and we reduce a fossil fuel dependency"	Indonesia – IPP
"So, the value creation, it must be demonstrated on your tariffs, it must be demonstrated from your replication, it must be demonstrated from your job creation"	Southern Africa – IPP
"So, one, makes sure that we are able to deliver sustainable energies that are able to stimulate economic growth"	France – IPP
"But since we regulate electricity industry, which has much more impact on the environment and usage of natural resources, strategy is such that we are responsible and we will promote sustainable use of resources perhaps not only in reference to renewable energy, but whatever we are going to use should be in a sustainable manner that it will then meet the needs of today and be able to meet the need of the future generations to come"	Southern Africa Regulator

"The value creation is definitely there, and it can be felt, but it is also specific to the technology, if you are going to be doing a solar system in an area that there is no electricity, the value addition is in terms of employment creation at the construction stage, but then people will then be able to use that electricity for productive purposes"	Southern Africa Regulator
"The research confirms that wealth has gravitated towards very few people in within the old system of energy supply kind of model. Whereas if you have distributed models, and you have more renewable type plants, or even hybrid plants that have got other factors like hydrogen or battery storage, and so on, you have a greater chance of distributed wealth"	Expert
"The value should be shared anyway, by the different stakeholders. So, as you know, the landowner, the consumers, the lenders, the investors, the developer of the projects. The project will create value, but the value has to be shared with all the different stakeholders"	France – IPP

Source: Compiled by the author

5.2.1.2 In-case and cross-case analysis of the value-creation theme

As an illustration of potential similarities and differences across geographical location, the analysis was based on what the participants said regarding the theme by field in the energy sector and geographical location, as well as the researcher's understanding of the themes presented in the data.

A similar theme that emerged among IPPs across all geographical regions was their adoption or introduction of sustainable energy resources, such as "renewable energy", "use of natural resources", "green hydrogen projects", "reduction of greenhouse gas emissions", and "shared value by all stakeholders". These resources, activities, technologies, and partners are critical to the value-creation process. An important point that emerged from the interviews with the IPPs, regulators, and experts in Southern Africa was the establishment of collaborative partnerships by all stakeholders with the aim of creating shared value within communities. Moreover, all groups identified the lack of access to funding as an obstacle to the implementation of renewable energy projects that create value for the community.

Differences were identified when assessing the economic value creation of IPPs across all three geographical regions. IPPs in Indonesia prioritised initiatives that generate economic value in order to create income for local communities. From an economic standpoint, however, Southern African IPPs stated that value creation "only benefits shareholders" and that communities also experience a decline in local economic activity once renewable energy projects are completed. Although France IPPs never specified which parties stand to gain the most, the concept of shared value among various stakeholders was mentioned and that France is a real state-driven economy. A French IPP commented, "Yes, state owned

economy, but real estate driven economy particularly in terms of energy, energy is some kind of public thing" and referred to "a balance between political pressure, regulation and private investment".

According to a Southern African expert,

> wealth has gravitated towards very few people in within that old system of energy supply kind of model. Whereas if you have distributed models, and you have more renewable type plants, or even hybrid plants that have got other factors like hydrogen or battery storage, and so on, you have a greater chance of distributed wealth.

According to this expert, distributed wealth is more likely to occur when there are hybrid plants that incorporate additional components such as hydrogen or battery storage, distributed models, and a greater number of renewable energy plants.

It is noteworthy that the Southern African expert and the Southern African IPPs held different opinions with respect to the economic creation of value. For the expert, the potential economic value creation resulting from the deployment of various greener technologies is confirmed by research, while the IPPs declared that economic value creation only benefits shareholders when renewable energy projects are deployed.

5.2.1.3 Conclusion on value creation theme

The findings regarding the value-creation theme presented similarities and differences according to geographical location and fields within the energy sector. For example, differences and divergent findings were noted between what the research confirmed, according to a Southern African expert, and what experience dictated, according to the Southern African IPPs.

Regarding similarities, IPPs, experts, and regulators described resources, activities, technologies, and partners as critical components of the value-creation process. Further, these participants mentioned access to funding renewable energy projects as a challenge in creating value for the community.

The economic value creation of Indonesian, Southern African, and French IPPs was found to vary across regions, with Indonesia prioritising initiatives to generate income for local communities, and Southern African IPPs focusing on shareholders and noting a local economic activity decline after renewable energy projects are completed. Shared value among stakeholders was also explained by French IPPs, although no further details were provided regarding stakeholders. In contrast to these views, research confirms that

distributed wealth is more likely when hybrid plants incorporate renewable energy, distributed models, and additional components, which is a contradictory finding in comparison to what Southern African IPPs said.

5.2.2 Energy generation business model theme

Energy generation business models emerged as a new theme related to the business models within the energy sector. The theme was introduced by participants from Southern Africa only, specifically IPPs and an energy expert, as illustrated in Table 10 below.

Table 10: *The percentage of comments by participants*

Theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulator	IPPs	IPPs
Energy generation business model	75%	25%	0%	0%	0%

Source: Compiled by the author

5.2.2.1 Evidence of energy generation business model theme in participant responses

Table 11*: Evidence of energy generation business model theme*

Quotations from the Dataset	Geographical Location and Field in the Energy Sector
"it's the community that bears certain resources that can be used to generate energy. They are well endowed with certain resources to develop energy generation models"	Southern Africa – IPP
"there's a lot of drive around municipalities buying energy directly from independent power producers are developing their own energy generating models and then translating those cost reductions to their community, which is the whole municipality or town"	Southern Africa – IPP
"In essence, for instance, in renewable sector, there's various business models to generate energy, which would be solar, wind, hydro."	Southern Africa – IPP
"And the other side of the spectrum, you've got someone who is generating energy from the end products of wherever that might go or could be into a high fuel efficient, efficient fuel and that is another form of business model"	Southern Africa – Energy Expert

Source: Compiled by the author

5.2.2.2 In-case and cross-case analysis of energy generation business model theme

The similarities and differences regarding the energy generation business model focus on the Southern African IPPs and the Energy Expert as these were the only participants to discuss this theme.

Similarities were noted amongst IPPs regarding the nature of the energy generation business model, with the IPPs generally suggesting that these were models within the renewable sector, based on the solar, wind and hydro resources that exist within the community and are developed by IPPs.

Notable differences were found between the views of the Energy Expert. In contrast to the IPPs, the energy expert said that there are individuals who find ways to convert byproducts into fuel-efficient resources, regardless of their point of origin or final destination and this exemplifies a business model for energy generation within the energy industry. The expert made no comment about the renewable resources such as solar, which were mentioned by the IPPs.

5.2.2.3 Conclusion on energy generation business model theme

The study observed similarities among IPPs in terms of their conceptions of energy generating business models, which mostly operate within the renewable sector. These models are centred on harnessing solar, wind, and other renewable resources available within the local community, and are implemented by the IPPs.

Significant differences were seen when comparing the views of the energy expert and IPPs, with the energy expert asserting that some people have devised methods to transform byproducts into sources of fuel efficiency, irrespective of their origin or ultimate use. This serves as an illustrative paradigm for energy generation business model within the energy sector.

5.2.3 Monopoly renewable energy business model sub-theme

The theme of monopoly renewable energy generation business models emerged as a new sub-theme within the renewable energy business models. This sub-theme was selected based on the description by the energy regulator only, who related this type of model to the IPPs and the renewable energy sector. Table 12 below points to the frequency of mentions by the energy regulator as a percentage.

Table 12: The percentage of comments by participants

Theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulator	IPPs	IPPs
Monopoly renewable energy business model	0%	100%	0%	0%	0%

Source: Compiled by the author

5.2.3.1 Evidence of monopoly renewable energy business model sub-theme in participant responses

Table 13: Evidence of monopoly renewable business model sub-theme

Quotations from the Dataset	Geographical Location and Field in the Energy Sector
"the country is facing is the monopoly renewable business model within IPPs that we cannot really run away from"	Southern Africa – Energy Regulator
"Only the same players of IPPs are dominating the renewable energy procurement plans"	Southern Africa – Energy Regulator
"the culture of monopoly that we are moving away from, that of fossil-fuel dominance and only state-owned power generation plants is seen within the IPPs"	Southern Africa – Energy Regulator

Source: Compiled by the author

5.2.3.2 In-case and cross-case analysis of monopoly renewable energy business model sub-theme

This theme was only discussed by one of the energy regulators in Southern Africa, which means that similarities and differences amongst groups cannot be discussed. Instead, the analysis focuses on the important aspects of this theme, as described by the energy regulator, in relation to the renewable energy sector. The comments made by the energy regulator provide a deeper insight into the renewable energy business model within the energy sector.

The presence of IPPs in the energy sector reflects a shift away from the prevailing culture of monopoly that is characterised by fossil-fuel dominance and exclusive reliance on state-owned power-producing facilities. According to the energy regulator, the renewable energy procurement strategies are now being dominated by the IPPs. According to the Energy regulator, this means that the nation is now confronted with the challenge of a monopolistic renewable business model within IPPs, which may be a challenge to address.

.

5.2.3.3 Conclusion on monopoly renewable energy business model sub-theme

According to the energy regulator, the current shift in our society involves a transition from a monopolistic culture that is primarily controlled by fossil fuels and state-owned power plants to a culture that is characterised by the presence of IPPs for open markets in the energy sector.

Nevertheless, it is worth noting that the major IPPs are now exerting significant influence over the implementation of renewable energy procurement strategies. The nation is now faced with the persistent issue of a monopoly among IPPs, which mostly operate in the renewable energy sector. This is an important observation by the energy regulator.

5.2.4 Alternative energy ownership business model sub-theme

Alternative energy ownership business models or AEOBMs emerged as a new sub-theme under the renewable energy business model theme. This sub-theme was selected based on the discussion of this topic by Southern African IPPs and a Southern African energy expert, who provided diverse experiences and knowledge on AEOBMs. Table 14 below indicates which participants discussed this theme and how often in percentages.

Table 14: The percentage of comments by participants

Sub-theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulator	IPPs	IPPs
Alternative energy ownership business model	50%	25%	0%	0%	25%

Source: Compiled by the author

5.2.4.1 Evidence of alternative energy ownership business model sub-theme

Table 15: Evidence of alternative energy ownership business model sub-theme in participant responses

Quotations from the Dataset	Geographical Location and Field in the Energy Sector
"But then there's also this sort of emerging thread of sort of alternative models of ownership on the socially owned renewables or community energy projects with wheeling or things like that"	Southern Africa – IPP

"When I was at Company X, they started what they call alternative energy ownership that involves service delivery unit project, they're doing work in basically providing energy solutions in informal settlements"	Southern Africa – IPP
"We can say with certainty that the improvements in the long term are more likely with the transition away from dirty energy to alternative energy that create alternative business models"	Southern Africa – Expert
"the kind of project we're developing is really mixing renewable energy with community levels, providing an alternative energy ownership model"	France – IPP

Source: Compiled by the author

5.2.4.2 In-case and cross-case analysis of alternative energy ownership business model theme

Several similarities were found in the responses between the different types of participants. The primary emphasis was on alternative ownership models, as shown by all the comments, which suggest a shift away from conventional energy ownership models towards alternatives that include community or social ownership. All the IPPs and the energy expert unanimously supported a transition from fossil fuels or environmentally harmful energy sources to cleaner and more sustainable alternative energy sources.

There were differences in the focus of the responses amongst the IPPs and from the energy expert. The context of ownership models is diverse, as shown by the statements. The Southern African IPPs mentioned socially owned renewables and community energy projects and discussed alternative ownership models within service delivery units and the integration of renewable energy into community-based projects.

The statements regarding implementation show differences in their emphasis on the implementation of various ownership structures. For example, one discussion relates to energy solutions inside informal settlements, while another highlights the importance of changing away from polluting energy sources. Additionally, another perspective emphasises the need for integrating renewable energy sources into community-based projects.

5.2.4.3 Conclusion on alternative energy ownership business model theme

The IPPs and the energy expert showed similarities in their emphasis on alternative ownership models, suggesting a shift from conventional energy sources to community or social ownership and supporting transitioning from fossil fuels to cleaner, more sustainable alternatives.

However, differences were expressed in the context of ownership models, with Southern African IPPs discussing socially owned renewables and community energy projects. Discussions also varied regarding the implementation of ownership structures, with some focusing on energy solutions in informal settlements and others emphasising the need to transition away from polluting energy sources.

5.3 Research Sub-Question 1: How is value created for the energy community?

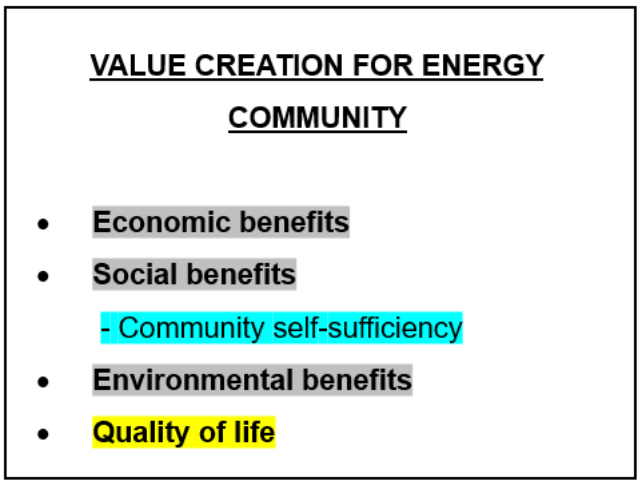


***Figure 9**: One sub-theme and one new theme selected for Research sub-question 1*
Source: Drawn by the author (part of the revised conceptual framework presented in Figure 7)

Figure 9 above shows only the section of the conceptual framework that is concerned with Research sub-question 1. The findings identified the three existing themes of economic benefits, social benefits, and environmental benefits within the energy literature, which were made part of the conceptual framework presented in Chapter 2 under the energy literature. During the data mapping process, an additional sub-theme of community self-sufficiency was identified under the social benefit theme and incorporated into the conceptual framework. The additional theme of quality of life was also identified during the data mapping process.

The main aim of the study was to develop understanding and provide key insights rather than providing a comprehensive review. Consequently, not all the themes are discussed and the themes to be discussed in terms of Research sub-question 1 were selected according to their contribution to providing understanding and key insights in answer to the research question. On this basis, only the quality-of-life theme and the sub-theme community self-sufficiency are discussed.

5.3.1 Community self-sufficiency sub-theme

Community self-sufficiency emerged as a sub-theme as part of the role played or to be played by the energy community. The topic of this sub-theme was mentioned by IPPs an energy regulator, and an energy expert from Southern Africa, as illustrated in Table 16 below.

Table 16: The percentage of comments by participants

Sub-theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulators	IPPs	IPPs
Community self-sufficiency sub-theme	67%	17%	16%	0%	0%

Source: Compiled by the author

5.3.1.1 Evidence of community self-sufficiency sub-theme in participant responses

Table 17: Evidence of community self-sufficiency sub-theme

Quotations from the Dataset	Geographical Location and Field in the Energy Sector
"But empower people, ultimately, the outcome is to empower people to not only be self-sufficient, but self-organised in the note that they live in"	Southern Africa – IPP
"So how can I use what I have to empower myself to know, what could come from the opportunities that are seemingly emerging? Community itself also has to play a role. I think we can't keep expecting that things will happen around us. We've seen, so much. At some point, we have to take the onus"	Southern Africa – IPP
"for us is to balance today the needs of the country as a whole, and the desires of the community by ensuring that they are self-sufficient once they have electricity"	Southern Africa – Energy Regulator
"In the renewable energy project, so I think it's quite important that some form of stake ownership for the communities is realized to achieve community self-sufficiency and economic growth in within communities"	Southern Africa – IPP
"And I think we have seen it in the economic development compliance, where now we are beginning to see the requirements that are demanding that some of these projects had to respond to the community needs, through infrastructure development, research and development, through building schools, creating some awareness and the expectation from community to take a lead of their needs to remain self-sufficient long after projects are completed"	Southern Africa – IPP
"In the coal value chain, there's been quite a lot of value creation, I think I would acknowledge even though I am a supporter of the transition…. There's been things like local economies that have been created around the power stations have been jobs that have been created permanent jobs and contract jobs and created self-sufficiency within communities. If this can be translated to the renewable value chain"	Southern Africa – Energy Expert

Source: Drawn by the author

5.3.1.2 In-case and cross-case analysis of community self-sufficiency sub-theme

Similarities were noted regarding the responses on community self-sufficiency, with each statement centring on the notion of enabling individuals or communities to achieve self-sufficiency across multiple domains. The IPP participants placed a particular emphasis on energy or economic development. They emphasised community involvement as the critical role that communities must play in order to achieve self-sufficiency, arguing that communities cannot simply wait for changes to occur in their surroundings. A correlation was found between energy and self-sufficiency: between the provision of energy, specifically via renewable sources, and the promotion of community self-sufficiency. Long-term sustainability was emphasised in multiple statements, which ensures that communities will maintain their self-reliance even subsequent to the conclusion of projects.

Differences were identified regarding the notion of empowerment. Although all statements support the values of self-sufficiency and empowerment, they adopt marginally divergent approaches to this notion. Certain statements by the Energy Expert emphasised the benefits of community involvement in infrastructure development and economic growth, whereas others centred on renewable energy initiatives. A range of illustrative cases to support the connection between energy initiatives and community self-sufficiency was provided by the energy expert, including infrastructure development, employment creation, a stake of ownership in renewable projects, and local economic growth in the vicinity of power stations.

5.3.1.3 Conclusion on community self-sufficiency sub-theme

The statements made by the participants emphasise the promotion of community self-sufficiency in energy and the economy, emphasising active participation and empowerment. They stress the importance of communities in achieving self-sufficiency and encourage a proactive approach to change. Renewable energy is closely linked to community self-sufficiency, emphasising long-term sustainability.

However, different focal points were expressed amongst the IPPs, the energy regulator, and the energy expert, with some prioritising infrastructure development and economic growth and others focusing on renewable energy sources. These statements provide various strategies for community and energy-industry self-sufficiency, including infrastructure development, employment generation, stakeholder participation, and local economic growth.

5.3.2 Quality-of-life theme

Quality of life emerged as a theme, with all of the energy experts mentioning it as part of long-term improvements within communities. The theme was also mentioned by Southern African and Indonesian IPPs, as illustrated in Table 18 below.

Table 18 The percentage of comments by participants

Theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulators	IPPs	IPPs
Quality-of-life theme	25%	50%	0%	25%	0%

Source: Compiled by the author

5.3.2.1 Evidence of quality-of-life theme in participant responses

Table 19: Evidence of community quality-of-life theme

Quotations from the Dataset	Geographical Location and Field in the Energy Sector
"people who have to travel long distances to get water, or to have access to health care, etc. By bringing a project closer to them, you're improving their quality of life, improving their access to clean water"	Indonesia – IPP
"Another one is local pollution. And that is improved, because if you have clean energy, then you have immediate improvement in air quality"	Southern Africa – Energy Expert
"We we can say with certainty that there that the improvements in the long term are more likely with the transition away from dirty energy"	Southern Africa – Energy Expert
"provide an alternative to fossil pollution. And that way, it then provides livelihood, sustained livelihood, a prolonged livelihood, in a clean and cleanest and most possible way"	Southern Africa – IPP

Source: Compiled by the author

5.3.2.2 In-case and cross-case analysis of quality-of-life theme

The improvement of human life was emphasised in all statements, while similarities and differences were found, which ranged from ensuring access to pure water and healthcare to environmental quality. The objective in each case was to elevate individuals and communities. A collective emphasis was placed on promoting renewable energy sources as a means to alleviate pollution and improve community surroundings. This recurring theme implies an acknowledgment of the significance of sustainable energy in terms of its long-term benefits. The statements address the potential positive effects that these enhancements may have on livelihoods. The provision of pure water, healthcare, and healthier energy sources has the potential to foster economic opportunities and ensure sustainable livelihoods.

Significant differences appeared to be associated with distinct geographical regions, as one case concentrated on Indonesia while the other explored Southern Africa. The specific challenges and options may differ in accordance with geographical conditions. Although each statement touches upon quality of life, it places emphasis on a distinct aspect. For instance, some emphasise the significance of healthcare and access to clean water, while others prioritise the transition away from fossil fuels and the enhancement of air quality. Some statements were made by the energy experts. This may result in a different emphasis or nuances in their strategies or priorities regarding the resolution of these issues.

5.3.2.3 Conclusion on quality-of-life theme

The central theme in both scenarios put forward by the participants is the improvement of quality of life, which is achieved by either prioritising environmental quality or assuring access to vital resources such as pure water and healthcare. The aim is to improve the well-being of communities and individuals by promoting the use of renewable energy sources as a means to address the harm to the environment and improve the quality of life. The mentioned recurring pattern emphasises the vital importance of renewable energy in ensuring long-term benefit and recognises its potential to improve livelihoods.

Nevertheless, important differences emerge owing to geographical location; for instance, one case related to Southern Africa while the other focused in Indonesia. This may result in a multitude of challenges and remedies that are dependent upon particular geographical circumstances. Although both sets of participants discuss aspects of the quality of life, they point to contrasting priorities: certain individuals prioritise healthcare and water access, while others concentrate on the transition away from fossil fuels and the enhancement of air quality. Varied approaches and priorities that may result from the insights offered by energy experts in addressing these critical issues are possible.

5.4 Research Sub-Question 2: How are the energy community projects deployed?

DEPLOYMENT OF ENERGY COMMUNITY PROJECTS

- **Stakeholders**
- **Key Resources**
  - Grid Value
- **Key activities**

Figure 10: One sub-theme emerged with three existing themes for Research sub-question 2

Source: Drawn by the author (part of the revised conceptual framework in Figure 7)

Figure 10 above shows only the section of the conceptual framework that is concerned with Research sub-question 2. The data mapping process identified the three existing themes of stakeholders, key resources, and key activities, which were included as part of the conceptual framework presented in Chapter 2 under the energy literature. Furthermore, during the data mapping process, the additional sub-theme of grid-value was identified under the key resources theme and was incorporated into the conceptual framework.

With the main aim of the study being to develop understanding and provide key insights, rather than a comprehensive review, not all themes related to Research sub-question 2 are discussed. In terms of their contribution in providing understanding of and key insights into the topic of the research study, only the stakeholders' theme and the sub-theme grid-value are discussed.

5.4.1 Stakeholders' theme

The selection of the stakeholder theme for discussion was based on the in-depth experiences observed from participants, as well as the cross-case analysis that presented a wide distribution of descriptions in terms of percentages, as illustrated in Table 20 below. The inclusion of a wide range of individuals with varying backgrounds and perspectives provided valuable insights. This theme was an existing theme and emerged from the conceptual framework presented in Chapter 2.

***Table 20** The percentage of comments by participants*

Theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulator	IPPs	IPPs
Stakeholders	32%	25%	8%	27%	8%

Source: Compiled by the author

5.4.1.1 Evidence of stakeholders' theme in participant responses

***Table 21**: Evidence of stakeholders' theme*

Quotations from the Dataset	Geographical Location and Field in the Energy Sector

"So if it's a private sector, for instance, you're going to find that the developer will be the driver at one stage later on the Integrated Resource Plan. The entity that is responsible for operations and maintenance and then and continuing to earn revenues will be the driver"	Southern Africa – Expert
"But one that has not really been addressed is access to finance, access to capital which is a challenge when stakeholders implement such projects."	Southern Africa – Expert
"The Energy regulator nurser is involved private entities. So IPP is involved. And then we have financial institutions, banks. You know, private entities that have a very strong balance sheets."	Southern Africa – IPP
"There isn't any local organization manufacturer that can manufacture solar PV panels, competitively as when China do it, right. And so anyone who's investing into this project, it's far more economical for them to purchase them overseas."	Southern Africa – IPP
"NGOs provide a strong governance, they provide a platform where certain issues can be deliberated between representing a common voice within the private sector, and being able to deliver certain messages to the public institutions or government institutions that are making those decisions in terms of who gets to go forward, who does not get to go forward"	Southern Africa – IPP
"Well, one of the biggest drivers that is confirmed as a common basic variable is policy. There's got to be enabling policy by government"	Southern Africa – Expert
"Government is solely responsible for creating an energy policy that is inclusive, that will talk to those energy committees going forward"	Southern Africa – IPP
"You will realize that the same shareholders are the only ones to implement the renewable energy projects issued through the government procurement process"	Southern Africa – Regulator
"it's really about creating purpose for, you know, stakeholders. So again, creating purpose for businesses. There is a role for NGOs and to raise awareness and, and make sure that these renewable energy projects are built with adequate community participation"	Indonesia – IPP
"the private sector, it can be, they could be responsible for the financing the technology or even provide the land, the land area that will be utilized for their renewable energy project"	Indonesia – IPP
"financing is an issue, they are many financing mechanisms that are available out there. But of course, these financing mechanisms come with different terms"	Indonesia – IPP
"the value should be shared anyway, by the different stakeholders. So, as you know, the landowner, the consumers, the lenders, the investors, the developer of the projects"	France – IPP

Source: Compiled by the author

5.4.1.2 In-case and cross-case analysis of stakeholders' theme

Similarities were identified in the fact that a significant number of the participants highlighted private-sector participation in renewable energy initiatives, whether through financing, technology provision, or stakeholder engagement. Diverse regions have developed a strong

consensus regarding the critical role that government policies play in supporting and enabling renewable energy projects. The lack of access to financing was cited on multiple occasions as a significant obstacle and challenge in the implementation of these projects. To ensure stakeholder collaboration, it is common sense to involve a variety of stakeholders, including the government, investors, non-governmental organisations (NGOs), and developers, in decision-making and project execution.

Differences were identified among locations (Southern Africa, Indonesia, France), suggesting that local perspectives and possibly distinct environments influence the deployment of renewable energy. Although access to finance is a common challenge, the perspectives of different locations may shed light on domain-specific challenges, such as the role NGOs in project development in Indonesia or the manufacturing capabilities specific to Southern Africa. Some regions prioritise the role of NGOs (Indonesia), while others concentrate on the obligations of the government (Southern Africa) or equitable allocation of value among stakeholders (France). In general, the aforementioned statements emphasise the complex and diverse characteristics of renewable energy projects, the criticality of collaboration among the various stakeholders involved, and the backing of enabling policies and funding systems for their effective execution.

5.4.1.3 Conclusion on stakeholders' theme

The participants highlighted the importance of private-sector involvement in renewable energy initiatives, particularly in financing, technology provision, and stakeholder engagement. They also emphasised the role of government policies in supporting and enabling these projects. Access to financing is a substantial challenge and involving various stakeholders in decision-making and project execution is crucial. The responses also highlight the differences among locations, such as Indonesia's focus on NGOs and France's emphasis on government obligations and stakeholder allocation.

5.4.2 Grid-value sub-theme

Grid value emerged as a new sub-theme under the deployment of energy community projects. This sub-theme was selected on the basis of the diverse views regarding this topic and the emphasis placed on it by multiple IPPs, an energy expert, and an energy regulator, as shown in Table 22 below.

Table 22: The percentage of comments by participants

Theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulator	IPPs	IPPs
Grid-value sub-theme	42%	14%	16%	14%	14%

Source: Compiled by the author

5.4.2.1 Evidence of grid-value sub-theme in participant responses

Table 23: Evidence of grid-value sub-theme

Quotations from the Dataset	Geographical Location and Field in the Energy Sector
"With it's not the case, because at this moment, most of the time, renewable energy is deployed on just a rooftop, or in big power plants connected to the big grids"	France – IPP
"But now we are seeing other municipalities adopting renewables, bringing in partners to actually start renewable energy projects. And they use the grid to actually inject electrons and serve communities so that they alleviate or address energy poverty"	Southern Africa – Energy Expert
"So one of the most important things for us is to look at tariffs, and to start promoting the idea that the grid has value and it's still not cost effective to go completely off the grid off the grid and we've now got to think seriously about creating working grid communities. And that's our future business"	Southern Africa – IPP
''an important stakeholder is the grid operator because they need to facilitate the transfer of energy from the generator to the off taker"	Southern Africa – IPP
"we need to have some strong partnership with the private sector and local government has to invest more in their power grids for distribution infrastructure"	Southern Africa – IPP
"the concept of community energy requires a grid to like to tie the community together and allow that pool buying power. So the grid really facilitates the community energy projects"	Indonesia – IPP
"We have renewable projects that are connecting to the grid. And one of the things that are happening in renewable energy projects they have to have community members as parts, partaking or having shares in those projects, where you will be developing your electricity generation facilities"	Southern Africa – Energy Regulator

Source: Compiled by the author

5.4.2.2 In-case and cross-case analysis of grid-value sub-theme

The fact that numerous statements by the participants shared similarities highlights the value of the grid in the context of renewable energy projects. According to the statements, the stakeholders acknowledge the grid's function in enabling the connection of renewable energy sources, serving communities, and facilitating energy transmission. Numerous statements

emphasised community participation and engagement in renewable energy projects. The concept of community ownership or participation in these projects was emphasised for cultivating local support and providing benefit for community members. Collaboration and partnership among diverse stakeholders were a common theme that was emphasised in order to drive renewable energy projects forward, with stakeholders that included local governments, private sectors, grid operators, and communities. It is believed that partnerships are essential for a successful deployment of grid value.

Various geographical regions, including France, Southern Africa, and Indonesia, adopt different approaches to grid integration and renewable energy, influenced by their specific conditions, requirements, and pre-existing infrastructure. Perceptions of grid value from Southern African IPPs and Indonesian IPPs highlighted the grid's importance and value for promoting the integration of renewable energy. Others (French IPP and Southern African energy expert) emphasised the difficulties in achieving cost-effectiveness or the necessity to re-evaluate its value. Multiple aspects of regulation were given significant attention, including tariffs (Southern African IPP), the responsibility of grid operators (Southern African IPP), and the need for local government investment in distribution infrastructure.

5.4.2.3 Conclusion on grid-value sub-theme

Fundamentally, although the value of the grid and the need for community engagement and collaboration in renewable energy initiatives are universally acknowledged, viewpoints diverge according to regional circumstances, regulatory dominance, and the perceived benefits and challenges linked to grid integration.

5.5 Value-Creation Outcomes

VALUE CREATION OUTCOMES

- **Environmental value creation outcomes**
- **Economic value creation outcomes**
- **Social Value creation outcomes**
- **Democratisation of energy value creation outcome**

Figure 11: One new theme emerged with three existing themes for the value-creation outcomes

Source: Drawn by the author (part of the revised conceptual framework in Figure 7)

Figure 11 above shows only the section of the conceptual framework that is concerned with value-creation outcomes. The data mapping process identified the three existing themes of environmental value creation outcomes, economic value creation outcomes, and social value creation outcomes, which were included as part of the conceptual framework presented in Chapter 2, when intersecting both the business literature and the energy literature. During the data mapping process, the additional theme of democratisation of energy value creation outcome was identified and incorporated into the conceptual framework.

The primary objective of the research study was to seek understanding to develop insights, rather than conducting a comprehensive review. Consequently, not all themes are discussed in the research. The selection of the themes for discussion was based on their noticeable presence in the participants' statements and their role in providing understanding and insights into the research study.

Following the above criteria, the social value creation outcomes, economic value creation outcomes, and the new theme democratisation of energy value creation outcome were selected for discussion in this section.

5.5.1 Social value-creation outcomes

The first theme to be discussed within the context of value-creation outcomes is social value creation. This theme was identified from the conceptual framework presented in Chapter 2. The theme was explained by Southern African IPPs, an energy expert, and an energy regulator, as shown in Table 24 below.

***Table 24**: The percentage of comments by participants*

Sub-theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulator	IPPs	IPPs
Social value creation outcome	72%	14%	14%	0%	0%

Source: Compiled by the author

5.5.1.1 Evidence of social value creation in participant responses

***Table 25**: Evidence of social value creation theme*

Quotations from the Dataset	**Geographical Location and Field in the Energy Sector**
"the first outcome is obviously job creation, because I mean, the moment you start with a project, then you creating jobs for someone else"	Southern Africa – IPP
"there's Job Creation if the projects are local, so there's I think there's many layers of value"	Southern Africa – IPP
skills development in between the community and job creation years calculations, really, and the upgrading of, of local schools and where you will be developing your electricity generation facilities, community members will have shares in it and have developments in the community that will uplift those individual community"	Southern Africa – Energy Regulator
"the provision of higher education within the node of the company, but more than anything, we really are aligned to transfer skills, skills development, and ultimately the provision of renewable energy education"	Southern Africa – IPP
"Actually seeing what you can, it's visible, when you drive through places where there are these different energy communities, you can see how different parts of it have been improved physically for people, you know, the way they'd be roads, because a lot of energy communities that have actually provided new roads or improved roads, clinics, what do you call it? Schools? Is all sorts of small industries"	Southern Africa – Energy Expert
"we cannot run away from that it's an obligation to have to hire local people, right? Sometimes they are skilled. It is a burden that you're taking one as the as the developer"	Southern Africa – IPP
"So that's the first thing that just you're able to create a job and alleviate the poverty on someone else"	Southern Africa – IPP
"So I think some of the best in value ads have been things like supplementing wherever government programs are falling short, whether it be education or health or water supply, for instance. There's a lot of good projects that have improved water supply. Or where it has enabled entrepreneurship programs for young unemployed people or bursary programs"	Southern Africa – Energy Expert

Source: Compiled by the author

5.5.1.2 In-case and cross-case analysis of social value creation outcome theme

Similarities expressed in the participants' statements were that in energy projects, particularly when local or community-focused, job-creation opportunities were observed. Job creation was consistently emphasised as a noticeable outcome of these projects. A persistent theme emphasised the need for promoting community development in multiple ways, including the development of skills; education; improvements of infrastructure such as roads, schools, and clinics; and the support to small businesses and entrepreneurial ventures. The significance

of skills development was further emphasised by several statements, highlighting its impact on both job creation and the empowerment of communities. The importance of enhancing skills, delivering education, and facilitating skills transfer in renewable energy was also evident in mentioned comments.

Differences were also seen in the statements. While job creation was a recurring theme, some statements emphasised other aspects of value beyond job creation. An energy expert pointed out the significance of local infrastructure development, including roads, schools, and clinics. On the other hand, IPPs placed particular emphasis on the value of skills transfer and education. There was also a disparity in the approaches used for the betterment of communities. The energy expert emphasised tangible advantages, such as improvement of infrastructure, while also pointing to other advantages such as education, health, and water-supply improvement via entrepreneurship. Varying viewpoints were expressed about the responsibility or onus associated with the recruitment of people from the local community. While some IPPs saw the hiring of local workers as a responsibility of developers, acknowledging the difficulties related to the availability of skilled labour, other IPPs considered it a beneficial outcome that contributes to reducing poverty.

5.5.1.3 Conclusion on social value creation outcomes

The comments generally revealed differences in the views about what constitutes value. Emphasis was placed on different aspects of community upliftment, and the perspectives about local engagement differed, despite the overall presence of job creation and community development as overarching themes.

5.5.2 Economic value creation outcomes

The economic value creation theme was identified from the conceptual framework in Chapter 2 and frequency of statements by participants that reflect this theme is shown in Table 26 below.

***Table 26**: The percentage of comments by participants*

Sub-theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulator	IPPs	IPPs
Economic value creation	50%	24%	0%	13%	13%

Source: Compiled by the author

5.5.2.1 Evidence of economic value creation outcomes in participant responses

***Table 27**: Evidence of economic value creation*

Quotations from the Dataset	**Geographical Location and Field in the Energy Sector**
"Electricity is an input to the economy and cost reduction should be the first sort of primary value creation"	Southern Africa – IPP
"there's Job Creation if the projects are local, so there's I think there's many layers of value"	Southern Africa – Energy Expert
"Bigger market share better profitability, social acceptance, positive brand"	Southern Africa – IPP
"Having access to clean water, every year, having access to electricity, having access to income generating activities, like you are having access to, to enable you to do a lot of things like a business"	Southern Africa – Energy Expert
"Second one is making economy clean, sustainable projects, that is reinforce the depth making profit for the investors and so that's the major things"	France – IPP
: "so financially is sort of we work with utilities, power utilities, their business models, Knockaround, electricity pricing and cost recovery. And yeah, making sure that they can sort of balance their service provision with cost recovery. It's quite a complex balance. So that would be financial sustainability"	Southern Africa – IPP
"Displacement of fossil fuels, that's one and second is always about economic growth. And, and what we mean by economic growth is either investment or job opportunities"	Indonesia – IPP
: "the people that benefit from this, whether it's benefiting in terms of having access to that energy or access to infrastructure, but also the ones that participate in delivering that infrastructure. So now suddenly, you start to look at some of those economic development objectives… certain economic zones or economic hubs that can actually sustain themselves after these big projects"	Southern Africa – IPP

Source: Compiled by the author

5.5.2.2 In-case and cross-case analysis of economic value creation outcome theme

A large number of statements were similar in highlighting the importance of energy infrastructure in the context of economic growth. The statements presented above emphasised the significance of job creation, the facilitation of access to income-generating activities, and the possibility of economic expansion via investments and employment opportunities. In addition, there was a collective recognition of the importance of providing clean water and energy. The IPPs highlighted the numerous benefits associated with the availability of these resources. Multiple statements emphasised the importance of clean and

sustainable projects, with the IPPs highlighting the benefits of transitioning away from fossil fuels and placing weight on the economic sustainability of projects for investors.

Regarding differences, although there was consensus about the importance of both economic growth and sustainability, the statements emphasised different basic ideas. For instance, of the Southern African IPPs one considered the reduction of costs and the attainment of financial sustainability within the power utilities sector to be important, while others highlighted the importance of market share, profitability, societal acceptance, and the development of a favourable brand image. Multiple statements provided diverse viewpoints regarding economic outcomes. Southern African IPPs emphasised the broader implications for economic growth, including the persistent benefits experienced by communities involved in the delivery of infrastructure projects. In contrast, an Indonesian IPP placed primary emphasis on economic development, specifically in relation to the replacement of fossil fuels and the generation of employment prospects. The aforementioned statements assign varying degrees of importance to various aspects of energy infrastructure. For example, Southern African IPPs largely focused on the financial components and business models of power utilities, while an energy expert put emphasis on local employment development and the multifaceted worth of local projects.

5.5.2.3 Conclusion on economic value creation outcome

In general, while these statements exhibit similar themes about the importance of energy infrastructure for economic value and sustainability, they differ in terms of their primary viewpoints on economic value creation and the particular components of energy infrastructure that they prioritise.

5.5.4 Democratisation of energy value creation outcomes

The democratisation of energy value creation emerged as a new theme and the frequency of statements by participants concerning this theme is shown in Table 28 below.

Table 28: The percentage of comments by participants

Sub-theme	Southern Africa			Indonesia	France
	IPPs	Energy Experts	Energy Regulators	IPPs	IPPs
Democratisation of energy	58%	14%	0%	14%	14%

Source: Compiled by the author

5.5.4.1 Evidence of democratisation of energy value creation outcomes in participant responses

Table 29: Evidence of democratisation of energy value creation

Quotations from the Dataset	**Geographical Location and Field in the Energy Sector**
I guess you could argue that the municipality is an energy community, you know, they have one local government, one distribution grid, and they all sort of consuming electricity in that area and cross subsidizing each other and one running one sort of democratic community where the municipality is like a democratically elected voice of that community"	Southern Africa – IPP
"allow our people to be able to even, you know, install those solar panels on their roofs, you know, in their household going forward, because energy we understand, it's, it's democratic, you know, at some point we'll be able to reach the stage where everyone, you know, is able to generate its own power"	Southern Africa – IPP
"There's unquestionable like democratization of energy that's going on. So like, whether it is an energy community, or whether it's local governments procuring from IPPs, or whether it's just people putting rooftop solar on their roofs, there's definitely like a democratization of the energy system that's happening. So you know, instead of these large, centralized power plants, this generation in our towns and cities, so that's happening, like there's gigawatts of rooftop solar embedded generation already installed in South Africa"	Southern Africa – IPP
: "if you have distributed models, and you have more renewable type plants, or even hybrid plants that have got other factors like hydrogen or battery storage, and so on, you have a greater chance of distributed wealth"	Southern Africa – Energy Expert
"the kind of project we're developing is really mixing renewable energy with community levels"	France – IPP
"we also have the need for energy access. Yes. Why? Because the value creation that we need to have in Indonesia, energy transition, energy access, energy transition, it's how we actually can do the transformation of businesses into a greener business and have access to electricity. for remote areas, actually located in the islands"	Indonesia – IPP
"I think it all it all come from the holistic development, creating an enabling environment through the energy policy development, and I think it's something that we've been advocating for years to say, you know, our energy policies at some point in time surely reflect the role of our communities. And I think we have seen it in in the in the in the economic development compliance, where now we are beginning to see the requirements that are demanding that some of these projects have to respond to the community's needs"	Southern Africa – IPP

Source: Compiled by the author

5.5.4.2 In-case and cross-case analysis of democratisation of energy value-creation outcome theme

Similarities were noted regarding the democratisation of energy, with multiple statements highlighting the democratic aspect of energy systems. The participants discussed how municipalities or local governments represent the community's voice in energy matters, aiming for a more inclusive and participatory decision-making process. There was a common emphasis on distributed energy models, such as rooftop solar panels and community-level renewable projects. These models were seen as democratising energy by allowing individuals or smaller communities to generate their own power, moving away from centralised power plants. Several statements stressed the importance of involving communities in energy projects. The participants advocated energy policies that reflect and respond to the needs of local communities, promoting an enabling environment for community engagement and development.

Differences were noted in the approaches to democratising energy within the Southern African IPPs; while all statements agreed on the trend towards democratisation of energy, they differed in the approaches mentioned. Some highlighted the role of local governments and municipalities, while others focused on individual empowerment through solar panels. Additionally, the Southern African energy expert and the French IPP discussed the distribution of wealth and the integration of renewable energy at a community level. Further, the Indonesian IPP emphasised the importance of energy access for remote areas in Indonesia, while others discussed broader concepts of community involvement and democratisation.

While the statements showed agreement on the potential for wealth distribution and economic transformation through distributed energy models, different statements emphasised different aspects. For instance, a Southern African IPP focused on energy policies that reflect community needs to stimulate economic development, while another Southern African IPP discussed gigawatts of rooftop solar as an example of the ongoing democratisation of energy systems.

5.5.4.3 Conclusion on democratisation of energy value creation outcomes

In summary, these statements differ regarding the democratic nature of energy systems, distributed energy models, and the importance of community involvement. However, they differ in their specific approaches, geographical contexts, and the economic perspectives associated with democratising energy.

CHAPTER 6: DISCUSSION OF THE RESEARCH FINDINGS

Chapter 6 provides an analysis of the results that were reported in Chapter 5 and establishes a comparison of these findings with the existing literature outlined in Chapter 2. This chapter builds upon the approach described in Chapter 5, whereby the research questions and 11 chosen themes are analysed and compared with the most recent literature in Chapter 2.

The main objective of Chapter 6 is to conduct a process of comparative analysis to see if the findings presented in Chapter 5 can be confirmed or revised by examination of the current literature. In order to achieve this, the researcher followed a systematic approach outlined in Figure 11 below, with the objective of ensuring the research's rigour, credibility, and trustworthiness, as outlined in Section 4.1 of Chapter 4.

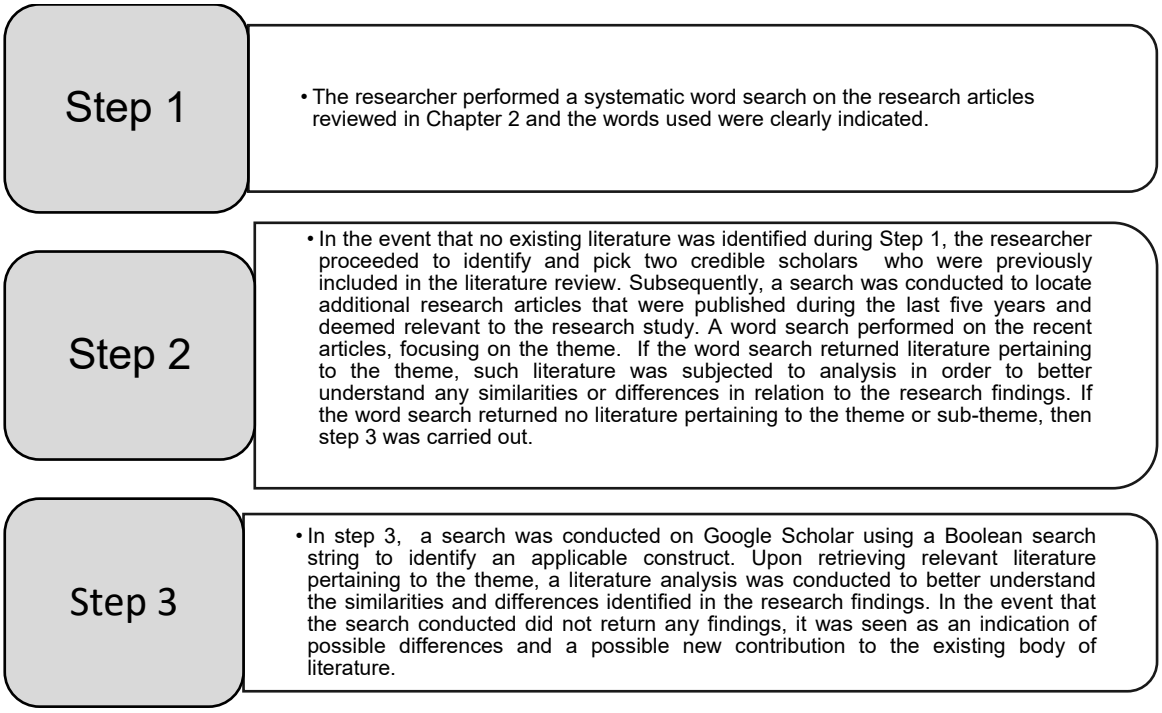


Figure 12: A three step process of comparison of findings in Chapter 5 and literature in Chapter 2 for confirmation or amendment of themes and sub-themes.
Source: Drawn by Author

Table 30 provides a summary of chapter 5 which includes the research questions, theoretical constructs, existing themes, new themes, new sub-themes identified discussed in Chapter 5 and most importantly the scholars from the literature review in Chapter 2.

Table 30: *Summary of Chapter 5 with scholars from Chapter 2 (Source: Drawn by Author)*

Research Questions	Theoretical Constructs		Existing themes / Potential new themes	Potential new sub-themes	Literature Review
How could sustainable business models enhance value creation for energy communities and deployment of energy community projects?	SBMs	Business literature	Value propositions		Geissdoerfer et al. (2018) and Bocken (2023)
			Value Creation		
			Value Capture		
		Energy Literature	New Business models		Blasch et al. (2021), and Reis et al. (2021)
			Renewable Energy Business Models	Monopoly renewable energy business model Alternative energy ownership business model	
			Energy Community Business Models		
			Energy Generation Business Model		
Research sub-question 1: How is value created for energy communities?	Value creation		Economic benefits		Brummer's (2018) and Lopez et al (2023)
			Social benefits	Community self sufficiency	
			Environmental benefits		
			Quality of life		
Research sub-question 2: How are the energy community projects deployed?	Deployment		Stakeholders		Kristoffersen et al. (2021), Hicks and Ison (2018), and Iazzolino et al. (2022)
			Resources	Grid value	
			Key activities		
Research value creation Outcomes	Value creation outcomes		Environmental value creation outcome		Laukkanen and Tura (2020, Freudenreich et al. (2020), Gregori and Holzmann (2020)
			Social value creation outcome		
			Economic value creation outcome		
			Democratisation of energy Value creation		

6.1 Main Research Question: How could sustainable business models enhance value creation for the energy community and deployment of energy community projects?

6.1.1 Value creation theme

Value creation was an existing theme from the literature. Based on this, the search from the literature review was sufficient to conduct a comparison of findings from this theme to the literature which was reviewed.

6.1.1.1 Value creation: Findings

IPPs, Experts and Regulators described resources, activities, technologies, and partners as critical in the value creation process.

6.1.1.2 Value creation: Literature

Geissdoefer et al. (2018) talk about incorporating sustainability into their value proposition, value delivery and creation activities, as well as value capture. Bocken (2023) talks about key resources, key activities, and key stakeholders through the eye of the business model canvas as part of value creation process for businesses.

Reis et al. (2021) presented initiatives such as renewable energy generation, options to select technologies for energy generation, and the social innovation as a response to addressing unsustainability in the energy sector. This covers the technology component that was also identified by IPPs, Experts and Regulators. The above literature was included in the body of literature in Chapter 2 as part of the study contribution.

6.1.1.3 Value creation: Comparison of Findings and Literature

The findings on value creation matched the literature discussed in Chapter 2 and literature confirmed by Geissdoefer et al. (2018), Bocken (2023) and Reis et al. (2021). There are insights from IPPs and the Energy Experts regarding value creation, Indonesia IPP say they generate economic value in order to create income for the communities, while the Southern IPP say economic value is for shareholders.

Conversely, the Energy Expert says wealth has gravitated towards very few people for the old energy supply and argue that there's a greater chance of distributed wealth with the deployment of renewable energy systems especially with hybrid power plants. Reis et al. (2021) says energy communities can additionally contribute significantly to local economic growth and employment creation, thereby accelerating the transition to a low-carbon economy. This is however a different view from the Indonesia IPP whereby it's the IPP that create income for the community.

6.1.1.3 Value creation: Conclusion

The findings indicate a similar outcome to the literature on value creation with potential insights from geographical locations of IPPs and the Energy Experts.

6.1.2 Energy Generation Business Model Theme

The energy generation business model was a potential new theme and there was no discussion of energy generation business model in the literature review in Chapter 2. Based on this, the three-step process in Figure 12 was followed to compare findings with the literature.

Step 1 was followed with the word search, namely, “energy generation business model” and “energy generation”. “Energy generation” was identified from the already viewed literature from Reis at al. (2021), Blasch et al. (2021) and Bocken (2023) and will be shared in section 6.1.2.2.

6.1.2.1 Energy Generation Business Model: Findings

The research study found that the energy generation business model were models within the renewable sector, based on solar, wind and solar resources that exist within the community and developed by IPPs. The Expert further stated that some persons have devised methods to transform the byproducts into sources of fuel efficiency, irrespective of their origin or ultimate use.

6.1.2.2 Energy Generation Business Model: Literature

Blasch et al. (2021) talks about new technologies and social structures to encourage energy user participation, which generates new energy communities, such as those engaged in distributed renewable energy generation. Reis et al. (2021) talk about energy generation, on-site and off-site, as a key activity and a “unique value proposition of ECBM” (p.16) and one of the customer side business models.

Bocken (2023), as part of the SBM canvas, talks about “reusing and refurbishing products” and “product take back for recycling” (p.6) linking the transformation of products into other useful sources.

Blasch et al. (2021) and Reis et al. (2021) confirm the findings from the IPPs and Bocken (2023) confirms the findings by the Energy Experts. The above literature was included in the body of literature in Chapter 2 as part of the study contribution to the business literature and energy literature.

6.1.2.3 Energy Generation Business Model: Comparison of Findings and literature

The comparison of findings and the literature confirms that the energy generation business model that emerged as a potential theme from Chapter 5 was identified from Reis et al. (2021) as a key activity and a unique value proposition. Furthermore Blasch et al. (2021) recognise that renewable energy generation is a new technology emerging from new energy communities. This further emphasised that energy generation business model is a core activity or technology that makes ECBMs. The above literature was included in the body of literature in Chapter 2 as part of the study contribution.

6.1.2.4 Energy Generation Business Model: Conclusion

Energy generation business model as a potential theme from findings was identified in the reviewed literature. Based on the comparative analysis of findings and literature, the findings show that energy generation business model already exists and forms part of key activities and value propositions for ECBMs. Therefore, this potential theme was updated as an existing sub-theme under ECBMs and will now be highlighted grey as an existing sub-theme and not highlighted yellow.

6.1.3 Monopoly renewable energy business model (MREBM) sub-theme

The MREBM emerged as a potential sub-theme under renewable energy business models (REBMs) in Chapter 5. Based on this, the three-step process in Figure 12 was followed to compare findings with the literature. Based on this, the three-step process in Figure 12 was followed to compare findings within the literature. Step 1 and step 2 yielded no results from the existing literature when searching using the word search, “monopoly renewable energy” and “dominance renewable energy”. There was no literature from step 2, therefore step 3 had to be followed to obtain the literature.

6.1.3.1 MREBM Findings

The Energy Regulator emphasises a notable transition towards the involvement of Independent Power Producers (IPPs) in open energy markets, whereby these entities have gained significant influence in the implementation of policies for procuring renewable energy. The Regulator has highlighted a significant concern over the emergence of a monopolistic pattern among Independent Power Producers (IPPs) operating in the renewable energy industry within the renewable procurement process by government and this brings about the MREBM in the renewable energy sector.

6.1.3.2 MREBM: Literature

Bhatti and Danilovic (2018) talk about energy distributors changing their value chain position to renewable energy generation business model more specifically to transform their revenue model; however, they highlight a risk of monopoly, which they do not further clarified in the literature This information does not talk about IPPs, but rather the utilities and therefore not in alignment with the findings.

Liu (2019) says over an extended period of time, conventional energies have developed and maintained monopoly positions in the market. Certain sectors of renewable energy are also subject to government monopoly control. However, According to Liu (2019) this is primarily due to the extremely high risk associated with renewable energy generation and the fact that businesses can hardly afford the substantial investment and the associated risk. Further literature review could not be undertaken as the study was not comprehensive but rather systematic.

6.1.3.3 MREBM: Comparison of findings and literature

When comparing findings and literature, the emergence of the potential MREBM sub-theme could not be identified from Bhatti and Danilovic (2018) as they focused on the risk of monopoly on energy distributors, not IPPs. Liu (2019) talks about certain renewable energy sectors who are subjected to government monopoly control due to substantial investment risk associated with renewable energy generation. In comparison with the findings, Liu (2019) posits that the renewable energy sector (lead by IPPs) is subjected to government monopoly whereas the findings by the Energy Regulator referred to the emergence of IPP monopoly operating within the renewable energy sector in turn within the governmental renewable procurement process.

6.1.3.4 MREBM: Conclusion

The comparison of literature and findings highlight a link between government monopoly and emergence of IPP monopoly but does not confirm findings. Based on the difference between the findings and the literature, the sub-theme MREBM was added and maintained as a potential sub-theme under the Renewable Energy Business Model theme.

6.1.4 Alternative energy ownership business model (AEOBM) sub-theme

The AEOBM emerged as a potential sub-theme under renewable energy business models (REBMs) in Chapter 5. Based on this, the three-step process in Figure 12 was followed to compare findings with literature. Step 1 was adequate to provide literature on Quality of life yielded no results from the existing literature when searching using the word search,

“alternative energy ownership” or “social energy ownership” or “community energy ownership”. Step 3 had to be followed to obtain further literature.

6.1.4.1 AEOBM: Findings.

The primary emphasis is on alternative ownership models, as shown by all comments, which suggest a shift away from conventional energy ownership models towards alternatives that include community or social ownership; all IPPs and the Energy Experts unanimously support a transition from fossil fuels or environmentally harmful energy sources to cleaner and more sustainable alternative energy sources.

The differences in the context of ownership models, with Southern Africa IPPs discussing vary in the implementation of ownership structures, with some focusing on energy solutions in informal settlements and others emphasising the need to transition away from polluting energy sources.

6.1.4.2 AEOBM: Literature

Wahlund and Palm (2022) introduced many collaborative business models, including jointly owned micro-production and distribution, as well as community or individual ownership of energy production which are considered as alternative business models.

According to Gui and MacGill (2018), households and communities are increasingly not limited to solely engaging as passive consumers of electricity services. Instead, they are progressively taking on roles as producers/prosumers, investors, and asset owners, thereby assuming responsibility for crucial investment choices either individually or collectively as "clean energy communities" and this gives rise to alternative forms of ownership of the energy system (Kubli and Puranik, 2023).

6.1.4.3 AEOBM: Comparison of findings and literature

When comparing findings and literature, the emergence of the potential AEOBM sub-theme could be identified from Wahlund and Palm (2022), Gui and MacGill (2018), and (Kubli and Puranik, 2023) in different forms of alternatives. The findings explain alternatives as being inclusive of community or social ownership, which have been identified and confirmed by Wahlund and Palm (2022) and Gui and MacGill (2018). The above literature was included in the body of literature in Chapter 2 as part of the study contribution.

6.1.4.4. AEOBM: Conclusion

The findings of the study align with the literature obtained when following step 3. AEOBM was initially a new sub-theme, however based on literature, it is consequently identified as an existing sub-theme under renewable energy business model.

6.2 Research Sub-question 1

6.2.1 Community self-sufficiency sub-theme

The community self-sufficiency emerged as a potential sub-theme under social benefits in Chapter 5. Based on this, the three-step process in Figure 12 was followed to compare findings with the literature. Step 1 could not provide adequate literature when searching using the word search, “community self-sufficiency” or “self-sufficiency”. The researcher followed step 2.

6.2.1.1 Community self-sufficiency: Findings

The similarities were noted on the promotion of community self-sufficiency in energy and economy, emphasising active participation and empowerment of communities. They stress the importance of communities in achieving self-sufficiency and encourage a proactive approach to change.

Different statements exist amongst IPPs, Energy Regulator and Energy Expert, with some prioritising infrastructure development and economic growth, while others focus on renewable energy sources.

6.2.1.2 Community self-sufficiency: Literature

According to the findings of Reis et al. (2021b), energy self-sufficiency is defined as the capacity of an energy system to operate independently from the power grid, resulting in advantages for both users and the power system. The findings of their study demonstrate that despite the presence of divergent individual objectives among energy community members, it is possible to achieve optimal self-sufficiency within the overall system while also generating economic advantages for all stakeholders. This serves to highlight the many benefits associated with energy communities.

6.2.1.3 Community self-sufficiency: Comparison of literature and findings

Comparing the literature and the findings, there are similarities between the community self-sufficiency as a benefit associated with community; however, there’s a difference identified from the literature in relation to the findings. The literature talks more about energy self-sufficiency, and it is related to the energy system. The findings referred to community self-sufficiency emphasising active participation and self-empowerment of communities. Based

on this, energy self-sufficiency and community self-sufficiency are different. The above literature was not included in the body of literature in Chapter 2 as in does not provide literature on community self-sufficiency.

6.2.1.4 Community self-sufficiency: Conclusion

Based on the analysis above, community self-sufficiency will remain a potential sub-theme and identified as a new sub-theme under social benefits.

6.2.2 Quality of life theme

The quality of life emerged as a potential new theme under value creation for energy community in Chapter 5. Based on this, the three-step process in Figure 12 was followed to compare findings with literature. Step 1 was followed with the word search, namely “quality of life”, “sustained livelihood”, “improved quality of life”, and the theme was identified from the already reviewed literature: Bocken (2023) and Freudenreich et al. (2020).

6.2.2.1 Quality of life theme: Findings

The improvement of human life was emphasised in both similarities and differences, be it ensuring access to pure water, healthcare, and/or environmental quality. The objective is to uplift individuals and communities. A collective emphasis exists on promoting renewable energy sources as a means to alleviate pollution and improve the environment. This recurring theme implies an acknowledgment of the significance of sustainable energy in terms of its long-term benefits.

6.2.2.2 Quality of life theme: Literature

According to Bocken (2023), it is possible to increase the quality of life and promote a more equitable distribution of resources by minimising material reliance and adopting non-material values. Freudenreich et al. (2020) talk about a secure livelihood of people as a value created for stakeholders (people).

Bocken (2023) also states the need to mitigate the ecological consequences of economic efforts to achieve sustainability, alongside the fair allocation of wealth across countries in order to achieve improved quality of life. Furthermore, in the context of the era known as the Anthropocene, it is important to shift human activities towards sustainable development in order to safeguard the long-term health and welfare of earth and human beings (Bocken, 2023).

6.2.2.3 Quality of life theme: Comparison of literature and findings

The literature and findings emphasise the importance of enhancing quality of life by reducing material dependence and adopting non-material values. This leads to a more equitable allocation of resources and promotes sustainable welfare. The Anthropocene concept calls for a transition towards sustainable development, emphasising the significance of sustainable energy in enhancing human existence and community well-being.

6.2.2.4 Quality of life theme: Conclusion

The findings of the study align with the extant literature. In Chapter 5, quality of life was initially identified as a potential new theme under the value creation for energy community, however based on the literature, it is now identified as an existing theme under the value creation for energy community.

6.3 Research sub-question 2

6.3.1. Stakeholders theme

Stakeholders was an existing theme from the literature review, therefore the literature review in Chapter 2 sufficed for comparing the findings related to this theme to the literature. Based on this, only step 1 was implemented with a focused search encompassing keywords and phrases such as “stakeholders” and “actors”.

6.3.1.1 Stakeholders: Findings

The participants highlighted the importance of private sector involvement in renewable energy initiatives, particularly in financing, technology provision, and stakeholder engagement. It emphasized the role of government policies in supporting and enabling these projects. Access to financing is a significant challenge, and involving various stakeholders in decision-making and project execution is crucial. The study also highlights the differences among locations, such as Indonesia’s focus on NGOs and France’s emphasis on government obligations and stakeholder allocation.

6.3.1.2 Stakeholders: Literature

For an effective deployment of energy community projects, Hicks and Ison (2018) posit the critical aspect of understanding the stakeholders involved and present motivators and factors by, used these stakeholders when deploying energy community projects. This part emphasises the role and importance of understanding stakeholders who deploy such projects.

The three important dimensions, namely, stakeholders (Hicks & Ison, 2018), key resources (Kristoffersen et al., 2021) and key activities Iazzolino et al. (2022) are important in the deployment of energy community projects. Hicks and Ison (2018) talk about “the number of actors engaged also has a bearing on ‘community’ outcomes: with stronger outcomes being delivered by collaboration among a number of stakeholders” (p.529).

6.3.1.3 Stakeholders: Comparison of literature and findings

The literature and findings are both similar as they highlight aspects such key activities financing and stakeholder engagement; “stakeholders” (government, NGOs and private sector) and “resources” (enabled government policies, technology provision).

6.3.1.4 Stakeholders: Conclusion

The findings indicate a similar outcome to the literature on stakeholders.

6.3.2 Grid value Sub-theme

The grid value emerged as a potential theme under the resources theme in Chapter 5. Based on this, the three-step process in Figure 12 was followed to compare findings with literature. Step 1 was followed with the word search, namely “grid values” and “electricity network value”. Information was identified from the already viewed literature from Reis at al. (2021) and Iazzolino et al. (2022).

6.3.2.1 Grid value: Findings

Fundamentally, value of the grid is universally acknowledged by IPPs and the Energy Expert. Key aspects such as regulatory dominance, challenges linked to grid integration and the need for local government investment in distribution infrastructure, responsibility by the grid operator and value for promoting the integration of renewable energy to the grid were key aspects explained.

6.3.2.2 Grid value: Literature

Reis at al. (2021) say energy communities have the potential to enhance the efficiency of overall operations and reduce the need of additional network investments, therefore contributing energy and flexibility to the grid. Furthermore, these ECBM projects is to include residents in the process of local energy production, with the goal of attaining a certain level of autonomy from the power grid and benefiting from the excess energy sales (Reis at al., 2021). Reis et al. (2021) say the demand side management strategies provide flexibility to grid operators.

Iazzolino et al. (2022) talk about network benefits stating that the injection and consumption of energy within the same distribution system boundary have advantages that extend beyond just financial implications. The advantages of the system, resulting from self-consumption in any of its recognised forms, are associated with the prevention of network losses, network connectivity, network expansion, and dispatching (Iazzolino et al.,2022).

In his study, Iazzolino et al. (2022) talk about Denmark that serves as a prominent illustration of community investment in renewable energy sources. The federal government is responsible for addressing concerns pertaining to energy and establishing agreements with utility firms for the purpose of grid connectivity. Nevertheless, these corporations are not only collaborators, but also joint proprietors of the projects.

6.3.2.3 Grid value: Comparison of literature and findings

Grid value was deemed a potential sub-theme in Chapter 5. The findings and literature have aligned and confirmed its existence in the extant literature. Similarities in findings and literature were acknowledged the network benefits both for communities, grid operators and an existing case of Denmark's government in investing and supporting grid connectivity. Therefore, grid value is deemed to be similar to the literature and considered an existing sub-theme within the network infrastructure.

6.3.2.4 Grid value: Conclusion

Based on this analysis, grid value is considered a key important infrastructure resource as supported by the extant literature. This will be recognised as an existing theme under resources.

6.4 Research Value Creation Outcomes

6.4.1 Social value creation outcome

Social value creation was an existing theme from the literature review, therefore the literature review in Chapter 2 sufficed for comparing the findings related to this theme to the literature. Based on this, only step 1 was implemented with a focused search encompassed keywords and phrases such as "social value creation", "community development", "social development", and "job creation".

6.4.1.1 Social value creation: Findings

Participants stated in similar terms that energy projects, particularly when local or community-focused, job creation opportunities, the need of promoting community development via multiple ways, development of skills, education, improvements of

infrastructure such as roads, schools, and clinics, and the support to small businesses and entrepreneurial ventures were all common descriptions linked to social value creation outcomes. The significance of skills development and skills transfer was further emphasised by several statements, highlighting its impact on both job creation, delivering education and the empowerment of communities.

6.4.1.2 Social value creation: Literature

Laukkanen and Tura (2020) emphasise the significance of business models that go beyond mere economic value creation and instead prioritise the provision of environmental and social benefits hence promoting sustainability and yielding a net-positive outcome. The social outcomes such as community development and education are also evident from Brummer (2018). In his study, Brummer (2018) lists community empowerment, education, skills, and employment as social outcomes for energy community.

6.4.1.3 Social value creation: Comparison of literature and findings

The literature and findings are both similar as they highlight aspects such as different community development activities, education, skills, and employment or job creation from findings.

6.4.1.4 Social value creation: Conclusion

The findings of the study align with the literature review when it comes to the creation of social value.

6.4.2 Economic value creation outcome

Economic value creation was an existing theme from the literature review, therefore the literature review in Chapter 2 sufficed for comparing the findings related to this theme to the literature. Based on this, only step 1 was implemented with a focused search encompassed keywords and phrases such as “economic value creation”, “profitability” or “profit”, “economic growth”, and “return on investment”.

6.4.2.1 Economic value creation: Findings

A significant number of statements highlighted the significance of energy infrastructure in the context of economic growth. The factors mentioned above emphasised the significance of job creation, facilitating access to income-generating activities, and the possibility for economic expansion via investments and employment opportunities.

On differences, although there exists a consensus about the importance of both economic growth and sustainability, Southern IPPs have different statements, one places significant emphasis on the reduction of costs and the attainment of financial sustainability within the power utilities sector, they also highlight the importance of market share, and profitability.

6.4.2.2 Economic value creation: Literature

Freudenreich et al. (2020) and Geissdoerfer et al. (2018) highlighted the importance of economic value creation, particularly emphasising aspects such as profitability, cost structure, and revenue streams. Freudenreich et al. (2020) highlighted the importance of revenue streams and cost structure as essential financial resources for establishing sustainable business models.

6.4.2.3 Economic value creation: Comparison of literature and findings

The literature and findings are both similar as they highlighted aspects such profitability, and revenue streams, which align with economic expansion via investments and income generating activities.

6.4.2.4 Economic value creation: Conclusion

The findings of the study align with the literature review when it comes to the creation of economic value.

6.4.3 Democratisation of energy value creation outcome

The democratisation of energy emerged as a potential theme under value creation outcomes in Chapter 5. Based on this, the three-step process in Figure 12 was followed to compare findings with literature. Step 1 was followed with the word search, namely “democratisation of energy”, “democratic energy”, “decentralised energy/electricity system” and “decentralised energy generation”. Literature was identified from the already viewed work of Reis at al. (2021), Blasch et al. (2021) and Brummer (2018).

6.4.3.1 Democratisation of energy value creation: Findings

There’s a common emphasis on distributed energy models, such as rooftop solar panels and community-level renewable projects. These models were seen as democratising energy by allowing individuals or smaller communities to generate their own power, moving away from centralised power plants to decentralised power plants.

6.4.3.2 Democratisation of energy value creation: Literature

Blasch et al. (2021) say the promotion of clean energy communities entails a transition towards decentralised electricity systems that rely on the use of distributed energy

resources. The use of inclusive design in these systems provides energy communities with improved choices for engagement and empowerment.

Blasch et al. (2021) emphasised the significance of including a wide range of stakeholders in energy communities has become more pertinent due to the evolution of energy policy and innovation towards decentralised and locally based energy systems. Decentralised energy systems are structured and socially organised, highlighting the institutional arrangements and processes that shape and impact these systems (Blasch et al., 2021).

Reis et al., (2021) says the term energy communities refers to models that are rooted in specific locations and interests and are characterised by purposes that extend beyond mere profit-making. These models are characterised by democratic principles and shared ownership and organisational standards.

In his study, Brummer (2018) says on the scholarly literature, it is widely acknowledged that the energy community concept encompasses two primary dimensions. Firstly, it pertains to an energy system that exhibits enhanced sustainability in its technological aspects. Secondly, it pertains to an energy system that facilitates increased participation and democratic control.

Further to that, Brummer (2018) highlights value creations such as energy market unbundling, along with the growth of decentralised generation powered by renewable sources, has brought about significant transformations in the conventional utilities business model. This has enabled smaller energy retailers to thrive and provide novel electricity supply packages, hence creating opportunities for emerging energy business models.

6.4.3.3 Democratisation of energy value creation: Comparison of literature and findings

Comparing the findings and literature, the emergence of democratisation of energy or decentralised energy systems was identified from the extant literature. The literature and findings recognise the models of decentralised energy systems or democratisation of energy as it provides energy communities with improved choices for engagement and empowerment for the energy community characterised by democratic principles and shared ownership and the unbundling of the energy market which further provides transformation in smaller energy retailers and in energy communities.

6.4.3.4 Democratisation of energy value creation: Conclusion

This theme was initially deemed a potential theme. The findings and literature have aligned and confirmed its existence in the extant literature, therefore, democratisation of energy is deemed to be similar to themes in the literature and considered an existing theme. The literature only links democratisation of energy with energy communities and highlights the improvements and transformation for energy communities.

Based on this analysis, democratisation of energy is considered a benefit or value creation to the energy community. It will therefore be identified in the literature and now an existing theme under value creation for energy community.

6.5 Conclusion to Chapter 6

In conclusion, Chapter 6 compared the findings with literature with the aim of providing response to the research question. A revised summary of existing themes, no new themes, existing sub-themes, and new sub-themes after the analysis of findings and literature is illustrated in Table 31 below in the next page. which includes outcomes of Chapter 6.

Table 31: 1 Revised summary of themes and sub-themes after Chapter 6 analysis of findings and literature. (Source: Drawn by Author)

Research Questions	Theoretical Constructs		Existing themes	Existing sub-themes /Potential new sub-themes	Chapter 6 Outcome
How could sustainable business models enhance value creation for energy communities and deployment of energy community projects?	SBMs	Business literature	Value propositions		Not discussed in Chapter 5 and Chapter 6
			Value Creation		Existing theme retained
			Value Capture		Not discussed in Chapter 5 and Chapter 6
		Energy Literature	New Business models		Not discussed in Chapter 5 and Chapter 6
			Renewable Energy Business Models	Monopoly renewable energy business models	Different to literature, maintained as a potential new sub-theme
				Alternative energy ownership business model	Similar to literature, identified as an existing sub-theme
			Energy Community Business Models	Energy Generation Business Model	Theme re-assigned as an existing sub-theme under ECBMs
Research sub-question 1: How is value created for energy communities?	Value creation		Economic benefits		Not discussed in Chapter 5 and Chapter 6
			Social benefits	Community self-sufficiency	Different to literature, maintained as a potential new sub-theme
			Environmental benefits		Not discussed in Chapter 5 and Chapter 6
			Quality of life		Similar to literature, now an existing theme
			Democratisation of energy		Similar to literature. Existing theme
Research sub-question 2: How are the energy community projects deployed?	Deployment		Stakeholders		Remains an existing theme
			Resources	Grid value	Remains an existing sub-theme
			Key activities		Not discussed in Chapter 5 and Chapter 6
Research value creation Outcomes	Value creation outcomes		Environmental value creation outcome		Not discussed in Chapter 5 and Chapter 6
			Social value creation outcome		Existing theme
			Economic value creation outcome		Existing theme

6.5.1 The adjusted conceptual framework

Figure 13: Adjusted Conceptual Framework

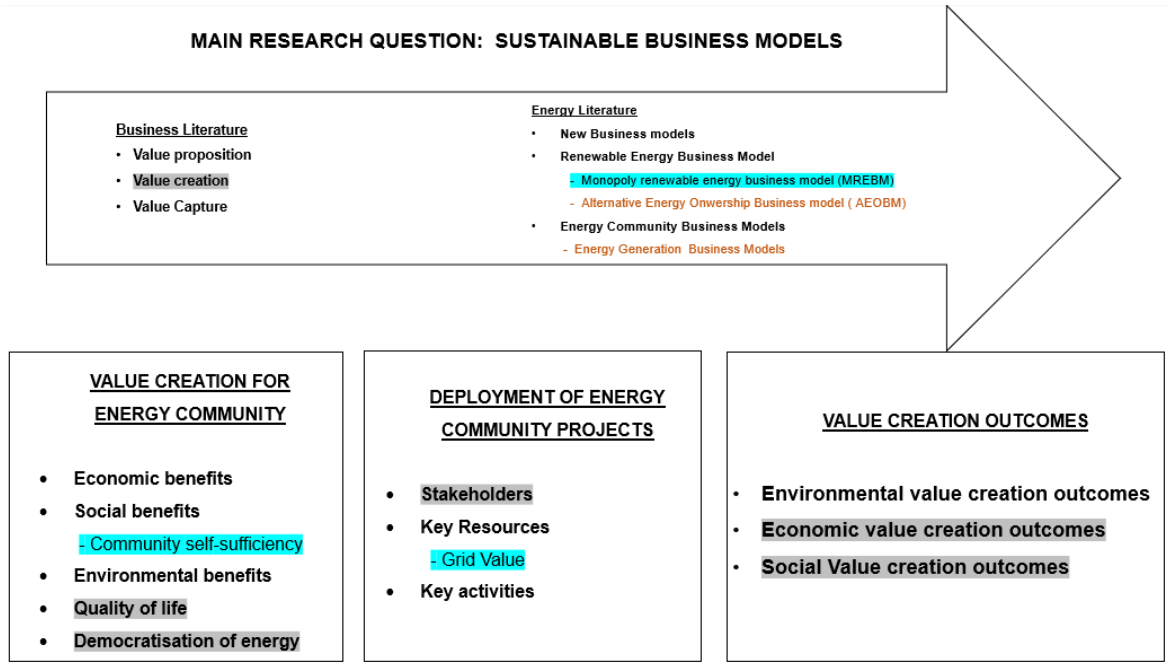


Figure 13 shows the conclusions from Chapter 6 from the comparison of literature and research findings from Chapter 2 and Chapter 5 respectively. The adjusted conceptual framework from Chapter 5 has been adjusted to incorporate the analysis from Chapter 6. This shows all existing themes, new sub-themes and existing sub-themes. There were no new themes.

A total of 11 themes was selected for discussion and only 6 were identified as similar to the existing literature and remained in the conceptual framework highlighted grey. Three new potential sub-themes were identified and highlighted in blue. Furthermore, three existing sub-themes were identified and highlighted in orange. All themes that are unhighlighted are existing themes that were excluded from discussion.

CHAPTER 7: CONCLUSIONS

This chapter is aimed at presenting the outcomes of the research study, obtained from Chapter 6 when the analysis of comparing findings and literature was undertaken. The main aim of the research study was to explore and seek understanding on how SBMs could enhance value creation for the energy communities and the deployment of energy community projects. The research study setting was the energy sector and drew on the experience, knowledge, and expert opinion of business professionals in Southern Africa (specifically in South Africa, Namibia, and Zimbabwe) as well as other countries internationally (specifically France, Australia, and Indonesia).

This chapter outlines the conclusions for each research question derived from chapter 6 and further provides the final conceptual framework based on chapter 6 with understanding and deeper insights. Furthermore, research contributions, recommendations for management and stakeholders, research limitations and future research suggestions shall be discussed as part of drawing conclusions to the research study. The following section provides a high-level conclusions per research question as differences and similarities have already been covered in Chapter 6.

7.1 Principal Theoretical Conclusions

7.1.1 Main research question

The main research question intersected the business literature with one theme selected for discussion, namely *value creation* and three sub-themes in energy literature, namely MREBM (new), AEOBM (existing) and EGBM (existing). The aim of the main research question was to seek understanding and insights into SBMs ability to enhance value creation for the energy community and the deployment of energy community projects in the energy sector.

Value creation theme was identified from the literature with similaraties and in alignment with the literature with the exception of insights from IPPs and the Energy Experts. Energy experts and IPPs offer differing perspectives on value creation. The Indonesia IPP asserts that economic value is generated to generate income for the communities, whereas the Southern IPP maintains that economic value is intended for the benefit of shareholders. In contrast, the Energy Expert states that due to the old energy supply, wealth has accumulated in the hands of a small number of individuals, and argues that the implementation of renewable energy systems, particularly hybrid power plants, increases the likelihood of wealth distribution.

After literature review, the EGBM was identified from the literature as a sub-theme under ECBM with similarities to the literature. Regarding their views of energy generating business models, IPPs agree. The majority of IPPs operate in the renewable sector, and they all concur that these models revolve around the utilisation of solar, wind, and other locally accessible renewable resources. The results indicate that the energy generation business model is already established and is incorporated into ECBMs' core activities and value propositions and identified within literature. Further literature contributions were made on the business literature SBMs and energy literature on EGBM.

The MREBM emerged as a new sub-theme, distinct from existing literature, warranting attention due to its unique characteristics. The Energy Regulator raised a significant concern regarding the potential monopolistic tendencies observed among Independent Power Producers (IPPs) in the renewable energy sector. This concern specifically pertains to their influence within the government's procurement process for renewables, highlighting the potential emergence of the MREBM within this sector. Notably, this potential new sub-theme was only explained by the Energy Regulator, offering a different perspective and highlighting an area of concern within the evolving landscape of renewable energy. However, this insight remains exclusive to regulatory discussions and lacks broader participant acknowledgment, indicating the need for more expansive literature to delve deeper and gain comprehensive insights into this potential sub-theme.

AEOBM was also identified from the literature as an existing sub-theme under REBM; The findings explain alternatives as being inclusive of community or social ownership, All the IPPs and Energy Experts similarly support and agree on the transitioning from fossil fuels to cleaner, sustainable alternatives, suggesting community or social ownership type of models. Varying ownership models, focusing on informal settlements and polluting energy sources were slight differences observed between IPPs and the Energy Experts. AEOBM During findings was identified as a new sub-theme and now has been confirmed by literature that it is an existing sub-theme with contributions to the literature.

.

Various business models within the energy literature, such as AEOBM, EGBM, and MREBM, have substantiated the evolving landscape of business ***model***s within the renewable energy sector. This evolution is attributed to the ongoing energy transition and rapid technological advancements. Diverse partnerships, collaborations, and model arrangements are now emerging, aligning with the objectives of energy democracy and the transformation of energy markets. A consequential shift in ownership models of the energy system is apparent, stemming from households and communities transitioning

from mere consumers to proactive producers, investors, asset owners and self-generators of clean energy.

The research findings provide insights and understanding of these business models within the energy sector, while drawing consistent parallels with existing literature for AEOBM and EGBM. These insights shed light on the emerging business models within the energy sector, emphasising their alignment with sustainability-driven principles shared by both IPPs, Energy Experts and Energy Regulators.

7.1.2 Research sub-question 1

Research sub-question 1 was aimed at understanding and gaining insights into value creation for the energy communities in the energy sector. Two existing themes and one new potential sub-theme were discussed, namely quality of life, democratisation of energy and community self-sufficiency.

Regarding quality-of-life theme, while similarities and differences were found, which ranged from ensuring access to pure water and healthcare to environmental quality. The objective in each case was to elevate individuals and communities. A collective emphasis was placed on promoting renewable energy sources as a means to alleviate pollution and improve community surroundings. Differences were mainly on geographical location of IPPs whereby one IPP emphasised the significance of healthcare and access to clean water, while other IPP prioritise the transition away from fossil fuels and the enhancement of air quality. These differences are seen as order of priorities per geographical local. Quality of life theme was identified from literature and contributions were included in the body literature.

On community self-sufficiency theme, similarities were noted on the promotion of community self-sufficiency in energy and economy, emphasising active participation and empowerment of communities. The importance of communities in achieving self-sufficiency and encourage a proactive approach to change was emphasised by all participants. Community self-sufficiency could not be identified in the literature. Based on that, this is now a potential sub-theme and further literature review may shed light and new understanding of this sub-theme.

Democratisation of energy was identified as an existing theme in literature. Interestingly, similarities were noted regarding the democratisation of energy, with multiple statements highlighting the democratic aspect of energy systems and how municipalities or local

governments represent the community's voice in energy matters, aiming for a more inclusive and participatory decision-making process. There was a common emphasis on distributed energy models, such as rooftop solar panels and community-level renewable projects. These models were seen as democratising energy by allowing individuals or smaller communities to generate their own power, moving away from centralised power plants. This existing theme contributed to the body of literature and viewed as part of value creation for energy community.

Value creation for energy communities can be viewed through the three themes covered and how each theme has a common thread that emphasised the benefit for communities such as community empowerment and participation, community's voice in energy decision making as well as the emphasis on ensuring that community have access to essential resources.

7.1.3 Research sub-question 2

Research sub-question 2 was aimed at understanding and gaining insights into deployment of energy community projects in the energy sector. One theme and one sub-theme were discussed, namely, stakeholders and grid value.

The discussion on grid value emphasises the benefits of network connection for communities and grid operators, comparing Denmark's efforts to facilitate grid connectivity. The concept of the grid has become a well-established debate in network infrastructure.
Three fundamental aspects were identified: stakeholders, important resources, and key activities both during findings further identified in literature. Collaborative efforts, private sector participation in finance, technology supply, and stakeholder engagement are crucial for achieving robust community results. Government policies play a role in facilitating these activities. The research highlights the difficulty of obtaining financial resources and the need to engage a wide range of stakeholders in decision-making and project deployment.

7.1.4 Research value creation outcomes

Research value creation outcomes are purposed for outlining the overall research outcomes and provide insights and deeper understanding regarding the research. Themes covered here are economic value creation and social value creation outcomes.

On the economic value creation outcomes, similarities within IPPs, Energy Experts and regulators were notable with covered aspects such as profitability, and revenue streams, which align with economic expansion via investments and income generating activities.

Major findings on social value creation outcomes were noted and included job creation, community development, skills upgrading, and support for local companies. Key factors include skills development, education, and infrastructure improvement. Business models prioritising environmental and social advantages foster sustainability and yield positive results.

Notable insights were on energy infrastructure which also promotes economic development through employment opportunities, income-generating activities, and investment stimulation. However, Southern Independent Power Producers (IPPs) emphasise cost reduction and financial sustainability in the power utilities industry, while the Energy Expert emphasised economic value generation. This is an alignment highlighting the need for prioritising financial sustainability and cost-effectiveness and societal benefits.

7.1.5 The potential conceptual framework for the research by the author

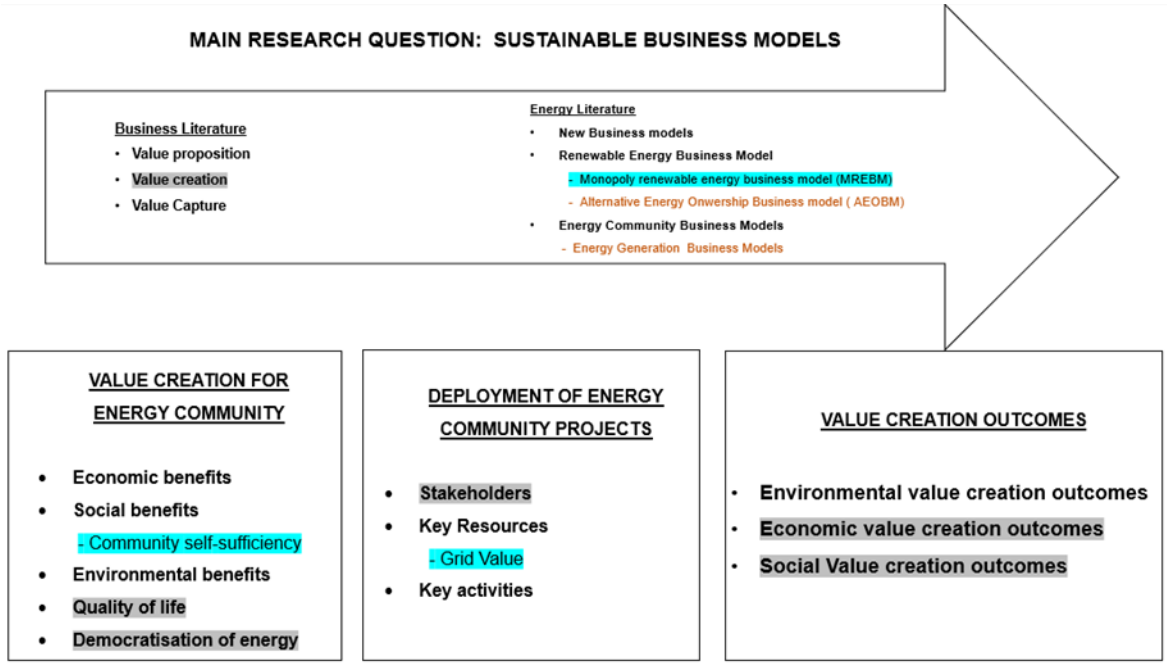


Figure 14:Potential conceptual framework (drawn by the author)

In conclusion, Figure 14 above provides the outcome of the research study with existing themes, potential new sub-themes and existing sub-themes obtained from findings and identified in literature which further contributed to the body of literature and provided understanding and insights for the study.

7.2 Research Contribution

7.2.1 Contribution to the existing body of literature

The research study presented a potential contribution by identifying similarities and differences to the literature which may be added to the body of literature. The study identified similarities on the existing business models such as EOBM, EGBM and the potential sub-theme MREBM, all within the energy sector. However, this potential theme remains exclusive to the Energy Regulatory discussions and lacks broader participant acknowledgment, indicating the need for more expansive literature to delve deeper and gain comprehensive insights into this potential sub-theme.

7.3 Recommendations for Management and Other Stakeholders

This study has developed a potential conceptual framework aimed at assisting businesses and other stakeholders in the renewable energy sector in understanding the evolving nature of business models within the energy sector. Additionally, it explores how sustainable business models in the energy sector can contribute to the creation of value for energy communities and the implementation of energy community projects:

The need for businesses to transform and adapt their new energy business models that are not only enable the collaborative creation of value to enhance resource utilisation and service exchange, but also provide economic advantages for local communities. Additionally, these models offer substantial business opportunities for technology entrepreneurs and forward-thinking utilities.

In anticipation of a distributed and decentralised energy future, proactive utility companies can use their expertise, technical knowledge, financial capabilities, and established customer and community relationships to gain knowledge and experience in emerging technologies and business models. This strategic approach would enable them to introduce new offerings and expand their customer base to effectively deploy energy community projects that will create value for all stakeholders.

The proposed approach entails the development of business models that prioritise triple-bottom-line sustainability, including economic, social, and environmental dimensions. The objective is to develop strategies that not only aim to earn profits, but also prioritise the promotion of social well-being and environmental stewardship.

Community Engagement is also an important element in the deployment of energy community projects. It is important to include stakeholders at an early stage, so ensuring that their concerns, needs, and ideas are duly integrated into the project design. This cultivates a perception of possession and dedication among the community members.

The important of stakeholders' involvement, engagement. Interest and a broader picture in ensuring that there is shared value for all in such projects deployment, especially when projects are designed within communities where natural resources are.

Investigate a range of revenue opportunities beyond the sale of energy, including supplementary services, energy efficiency initiatives, and new finance structures such as

community-based ownership of energy assets. Diversification serves to mitigate risks and promote financial stability.

The implementation of capacity building and education initiatives is crucial for fostering skills development and promoting educational opportunities within the community. It enables community members to acquire the necessary information and competencies to actively engage in and derive advantages from energy projects. The curriculum encompasses instruction in project management, technological proficiencies, and entrepreneurial competencies.

Partnerships and Collaboration to cultivate alliances with local enterprises, governmental bodies, non-governmental organisations (NGOs), and academic institutions. Engage in collaborative efforts to optimise the use of resources, knowledge, and networks, so enhancing the efficiency and long-term viability of project execution.

The use of technical breakthroughs and innovation should be embraced in order to optimise the processes of energy production, storage, and distribution. The integration of renewable energy sources, energy-efficient technology, and smart grid solutions are necessary in order to achieve sustainability and enhance cost-effectiveness.

Policy advocacy and support through the engagement of stakeholders with policymakers is crucial to advocate for the establishment of regulatory frameworks and policies that provide incentives for the adoption of sustainable energy practises. I propose advocating for the implementation of incentives, subsidies, or grants aimed at fostering community-based renewable energy initiatives.

Through the implementation of these approaches, both management and stakeholders may engage in a cooperative effort to construct enduring business models that not only provide advantages for the energy sector but also make beneficial contributions to society, the environment, and the economy while ensuring the sustained success of the project in the long term.

7.4 Research Limitations

Three limitations were identified for the research study. The study was conducted within a specific setting and context, covering selected IPPs in Southern Africa, three international IPPs, Energy experts and Energy regulators. Other countries were not incorporated as part of the study.

The emergence of the potential new theme MREBM explained by the Energy Regulator provided an understanding, this insight remains exclusive to regulatory discussions and lacks broader participant acknowledgment, indicating the need for more expansive literature to delve deeper and gain comprehensive insights into this potential sub-theme.
The study only explored the Renewable energy sector within the energy sector. Other sectors such as green hydrogen sector were not included. The researcher did not explore the new potential subthemes identified with comprehensive literature review such as the grid value, community self-sufficiency and MREBM.

7.5 Suggestions for Future Research

The emergence of the potential new theme MREBM explained by the Energy Regulator provided an understanding, this insight remains exclusive to regulatory discussions and lacks broader participant acknowledgment, indicating the need for more expansive literature. This may be potential future research.

Nes potential sub-theme, namely, community self-sufficiency and grid value may require further understanding and exploration through future research.

Further studies it may be necessary to explore the intersection of business literature and energy literature with the aim of adding to the body of literature and proving more in-depth understanding and insights into the linkages and connections between the two.

REFERENCES

Aborisade, O. P. (2013). Data collection and new technology. *International Journal of Emerging Technologies in Learning (Online), 8*(2), 48.

Ackermann, T., Andersson, G., & Söder, L. (2001). Distributed generation: A definition. *Electric Power Systems Research*, *57*(3), 195–204. https://doi.org/10.1016/S0378-7796(01)00101-8

Agle, B. R., & Caldwell, C. B. (1999). Understanding research on values in business. *Business and Society, 38*(3), 326–387. https://www.proquest.com/scholarly-journals/understanding-research-onvalues-business/docview/199413573/se-2

Bell, E., Bryman, A. & Harley, B. (2019) *Business Research Methods*. (5th ed.). London: Oxford University Press.

Blasch, J., van der Grijp, N. M., Petrovics, D., Palm, J., Bocken, N., Darby, S. J., Barnes, J., Hansen, P., Kamin, T., Golob, U., Andor, M., Sommer, S., Nicita, A., Musilino, M., & Mlinarič, M. (2021). New clean energy community in polycentric settings: Four avenues for future research. *Energy Research & Social Science*, *82*, 102276.

Bhatti, H. J., & Danilovic, M. (2018). Business model innovation approach for commercializing smart grid systems. *American Journal of Industrial and Business Management*, *8*(9), 2007-2051.

Bocken, N. (2023). Business models for sustainability. *Oxford Research Encyclopedia of Environmental Science*, 842.

Bocken, N., Short, S., Rana, P., & Evans, S. (2013). A value mapping tool for sustainable business modelling. *Corporate Governance*, *13*(15), 482–497. https://doiorg.uplib.idm.oclc.org/10.1108/CG-06-2013-0078

Bocken, N. M. P., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, *65*, 42–56. https://doi.org/10.1016/j.jclepro.2013.11.039 U6

Bocken, N. M., Schuit, C. S., & Kraaijenhagen, C. (2018). Experimenting with a circular business model: Lessons from eight cases. *Environmental innovation and societal transitions*, *28*, 79-95.

Bocken, N. M., & Geradts, T. H. (2020). Barriers and Drivers to Sustainable Business Model Innovation: Organization Design and Dynamic Capabilities. Long Range Planning, 53(4), 101950

Bohnsack, R., Ciulli, F., & Kolk, A. (2021). The role of business models in firm internationalisation: An exploration of Europe electricity firms in the context of the energy transition. *Journal of International Business Studies*, *52*(5), 824–852. https://doi.org/10.1057/s41267-020-00364-4

Braun, V., & Clarke, V. (2020). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytical approaches. *Counselling and Psychotherapy Research, 21*(1), 37–47.

Brown, D., Hall, S., & Davis, M. E. (2019). Prosumers in the post subsidy era: An exploration of new prosumer business models in the UK. *Energy Policy, 135*, 110984.

Bryant, S. T., Straker, K., & Wrigley, C. (2018). The typologies of power: Energy utility business models in an increasingly renewable sector. *Journal of Cleaner Production, 195*, 1032-1046.

Brzóska, J., Knop, L., Odlanicka-Poczobutt, M., & Zuzek, D. K. (2022). Antecedents of creating business models in the field of renewable energy based on the concept of the new age of innovation. *Energies, 15*(15), 5511. https://doi.org/10.3390/en15155511

Burger, S. P., Jenkins, J. D., Batlle, C., & Pérez-Arriaga, I. J. (2019). Restructuring revisited Part 1: Competition in electricity distribution systems. *The Energy Journal, 40*(3). https://doi.org/10.5547/01956574.40.3.sbur

Chicco, G., Di Somma, M., & Graditi, G. (2021). Overview of distributed energy resources in the context of local integrated energy systems. In G. Chicco, M. Di Somma, & G. Graditi (Eds.), *Distributed energy resources in local integrated energy systems* (pp. 1–29). Elsevier.

Coy, M. J. (2019). Research methodologies: Increasing understanding of the world. *International Journal of Scientific and Research Publications*, *9*(1), 71–77.

Dembek, K., & York, J. (2019). Sustainable business models: Rethinking value and impact. *Rethinking Strategic Management: Sustainable Strategizing for Positive Impact*, 131–148.

Dzwigol, H. (2020). Methodological and empirical platform of triangulation in strategic management. *Academy of Strategic Management Journal*, *19*(4), 1–8.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1–4.

Evans, S., Vladimirova, D., Holgado, M., Van Fossen, K., Yang, M., Silva, E. A., & Barlow, C. Y. (2017). Business model innovation for sustainability: Towards a unified

perspective for creation of sustainable business models. *Business Strategy and the Environment*, *26*(5), 597–608.

Freudenreich, B., Lüdeke-Freund, F., & Schaltegger, S. (2020). A stakeholder theory perspective on business models: Value creation for sustainability. *Journal of Business Ethics, 166*, 3–18.

Gauthier, C., & Gilomen, B. (2016). Business models for sustainability: Energy efficiency in urban districts. *Organization & Environment*, *29*(1), 124–144.

Geissdoerfer, M., Bocken, N.M.P., & Hultink, E. J. (2016). Design thinking to enhance the sustainable business modelling process. *Journal of Cleaner Production, 135*, 1218e1232. https:// doi.org/10.1016/j.jclepro.2016.07.020.

Geissdoerfer, M., Vladimirova, D., & Evans, S. (2018). Sustainable business model innovation: A review. *Journal of Cleaner Production, 198*, 401–416.

Gjorgievski, V. Z., Cundeva, S., & Georghiou, G. E. (2021). Social arrangements, technical designs and impacts of energy communities: A review. *Renewable Energy*, *169*, 1138–1156.

Gregori, P., & Holzmann, P. (2020). Digital sustainable entrepreneurship: A business model perspective on embedding digital technologies for social and environmental value creation. *Journal of Cleaner Production*, *272*, 122817.

Gui, E. M., & MacGill, I. (2018). Typology of future clean energy communities: An exploratory structure, opportunities, and challenges. *Energy Research & Social Science, 35*, 94–107.

Hafner, M., & Tagliapietra, S. (2020). *The geopolitics of the global energy transition.* Lecture Notes in Energy, vol 73. Cham: Springer,. https://doi.org/10.1007/978-3030-39066-2_1

Hall, S., & Roelich, K. (2016). Business model innovation in electricity supply markets: The role of complex value in the United Kingdom. *Energy Policy*, *92*, 286–298.

Hall, S., Brown, D., Davis, M., Ehrtmann, M., & Holstenkamp, L. (2020) Business Models for Prosumers in Europe. PROSEU – Prosumers for the Energy Union: Mainstreaming active participation of citizens in the energy transition (Deliverable N°D4.1).

Hicks, J., & Ison, N. (2018). An exploration of the boundaries of 'community' in community renewable energy projects: Navigating between motivations and context. *Energy Policy, 113*, 523–534.

Hughes, P., Hodgkinson, I. R., Elliott, K., & Hughes, M. (2018). Strategy, operations, and profitability: the role of resource orchestration. *International Journal of Operations & Production Management*, *38*(4), 1125-1143.

Intergovernmental Panel on Climate Change (IPCC). (2023). Sections In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva,Switzerland, pp.35-115, doi: 10.59327/IPCC/AR6-9789291691647

Institute of Directors in Southern Africa. (2016). King IV report on corporate governance for South Africa, 2016. South Africa.

International Renewable Energy Agency. (2023). World Energy Transitions Outlook 2023: 1.5°C Pathway, International Renewable Energy Agency, Abu Dhabi:

Josselson, R. (2013). Chapter 3: Planning the Interview. In R. Josselson, *Interviewing for qualitative inquiry: A relational approach*. (pp. 35–50). Guilford Press.

Kennedy, S., & Bocken, N. (2020). Innovating business models for sustainability: An essential practice for responsible managers. In Research handbook of responsible management (pp. 640-653). Edward Elgar Publishing.

Kristoffersen, E., Mikalef, P., Blomsma, F., & Li, J. (2021). The effects of business analytics capability on circular economy implementation, resource orchestration capability, and firm performance. *International Journal of Production Economics*, *239*, 108205.

Bocken, N. M., & Short, S. W. (2021). Unsustainable business models–Recognising and resolving institutionalised social and environmental harm. *Journal of Cleaner Production*, *312*, 127828.

Klag, M., & Langley, A. (2013). Approaching the conceptual leap in qualitative research. *International Journal of Management Reviews*, *15*(2), 149–166.

Kothari, C. R. (2004). *Research methodology: Methods and techniques. (2*nd revised ed.). New Age International.

Kubli, M., & Puranik, S. (2023). A typology of business models for energy communities: Current and emerging design options. *Renewable and Sustainable Energy Reviews, 176*, 113165.

Iazzolino, G., Sorrentino, N., Menniti, D., Pinnarelli, A., De Carolis, M., & Mendicino, L. (2022). Energy communities and key features emerged from business models review. *Energy Policy*, *165*, 112929.

Laukkanen, M., & Tura, N. (2020). The potential of sharing economy business models for sustainable value creation. *Journal of Cleaner Production*, *253*, 120004.

Lowitzsch, J., Hoicka, C. E., & van Tulder, F. J. (2020). Renewable energy communities under the 2019 European Clean Energy Package–Governance model for the energy clusters of the future? *Renewable and Sustainable Energy Reviews*, *122*, 109489.

Lozano, R. (2018). Sustainable business models: Providing a more holistic perspective. *Business Strategy and the Environment*, *27*(8), 1159-1166.

López, I., Gómez-Cornejo, J., Aranzabal, I., García, L. E., & Mazón, J. (2023). Photovoltaic Local Energy Communities—Design of New Energy Exchange Modalities—Case Study: Tolosa. *Energies*, *16*(10), 4000.

Lüdeke-Freund, F., Carroux, S., Joyce, A., Massa, L., & Breuer, H. (2018). The sustainable business model pattern taxonomy—45 patterns to support sustainability-oriented business model innovation. *Sustainable Production and Consumption*, 15, 145-162. https://doi.org/10.1016/j.spc.2018.06.004

Lüdeke-Freund, F., Massa, L., Bocken, N., Brent, A., & Musango, J. (2016). Business models for shared value. *Network for Business Sustainability: South Africa*.

Lynch, P., Power, J., Hickey, R., & Messervey, T. (2017). Business model strategies: Flexibility trade in emerging low voltage distribution networks. *Entrepreneurship and Sustainability Issues*, *4*(3), 380.

Mihailova, D., Schubert, I., Burger, P., & Fritz, M. M. (2022). Exploring modes of sustainable value co-creation in renewable energy communities. *Journal of Cleaner Production, 330*, 129917.

Mlinarič, M., Kovač, N., Barnes, J., & Bocken, N. (2019). *Typology of new clean energy communities.* Deliverable D2.2 developed as part of the NEWCOMERS project, funded under EU H2020 grant agreement 837752, December 2019.

Neesham, C., Dembek, K., & Benkert, J. (2023). Defining Value in Sustainable Business Models. *Business & Society*, 0(0). https://doi.org/10.1177/00076503221147902

Nolden, C., Barnes, J., & Nicholls, J. (2020). Community energy business model evolution: A review of solar photovoltaic developments in England. *Renewable and Sustainable Energy Reviews, 122*, 109722.

Porter, M., & Kramer, M. (2011). Creating shared value. Harvard Business Review 89 (1/2): 62-77.

Rehman, A. A., & Alharthi, K. (2016). An introduction to research paradigms. *International Journal of Educational Investigations*, *3*(8), 51–59.

Reinhardt, R., Christodoulou, I., García, B. A., & Gasso-Domingo, S. (2020). Sustainable business model archetypes for the electric vehicle battery second use industry: Towards a conceptual framework. *Journal of Cleaner Production*, *254*, 119994.

Reis, I. F., Gonçalves, I., Lopes, M. A., & Antunes, C. H. (2021). Business models for energy communities: A review of key issues and trends. *Renewable and Sustainable Energy Reviews, 144*, 111013.

Renewables Global Status Report. (2022). *Renewables 2022 Global Status Report*. https://www.ren21.net/gsr-2022/

Richardson, J. (2008). The Business Model: An Integrative Framework for Strategy

Execution. Strategic Change, 17(5-6), 133-144. http://dx.doi.org/10.1002/jsc.821

Ryszawska, B., Rozwadowska, M., Ulatowska, R., Pierzchała, M., & Szymański, P. (2021). The power of co-creation in the energy transition—DART model in citizen energy communities projects. *Energies, 14*(17), 5266.

Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). Sage Publications Ltd.

Schaltegger, S., Lüdeke-Freund, F., & Hansen, E. G. (2012). Business cases for sustainability: The role of business model innovation for corporate sustainability. *International Journal of Innovation and Sustainable Development*, *6*(2), 95–119.

Schaltegger, S., Hansen, E. G., & Lüdeke-Freund, F. (2016). Business models for sustainability: Origins, present research, and future avenues. *Organization & Environment, 29*(1), 3–10.

Scott, R.W. (2003). *Organizations: Rational, natural, and open systems*, Upper Saddle River, NJ: Prentice-Hall.

Seyfang, G., Park, J.J., & Smith, A. (2013). A thousand flowers blooming? An examination of energy community in the UK. *Energy Policy, 61*, 977–989.

Steffen, W., Rockström, J., Richardson, K., Lenton, T. M., Folke, C., Liverman, D., Summerhayes, C.P., Barnosky, A.D., Cornell, S.E., Crucifix, M., & Donges, J. F. (2018). Trajectories of the Earth System in the Anthropocene. *Proceedings of the National Academy of Sciences, 115*(33), 8252-8259. https://doi.org/10.1073/pnas.1810141115

Stubbs, W., & Cocklin, C. (2008). Conceptualizing a “sustainability business model”. *Organization & Environment, 21*(2), 103 – 127.https://doi.org/10.1177/1086026608318042

Teece, D. J. (2018). Business models and dynamic capabilities. *Long range planning*, *51*(1), 40-49.

Brummer, V. (2018). Community energy–benefits and barriers: A comparative literature review of Community Energy in the UK, Germany and the USA, the benefits it provides for society and the barriers it faces. *Renewable and Sustainable Energy Reviews*, *94*, 187-196.

Walker, G., & Devine-Wright, P. (2008). Community renewable energy: What should it mean? *Energy Policy, 36*(2), 497–500.

Wahlund, M., & Palm, J. (2022). The role of energy democracy and energy citizenship for participatory energy transitions: A comprehensive review. *Energy Research & Social Science*, *87*, 102482.

United Nations Department of Economic and Social Affairs (UN DESA), (2017). *Sustainable Development Goal 7: Ensure access to affordable, reliable,*

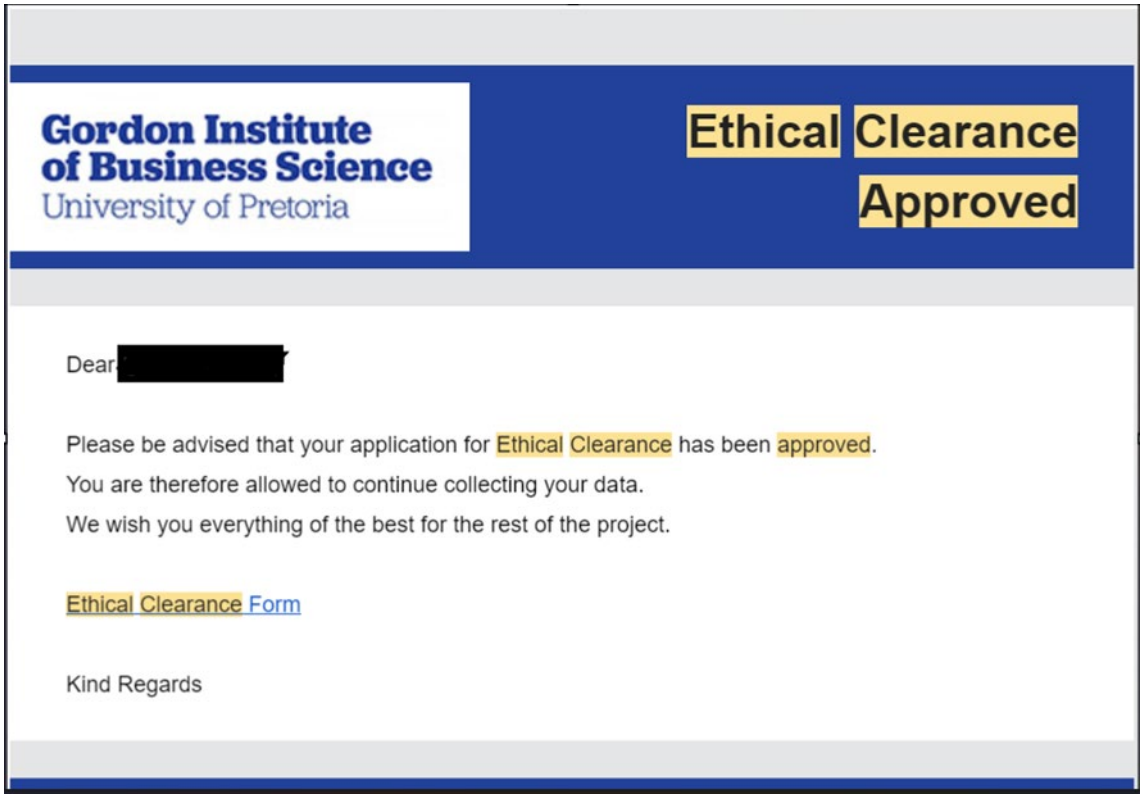
sustainable and modern energy for all. New York, NY: UN DESA. https://sdgs.un.org/goals/goal7 , archived version: https://sustainabledevelopment.un.org/post2015/summit

World Economic Forum (WEF). (2022). *Fostering effective energy transition 2022*. https://www.weforum.org/reports/fostering-effective-energy-transition-2022/

Yilmaz, K. (2013). Comparison of quantitative and qualitative research traditions: Epistemological, theoretical, and methodological differences. *European Journal of Education*, *48*(2), 311–325.

Zott, C., Amit, R., & Massa, L. (2011). The business model: Recent developments and future research. *Journal of Management*, *37*(4), 1019–1042. https://doi.org/10.1177/0149206311406265

APPENDIX A: ETHICAL CLEARANCE APPROVAL



Gordon Institute of Business Science
University of Pretoria

Ethical Clearance Approved

Dear [redacted]

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.

Ethical Clearance Form

Kind Regards

APPENDIX B: INTERVIEW GUIDE

Interview Guide for Business Professionals and Energy Regulators		
Research Question	Intention	Interview questions
Introduction	Building rapport and connection	1. Please tell me about your involvement with sustainability initiatives.
Main research question: How could sustainable business models enhance value creation for energy communities and future deployment of energy community projects?	Sustainable business model	2. Based on your understanding, please tell me what does sustainability mean for this organisation?
		3. What are the drivers of your sustainability strategies?
		4. Please tell me about the expected outcomes of your organisation from the sustainability strategies?
Research sub-question 1: How is value created for energy communities?	Value creation	5.This question is on value creation for an energy community and has two parts:
		5.1 Please tell me, what is your understanding of an energy community?
		5.2 What is your understanding of energy community projects?
		6. Based on your knowledge and experience, how is value created for the energy community? and by whom?
Research sub-question 2: How are the energy community projects deployed?	Deployment	7.This question is on deployment of energy community projects and has three parts:
		7.1 How are the energy community projects deployed?
		7.2 Who is involved and what is their role and responsibility in the deployment of energy community projects?
		7.3 What are the challenges involved in the deployment of energy community projects and how have these been addressed?
Research Outcomes	Value creation outcomes	8. Please tell me about the outcomes and/or value creation from the deployment of energy community projects? and for whom?
		9. What are the actual outcomes for the organisation derived from the energy community projects?
End	Conclusion	10. In order to conclude the interview, please could you tell me how you see this developing going forward?
Guidelines for conducting an interview	Probing Questions	Probing questions to be used as and when required:
		I wonder if you can tell me more about that
		Would you please give an example of that

		Please could you illustrate that, tell me more about that
		Please could you provide some examples of projects that have been deployed?
	Clarifying question	Clarifying question to be used only if necessary:
		Please could you you clarify X (an example would be an acronym)
Interview Guide for Experts		
Research Questions	Intention	Interview questions
Introduction	Building rapport and connection	1. Could you please tell me about your research involvement on sustainability in the energy sector?
Main research question: How could sustainable business models enhance value creation for energy communities and future deployment of energy community projects?	Sustainable business model	2. In your expert opinion, what does sustainability mean in research?
		3. Could you please tell me, what does research tell us about drivers of sustainability strategies in the energy sector?
		4. Please tell me, what does research tell us about the expected outcomes of sustainability strategies in the energy sector?
Research sub-question 1: How is value created for energy communities?	Value creation	5.This question is on value creation for energy communities and has two parts:
		5.1 Please tell me, based on your research, what is an energy community?
		5.2 According to your research, what are energy community projects?
		6. Based on your research, how is value created for the energy community? and by whom?
Research sub-question 2: How are the different energy community projects deployed?	Deployment	7.This question is on deployment of energy community projects and has three parts:
		7.1 According to your research, how are the energy community projects deployed?
		7.2 Who is involved in the deployment of the projects?
		7.3 Based on your research, what are the challenges involved in the deployment of energy community projects and how have these been addressed?
Research Outcomes	Value Creation Outcomes	8. Based on your research, please tell me about the outcomes and/or value creation from the deployment of energy community projects? and for whom?
		9. According to your research, please tell me, what are the actual outcomes derived from the energy community projects?
End	Conclusion	10. In order to conclude the interview, please could you tell me how you see this developing going forward in research?

APPENDIX C: INFORMED CONSENT LETTER

Informed consent letter

Dear Participant

I am a second-year student in the Master of Philosophy in Corporate Strategy (MPhil_CS) program at the Gordons Institute of Business Science and conducting research on **"Sustainable business models for the energy sector: Value creation for the energy community and future deployment of energy community projects"**. The purpose of the study is to understand how sustainable business models (SBMs) could create value for energy communities and further understand the deployment of energy community projects. The interview is expected to last about 45 minutes.

Your participation is voluntary, and you can withdraw at any time without penalty. By signing this letter, you are indicating that you have given permission for*:*

- the interview to be recorded;
- the recording to be transcribed by a third-party transcriber, who will be subject to a standard non-disclosure agreement;
- verbatim quotations from the interview to be used in the report, provided they are not identified with your name or that of your organisation;
- the data to be used as part of a report that will be publicly available once the examination process has been completed; and
- all data to be reported and stored without identifiers.

If you have any concerns, please contact my supervisor or me. Our details are provided below.

Researcher's name:	Supervisor's name:
Email:	Email:
Phone:	Phone:
Signature of participant	Signature of Researcher
_____	_____
Date: _____	Date: _____

APPENDIX D: LIST OF CODES

Count	Codes extracted from Atlas.ti
1	Absence of electricity
2	Absence of infrastructure
3	Access to economical activities
4	Access to education
5	Access to electricity/access
6	Access to Finance
7	Access to healthcare
8	Access to help system education
9	Access to income generating activities
10	Access to infrastructure
11	Access to water
12	Accountabilityof Private sector and Public Sector
13	Accountable governance
14	Acquire skills for new technology
15	Address load shedding
16	Affordable energy
17	Alternative energy source
18	Alternative models of ownership
19	Alternative service delivery unit projects
20	Alternative to fossil pollution
21	Ambitious climate targets
22	An enabling environment by Private sector
23	An increased on monopoly within IPPs for Renewable Programme
24	Balance of energy needs and skills needed
25	Balance of responsibilities between public and private sector
26	balance political pressure, regulations and private investment
27	Bankable Feasibility Stage
28	better profitability with renewable energy
29	blueprint to adopt principles to achieve sustainable developments
30	Business green practices
31	Shareholders income
32	Viable business models
33	Carbon economy
34	Centralised economy

35	Energy security
36	Challenge of Greenwashing with Emerging cleaner technologies
37	Challenges Understanding the technology
38	Challenges: investors to empower EC
39	Circular Economy
40	Clean energy
41	Clean water access
42	Cleaner products
43	Cleaner technologies and innovation
44	Climate Action Plan
45	Climate adaptation
46	Climate change impact eg drought
47	Climate change strategy
48	Climate funding
49	Cold storage facility for fisherman
50	Commercialisation of the RE industry
51	Commitment to the environment
52	Communities with access to energy
53	Community awareness
54	Community development e,g libraries, community halls, building schools
55	Community empowerment
56	Community energy projects
57	Community engagement
58	Community involvement
59	Community local champions
60	Community ownership of RE projects
61	Community participation and upliftment
62	Community solar borehole systems
63	Community to take ownership and accountability for their needs
64	Community upliftment
65	Community self-sufficiency
66	Community-owned projects in Denmak_learnings
67	Competencies development
68	Competitive power purchase agreements
69	Complementary technologies
70	conservation of natural habitats
71	Consumer Demand

72	Consumer driven
73	Continuous research and education
74	Cost of electricity
75	Cost recovery
76	Cost reductions of electricity/cost savings by clients
77	Country development
78	Creation of competition due to Eskom price hikes
79	Democratic community
80	Democratic energy
81	Democratically elected voice
82	Democratisation of energy
83	Deployment of resources
84	Deployment opens up a project
85	Develop independent power community in the country
86	Developmental needs
87	Distributed energy models
88	Distributed wealth due to distributed energy models
89	Drivers of sustainability
90	Drivers of sustainability:Accelerate solar power development
91	EC definition: European started this terminology of energy Community
92	EC Megawatt commercially scale project
93	EC Scale energy transition projects
94	EC well defined in Europe with ECP
95	EC with RE_Solar energy and wind energy
96	Economic Activity
97	Economic contribution
98	Economic development
99	Economic growth
100	Economic hubs
101	Economic infrastructure
102	Economic resilience
103	Economic stability
104	Economic stimulation
105	Economic sustainability
106	Economic viability of ECP
107	Economic zones
108	Economically empowering communities

109	Economies of scale
110	ECP deployed by private sector or government
111	ECP Deployed through community needs assessment
112	ECP deployment for communities living above waters
113	ECP:driven by communities due to the need for energy
114	ECP:little is known about ECP deployment in SA
115	Education/ access to education systems
116	Electricity affordability
117	Electricity cost reduction
118	Electricity grid
119	Electricity highly regulated
120	Electricity is a basic right for people
121	Electricity is an input to the economy
122	Electrification
123	Emerging possibilities due to transition
124	Employment Creation
125	Employment decline around fossil fuel
126	Employment improvement expected due to transition to clean energy
127	Enabling environment
128	Enabling policy
129	Energy poverty
130	Energy access
131	Energy community project for this island
132	Energy efficiency
133	Energy Export Potential
134	Energy generation
135	Energy generation models
136	Energy inequality
137	Energy policy development
138	Energy policy inclusivity
139	Energy resources
140	Energy Security
141	Energy solutions in informal settlements
142	Energy storage
143	Energy supply to remote area
144	Entrepreneurship
145	Environmental Balance

146	Environmental Challenge:fastest sinking capital city
147	environmental friendly things
148	ESG
149	European Policy
150	Financial driven
151	Financial sustainability
152	Financial viability
153	Financing Gap
154	Flexibility to adapt in the changing landscape
155	Forcing private companies to include communities
156	Foreign Investment
157	Funding is an issue
158	Funding facilitation/requirements
159	Future generations
160	Global Collaboration
161	Global warming
162	Going off the grid in Urban areas not practical (Infrastructure)
163	Governance in all three spheres of government
164	Government mandate to hire local people
165	Government subsidy
166	Government trust
167	Grant funding
168	Green energy
169	greener businesses
170	Greening of the energy system (Sustainability)
171	Grid integration
172	Grid operator
173	Grid value
174	Growing domestic value chain industry
175	High cost of projects
176	Human developmental need
177	Impact on Environment
178	Improve lives
179	Improvement in air quality
180	Improving quality of life
181	Improved water supply due to ECP deployment
182	In SA Context we have Municipality

183	Incentives for Customers to use PV solar sytem
184	Include sustainability in operation
185	Incorporate green practices
186	Increasing number of PV system installation
187	Independent Power Producers
188	Industrial scale of renewable equipment
189	Industrialisation
190	Industry trust
191	Infrastructure delivery
192	Infrastructure development
193	Infrastructure for health and education
194	Infrastructure strengthening
195	EC Initiative from and well defined in Europe
196	International collaboration
197	IPP procurement
198	Job Creation
199	Job opportunities
200	Key challenge is finance
201	Key stakeholders crucial for ECP deployment
202	Knowledge creation
203	Lack of training
204	Lack of trust in government
205	Leaving a place better than you found it
206	Legal investment department
207	Lenders and investors do not invest in unsustainable businesses (View)
208	Limit warming to within the safe limits for human existence
209	Local business support
210	Local community benefit
211	Local community engagement
212	Local economy
213	Local government partnership
214	Local hiring
215	Local manufacturing industry for solar PV
216	Local manufacturing of components in the RE value chain
217	Local ownership
218	Local workers
219	Low-income communities

220	Mandates and goals of private entity and public entity
221	Micro-grids deployment
222	Monopoly structure in the renewable energy sector
223	Mini grids with storage components
224	Municipality as EC institutional setup
225	Natural resources
226	Negative environmental impacts
227	NERSA has exporters of electricity
228	NERSA Mandate to license or register interested investors in the market
229	New/ emerging business models
230	NGOs awareness raising
231	NGOs has a certain role to play
232	No enabling policy
233	Energy Community not well defined in the African context
234	Off-grid communities
235	Off-grid project
236	Off-grid solar
237	One can argue that Municipality is an EC
238	Outcome: cost savings by clients
239	Oversee gaps such as energy shortage, skills for the country
240	Ownership of projects
241	Paris Agreement ambitions
242	Participation of communities
243	Partnership and private sector involvement/
244	Personal responsibility by communities
245	Philanthropic funding
246	Policy and Planning
247	Policy certainty
248	Policy coordination
249	Policy driven
250	Policy implementation
251	Policy prioritisation
252	Policy stability
253	Positive impact in the economy
254	Poverty alleviation
255	Power grid investment
256	Power purchase agreement

257	Preserve future generation
258	private entities has a strong balance sheet
259	private sector benefits
260	Private Sector Engagement
261	Profitability/maximising returns and revenue/return on investments
262	Project benefits locals
263	Project sustainability
264	Public-private partnerships
265	Purpose creation for businesses
266	Repeat of Monopoly
267	RE use in the overall national energy mix
268	Reduced electricity cost
269	Reduced water usage
270	Reducing carbon emissions/greenhouse gas emissions
271	Reduction of energy consumption
272	Reduction of Illegal connection
273	Refurbishment of school, hostels, clinics
274	Refurbishment of the grid
275	Reliance on coal results in pollution and affect health
276	Renewable energy development
277	Renewable energy financing
278	Renewable energy in our national energy mix
279	Renewable energy integration to the grid
280	Renewable Energy Ownership
281	Renewable energy projects connecting to the grid
282	Replacement of unustainable resources with sustainable resources
283	Gap in big economies and small economies
284	Return on investment for shareholders
285	Resilience to economic collapse
286	Resource deployment for business sustainability
287	Revenue generation
288	Risk mitigation during RE value chain price changes
289	Role of local communities utilise the energy
290	Rural areas development
291	SDGs
292	Self -sufficiency by community
293	Self energy generation

294	Self-consumption
295	Self-sustaining RE sources
296	Sense of ownership
297	Shared value
298	Shift from fossil fuel generatio to RE sources
299	Strengthening of the grid
300	Fossil fuel transition to RE
301	Shift from coal dominance
302	skill transfer
303	skills development/training and capacitation/skills training
304	small community grid
305	small solar companies
306	social impacts
307	social integration
308	Social issues and social acceptance
309	Socially owned renewable energy projects
310	Socially owned renewables
311	Socio-economic development benefits
312	Solar energy integration to the grid
313	Solar panel installation
314	Solar powered boreholes
315	Solar Home Systems in Africa
316	Solar PV investment by EC
317	Stakeholders: NGO, Government, Developers, Banks, Lenders, Investors, Off-taker, In value chain, Research and development institutions/project managers/shareholders/international donor organisations/Independent Power Producers
318	Stakeholder engagement, communication, and involvement
319	Stake ownership by communities
320	Stimulate the economy
321	Sustainability: Economically viable
322	Sustainability: Environmentally friendly
323	Sustainability: Socially accepted
324	Sustainability: Technically sound, maintained and operated renewable energy projects
325	Sustainability challenges: Lack of budget for O & M of RE installation in public schools and institutions

326	Sustainable business model
327	sustainable development practices
328	sustainable power generation
329	Sustainable practices woven into business practices
330	Sustained lives
331	Synergy between climate mitigation and provision of RE
332	Taking initiative by communities
333	Technology adoption
334	Technology sits with the private sector
335	Trust deficit between government, communities and developers
336	Underdeveloped Grids and the need for Upgrading of the grid
337	Unserved people
338	Value due to transition
339	Value extraction for local people
340	Value for communities
341	Value of well-being in health/
342	Viable business models
343	Wheeling of clean energy
344	While the market is open but the RE sector is seeing the same IPPs in the industry resulting to a monopoly
345	Solar and wind projects
346	Working grid communities
347	Working together with small businesses

APPENDIX E: CONSISTENCY MATRIX

TITLE: Sustainable business models for the energy sector: Value creation for the energy community and= deployment of energy community projects

RESEARCH QUESTIONS and/or PROPOSITIONS or HYPOTHESES	LITERATURE REVIEW	DATA-COLLECTION TOOL	DATA ANALYSIS
Main research question: How could sustainable business models enhance value creation for the energy community and deployment of energy community projects?	Geissdoerfer et al. (2018). Bocken (2023). Blasch et al. (2021); and Reis et al. (2021)	Question 2, 3 and 4 in the interview Guide	Braun and Clarke (2020) Thematic analysis
Research Sub-Question 1: How is value created for energy communities?	Freudenreich et al. (2020); Brummer's (2018); and Lopez et al (2023).	Question 5.1, 5.2 and 6 in the interview guide	Braun and Clarke (2020) Thematic analysis
Research Sub-Question 2: How are different energy community projects deployed from a sustainability business model perspective?	Kristoffersen et al. (2021); Hicks and Ison (2018); and Iazzolino et al. (2022)	Question 7.1, 7.2 and 7.3 in the interview guide	Braun and Clarke (2020) Thematic analysis
Research value creation outcomes	Laukkanen and Tura (2020, Freudenreich et al. (2020), Gregori and Holzmann (2020)	Question 8 and 9 on interview guide	Braun and Clarke (2020) Thematic analysis