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# A CRITICAL ASSESSMENT OF FINANCING RENEWABLE ENERGY PROJECTS IN GHANA

## Challenges, Opportunities, Profitability and Attractiveness to Investors

Technology and Communication

2024

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# 1. INTRODUCTION

## 1.1 Background to the study

The widespread consensus is that the country's total developmental needs cannot be met by existing cash or revenue, regardless of how public-spirited a government may be (Kivuitu, Yambayamba, & Fox, 2005). This is particularly true in the majority of developing country contexts, as government revenue nearly never meets the citizens' ever-increasing expectations (Jamali, 2006; Mensah & Amponsah-Tawiah, 2015). Therefore, for the government to consider advancing renewable energy enterprises, other parties, including companies, must assist it (Amponsah-Tawiah & Dartey-Baah, 2011).

In addition to fostering social progress, growth in the economy, and environmental sustainability, renewable energy sources provide a workable way to handle the continent's energy problems (Güney, 2019). However, significant financial support is needed for the proper execution of renewable energy ventures throughout Africa. To promote the continent's transformation to sustainable energy sources, climate financing is essential in providing the funding required for renewable energy programmes (Schwerhoff & Sy, 2017). The energy landscape of Africa is typified by a high dependence on traditional energy for cooking and heating, as well as restricted access to electricity, especially in rural regions (Amoah et al., 2020). Lack of access to contemporary energy services impairs healthcare delivery, restricts educational options, and impedes economic development (Rastogi, 2018). Moreover, the energy infrastructure across the continent is frequently insufficient, resulting in frequent power outages and an unstable supply of electricity (Tshidavhu & Khatleli, 2020).

These difficulties highlight how vital it is for Africa's development goal to be propelled by dependable and sustainable energy sources. Alternatives to conventional fossil fuels that are clean and sustainable include geothermal, wind, and solar energy (Güney, 2019). Africa can decrease its carbon footprint, lessen the effects of climate change, and enhance energy security by utilising these plentiful

and sustainable resources (Nzomo & Getachew, 2021). Deployment of renewable energy innovations can also improve job prospects, boost economic growth, and improve underprivileged areas' access to energy (Ambole et al., 2021). To achieve sustainable development objectives and promote equitable growth throughout the continent, renewable energy must be incorporated into Africa's energy mix. Because it provides the funds required to invest in clean energy infrastructure, climate finance is essential to the support of renewable energy ventures in Africa (Schwerhoff & Sy, 2017). According to Taghizadeh-Hesary and Yoshino (2020), financial support plays a crucial role in helping African countries overcome the initial substantial expenses related to renewable energy technology and ease the implementation of sustainable energy solutions. Furthermore, the implementation of climate finance instruments, such as environmentally friendly bonds and worldwide development financing, aids in the expansion of renewable energy projects and removes financial obstacles that impede the broad acceptance of clean energy technology (Tolliver et al., 2019). African countries may expedite the shift to renewable energy sources by utilising climate finance, which will help them achieve their goals for sustainable development and make a positive impact on global climate change (Chelminski, 2022).

In brief, to promote sustainable development throughout the continent, Africa's energy problems demand a move towards renewable energy sources (Mouchou et al., 2021; Nnaji et al., 2019). To overcome financial obstacles and hasten the adoption of sustainable energy solutions in Africa, climate finance plays a critical role in assisting renewable energy projects.

This is consistent with the assertion made by Dartey-Baah, Amponsah-Tawiah, and Agbeibor (2015, p. 70) that "organisations are allies with government in nation-building" and that enterprises should be encouraged to fill up any gaps left by the government. Therefore, it is required of them to act in a way that advances the utilisation of the resources that nature has provided, going above and beyond the pursuit of profit (Adewuyi & Olowookere, 2010; Adusei, 2017; Galbreath, 2009; Hinson, 2012). The increased focus that corporations are placing on financing

renewable energy sources can be attributed to the ongoing and growing demands for accountability from the government and other stakeholders, such as NGOs and civil society, particularly in nations that are developing (Abugre & Nyuur, 2015; Grey, 2006). These demands call on businesses to acknowledge social concerns and take action to demonstrate their commitment to these issues while maintaining their competitiveness to meet their objectives (Abukari & Abdul-Hamid, 2018; Birch, 2003).

**1.2 Research gap**

Even though financing for renewable energy is becoming increasingly prevalent worldwide, research reveals that, in comparison to the developed world, not enough has been written about financing renewable energy in developing countries, particularly in the understudied Sub-Saharan African (SSA) region (Muthuri & Gilbert, 2011; Nyuur, Ofori, & Debrah, 2014). This indicates that the former have a low level of consciousness (Nyuur et al., 2014) and typically only provide a positive image of themselves as good citizens through deeds of kindness.

It is crucial to remember that evaluating an organisation's project in a developing country cannot be done solely based on the cultural norms, societal values, and other tenets that support renewable energy initiatives in industrialised nations (Jamali & Mirshak, 2007), because funding renewable energy initiatives requires special considerations, necessitating more study in developing nations. The financing of renewable energy operations by emergent international energy-producing corporations in Ghana has received little to no investigation, despite the body of knowledge on energy and expectations in developing nations. Yet again, a critical examination of these publications demonstrates the paucity of research on the assessment of financing renewable energy initiatives in Ghana. The study that is now accessible on financing renewable energy appears to have dominated more in the European setting, like the literature on the notion of financing renewable energy (Birth, Illia, Lurati, & Zamparini, 2008; Kotonen, 2009). Arli and Lasmono (2010)

suggest that further research be done on the communication aspect of financing renewable energy projects, specifically in sub-Saharan Africa.

To be more specific, more study is still needed in Ghana, even if it appears that the literature on financing renewable energy is gradually growing (Abukari & Abdul-Hamid, 2018). In a study on renewable energy in Ghana, Abugre & Nyuur (2015) found that African nations understand the value of disclosing their financing for renewable energy projects and, accordingly, employ a range of strategies to make sure these disclosures are made. On the other hand, the study concentrated on the dedication that companies must make to these disclosures and how well the information they provide affects investors.

The study concludes that communicating financing for green energy to individual investors is ineffective. Managers from a variety of Ghanaian organisations were surveyed as part of the study's qualitative methodology. Other approaches must be used in this context to comprehend funding projects for renewable energy and assess African nations' financing methods for renewable energy, according to more specific research.

Further investigations by Hinson, Boateng, and Madichie (2010) and Hinson (2011) concentrate on reporting on the financing of renewable energy projects on the websites of Ghanaian utility companies. Thus, the purpose of this research is to significantly contribute to the evaluation of the benefits and challenges associated with financing renewable energy projects, as well as how companies in Ghana's energy sector attract investors. Through the qualitative process of gathering and examining their annual sustainable reports, it aims to contribute to the body of knowledge already available on financing renewable energy initiatives in developing countries, with a focus on Ghana. Specifically, it explores the areas in which emerging renewable energy corporations are financing renewable energy and calls attention to the reasons behind those areas through theoretical underpinnings.

### 1.3 Objectives of the study

The primary objective of this research is to determine the renewable energy initiatives and business practices of the chosen organisation and then investigate how investors are involved in those areas. Furthermore, having this knowledge will make it easier to understand why those areas of renewable energy financing exist. This study, thus, seeks to:

1. Identify the pivotal areas for financing renewable energy projects in Ghana.
2. Determine how emerging renewable energy corporations are influenced to disclose and discharge their activities and reporting.
3. Understand why investors are attracted to emerging renewable energy corporations that disclose and report on their activities despite their challenges.

### 1.4 Research questions

This research is guided by the following research questions:

1. What are the dimensions of financing renewable energy projects in Ghana?
2. How are renewable energy corporations influenced to discharge and disclose their activities and reporting?
3. Why are investors attracted to emerging renewable energy corporations that disclose and report on their activities despite the challenges they face?

### 1.5 Significance of the study

This study will broaden our understanding of how Ghana's energy business perceives renewable energy funding in terms of reporting, which will contribute to the sparse but constantly growing body of literature on the subject in sub-Saharan Africa, especially in Ghana. This is because very little or no research has been done about the financing of renewable energy projects in Ghana. Once more, the study supports legitimacy and stakeholder theory as reliable frameworks for comprehending the funding of renewable energy.

Additionally, this study will supply pressure groups and national officials with information on financing for renewable energy in Ghana's energy sector. In essence, this information would support efficient industrial regulation in that area. It will also give the administration of public energy institutions helpful information.

**1.6 Organisation of the Study**

The rest of the study is arranged as follows: Chapter 2 provides a review of extant literature by particularly presenting the theoretical frameworks that are used to buttress the findings in this research. Empirical works of literature relevant to this study are also reviewed. In Chapter 3, the methodology used in this research is described. This includes the research design, methods of gathering data, and procedures for analysing it. Chapter 4 reports on the findings from the research. Finally, Chapter 5 discusses these findings, provides a summary of the results, and concludes the study.

The contributions of this study to the pool of knowledge and the limitations attributed to the research are also discussed. Again, some recommendations are presented for future research. At the very end of this research is a list of the various sources that contributed to the research.

# 2. LITERATURE REVIEW

## 2.1 Introduction

This chapter carefully examines and discusses prior research work in renewable energy to help grasp the meaning of the concept. The topic is further explained in this chapter by adopting theoretical and conceptual frameworks. Considering this, stakeholder theory and legitimacy theory are used to improve our understanding of renewable energy and aid in its explanation. The chapter examines a few theoretical and empirical works that support this investigation.

## 2.2 Overview of renewable energy financing

Despite the growing global interest in financing renewable energy, existing research reveals that there is insufficient literature gathered on financing renewable energy in the context of developing countries, specifically the under-researched Sub-Saharan African (SSA) region, as compared to the developed world (Muthuri & Gilbert, 2011; Nyuur, Ofori, & Debrah, 2014). Unpredictability is a key component of renewable energy sources, particularly solar and wind power (Maqbool et al., 2022).

These sources are weather- and time-dependent due to their intrinsic fluctuations. Businesses must design strategies that incorporate dynamic demand-side management, balance grid technologies, and store energy options to deal with this uncertainty. Businesses may proactively create strong supply chain plans that ensure a consistent and sustainable energy supply by having a clear understanding of the challenges posed by variability (Waris et al., 2019). The chain of supply for renewable energy is significantly impacted by geopolitical considerations as well. The global distribution of renewable resources necessitates international cooperation and strategic planning (Waris et al., 2019).

By having a comprehensive awareness of the geopolitical context, businesses can predict potential challenges with resource availability, geopolitical tensions, and international trade policies (Wang et al., 2020). By considering these aspects,

organisations can enhance their agility in handling possible disruptions, identify substitute sources, and broaden their supply chain (Maqbool et al., 2018). In addition, a range of events, such as natural catastrophes, erratic political climates, and technical glitches, can interrupt supply chains.

To reduce risk, it is imperative to become aware of these potential disturbances (Steckel et al., 2016). By integrating renewable energy sources into their supply chain and decentralising energy production, organisations can reduce their dependence on centralised power generation facilities (Masse et al., 2020). Distributed renewable energy solutions further increase the resilience of essential infrastructure by ensuring operations can continue even in the event of more severe disruptions (Steckel et al., 2016). Vulnerabilities are decreased, and overall supply chain resilience is strengthened by addressing these problems proactively. This resilience is necessary to maintain company continuity, especially in industries where a constant supply of energy is essential (Othman & Khallaf, 2022).

Knowing the challenges of embracing renewable energy sources promotes technological innovation and advancement. Industry professionals and researchers can develop new technologies, energy storage choices, and smart grid systems to overcome obstacles (Maqbool et al., 2018). This innovative culture not only solves problems but also promotes the renewable energy sector and helps create more efficient and cleaner technology (Othman & Khallaf, 2022). Businesses that expertly handle and capitalise on these chances to meet the increasing demand for environmentally friendly products and services around the world position themselves at the epicentre of economic expansion and competitiveness (Wang et al., 2020).

Investing in new technology is one crucial way businesses can benefit from the financial potential of the renewable energy supply chain. Research and development in areas like innovative materials, energy storage systems, and solar technologies not only advances the industry but also creates chances for competitiveness (Samuwai & Hills, 2018). Businesses can differentiate themselves

from the competition, attract investment, and foster an inventive culture that permeates the whole supply chain by staying abreast of technological advancements (Maqbool et al., 2018). Another strategy for boosting the economy is to develop new company models. As renewable energy technology progresses, new avenues for innovative business models such as decentralised microgrids, community-based energy initiatives, and energy-as-a-service become available (Piemontese et al., 2019). These models not only satisfy evolving consumer needs but also open up fresh earnings for businesses willing to try and adjust to novel approaches to energy generation and distribution (Aldy et al., 2016).

Participating in government initiatives that promote the utilisation of renewable energy has major financial benefits (Gkalonaki & Karatzas, 2022). Many governments around the world are promoting the conversion to renewable energy through rebates, subsidies, and other supportive measures. Businesses that include these programmes in their strategy not only benefit financially but also contribute to the accomplishment of national sustainability goals (Idoko et al., 2023). Industries are positioned to become accountable players in the green economy; their reputation is enhanced; and dealing with regulatory bodies is made simpler (Jia et al., 2022).

Additionally, utilising the financial opportunities present in the renewable energy supply chain aligns with the broader trend of conscientious consumerism (Idoko et al., 2023). Companies utilising renewable energy meet customer demand and foster brand loyalty at the same time as customers place an increasing emphasis on sustainability. Increased market share, increased customer retention, and enhanced financial performance are the outcomes of this alignment with consumer values (Sarmiento et al., 2019).

### 2.3 Challenges and opportunities in financing renewable energy in Ghana

Numerous features of renewable energy projects have been shown to be highly successful, such as their efficient use of climate funding and their beneficial effects

on regional economies and communities (Maqbool et al., 2022). highlighted the significance of using key success factors and ensuring the satisfaction of internal as well as external stakeholders for the operational performance and successful completion of renewable energy projects.

Furthermore, the beneficial impacts of renewable energy projects on social, environmental, and economic fronts were emphasised by Waris et al. (2019), demonstrating the projects' ability to assist local economies and communities in a multitude of ways. To further bolster the beneficial effects on regional economies and communities, Honvári and Kukorelli (2018) underlined the importance of financial benefits in the effective implementation of renewable energy projects. But these achievements come with some difficulties. As Othman & Khallaf (2022) point out, regulatory and policy constraints provide serious obstacles to the actualization of renewable energy projects.

Further to the above, as mentioned by Maqbool et al. (2018) and Wang et al. (2020), institutional and capacity limitations, market dynamics, and investment risks add to the difficulties faced by renewable energy projects. to highlight the importance of community involvement in project execution and the active role that local communities play in the production and management of renewable energy. To further highlight the significance of recognising and resolving these elements for project success, Maqbool et al. (2018) presented empirical evidence from Pakistan about crucial success determinants for renewable energy projects.

Regarding climate finance, Steckel et al. (2016) emphasised the necessity of substantial investment flows as well as the pivotal role that international climate financing plays in bringing in private capital for the decarbonisation of the world energy system. Furthermore, Masse et al. (2020) discussed the difficulties in preparing for climate finance and the necessity of increasing investments in particular sectors, like the meat and dairy sector, highlighting the opportunities and complexities of directing climate finance into a variety of sectors.

To sum up, solar and wind power projects have shown success in utilising climate financing effectively and having a good influence on local economies and communities, but they also confront considerable hurdles linked to investment risks, capacity restrictions, and regulatory impediments. For renewable energy projects to continue to be successful, they must address these issues and make use of important success factors, stakeholder engagement, and community involvement. A variety of possibilities and innovations are included in climate finance initiatives, such as community engagement, regional cooperation, and creative funding structures. Cross-border projects, alliances, and regulatory framework harmonisation are all components of regional collaboration. Samuwai and Hills (2018) underscore the preparedness of the Asia-Pacific area to mobilise climate financing, stressing creative approaches like the National Climate Fund (NCF) and green bonds. Green bonds are an emerging instrument for financing climate change that is important for large-scale projects in African economic centres, as Ngwenya & Simatele (2020) point out. The significance of international projects and funding sources for regional climate finance plans is emphasised by these references.

Another important component is community engagement, which focuses on giving local populations a voice in construction planning and decision-making while also enabling them to support the project's sustainability over the long run. Waheed & Waheed (2022) underline that to fully realise its potential to support both gender equity and sustainable global development, climate finance must implement a thorough method to assess gender equity. This emphasises how crucial it is for climate financing solutions to take equality and community engagement into account. Schloesser & Schulz (2022) show how technical developments have the potential to improve financial structures for climate action. Furthermore, to draw in public and private funding, Sheriffdeen et al. (2020) stress the significance of assessing the institutional efficacy of national climate financing institutions and underscore the necessity of strong and open legal frameworks. The importance of creative finance models and strong institutional performance in advancing climate finance initiatives is emphasised by these references.

To sum up, creative funding approaches, community involvement, and regional cooperation are all part of climate finance initiatives and are critical to tackling climate change issues. With an emphasis on the necessity of teamwork, community involvement, and creative financing strategies to accomplish sustainable global growth, the resources provided offer insightful information about the various facets of climate finance methods. Evaluating renewable energy projects' contribution and considering adaptation and mitigation factors are essential for conforming to global climate targets (Piemontese et al., 2019). The necessity of comparability and openness in fostering steadiness and scope in climate action is underscored by the Paris Agreement, which provides a major global commitment to address climate change (Aldy et al., 2016). To meet climate targets, renewable energy initiatives are essential. They are a global priority since they not only prevent future climate change but also maintain energy supplies (Fant et al., 2016). Considering climate change, the development of renewable energy is extremely desirable, as it contributes to the reduction of greenhouse gas emissions and facilitates the mitigation and adaptation of climate change (Idoko et al., 2023; Enebe et al., 2022; Jia et al., 2022).

Furthermore, to combat climate change and address current issues facing the global energy industry, renewable energy technologies have gained popularity on a global scale (Gkalonaki & Karatzas, 2022). To comprehend how renewable energy sources, especially wind energy, contribute to achieving climate goals, it is imperative to evaluate their environmental effects (Gkalonaki & Karatzas, 2022). Achieving climate targets also depends on integrating renewable energy sources into the energy system, which can have an impact on the system's cost and structural makeup (Sarmiento et al., 2019). In addition, renewable energy initiatives provide other advantages, such as local economic expansion, job development, and revenue generation, in addition to helping to mitigate the effects of climate change (Zapata, 2022).

Examining the hydroclimatic effects on Africa after the Paris Agreement is crucial for analysing African pledges. The argument surrounding the viability of adhering to the

2°C target for African water resources underscores the necessity for thorough evaluations of the impact of renewable energy initiatives in the area (Piemontese et al., 2019; Ukoba et al., 2017).

Further highlighting the significance of renewable energy projects in reducing climate change and maintaining energy resources in the region is the effect caused by climate change on wind and solar resources in southern Africa (Fant et al., 2016). As a result, to be in line with global climate goals, especially the Paris Agreement, renewable energy projects must be thoroughly evaluated for their impact on adaptation and mitigation. In addressing climate change, renewable energy is crucial, as evidenced by the agreement's priority for comparability and transparency. In addition to that, renewable energy projects enjoy multiple advantages beyond combating the effects of climate change, which makes them indispensable for attaining climate goals and sustainable development. Because of the intricacy of incorporating renewable energy into the supply chain, a complete understanding of the risks involved is required.

### 2.4 Theoretical review

To explain and provide a basis for understanding why businesses are involved in renewable energy, a few ideas have been postulated. Stakeholder theory and legitimacy theory (Abraham, Asor, Torviawu, Yeboah, & Laryea, 2018; Dong & Xu, 2016) are two relevant examples. Legitimacy theory and stakeholder theory are the two underlying theories that this study seeks to adopt.

#### 2.4.1 Legitimacy theory

In line with Cho and Patten (2007), the legitimacy hypothesis posits that an organisation's willingness to reveal its financial and environmental performance is influenced by the degree of public pressure it faces in its social or political milieu. Based on Cho and Patten (2007), companies that do poorly in the environment are also more likely to come under public scrutiny and, as a result, are thought to focus more on disclosing their achievements in environmental protection to maintain

their credibility. Consequently, it is anticipated that the mining sector, which has been shown to have relatively poor environmental performance (Amponsah-with & Dartey-Baah, 2004) and is under increased public pressure, will reveal more information about its environmental performance (Cho & Patten, 2007).

To aid in the definition of the idea at each level, Tilling (2004) outlines two different kinds of legitimacy: Known by another name, "macro theory," is the first: institutional legitimacy. The question of how entire organisational institutions, such as the democratic government, come to be accepted by society is known as institutional legitimacy. When it comes to this kind of legitimacy, institutionalisation and legitimacy are nearly identical. Organisations that are accepted by the community are said to have "organisational legitimacy" (Tilling, 2004). The investigation aims to obtain insight into legitimacy from the second form of legitimacy.

According to O'Donovan (2002), organisations are more inclined to continue managing social perception changes if there is a bigger chance of a detrimental impact on how society views their activity. This assumption highlights certain claims that require additional investigation, such as the possibility that a company may "manage" shifts in the way society views them. Four strategies for responding to a shift in the public's negative opinion of a firm are highlighted by O'Donovan (2002). They are not to participate in a public discussion on the issue's consequences or impact, which is what led to the unfavourable change, and they should also refrain from disseminating material that could be seen negatively. Together with educating the public about the problem and changing the public's perception of the company by highlighting its prior contributions to the environment and society, they also aim to alter societal norms by demonstrating that the corporation complied with all legal requirements. Lastly, to uphold society's ideals, they must declare that they will move quickly to resolve the problem and guarantee that all necessary measures will be taken to prevent it from happening again.

In addition, Grey, Kouhy, and Lavers (1995) emphasise four different strategies that an organisation can employ if it feels that its legitimacy is in jeopardy: Its goal may be to notify and educate the pertinent parties about modifications to its operations and performance. While it may not modify its actual actions and behaviour, the organisation may try to influence the opinions of these significant stakeholders. Additionally, it might include tactics like manipulating thinking and drawing attention away from the issues at hand and towards more pertinent subjects by appealing to emotions. Finally, the company might try to modify its standards for external performance.

Furthermore, Tilling (2004) identifies four modes—establishing, sustaining, extending, and defending legitimacy—that could account for a company's use of the strategies. This research aims to assess how much of the disclosure on the subject is due to the organisation's attempts to acquire, maintain, extend, or defend legitimacy by using these presumptions and theories as a foundation. By deepening our understanding of how Ghana's energy industry considers renewable energy finance from a reporting perspective, this study will add to the sparse but steadily growing body of research on renewable energy financing in sub-Saharan Africa, specifically in Ghana.

### 2.4.2 Stakeholder Theory

According to Post et al. (2002), stakeholders are "the individuals or entities who provide input, whether freely or unconsciously, to an organisation's wealth-creating competence and operations and hence become possible benefactors and/or risk bearers." They are entitled to demand that the businesses provide an accounting of their contributions. Through this arrangement, government representatives oversee maintaining compliance and informing all interested parties—whether favourably or unfavourably—of developments regarding these regulations (Ado, 2016). Freeman's (1984) recommendation that managers develop and execute policies that address the needs of all parties with an interest in the business, including suppliers,

customers, workers, shareholders, communities, and others, lends even more credence to this. This is known as stakeholder management.

As an overview of economics, stakeholder theory captures the interdependent relationship that occurs between a company and its several stakeholders (Freeman, 1984). Freeman (1984, p. 46) defines a stakeholder as "any group or individual who can affect or is affected by the achievement of the organisation's objectives."

In short, people who have the power to help or hurt a company are considered stakeholders (Miller & Lewis, 1991). Stakeholder theory asserts that companies have obligations to the public as well as shareholders, in contrast to the commonly accepted economic theory, which states that businesses only must create value for their shareholders who have made investments in their resources (Friedman, 1970). This assumes that the stakeholder theory offers a fresh perspective on how companies should conceptualise their obligations, recognising that other stakeholders, whose needs may also be satisfied to some degree, may contribute to value creation for the company's owners (shareholders), rather than just shareholders as the exclusive beneficiaries of business returns (Jamali, 2008).

According to Deegan (2013), stakeholder theory falls under the category of managerial and ethical models. Stakeholder theory's ethical stance suggests that all parties involved should be treated equally to prevent any of them from being at a disadvantage relative to another. It makes the argument that stakeholders have a right to information about the effects of a company's operations and that the latter must make sure that everyone it considers to be a stakeholder benefits from the company's operations (Deegan, 2013; Harrison, Freeman, & de Abreu, 2015). According to O'Dwyer (2003)'s management stakeholder theory, which is the second branch of the theory, organisations must treat their stakeholders in a way that satisfies the needs of people who have the potential to exert more influence over the company.

In addition to individuals who are interested in the firm's operations and have the potential to influence it even if they do not directly contribute financially, this group also comprises people who can economically impact the organisation (O'Dwyer, 2003). Although these models seem straightforward, selecting the one that best suits a particular organisation typically becomes contentious for most organisations (Kakabadse et al, 2005). here are several classifications for business stakeholders. According to some academics, there are two types of stakeholders in an organisation: primary and secondary (Waddock, Bodwell, & Graves, 2002). Primary stakeholders are defined as individuals who, through their ongoing involvement with the company, help the business achieve its objective of operating in the next few decades. They consist of workers, suppliers, owners, and clients. On the other hand, secondary stakeholders include the government, local communities, and non-governmental organisations. These groups also include the media and other pressure groups that influence businesses to be accountable to society but do not play a role in corporate activity.

Clarkson (1995) and Jones (1995) have classified organisational stakeholders in yet another way. They recommend classifying stakeholders into two categories: internal and external. The term "internal stakeholders" describes those who have a direct influence on the organisation from within. Investors, staff, and management are a few examples of these stakeholders. On the other hand, external stakeholders are those individuals who are not affiliated with the organisation; these groups may include suppliers, the government, or communities.

**2.5 Interconnectedness of Legitimacy and Stakeholder theory**

It is evident that the legitimacy and stakeholder theories appear to support one another rather than function as stand-alone ideas. According to the stakeholder theory, companies should tell stakeholders and people in the community who are not only shareholders about the actions or functions of their business that may directly or indirectly affect them. Stakeholders who know such crucial information might use it to inform pertinent decisions that validate or invalidate the

organisation's legitimacy to carry on with its activities. According to Ching and Gerab (2017), these signals are an effective means of closing the credibility gap that separates business from society.

# 3 METHODOLOGY AND METHODS

Presenting and outlining the research methods used for this study is the goal of this chapter. The study population, sample, data collection, data analysis, and research

design are further subdivided under the methodology in this chapter. The methodology, data collection techniques, and data analysis are all considered in the significant subsections to aid in addressing the research issues of the study.

### 3.1 Research design

The present study aims to critically evaluate the challenges and opportunities in financing renewable energy projects in Europe, specifically focusing on Norway and Portugal. To this end, the research design presents the theoretical foundations that support the study. It also outlines the techniques and research methodology that are used. Consequently, the research methodology, research method, and philosophical assumptions are used to classify the study design. Research design, according to Bryman and Bell (2003), offers a framework for gathering and analysing data. It functions as an outline, creating a structure and a plan to guide the research.

There are distinct research designs appropriate for doing research for both quantitative and qualitative research approaches. The qualitative research designs include phenomenology, biographical research, ethnography, grounded theory, case studies, therapeutic methods, literature reviews, and historical participatory research (Creswell, 2009). The literature review method is used to shed light on the renewable energy institutions in Norway and Portugal because it is thought to be a potent research technique, particularly for an extensive, in-depth study that seeks to comprehend the circumstances surrounding the behaviour from the perspective of the topic (Tight, Symonds, & Symonds, 2016). The literature review method was selected for this study over focus groups, ethnography, questionnaires, correlation research, and grounded theory because it will help the researcher become familiar with the field's boundaries and constraints as well as the theories guiding the chosen field (renewable energy) and its body of knowledge (Creswell, 2009).

First, the purpose of this study is to scrutinise the data in the overall setting of its application, which is why the literature review approach was used (Rowley, 2002). This differs from other methods like experimentation, which focus on a set number

of variations and may isolate an occurrence or development from its surroundings or context (Tight et al., 2016). This approach enables a rigorous, tangible, and practical analysis of the organisation's performance regarding its obligations and standards for financing renewable energy. It also makes it possible to examine the circumstances in its surroundings more thoroughly.

According to Rowley (2002) and Barnham (2015), a literature review approach is appropriate when it asks "why" and "how" questions concerning a cycle of events over which the researcher has little to no influence. That is appropriate for the study project since the goal is to determine "why" investors are attracted to emerging renewable energy corporations that fully disclose their activities and reporting and "how" renewable energy corporations are influenced to disclose their activities and reporting. However, there are several restrictions to the literature review approach. A prime instance of this will be if the researcher has a propensity for prejudices and assumptions, which could make it difficult to evaluate the challenges at hand, particularly if they have implications for politics or national security. Nonetheless, the investigator overcomes this constraint because they are free from biases and conflicts of interest.

### 3.1.1 Research approach

Every research study is distinct. Through the pursuit of a particular goal, knowledge from different scholars is gathered over time. This calls for original and well-thought-out strategies that more effectively interpret the research's findings. To investigate and comprehend the financing activities that the renewable energy firms report, a qualitative research approach was adopted for this study. This study's choice of a qualitative methodology is supported by a few factors. Since it more accurately captures the goals of this investigation, namely, assessing the challenges, opportunities, and profitability of renewable energy corporations and understanding how investors get attracted to the company's reasoning for such actions, a qualitative research methodology was employed. Despite their exploratory nature and ability to shed light on the driving forces behind social issues

like behaviours, norms, work-life balance, and attitudes, qualitative methodologies are well suited to achieving these goals. The "what," "how," and "why" questions are all qualitative in character, and they are all asked to meet the study's objectives.

On the contrary, the quantitative research approach concentrates on providing answers to "what" inquiries to gather data (Barnham, 2015). The study asks questions about the main categories of financing renewable energy that the company reports, how these activities are executed, and why the corporations concentrate on those areas. As a result, the quantitative approach is unable to provide a comprehensive answer to these questions. Thus, although it could take more time, the qualitative approach seems preferable (Baxter & Jack, 2008).

On top of that, the study's primary topic, financing renewable energy activities, cannot be quantified. Stated differently, quantifying individual perceptions to understand how and what respondents hold as their views on financial issues is impractical because the quantitative research approach relies on a few data points and the use of deductive reasoning to analyse the phenomenon (Knupfer & McLellan, 2001). This proves that a qualitative technique was appropriate for this investigation. It is appropriate to employ a strategy that not only identifies the company's renewable energy financing practices but also delves deeper to reveal their consequences on a few other variables, as the study aims to produce a thorough analysis of the data.

Furthermore, the subjective evaluation of the topic matter, in this case, the financing of renewable energy activities by the chosen corporations, is a concern of the qualitative research method's approach (Kothari, 2004). Once more, Kothari (2004) says that when it comes to the qualitative approach, the researcher's perceptions and insights become part of the investigation. Creswell (2009) states that there are three generally recognised methods by which a research study can be carried out. They use combined, qualitative, and quantitative approaches. Each has advantages and disadvantages, and the research objectives of the study will determine which is best for that study.

For this study, the qualitative method was adopted to analyse and understand the renewable energy financing within Europe, specifically Norway and Portugal. This methodology facilitated a more profound comprehension of the study subject's perspective, actions, opinions, incentives, and motives (Barnham, 2015). A succession of "why" and "how" questions are asked in the qualitative method to delve deeper than the quantitative approach's cycle of "what" questions in pursuit of the meaning behind the facts. This contrasts with the quantitative approach's simple search for facts, according to Barnham (2015).

This remark was in line with the study's research aim, which was to delve deeper and provide a more thorough knowledge of the motivations behind the emphasis areas and methodology by going beyond the "what" of renewable energy's reporting. In this study, the investigator aimed to closely examine not just the information that renewable energy corporations release in their reports but also the reasons for their focus on these concerns and the methods by which they accomplish their goals in these areas of concentration. Furthermore, the qualitative approach's adoption made it possible to analyse materials devoid of mathematical data.

In other words, because the topics covered in the reports were difficult to measure, the qualitative approach was chosen over the quantitative one. This approach enables document study that goes beyond analysing sample data to provide a deeper understanding of people's intentions (Amaratunga, Baldry, Sarshar, & Newton, 2002). The fact that qualitative methods produce results that are easily generalizable and are described as rich, deep, and meaningful, as opposed to quantitative methods, which produce results that are described as "hard generalizable data", is another advantage of the qualitative method that contributed to its preference over quantitative methods in this study (Amaratunga et al., 2002).

This is because the research aims to extrapolate, from an analysis of one industry organisation's report, the reasons for and outcomes of the corporation's renewable

energy reporting. This is attributed to the fact that the qualitative approach becomes both desirable and helpful if the outcome is based on the subjective opinions of the researcher and those who were sampled rather than on rigorous quantitative techniques (Myers, 2008).

Additionally, because the qualitative approach is more inductive, hypotheses can be created from the assertions and ideas in the subject matter itself rather than only from practice and reviews of previous literature (Amaratunga et al., 2002). This enables a thorough investigation of the themes and analysis's emphasis areas to determine and elicit their true significance.

### 3.1.2 Research method and philosophical assumptions

There are multiple variations of qualitative research methodologies. According to Creswell (2009), they could include action, history, grounded theory, phenomenology, ethnography, and case studies. The literature review technique is used to analyse the renewable energy financing activities revealed by Norwegian corporations because it allows the researcher to get answers to questions without having a significant impact on the organisation (Creswell, 2009). The knowledge gaps covered in the statistical analysis are broadly described, and the most recent documentation is summarised in this section (Sylvester et al., 2013). The topic, the analysis as a novel information source, or the suggested research methodology may all be supported by the theoretical framework for the proposed analysis (Rowe, 2014). It is essential for all investigations to first analyse the relevant literature. The investigator begins a position by defining previous investigations, reviewing scientific domains to inform the thesis goal, and outlining the study subject and hypotheses.

According to Snyder (2019) and Bannister and Van Wee (2015), this is commonly known as "literature analysis," "theoretical framework," or "research history." The evaluation of a text is a continuous process rather than a sequential or iterative one. The standards of the research will be established by the subject matter, theory, and

methodology, which will be communicated through your literature review. O'Leary (2017) states that there is a continuous phase. For most postgraduate students, it is one of their first and last assignments. Because it must be constantly evaluated, updated, and improved, the literature research produced at the start of the research will differ. One could engage with the available literature in different ways at different points during your research (Henry et al., 2013). The investigation is iterative, and while the phases are addressed sequentially, certain activities are started in the initial planning phase. and then improved during the next phases (Finfgeld and Johnson, 2013).

As a result, the qualitative research technique used in this work is multiple literature reviews. The literature review technique was employed in this study for a few reasons. First, as noted by Yin (1984), it makes it possible to examine a modern phenomenon in a real-world setting. The researcher may better comprehend challenging social phenomena and disparities among multiple participants in each setting by utilising two countries, which is another reason why it was chosen. According to Yin (2003), it can additionally be used to draw attention to parallels that will help the researcher predict the outcomes of instances that are similar.

Once more, a literature review methodology is the method of choice when "what" and "why" inquiries are posed about a sequence of events on which the researcher has limited or no influence (Barnham, 2015). Despite doing a literature review that can yield substantial and trustworthy evidence, it can also be quite costly and time-consuming (Baxter & Jack, 2008). In addition, a literature review establishes a solid framework for creating more organised approaches to delve deeper into the field of study (Yin, 2003). Thus, the literature review method offers a less complicated way to accomplish the goals of this research.

To conclude, just like other qualitative research designs, a literature review requires the researcher to be more concerned with the significance of the experiences for the participants than with extrapolating findings to other populations (Myers, 2008). Every aspect to which the research relates is represented in the research population

of the work. The renewable energy corporations in Norway and Portugal were the demographics chosen for this study. This group was selected because of the countries strong interest and dominance in the issue of renewable energy, which is the focus of the research. According to Jenkins and Obara (2006), this activity is not notorious for having a detrimental effect on countries and not depleting them of resources. To counteract this favourable impression, the industry has focused on the topic's performance (Arko, 2013).

### 3.2 Data collection techniques

This section covers the methods employed in the data collection procedure, the length of time it took, ethical issues, and difficulties encountered. Below is a thorough explanation of each of the sections:

#### 3.2.1 Publicly available documents

The utilisation of publicly accessible documents was employed for this investigation. These resources, which included webpages and articles from the International Journal of Engineering & Technology Science and the European Environmental Agency, provided a wealth of useful information about the study. By comparing the data from the International Journal of Engineering & Technology Science with reports from the European Environmental Agency, the web pages made it easier to verify the accuracy of the information. Nonetheless, four criteria—authenticity, credibility, representation, and meaning—were applied to the publicly accessible documents to determine whether they accurately depicted the organisation (Scott, 1990).

To guarantee the accuracy of the information retrieved, Payne & Payne (2004) verified the veracity of the yearly renewable energy reports. This ensured that the information gathered could be trusted to help decision-makers make well-informed choices. Regarding credibility, it was essential to determine the information's source and the degree to which the author could be trusted (Payne & Payne, 2004).

### 3.2.2 Data Collection

The most current renewable energy reports from Norway were gathered in 2022, and data for this research was taken from the European Environmental Agency report from 2018 through 2023. To investigate the research issues posed, the study has decided to employ secondary data. Through the International Journal of Engineering & Technology Science's website, these renewable energy reports were accessed online.

The International Journal of Engineering & Technology Science releases independent renewable energy reports every year that might highlight the company's dedication to and understanding of financing renewable energy. Additionally, the corporations' renewable energy reporting is carried out by the International Tracking Standard Foundation, which may indicate that by reporting by those standards, the corporations hope to gain international approval for their operations. This study's emphasis on the corporations yearly renewable energy report was justified by a few factors. The purpose of corporate reports is to provide information about a company's policies and practices through official documents from management. As such, they are quite reliable.

Also, it is less expensive and more convenient to receive these reports because they are readily available on their website. A further benefit of using the European Environmental Agency's renewable reports is that, based on White and Hanson (2002), no other media provides the same level of consistency and guarantees the reports' broad applicability. JSTOR, Google Scholar, Science Direct, Emerald, and other reputable online sites provided pertinent journal articles that were used as additional secondary data. Additional online pages pertinent to the study's subject matter are also examined.

## 3.3 Population and sample selection of the study

The complete mix of all the components that make up the research is referred to as the study population. The European countries that are actively into renewable

energy were the study's sample population. The term "sample" describes the precise percentage of the population that is the subject of the study. Norway and Portugal were chosen as the study's sample from among the European countries as the total population. The absence of or insufficient renewable energy-related research in the continent's literature led to the selection of this sample. Therefore, the researcher hopes to add something significant to the body of renewable energy reporting on these corporations.

This sample was chosen on purpose because the corporations' operations may have a detrimental effect on the geographical space in which they operate and because the investigator needed the data to do this research simply and effectively. The sample was also chosen specifically because, at the time of the study, it was regarded as one of the top countries in Europe performing well in renewable energy. As a result, a review of the business would probably include a review of the finest products and services available.

This selection strategy adheres to the notion of purposive sampling, in which the researcher uses judgement and reasoning to pick "information-rich" examples (Etikan, Musa, & Alkassim, 2017). According to Etikan et al. (2017), purposeful sampling is applied more frequently in qualitative research since it helps researchers comprehend a phenomenon at a deeper level (Patton, 2002). Etikan et al. (2017) state that purposeful sampling is also carried out to enhance comprehension of the sample that was chosen.

### 3.4.1 Profile of renewable energy financing in Norway and Portugal

By 2050, Norway and Portugal aim to create a low-emission society and cut emissions by 90–95% below 1990 levels (Regjeringen, 2021). Because of their recent development of wind power resources (Vasstrøm & Lysgård, 2021) and their historical development of hydropower capacity (Rosendal et al., 2019), these countries have a significant percentage of output in renewable energy. Thus, the nation offers renewable and clean power for internal use and trade (Hansen, 2013).

The future energy system in Norway and Portugal is often linked to concepts like openness, modernity, and hopefulness (Ballo, 2015; Skjølsvold, 2014). However, it also must overcome a deeply ingrained "comfort culture" defined by excessive use of energy (Afewerki & Karlsen, 2021).

Likewise, these countries are major exporters of oil and gas, accounting for 4.6% of world oil output and 6% of global petrol consumption in 2020 (IEA, 2022). Government oil and gas revenues fund a large portion of the nation's welfare (Heide et al., 2006). Since the end of the 1960s, oil and gas have been linked to economic success and identity (Engen, 2009; Tamnes, 1997). However, the industry is also becoming more and more associated with hazards related to the economy and climate (Bang & Lahn, 2020). Mercure et al. (2018) have characterised the oil and gas business as economically fragile and stranded. Although the country's goals suggest a significant shift is necessary, the oil and gas industry prefers decarbonisation over gradual elimination (Afewerki & Karlsen, 2021). This is because decarbonisation is a partial reduction in carbon emissions using abatement technology rather than a decrease in oil and gas production.

According to studies (Le Billon & Kristoffersen, 2020; Piggot et al., 2020), not many laws or active interventions have specifically addressed supply reductions in the oil and gas sector, and it is challenging to change the operations of such a lucrative business (Mäkitie et al., 2018).

Fortunately, while the nation aims to supply green energy to Europe under the European Green Deal (Regjeringen, 2021), Russia's war in Ukraine has spurred collaboration between Norway and the EU and the extension of oil and gas development past 2030 (Regjeringen, 2022). Therefore, the state anticipates that oil and gas will play a big part in the long run. However, it also sees a shift towards "green industries" as a source of wealth and national competitiveness, which might potentially stall the change by strengthening the interests of the oil and gas industry.

The growing opposition to wind power development during the 2017–2018 installation boom can be attributed to several interconnected issues (Vasstrom & Lysgard, 2021). Larger and more noticeable turbines were one obvious explanation: between projects starting construction and licences being granted in certain locations up to ten or fifteen years earlier, developers had requested and been given permission to erect larger turbines based on the licences that were already in place (Dale & Dannevig, 2023). In the nearby towns, the more noticeable turbines were unpopular and the suggested national structure to govern wind power, which was launched in February 2017 by the Ministry of Minerals and Renewable Energy, was another factor (Vasstrom & Lysgard, 2021).

The approach, which considered grid capacity, environmental and social objectives, and wind resource evaluation, identified the region's most suitable for onshore wind energy (Rauter, 2022). The public interpreted the framework as a development plan that did not fully capture local societal interest, which led to strong opposition, even though it represented an immense collaboration of knowledge and expertise both within and from the Norwegian Water Supplies and Energy Department, the Norwegian natural world Agency, and the Norwegian Agency for Cultural Heritage (Inderberg et al, 2020). In the end, the administration chose not to act upon its suggestions. Frøya, Haramsøya (both islands), and Storheia were home to three notable wind power plants (Dales & Dannvig, 2023).

Plans for a wind park at Frøya were initiated in 2002, and in 2019 the island saw the installation of wind turbines despite the wishes of a significant number of the nearby people (Inderberg et al, 2020). It was evident from a 2005 vote that opinions on the wind project were split in the community, with 51.4% of respondents supporting it (Vasstrom & Lysgard, 2021). Upon project implementation, the 200 MW and 63 turbines were replaced by 14 turbines and 59 MW (Dale & Dannvig, 2023). The organisation "Motvind," which coordinated protests opposing onshore wind energy in Norway in 2019, was founded because of the opposition encountered (Inderberg et al, 2020). It was thanks to Motvind's efforts that no newly proposed onshore wind project could be approved by the Energy Directorate (Rauter, 2022).

At Haramsøya, where preliminary preparations for a wind project began almost 15 years before construction, there was also a lot of opposition (Dale & Dannevig, 2023). Following a protracted negotiation procedure, simply eight 4.2 MW turbines have been built whiles the initial project proposal included a completed capacity of 66 Megawatts and 33 turbines (Vasstom & Lysgard, 2021). The project was met with opposition from the regional and local administrations, but in March 2020 the Ministry of Oil and Energy was granted final clearance. With 288 MW of installed capacity, Storheia is the biggest wind farm in Norway (Dale & Dannvig, 2023). The project received its initial application in 2006, and the first wind farm was put into place in 2019 (Rauter, 2022). Since the wind farm will affect the places where reindeer graze in the winter, the local indigenous Sámi people have opposed it (Fredriksen, 2022).

As the wind turbines infringed upon the Sámi herders' freedom to practise their culture, the Supreme Court decided against the licence in October 2021, siding with the reindeer herders (Dale, 2023). It is uncertain exactly what will take place on the wind farm, but the present administration has made it plain that they intend to maintain the area's reindeer herding and wind park (Fredriksen, 2022).

### 3.4.2 Profile of Renewable Energy Financing in Ghana

Sustainable development and energy security are global issues that are especially common in underdeveloped countries (Nyasapoh, Elorm, & Derkyi, 2022). The issue of renewable energy sources is therefore particularly centred on how to fulfil society's energy needs without endangering the capacity of future generations to satisfy their energy demands (Ahiataku, 2016). To supply the necessary electricity sustainably, a few tactics have often been employed (Bigerna et al., 2015).

However, using renewable energy sources like coal, gas, and oil to create electricity, poses a serious barrier to the required expansion (Energy Commission Ghana, 2019). Thus, it is well recognised that burning fossil fuels releases greenhouse gas emissions that are harmful to the environment and interfere with the development of an

environmentally friendly future (Kumi, 2017). Merchant (2018) asserts that nations such as the United States of America possess inadequate means of averting serious environmental damage.

According to Kohlhepp (2019), to counteract the continued detrimental consequences of climate change, the Special Report of the Intergovernmental Panel on Global Warming of 1.5 °C in 2021 proposed that between now and 2050, at least 80% of energy be generated from renewable sources. Most nations in the world are working towards sustainable development targets, which include reaching net-zero emissions and carbon neutrality by 2050 (Liou, 2021). Discovering feasible, financially viable, and integrated ways to provide affordable, sustainable, and healthful energy has become increasingly important as a result (IAEA, 2019).

More than 196 parties have accepted the Paris Agreement, according to the United Nations Framework Convention on Climate Change (UNFCCC), to accomplish this goal (Sarkodie & Owusu, 2016). Exploring the integration of zero-emitting energy sources into Ghana's energy mix is crucial to fulfilling the country's global climate change commitment (Kumi, 2017). Malinga (2020) believes that by 2030, Ghana's annual per capita electricity consumption, which is currently 534 kWh, will have increased to 5000 kWh due to the country's aggressive growth goals. Ghana has been struggling for a period of fifteen years with the issue of sustainable electricity generation to attain more consistent supply security.

Notwithstanding having more than quadrupled its existing generating capacity during the preceding three decades, Ghana discontinued production worth $2.1 million per day on average throughout the 2015 power crisis (Kochtcheeva, 2016). Ghana, an emerging economy, consumes more than one-quarter of its GDP, or approximately 27% of its entire export profits, on purchasing fossil fuels to meet this problem, even though the country has access to lots of low-carbon energy alternatives, such as renewables (Kumi, 2017). Thus, Ghana's power generation went through several stages before reaching its current production mix, which is made up of sixty-nine percent fossil fuels (mainly gas and oil) and 31% renewable

energy (Heinberg & Fridley, 2016). Ghana's early infrastructure for producing electricity was made up of industrial mines that operated as independent energy producers and factory-owned diesel-powered machinery. Additionally, the construction of what would become the Akosombo Dam in 1966 marked the beginning of the hydropower era (Kumi, 2017).

Moreover, new gas- or crude oil-fueled thermal power plants have been added, increasing the overall total generation capacity to a total of nine (Hagan, 2015). Furthermore, Ghana is developing new renewable energy projects, and micro hydropower and solar have been introduced as renewable energy sources to the generating mix (Takouleu, 2019). Ghana relied heavily on hydropower energy from the time the Akosombo Dam was built until 2015, when thermal-producing sources replaced it (Hagan, 2015). However, Ghana sought to increase the amount of energy sources it was using, notably adding coal and nuclear to serve as baseload providers to augment the hydropower currently generated (Boke et al., 2022).

However, the establishment of the use of nuclear energy in Ghana is a protracted undertaking that is anticipated to commence operations only in 2030, provided that all other prerequisites are fulfilled (Bielecki et al., 2020). However, Ghana's energy from coal development, which was scheduled to start operations in 2019, faced strong opposition because of the risks to society's environment (Shenzhen Energy & VRA, 2015).

Ghana was reliant on fossil fuel imports in 1997, before the 2008 discovery of the Jubilee oil field and the subsequent discovery of additional resources. A pipeline called the West African Gas Pipeline (WAGP) transports natural gas from Nigeria to the country for use in energy production (Fulwood & Bros., 2018). Similarly, Debrah et al. (2020) discovered that even if Ghana's natural gas reserves were completely devoted to the generation of electricity, they would only be enough to power a 1200 MW mixed-cycle power plant for 25 years at a degree of heat of 7800 BTU/kWh. It is said that after 25 years of gas use, Ghana must either identify new gas resources carefully or strategically increase its energy sources (Debrah, 2020).

Apart from the numerous adverse environmental effects of utilising fossil fuels, the global oil crisis that started in 1970 and the decline of fossil fuel reserves compelled numerous nations to switch to renewable energy sources for electricity generation (Adzawla et al., 2019). To ensure that global temperatures stay below 2 °C, the current IPCC report focuses on the need for sustainable development. (Levi et al., 2021).

All the United Nations member states adopted the goals of the 2030 Agenda for Sustainable Development in 2015, which provides a framework for social development and environmental sustainability. As a result, rising fossil fuel usage, volatile prices, and the growing awareness of oil addiction throughout the world made it necessary to move from fossil fuels to alternate energy sources (Islam et al., 2014). Balancing a range of energy sources has been one way to solve energy-related issues (Malinga, 2021). Thus, energy leaders, scientists, and builders have proposed alternative energy options to meet policy aims (Vidaurre, 2012). The concept of renewable energy forms the basis for finding solutions to environmental problems and maintaining human life on Earth.

Nonetheless, Ghana's current 2017–2024 Coordinated Programme of Economic and Social Policies (CPESDP) demonstrates the nation's relevance and commitment to addressing the challenges and opportunities brought about by climate change (Bachoumis et al., 2022).

### 3.5 Data Collection Techniques

This section reviews the methods used to gather data for the study. It outlines the procedures and methods used to collect data for this research, as well as the moral standards upheld during data collection.

Primary data and secondary data are the two fundamental sources of literature (Ajayi, 2017). The primary means of data collection for the study were consulting annual renewable energy reports and other publicly accessible sources. As a result, it mostly relied on secondary data from the European Environmental Agency’s

annual Renewable Energy Report, which it supported with additional secondary data from press reports and other documents about the corporations' renewable energy activities. The other secondary sources are used as an auxiliary to provide us with a more thorough review of the primary source, and the International Journal of Engineering and Technology Science's report is chosen as the fundamental source of the study since it provides reasonably reliable data.

**3.6 Data analysis**

This research section explains how the study's objective was met by analysing the data that was gathered. The renewable energy reports and journals of renewable energy corporations in Norway and Portugal were examined using an interpretative content analysis. This study employed a literature review (Vourvachis & Woodward, 2015).

This approach investigates both the obvious and implicit meanings of the concepts behind the words, going beyond just measuring the frequency of a phrase (Marks & Yardley, 2004). The literature review approach was chosen because it is thought to be a successful means of closely examining data in depth and providing answers to the study's research objectives (Braun & Clarke, 2006).

Since literature review is a common tool for examining organisational disclosures in these domains, it is considered to have dominated most social and environmental reporting (SER) research (Khlif et al., 2015). Utilising the literature review technique as defined by Vourvachis and Woodward (2015) and Krippendorff (2013), the Norwegian and Portuguese corporations' renewable energy activities are understood. Since literature review is a common tool for examining organisational disclosures in these domains, it is considered to have dominated most social and environmental reporting (SER) research (Khlif et al., 2015).

According to Krippendorff (2013), it may be characterised as "a method of inquiry for making reliable and trustworthy inferences from literature (or other meaningful content) to the circumstances of their use." The use of Gill's (2000) "sceptical

reading" technique, which goes outside the texts to uncover the motivations hidden beneath the way those words have been presented, was made possible by the literature review approach. Although many additional characteristics indicate a high degree of similarity between literature review and theme analysis, some researchers have made a distinction between the two (Vaismoradi, Turunen, & Bondas, 2013).

Nonetheless, it appears that the idea that theme analysis is synonymous with a qualitative a qualitative literature review (Marks & Yardley, 2004; Vourvachis & Woodward, 2015). Thematic analysis is classified as either inductive or deductive by Marks and Yardley (2004).

However, Vourvachis and Woodward (2015) offer a more comprehensive categorization by classifying them into three categories: abductive, inductive, and deductive. The process of iteratively generating coding themes by bouncing back and forth between the data and existing theoretical frameworks is known as abductive content analysis. The method wherein the data drive's theme is coded is known as inductive content analysis. This data uses deductive content analysis, meaning that theoretical ideas serve as the foundation for coding. It entails the capacity of the investigator to deduce meaning using the themes that have been produced and to investigate the facets of those classifications while examining the connections among them (Bradley, 1993). This makes it possible for fresh researchers to make discoveries that, as proposed by Marks and Yardley (2004), may like and validate the validity of previous ones, expand upon them, or even totally contradict them.

### 3.7 Validity and reliability of data findings and ethical review

The findings of this study were based on the International Journal of Engineering & Technology Science and the European Environmental Agency's reports, which are reputable sources of information. Ethics were carefully considered in the planning, directing, examining, and presenting of this research project. The following is a statement of the ethics that informed the research:

1. The study complied with all significant regulations and standards of the university's ethical standards for research in academia.
2. The researcher made a conscious effort to prevent his own opinions and ideas from influencing his assessment and commentary on the study's findings to lessen the likelihood that he would have biases and prejudices.

# 4. ANALYSIS OF DATA AND DISCUSSION OF RESULTS

This chapter objectively evaluates the financing of renewable energy projects, as well as their prospects, problems, profitability, and investor appeal. It does this by presenting and analysing the data in depth and outlining the analysis's findings. It also includes comments on the data gleaned from the several sources used for the study. To evaluate newly emerging renewable energy corporations in Europe, the chapter primarily addresses the various themes from the Renewable Energy reports and journals of the European Environmental Agency and the International Journal of Engineering, Technology, and Science (Norway and Portugal specifically). The themes and conclusions are then discussed, considering the theoretical frameworks the researcher has chosen to support his quest to address the study issues and achieve his goal.

## 4.1 Dimensions of financing renewable energy projects in Ghana

The International Journal of Engineering, Technology, and Science examines three main areas that renewable energy companies consider when trying to run a sustainable business. These are eco-responsibility, sustainable society, and sustainable economic ideals. This aligns with the Global Reporting Initiative, which states that a sustainability report should include details on the social, environmental, and economic effects of an organisation's regular operations.

### 4.1.1 The environment: health and safety

Health and safety, which it defines as "providing a safe place to work," is a matter that every emerging renewable energy corporation must take very seriously. This remark highlights how important the matter is to the various stakeholders, as evidenced by the company's annual evaluation of the significant issues:

Emerging renewable energy corporations in Norway have ultimate responsibility for the health and safety of the firm, as stated in the company's statement of approach in the health and safety debate, further demonstrating the company's dedication to

the problem (International Journal of Engineering & Technology, 2022). Along with the other concerns listed as "high" in the corporations' materiality assessment for the year and the primary issues prioritised by the European Environmental Agency, the topic received at least one full page (six pages) of discussion. In this way, Norwegian and Portuguese corporations and all other corporations that read and make use of the renewable energy report will be made aware of the significance of the matter.

This agrees with the stakeholder theory that the report on renewable energy and sustainability serves as a tactical instrument to convey credibility and change public opinion and the way the public responds to the corporation (O'Donovan, 2002). Defining the idea also concurs with Grey et al.'s (1995) claim that informing pertinent stakeholders about the firm's operations is one way to acquire or preserve legitimacy.

### 4.1.2 Renewable economic values

As per Bowers' (2010) findings, a significant number of companies currently use the Global Reporting Initiative performance indicators for reporting on sustainability. One of the main components of the Global Reporting Initiative performance indicators is economic value, which pertains to the ability of the company to generate value for all its stakeholders, including customers and investors.

One area they examine is delivering sustainable economic value, according to the Renewable Energy Governance's report. The Renewable Energy Governance Act states that its goal is to improve businesses and foster an inclusive society by offering digital solutions that have positive socioeconomic and environmental effects. They provide a variety of solutions targeted at the requirements of different market groups to enhance mobile connection, affordability, and accessibility.

Like the stakeholder theory, which requires managers to make sure they are meeting the demands of all their stakeholders, renewable energy corporations in Norway and Portugal consider this dimension to make sure their operations are

meeting the needs of all their clients. According to the European Environmental Agency, their objective is to provide financial benefits for all parties involved, namely the company's consumers, shareholders, and the business itself. The research makes it clear that, when they discuss having sustainable economic worth, they are focused on dominating their industry and having the largest market.

They want to use their business to better people's lives and growth in general, all the while offering the greatest goods and services at a reasonable cost. Businesses now view social duties as a crucial instrument for long-term sustainability rather than as an option, as stated by Bradford et al. (2017). Renewable energy societies are a key topic of discussion in the European Environmental Agency's report, which aims to have sustained economic value. As to the Global Reporting Initiative, a sustainability report should include the economic, environmental, and social consequences of a company's daily operations. The European Environmental Agency's inclusion of a discussion on renewable economic value in their report aligns with this definition.

As Guthrie et al. (2006) point out, when a business realises that its acts do not align with the social compact, which is required for a business to remain in operation, it takes steps to become legitimate.

### 4.1.3 Eco-responsibility

According to Nneji (2010), business operations have the greatest and first impact on the environment and all major ecosystems. Furthermore, eco-responsibility is emphasised as a crucial component of organisations that demands careful consideration. The European Environmental Agency makes it known that they work hard to minimise their adverse effects on the environment by using natural resources wisely and effectively. They collaborate with others to increase the effectiveness of how they use natural resources to help achieve this.

Based on Scientific African's report on renewable energy, the corporations' primary goals in becoming an environmentally conscious business are to enhance worker

employment conditions, improve the environment in which they operate by assisting in the resolution of environmental issues, and make sure all their partners conduct themselves ethically and per the law.

This is in line with Butler et al. (2011), who point out that some people see renewable energy reporting as an internal notion that just addresses environmental concerns. It is acknowledged that the firm views environmental responsibility as an internal notion that deals with its operations. According to Best et al. (2013), businesses often use renewable energy reports to show how they are doing when it comes to social and environmental challenges. Subsequently, renewable energy firms in Ghana must discuss their actions towards the environment and their obligation to save and maintain it. Following the notion of stakeholders, renewable energy corporations in Ghana should safeguard the environment as it is home to these people, and people are essential to the company's existence and prosperity (Freeman, 2004).

### 4.1.4 Renewable societies

Filho et al. (2015) claim that a renewable society is distinguished by the prudent use of its natural resources as opposed to a preference for material wealth and excessive consumption. Since companies use a large portion of the resources in society, they must be sustainable in their operations. According to the Scientific African Report on Renewable Energy, renewable societies are those in which they want to make a constructive contribution to the society in which they operate.

Stakeholder theory (Brako & Brown, 2008) states that companies aim to align their operations with stakeholders' expectations through sustainability reporting. This finding lends credence to the idea.

Businesses now view social responsibility as a need, not a choice, for maintaining their long-term viability. As a result, they are adopting a new strategy known as environmental, social, and governance, which offers comprehensive information on all three (Bradford et al., 2017). The assertion is consistent with the one made by

the European Environmental Agency. In their report, the agency outlines how they try to make a positive impact on the communities in which they operate by educating their society, treating their employees well, and giving back to the communities in which they operate.

## 4.2 Factors influencing emerging renewable energy corporations to disclose their activities and reports

This study has examined four possible explanations for emerging renewable energy firms in Norway and Portugal's decision to create a sustainability report on renewable energy by examining the European Environmental Agency report. Profitability, luring in and keeping investors, globalisation, public opinion, and brand image are these. The remainder of the chapter will take these factors into account.

### 4.2.1 Profitability

Although Bodhanwala & Bodhanwala's (2018) research indicates that there are several ways to quantify a company's profitability, the main finding is that businesses that engage in sustainable practices and share their results with their industry see better profits. Reading the European Environmental Agency's report makes it clear that one of its goals is to generate value for the company while conducting business profitably. Emerging renewable energy corporations aim to turn a profit for the benefit of both their investors and their businesses. Additionally, the organisation must be profitable and in business for the foreseeable future.

It might not be cost-effective to make individual renewable energy reports freely available; thus, they may have chosen to create a national renewable energy report instead. If the European Environmental Agency thought that this report would only add to their expenses rather than help them recover some of their investment, they wouldn't have created it. According to Deegan (2002), if society feels that the company is not functioning legally, they have the power to revoke the social contract they have with them. This can be accomplished by lowering the demand for their

products, decreasing the supply of resources, passing laws, or paying fines that forbid behaviour that is not acceptable to society.

As a newly developed idea in this region, financing renewable energy is something that is gradually being implemented across the African continent to prevent any of these things from happening. Miguel (2017) suggests that an organisation should consider the benefits and drawbacks before voluntarily reporting on its sustainability efforts. Essentially, if the expenses are greater, the organisation would not undertake the responsibility of revealing its sustainable practices.

Additionally, as the stakeholder theory says, to make sure that their actions are still relevant, businesses need to connect with the various stakeholder groups (Harmoni, 2013). A business can only stay profitable if it is still regarded as important by the public, which is why emerging corporations in Norway and Portugal decided to disclose their renewable operations.

### 4.2.3 Investors

Investors view these companies' renewable energy reports as evidence of their credibility, attaching a positive value to the organisation and prompting them to allocate capital. This is according to Berthelot et al. (2012). The goal of creating value for emerging renewable energy firms and their stakeholders is mentioned often throughout the report. To have extensive coverage, a corporation would require investors and stockholders to generate cash. As stated in the report of the cited organisation,

Also, they state that they want to respond to stakeholder complaints more quickly. This is in line with the stakeholder idea, which states that managers should deal with stakeholder needs, disputes, and expectations as well as demands. Fortaine et al. (2006) state that although profit is a motivator, investors would prefer to put their money into well-known enterprises. Therefore, to maintain a positive connection with their investors, these corporations would have to provide them access to their renewable information.

### 4.2.3 Globalisation

In line with Geyer (2003), companies always seek to grow and become multinationals, and this process of globalisation is unstoppable, usually motivated by financial gain. Thanks to the internet, information technology, and many other resources, the globe is beginning to resemble a single global community. Businesses are starting to expand internationally at the same time, opening branches, franchises, and other operations. In their report, the European Environmental Agency consistently states that they want to expand their customer base, enhance the worldwide reach of their services, and become the dominant player in the telecommunications sector, with plans to expand operations throughout the continent.

It is transparent from their renewable energy report that they plan to unify renewable energy across the continent, as seen by their efforts to prepare and even group their reports. Meyer and Rowan (1997) stated that for an organisation to thrive, it must adhere to the norms and values that are prevailing in its surroundings. Because of the disparities in institutional contexts, multinational corporations operating in various nations would be subject to varied pressures. Businesses may engage in activities due to rivalry and legitimacy constraints from their most influential peers (Marquis & Tilcsik, 2016).

This is the legitimacy theory, and as the report shows, emerging renewable energy corporations base all their declared expenses on the European Rand. One of the several explanations for this might be that Norway and Portugal are the pioneers on the continent when it comes to renewable energy reporting right now. Emerging renewable energy corporations must make sure that they are adhering to the laws and regulations of the many nations in which they operate.

### 4.2.4 Public Perception and Brand Image

According to Amran & Okoi (2014), stakeholders in the business world are requesting more information about the social, economic, and environmental effects

of company operations and how these effects are accounted for in their strategies. They also point out that informed stakeholders are more likely to have a positive opinion of the company's operations and enhance its reputation with the public. Positive public impressions and brand image are highly beneficial to any firm. This is a result of the company's ongoing interactions with different societal and community members; it doesn't operate in a vacuum. Emerging renewable energy corporations discuss in their renewable energy report their desire to support the community and assist young people in realising their dreams.

A handful of mentions of youth in their report illustrate their efforts to cultivate a positive public image since they are the leaders of tomorrow's society and must be taken into consideration. A great deal of youth development initiatives and general global movements, like the fourth industrial revolution, are being carried out throughout the African continent to keep the continent grounded. Their plans to address community issues, educate, train, reinvest, and support locals are included in the report. They also want to have staff members volunteer and participate in community service initiatives.

Following Hinson et al. (2010), companies release sustainability reports on renewable energy to project a socially conscious image and justify their actions to their stakeholders. According to the legitimacy hypothesis, businesses aim to match their actions to the demands of their stakeholders, which includes the community. In cases where the community feels that the firm's operations are badly affecting them, they have the option to elect to shut down the business. All of this, though, is dependent on power and the degree to which the public's voices may influence how they operate.

According to Brako & Brown (2008), a company's brand image and public perception are crucial components of its operation. For this reason, sustainability reports on renewable energy aim to align the company's operations with the expectations of its stakeholders. This aims to maintain positive and constructive relationships between emerging renewable energy corporations and their different stakeholders.

Even though external parties are a component of the business environment, Surbhi (2017) lists the public as one of the external stakeholders. This implies that emerging renewable energy firms will have to consider these everlasting stakeholders' opinions when it comes to how their business operations are affected.

### 4.3 Attraction of Emerging Renewable Energy Corporations to investors

By examining the opportunities and challenges in financing renewable energy initiatives, companies may implement sustainable practices by considering the problems related to incorporating renewable energy sources into supply chains. Through the identification and resolution of obstacles, businesses may actively promote environmental conservation, reduce their carbon footprint, and comply with more stringent environmental rules (Ahmad, 20215).

One of the most important things to consider when evaluating the possibilities and difficulties of financing renewable energy is risk mitigation, which is in line with the legitimacy theory (Tiling, 2004). Because of the intricacy of incorporating renewable energy into the supply chain, a complete understanding of the risks involved is required. Unpredictability is a key component of renewable energy sources, particularly solar and wind power (Twidell, 2021).

These sources are influenced by the weather and the time of day due to their intrinsic variability. To deal with this volatility, companies must develop strategies incorporating energy storage options, flexible demand-side management, and grid-balancing technology. Businesses may construct resilient supply chain strategies that provide a consistent and persistent energy supply by being proactive in understanding the challenges posed by variability (Khan, 2019).

As per Cho & Pattern (2007), the renewable energy supply chain is extensively influenced by geopolitical considerations. Strategic planning and international collaboration are necessary due to the worldwide distribution of renewable resources (Scholten et al., 2016). A solid grasp of the geopolitical situation helps businesses prepare for potential challenges with resource availability, diplomatic

disputes, and international trade policies (Vakulchuk et al., 2020). Organisations can increase the agility with which they manage potential disruptions, find alternative sources, and diversify their supply chain by taking these factors into account (Haque, 2020).

On top of that, a range of events, such as natural catastrophes, erratic political climates, and technical glitches, can interrupt supply chains. To reduce risk, it is important to become mindful of these potential disturbances (Katsaliaki, 2021). By integrating renewable energy sources throughout their supply chain and decentralising energy production, organisations can reduce their dependence on centralised power-producing facilities (Shekaran, 2021). Distributed renewable energy solutions further increase the resilience of essential infrastructure by ensuring that operations remain operational irrespective of the event of more severe interruptions (Pani, 2020). Vulnerabilities are decreased, and overall supply chain stability is strengthened by proactively addressing these problems. This resilience is necessary to maintain company continuity, especially in industries where regular sources of energy are essential (Duong & Chong, 2020). Apart from tackling issues, this culture of innovation propels the renewable energy sector and facilitates the creation of more efficient and eco-friendly technology (Twidell, 2021).

In evaluating possibilities and difficulties, reviewing the economic prospects that result from funding renewable energy projects is the second thing to consider. Because the renewable energy supply chain offers a plethora of economic prospects, businesses are strongly urged to engage in sustainable practices (Khan et al., 2019). Businesses that adeptly manoeuvre and harness these prospects to capitalise on the rising worldwide need for environmentally sustainable solutions position themselves at the epicentre of economic expansion and competitiveness (Devkota, 2020).

Investing in innovative technology is a key strategy for businesses looking to capitalise on the financial prospects present in the renewable energy supply chain. Research and development in areas like innovative materials, energy storage

systems, and solar technologies not only advances the industry but also creates chances for superior market share (Sagel, 2022). Corporations may differentiate themselves from the competition, attract investment, and foster an inventive culture that permeates the whole supply chain by staying abreast of technological advancements (Arent, 2022). Another strategy for boosting the economy is to develop new company models. As renewable energy technology progresses, new avenues for innovative business models such as decentralised microgrids, community-based energy initiatives, and energy-as-a-service become available (Grosspietsch et al., 2022).

These models not only satisfy evolving consumer needs but also open fresh streams of income for businesses willing to try and adjust to novel approaches to energy generation and delivery (Rahman et al., 2019). Participating in government initiatives that promote the utilisation of renewable energy has major financial benefits (Lu et al., 2020). Many governments all over the world are promoting the conversion to renewable energy through tax credits, subsidies, and other supportive measures. Businesses that include these programmes within their plan of action not only benefit financially but also contribute to the accomplishment of national sustainability goals (Qadir, 2021).

Additionally, utilising the financial opportunities present in the renewable energy supply chain aligns with the broader trend of conscientious consumption (Rana, 2021). Deploying renewable energy not only meets customer needs but also fosters brand loyalty as consumers place greater importance on sustainability. Improved financial performance, increased market share, and increased customer retention are the outcomes of this alignment with consumer values (Lu et al., 2020).

Meeting stakeholder expectations is the third aspect that investors need to consider when evaluating possibilities and problems in funding renewable energy. In line with the stakeholder theory, the focus placed by clients, investors, and staff on sustainability isn't just a passing trend; rather, it's now a critical factor affecting the success and longevity of businesses in the contemporary business climate (Duong,

2020). Organisations that engage in proactive education on the advantages and challenges of incorporating renewable energy sources are better equipped to manage and reap the rewards of these evolving demands (Sagel, 2022).

Fulfilling stakeholder expectations contributes to increasing consumer influence as well as market share because environmentally conscious customers are becoming more and more influential, and their decisions are more impacted by a company's commitment to sustainability. Businesses that integrate renewable energy into their operations send a clear statement to their clientele about their dedication to environmental principles (Arent, 2022). This alignment not only attracts new customers who actively search for services and goods from environmentally conscientious business entities, but it also strengthens brand loyalty among present customers (Duong, 2020). Businesses that place a high priority on renewable energy can grow their market share and acquire a competitive advantage as consumers' concern for sustainability grows (Qadir, 2021).

Stakeholder expectations can also be met by luring investor confidence and access to capital. Investors are becoming more selective as they become more aware of the financial dangers associated with corporations that ignore environmental sustainability (Duong, 2020). Gaining insight into the potential benefits and obstacles linked to renewable energy helps companies formulate a plan for mitigating risk, which in turn builds investor trust (Scott & Richardson, 2021). Companies that employ renewable energy can collaborate with investors that respect sustainability and get access to a wider finance source. As a result, the company's financial stability increases, and its reputation as a responsible capital steward is cemented (Rana, 2021).

Engaging stakeholders throughout the financing of renewable energy projects also provides the business with a competitive advantage and market access. Several nations prioritise renewable energy in their energy profiles to meet environmental goals. Companies that understand and abide by these regulations may benefit from having preferred market access (Rahman et al., 2021).

Furthermore, a competitive advantage may be gained by setting the standard for environmental regulatory compliance as propelled by Tilling (2004) per the legitimacy theory. Businesses that integrate renewable energy into their supply chains are often better positioned to participate in alliances, government contracts, and industry collaborations to prioritise sustainability (Grosspietsch et al., 2022). Accessibility to international considerations is now readily available. Due to the worldwide nature of supply chains, organisations must be conscious of international agreements and legislation relevant to renewable energy.

International and domestic business are impacted by accords, notably the Paris Agreement (Pani, 2020). By keeping pace with international trends and agreements, organisations may efficiently negotiate regulatory variances, utilise international relationships, and promote global sustainability initiatives (Agovino et al., 2019). Strategies for constant development and solutions to address the issues and optimise the advantages of incorporating renewable energy across the supply chain, innovative thinking, and strategies for continuous improvement are needed (Silveira et al., 2018).

Long-term business resilience is an additional avenue for funding renewable energy initiatives. Beyond only meeting immediate needs, making investments in the long-term resilience and success of the firm also requires comprehending stakeholder expectations about sustainability and renewable energy (Duong, 2020).

In line with the stakeholder theory, companies that share these goals will be better able to navigate regulatory environments in the future, build enduring relationships with clients, and keep the ability to access capital in a market where sustainability continues to grow more and more important as the global community intensifies its quest to deal with climate change (Qadir, 2021).

Next up for funding renewable energy projects are incentives and support systems. Governments usually offer a range of incentives and support mechanisms to encourage firms to finance renewable energy. These might include subsidies, tax

breaks, grants, and favourable financing options (Sapraz, 2021). By being aware of these incentives, companies may capitalise on the possibilities to reduce startup costs and improve the overall economic feasibility of renewable energy projects. Strategic alignment with government programmes not only supports the organisation's financial goals but also promotes national and international sustainability goals (Vanhamaki et al., 2020).

Grid interconnection and energy storage technologies are the first challenge to consider when funding a renewable energy project. A steady supply of energy is harder to attain due to the volatile nature of renewable sources. In line with the Legitimacy theory, investing in battery systems or other cutting-edge energy storage technologies to store extra energy during times when output is at its highest. By permitting the use of renewable energy sources, smart grid technology can improve demand-response management and the stability of the system (Zhan & Tan, 2020).

Solutions for sustainable energy storage are the next crucial element. To overcome the volatile nature of renewable energy, it is imperative to invest in state-of-the-art energy storage technologies. Solid-body batteries, flow batteries, and lithium-ion batteries are examples of modern technologies that may be used as energy storage devices to store surplus energy generated during times of peak output (Sagel, 2022). During periods of low renewable energy generation, these reserves can be used to provide a more consistent and reliable supply of electricity. To increase storage capacity, reduce expenses, and enhance efficiency, energy storage systems require ongoing research and development (Ingram, 2018).

Smart grid systems present another issue to be aware of. Advanced energy storage is supported by smart grid technologies, which are crucial for maximising the incorporation of renewable energy sources into the wider energy infrastructure. Smart grids facilitate communication and cooperation in real time between energy providers, users, and the grid infrastructure (Scott & Richardson, 2021). This communication allows energy distribution to be dynamically adjusted in response to changes in demand and the availability of renewable energy. Modern

instruments, automation, and management systems enhance energy supply reliability and efficiency in smart grids, reduce waste, and provide a more resilient grid (Khan et al., 2018).

When thinking about funding renewable energy projects, investors also need to consider demand-responsiveness management. The grid may modify patterns of energy usage to coincide with the accessibility of renewable energy sources by employing technology to provide end users, enterprises, and homes with a means of communication (Devkota, 2020). When there are plenty of renewable energy sources available, incentives might be provided to encourage people to use more energy or to charge their electric cars.

Conversely, in situations where renewable energy is scarce, consumers can be incentivized to reduce their energy usage, which supports the legitimacy theory. The stability and resilience of the energy infrastructure are significantly enhanced by smart grid technologies. Renewable energy integration may bring some variability, but smart networks enable fast changes to maintain a consistent electricity supply (Silveira et al., 2018). When faced with unanticipated events like severe weather, this resilience is extremely crucial. Through adaptive control systems and real-time monitoring, smart grids improve the grid's ability to swiftly recover from interruptions, ensuring an uninterrupted supply of electricity for end users (Coquil et al., 2018).

Another challenge that needs to be carefully considered when funding renewable energy projects is the diversification of renewable sources. It may be more difficult to adapt to changing conditions if one is overly reliant on an instrumental renewable resource. To diversify its portfolio, the corporation ought to contemplate the utilisation of an array of sources of renewable energy, such as hydropower, solar, wind, and biomass. By using this approach, the impacts of variability are mitigated, and a more stable and reliable supply is ensured (Devkota et al., 2020).

Examining sustainable supply chain techniques is another difficulty. Sustainable supplies for renewable technologies might be hard to come by. Nonetheless, using sustainable supply chain methods, such as moral production procedures, eco-friendly transportation, and ethical raw material procurement, may offer a way out. Collaboration with suppliers committed to sustainability and traceability is encouraged (Krishan et al., 2019). To achieve sustainable supply chain management, responsible sourcing is essential. To ensure that the basic components utilised in the creation of renewable energy fields are supplied responsibly and ethically, companies must thoroughly inspect their supply networks (Lyons-White et al., 2018). Verifying that suppliers abide by regulations relating to fair labour standards, environmental preservation, and human rights is part of this. By adopting independent audits and certification programmes to confirm the sustainability capabilities of the suppliers of raw materials, accountability as well as transparency can be guaranteed across the supply chain (Devkota, 2020).

Sustainability is not limited to the acquisition of raw materials; it encompasses all stages of the production process. Reducing waste, optimising energy and resource use, and ensuring that by-products are dumped appropriately are among the benefits of using ethical manufacturing processes (Tan et al., 2021). The filming process of renewable technologies has a lesser environmental effect when employing environmentally friendly manufacturing processes and technology, which is consistent with broader sustainability goals (Sen & Ganguly, 2017). Carbon emissions are increased during the supply chain's transportation of raw materials, completed items, and components (Lowenberg-DeBoer, 2019). Sustainable supply chain methods encourage the use of environmentally beneficial modes of transportation, such as low-emission vehicles, alternative fuels, or optimised logistical routes. The overall objective of reducing the environmental effect of the supply chain is congruent with reducing the carbon footprint of the transportation sector (Missimer, 2017).

Collaborating with vendors who share the commitment to sustainability is a crucial strategy for developing a sustainable supply chain (Devkota, 2020). When an

organisation works with suppliers who prioritise environmental responsibility, ethical labour standards, and transparency, its sustainability efforts are reinforced. By building long-lasting connections with these suppliers, you may advance continuous improvement and innovation in the supply chain, all of which are focused on sustainability (Charles et al., 2017).

One further issue to consider when funding renewable energy is research and development expenditures. The answer requires a strong dedication to ongoing research and development. Companies may encourage creativity in renewable energy technology by allocating funds for projects related to research and development (Ahmadzai et al., 2021). This includes advances in material science, engineering, and design for renewable energy componentry, as well as the development of more productive production procedures. Companies may stay at the forefront of technological advancement by engaging in continual research and development projects. This fosters an inventive culture that drives improvements in manufacturing processes (Sen & Ganguly, 2017).

Cost is a significant element that affects how scalable renewable technologies are. To discover cost-effective manufacturing methods, substances, and supply chain optimisations, research and development expenditures are essential (Zahedi, Shahin, & Ali, 2016). Businesses may boost the viability of renewable energy sources in their respective industries and eventually encourage their broader adoption by using innovative cost-cutting strategies (Sen & Ganguly, 2017). Innovations in technology, like 3D printing: The application of transformational manufacturing technologies, such as advanced additive manufacturing or 3D printing, can cause a paradigm shift in production processes. 3D printing may be used to build complex and customised components with reduced material waste (Krishan & Suhag, 2019). This technology helps build prototypes, speeds up production schedules, and makes complicated renewable energy component manufacturing simpler. Improved flexibility, reduced lead times, and higher overall efficiency are the outcomes of integrating 3D printing technology into industrial processes (Ingram, 2018).

Application and Research of Advanced Materials: The use and research of advanced materials is a critical aspect of manufacturing innovation (Sagel, 2022).

The deployment of renewable energy systems requires skilled workers, which presents a barrier to employee engagement and training. To improve staff awareness of renewable energy technology and sustainable business practices, corporations must provide funding for employee training programmes. One way to encourage employees to contribute to the company's environmentally conscious culture is to ask them to identify ways to continuously improve energy efficiency (Sen & Ganguly, 2017).

The growing renewable energy company would like to establish mechanisms to guarantee that their actions are desirable and appropriate within the socially constructed system of norms, values, beliefs, and definitions. This would help them not only inform the community in which they operate and give back to it but also establish the best brand image and perception among renewable energy companies worldwide.

# 5. CONCLUSION

This chapter concludes the study by highlighting the discoveries from this investigation, which are presented in the summary below and offer a few proposals for improving Ghana's funding for renewable energy as well as future research study directions for renewable energy financing in Ghana.

## 5.1 Summary

According to the findings of this study, new companies focusing on renewable energy provide their stakeholders with sustainable renewable energy initiatives. As such, their interests extend beyond financial gain to include meeting their commitments to the environment and society. The lack of a comprehensive framework governing renewable energy in Ghana has led to the establishment of voluntary guiding principles by raising renewable energy firms to demonstrate their unwavering commitment. These principles govern the trajectory of their sustainable activities. Consistent with Bae et al. (2018), businesses may support renewable energy by including socially conscious written values in their corporate strategies and policies. They are dedicated to reporting them as well.

This has made it necessary to provide yearly sustainability reports that are independent of other publications and that detail sustainable Renewable Energy efforts. Nevertheless, it is important to highlight that the reporting from these companies has been selective and shows views depending on business (Bakre, Lauwo, and Otusanya, 2016).

The increasing evidence of social and environmental issues among renewable energy companies in Ghana (Mensah et al., 2014) and the persistent negative impact of the environmental and social activities of emerging renewable energy corporations, which are not visible in reports from the European Environmental Agency and International Journal of Engineering, Science & Technology, also supports the ineffectiveness of the regulatory and legislative frameworks in developing countries (Baden, 2016 ;Banerjee, 2007). In addition, stakeholders, such

as pressure groups and non-governmental organisations, are unable to exert enough influence over these companies. (Bakre et al, 2016).

**5.2 Conclusions of research findings**

After the existing literature on funding for renewable energy was reviewed, three research issues were raised. The research employed a case study design using a qualitative methodology. In doing so, it used the literature review approach to analyze the data and provide answers to the presented problems. The initial research topic is to ascertain Ghana's finance landscape for renewable energy projects. It was discovered that to conduct sustainable business operations, growing renewable energy firms concentrate on four important areas.

These include eco-responsibility, renewable societies, health and safety in the environment, and values of renewable energy. According to Arko (2013) and Mensah & Amponsah-Tawiah (2015), renewable energy companies in Ghana place a high value on community initiatives, these emerging renewable energy corporations disclosed more about their stakeholder engagement than the other mentions. Possibly, the corporation links this focus on them to research by Ali-khan & Mulvihill (2008) and Santiago & Demajorovic (2016), which highlights that stakeholders are the ones who may grant or withdraw a company's operating license.

This research found that while most of these initiatives support general healthcare in areas such as medical supplies, maternity, and childcare, health and safety practices towards external stakeholders do not always address the negative impact of emerging renewable energy corporations on the community. The claim that renewable energy in Ghana has always been philanthropic is supported by the fact that these renewable energy companies are visible in the community and often donate to charitable causes that help community development. According to Egbon, Idemudia, and Amaeshi (2018), there is a power asymmetry between the

community and the enterprise, which puts Renewable Energy corporations at the receiving end of stakeholder interactions.

The reason for these power imbalances is that community members typically have varying expectations, which prevents them from having enough clout to influence business choices. The third question sought to ascertain the reasons behind investors' interest in supporting renewable energy companies that, despite their difficulties, report on and disclose their business operations. Three key factors that affected it were identified by the study. Renewable energy companies understand that they have obligations to other social groups and organizations in addition to their shareholders and that they must answer to them.

In addition, because the energy sector has led the way in numerous social and environmental reporting talks due to the detrimental effects of their operations, investors are drawn to emerging renewable energy corporations that report on these issues to lessen the information asymmetry that currently exists between them and society (Lauwo & Otusanya, 2014; Peck & Sinding, 2003). Hence, renewable energy companies aim to provide stakeholders with a good impression of the business through their selective information-sharing practices.

Ultimately, growing renewable energy companies report on the areas in which they must obtain and uphold social licenses, and draw in investors to provide capital intended for business expansion, and this aligns with the findings of Hilson (2012) that a company's ability to be seen as a sustainable enterprise is a crucial tool used by Ghanaian energy companies to secure a social license to operate.

**5.3 Contribution of the study to knowledge**

This study provides empirically to the body of knowledge on financing renewable energy projects and renewable energy reporting by presenting some insights from the gold mining context in Ghana. These insights highlight how sustainable the renewable energy activities reported by these corporations are, thanks to the involvement of governments, corporations, and other stakeholders such as the

community. As such, the researcher discovered certain concerns that might provide useful information to politicians, management, and pressure organizations such as Non-Governmental Organizations. It is evident to management that energy firms in Africa, especially Ghana, are facing a common difficulty with funding renewable energy projects and reporting on renewable energy.

The reasoning behind this is that, given the widely held belief that the energy sector harms society the most, emerging businesses focused on renewable energy can leverage this to gain legitimacy. As a result, the company needs to handle the various stakeholder needs as recommended by Du et al. (2010) and Esrock & Leichty (2000) and treat financing Renewable Energy projects and Renewable Energy reporting with considerable interest. It ought to take advantage of the internet, which reduces the cost and increases the convenience of business activity communication.

Especially since some stakeholders, such as residents, may not be able to read or even access electricity or a network, emerging renewable energy corporations would be well advised to gain a deeper understanding of their stakeholders and devise additional reporting practices that cater to stakeholder groups (Abugre & Nyuur, 2015). Companies involved in the renewable energy sector must keep reporting using the Global Reporting Initiative guidelines since they lend credibility and encourage openness in their business practices. In conclusion, Schmitt (2010) suggests that developing Renewable Energy should implement the technique of "open strategizing" in its community engagements to mitigate or eradicate the power asymmetry that now exists between the community and the firm.

This will enable the community to derive the maximum benefit from its renewable energy endeavours, as well as in the meantime, the community will persist in furnishing the licensing prerequisites that nascent renewable energy firms require to function profitably. The funding of renewable energy projects as well as reporting on renewable energy must be viewed by policymakers as critical issues. Most industrialized nations, such as Norway, Japan, and France, have made renewable energy reporting and financing projects obligatory; nevertheless, most African

nations, such as Ghana, portray a different picture through voluntary initiatives. Policymakers in Ghana need to move toward requiring the financing of renewable energy projects and the filing of renewable energy reports by creating a comprehensive policy that will direct the field's direction in the nation, much like the popular and required openness of financial statements even in Africa (Ziek, 2009).

To guarantee that Ghanaian mining corporations fulfil their responsibilities to stakeholders such as the government and society, strict enforcement procedures must also be implemented. By doing this, the myth that Ghanaian businesses involved in renewable energy are relieving the government of some of its duties will be dispelled (Ofori & Wilson, 2010).

For energy businesses to be in a better position to meaningfully contribute to society, policymakers must also make sure that the sustainable business practices of these corporations resolve their negative social impact. Considering the significant advantages that renewable energy projects and reporting may provide for developing renewable energy companies as well as Ghana overall, policymakers and management alike must therefore treat these issues attentively.

To effectively advocate for transparency and accountability in the financing practices of renewable energy by these emerging corporations and other energy corporations, it is imperative that pressure groups, such as NGOs and civil societies, receive the necessary education, as recommended by Dartey-Baah et al. (2015).

This empowerment can take the form of financial, educational, and other resources that will enable people to challenge renewable energy businesses' disclosures more effectively by presenting opposing information and disclosures that call attention to their operations.

### 5.4 Directions for further research

Only two European nations' renewable energy reporting policies were examined in this study; future research should look at Ghana's reporting requirements for the whole European continent. To further extract the findings from the research, a qualitative method of literature review was employed in the study. To answer the study issues, future studies ought to investigate other qualitative approaches or, better yet, use a quantitative methodology. In the case of developing countries, notably Ghana, future studies should also investigate identifying the underlying factors that prevent legislative bodies from enforcing stricter regulatory framework implementations on the reporting practices of energy businesses in renewable energy.

Ultimately, future studies must examine the difficulties that different stakeholders have when trying to speak for the public while promoting problems related to funding renewable energy in developing nations.

### 5.5 Research limitations and Recommendation

This research is prone to several limitations, just like nearly all other investigations. The findings may only have limited applicability to that continent because the study's focus on the energy business was limited to just two nations worldwide. To comprehend the research questions, this study also used the strategy of using solely the literature review as an analytical instrument. Different approaches could provide varying outcomes. The recommendation that follows is based on the information acquired concerning the issue statements specified in the first chapter. The energy sector is notorious for providing little information, particularly when it comes to engaging stakeholders, which distances the public from its operations. Considering this, the study's researcher suggests that renewable energy corporations in Portugal and Norway, which serve as the industry's representatives, disclose all relevant information about their interactions with stakeholders,

particularly when it comes to corporate governance and other procedures like sustainability.

This would improve transparency as well as accountability, eradicate any issue of information asymmetry as noted in the literature review, and increase stakeholder engagement because they would have easy access to any information, they deem relevant. It would also raise stakeholders' level of trust in renewable energy corporations, which in turn would encourage them to promote the products and services of the companies, thereby enhancing their goodwill.

## References

Abraham, E. M., Asor, V., Torviawu, F., Yeboah, H., & Laryea, F. (2018). Public perception of corporate social responsibility of AngloGold Ashanti in Obuasi Municipality, Ghana. *Social Responsibility Journal*, *14*(3), 485–500. https://doi.org/10.1108/SRJ-08-2016-0149

Abugre, J. B., & Nyuur, R. B. (2015). Organizations' commitment to and communication of CSR activities: insights from Ghana. *Social Responsibility Journal*, *11*(1), 161–178.

Adewuyi, A. O., & Olowookere, A. E. (2010). Corporate Social Responsibility of a Nigerian polluter: the West African Portland Cement (WAPCO) Nigerian PLC's case. *Social Responsibility Journal*, *6*(1), 108–125.

Afewerki, S., & Karlsen, A. (2021). Policy mixes for just sustainable development in regions specialised in carbon-intensive industries*: The case of two Norwegian petro- maritime regions.* European Planning Studies, 30(11), 2273–2292. https://doi.org/10.1080/ 09654313.2021.1941786

Agovino, M., et al.,(2019) *Agriculture, climate change and sustainability: The case of EU-28.* Ecological Indicators, . 105: p. 525-543.

Ahmad, S. (2015) *Green human resource management: Policies and practices.* Cogent business & management. 2(1): p. 1030817.

Ahmadzai, H., S. Tutundjian, and I. Elouafi.(2021) *Policies for sustainable agriculture and livelihood in marginal lands: a review.* Sustainability, 13(16): p. 8692.

Ali-khan, F., & Mulvihill, P. R. (2008). *Exploring Collaborative Environmental Governance: Perspectives on Bridging and Actor Agency.* Geography Compass, 2(6), 1974–1994.

Amaratunga, D., Baldry, D., Sarshar, M., & Newton, R. (2002). Quantitative and qualitative research in the built environment: application of "mixed" research approach. Work Study, 51(1), 17–31. https://doi.org/10.1108/00438020210415488

Amponsah-tawiah, K., & Dartey-Baah, K. (2004). Corporate Social Responsibility in Ghana. *International Journal of Business and Social Science 2*(17), 107–112. Retrieved from http://ijbssnet.com/journals/Vol_2_No_17/15.pdf

Amoah, A., Kwablah, E., Korle, K., & Offei, D. (2020). Renewable energy consumption in africa: the role of economic well-being and economic freedom. Energy Sustainability and Society, 10(1).

Ambole, A., Koranteng, K., Njoroge, P., & Luhangala, D. (2021). A review of energy communities in sub-saharan africa as a transition pathway to energy democracy. Sustainability, 13(4), 2128.

Arent, D.J., et al., (2022). Challenges and opportunities in decarbonizing the US energy system. *Renewable and Sustainable Energy Reviews*, 169: p. 112939.

Arko, B. (2013). Corporate Social Responsibility in the Large-Scale Gold Mining Industry in Ghana. *Journal of Business and Retail Management Research*, 8(1), 81–90

Ajayi, V. O. (2017). Primary Sources of Data and Secondary Sources of Data. (September), 1–6

Baden, D. (2016). A Reconstruction of Carroll's Pyramid of Corporate Social Responsibility for the 21st Century. *International Journal of Corporate Social Responsibility*, 1(1), 1–15.

Bae, S. M., Masud, M. A. K., & Kim, J. D. (2018). A Cross-Country Investigation of Corporate Governance and Corporate Sustainability Disclosure: A Signaling Theory Perspective. *Sustainability*, 10(8), 1–16

Bakre, O., Lauwo, S. G., & Otusanya, O. J. (2016). *Corporate social responsibility reporting in the mining sector of Tanzania. Accounting, Auditing & Accountability* Journal, 29(6), 1038-1074

Berthelot, S., Coulmont, M., & Serret, V. (2012). *Do Investors Value Sustainability Reports? A Canadian Study.* Corporate Social Responsibility and Environmental Management, 19(6), 355–363.

Birch, D. (2003). Corporate Social Responsibility: Some Key Theoretical Issues and Concepts for New Ways of Doing Business. *Journal of New Business Ideas and Trends*, *1*(1), 1–19.

Bielecki.A., S. Ernst, W. Skrodzka, I. Wojnicki. (2020) The externalities of energy production in the context of development of clean energy generation, Environ. Sci. Pollut. Res. 27 (11) 11506–11530

Bang, G., & Lahn, B. (2020). From oil as welfare to oil as risk? Norwegian petroleum resource governance and climate policy. Climate Policy, 20(8), 997–1009.

Barnham, C. (2015). Quantitative and qualitative research: Perceptual foundations. International Journal of Market Research, 57(6), 837–854.

Baxter Pamela, & Jack, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. The Qualitative Report, 13(4), 544–559.

Bowers, T. (2010*). From image to economic value: A genre analysis of sustainability reporting.* Corporate Communications, 15(3), 249–262.

Bradford, M., Earp, J. B., & Williams, P. F. (2017*). Understanding sustainability for socially responsible investing and reporting.* Journal of Capital Markets Studies, 1(1), 10–35.

Bradley, J. (1993). *Methodological Issues and Practices in Qualitative Research*. Library Quarterly, 63(4), 431–449.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology.

Bryman, A., & Bell, E. (2003). *Breaking down the quantitative/qualitative divide*. Business Research Methods, 465–478.

Birth, G., Illia, L., Lurati, F., & Zamparini, A. (2008). Communicating CSR: Practices among Switzerland's Top 300 Companies. *Communicating CSR: Practices among Switzerland's Top 300 Companies*, *13*(2), 1–20.

Chelminski, K. (2022). Climate finance effectiveness: a comparative analysis of geothermal development in indonesia and the philippines. The Journal of Environment & Development, 31(2), 139-167.

Ching, H., & Gerab, F. (2017). Article information: Reports with External. *Social Responsibility Journal*, *13*(1), 1–18.

Cho, C. H., & Patten, D. M. (2007). The role of environmental disclosures as tools of legitimacy: A research note. *Accounting, Organizations and Society*, *32*(7–8), 639–647.

Clarkson, M. B. E. (1995). A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance. *The Academy of Management Review*, *20*(1), 92–117.

Coquil, X., et al., *Questioning the work of farmers, advisors, teachers, and researchers in agro-ecological transition. A review. Agronomy for Sustainable Development*, 2018. 38: p. 1-12.

Creswell, J. W. (2009). Research Design: Qualitative, Quantitative and Mixed Approaches (3rd Edition). In Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.

Dartey-Baah, K., Amponsah-Tawiah, K., & Agbeibor, V. (2015). *Corporate Social Responsibility in Ghana's National Development. Africa Today*, 62(2), 71–92.

Deegan, C. (2013). *Financial Accounting Theory* (4th ed.). Sydney: McGraw-Hill.

Devkota, K.P., et al., *Assessing alternative crop establishment methods with a sustainability lens in rice production systems of Eastern India.* Journal of cleaner production, 2020. 244: p. 118835.

Dong, S., & Xu, L. (2016). The impact of explicit CSR regulation: Evidence from China' s mining firms. *Journal of Applied Accounting Research*, *17*(2), 237–258.

Duong, L.N.K. and J. Chong. (2020) Supply chain collaboration in the presence of disruptions: a literature review. *International Journal of Production Research*, 58(11): p. 3488-3507.

Du, S., Bhattacharya, C. ., & Sen, S. (2010). Maximizing Business Returns to Corporate Social Responsibility (CSR): The Role of CSR Communication. *International Journal of Management Reviews*, 7–15

Egbon, O., Idemudia, U., & Amaeshi, K. (2018). *Shell Nigeria's Global Memorandum of Understanding and Corporate-Community Accounting Relations: A Critical Appraisal.* Accounting Auditing & Accountability, 31(1), 51–74

Enebe, G.C., Lukong, V.T., Mouchou, R.T., Ukoba, K.O. and Jen, T.C., 2022. Optimizing nanostructured on heterojunction solar cells using SCAPS for fourth industrial revolution. *Materials Today: Proceedings*, *62*, pp.S145-S150.

Engen, O. A. (2009). The development of the Norwegian petroleum innovation system: A historical overview. In J. Fagerberg, D. C. Mowery, & B. Verspagen (Eds.), Innovation, path dependency, and policy. The Norwegian case (pp. 179–208). Oxford University Press.

Esrock, S. L., & Leichty, G. B. (2000). *Organization of Corporate Web Pages: Publics and Functions*. Public Relations Review, 26(3), 327–344

Etikan, I., Musa, S. A., & Alkassim, R. S. (2017). Comparison of Convenience Sampling and Purposive Sampling. (January 2016).

Fant, C., Schlosser, C., & Strzepek, K. (2016). The impact of climate change on wind and solar resources in southern Africa. Applied Energy, 161, 556-564.

Finfgeld-connett, d. & johnson, e. D. J. J. O. A. N. 2013. Literature search strategies for conducting knowledge-building and theory-generating qualitative systematic reviews. 69, 194-204.

Freeman, r. (1984). Strategic Management: A Stakeholder Approach.

Friedman, M. (1970, september 1). The Social Responsibility of Business is to Increase its

Profits. *New York Times Magazine*.

Gkalonaki, S. and Karatzas, K. (2022). Assessing the environmental impacts of renewable energy sources with emphasis on wind energy. Iop Conference Series Earth and Environmental Science, 1123(1), 012053.

Gray, R., Kouhy, R., & Lavers, S. (1995). Corporate social and environmental reporting. *Accounting, Auditing & Accountability Journal*.

Grosspietsch, D., M. Saenger, and B. Girod, *Matching decentralized energy production and local consumption: A review of renewable energy systems with conversion and storage technologies.* Wiley Interdisciplinary Reviews: Energy and Environment, 2019. 8(4): p. e336.

Güney, T. (2019). Renewable energy, non-renewable energy, and sustainable development. International Journal of Sustainable Development & World Ecology, 26(5), 389-397.

Guthrie, J., Cuganesan, S., & Ward, L. (n.d.). *Legitimacy theory: a story of reporting social and environmental matters within the Australian food and beverage industry Coca-cola Amatil.*

Harmoni, A. (2013). *Stakeholder-Based Analysis of Sustainability Report: A Case Study on Mining Companies in Indonesia*. In 204 International conference on Eurasian economies.

Haque, M.H., et al., *Sustainable antibiotic-free broiler meat production: Current trends, challenges, and possibilities in a developing country perspective*. Biology, 2020. 9(11): p. 411

Heide, K. M., Holmøy, E., Solli, I. F., & Strøm, B. (2006). A welfare state funded by nature and OPEC: A guided tour on Norway's path from an exceptionally impressive to an exceptionally strained fiscal position. Discussion Papers No. 464. Statistics Norway, Oslo.

Henry, a. L. J. H. O. D., activities in the teaching of psychology: volume i: introductory, s., research methods, & history 2013. Teaching Students to Write Literature Reviews: A MetaAnalytic Model. 228

Hilson, G. (2012). *Corporate Social Responsibility in the Extractive Industries: Experiences from Developing Countries*. Resources Policy, 37(2), 131–137

Hinson, R., Boateng, R., & Madichie, N. (2010). Corporate Social Responsibility Activity Reportage on Bank Websites in Ghana. *International Journal of Bank Marketing*, *28*(7), 498–518.

Hinson, R. (2011). Corporate Social Responsibility (CSR) Reportage on Websites and in Annual Reports: The Case of CAL Bank in Ghana. *Corporate Ownership and Control*, *8*(2), 190–202.

Idoko, I.P., Ayodele, T.R., Abolarin, S.M. and Ewim, D.R.E., 2023. Maximizing the cost effectiveness of electric power generation through the integration of distributed generators: wind, hydro and solar power. *Bulletin of the National Research Centre*, *47*(1), p.166.

Ingram, J., Agricultural transition: *Niche and regime knowledge systems' boundary dynamics.* Environmental innovation and societal transitions, 2018. 26: p. 117-135

Jamali, D., & Mirshak, R. (2007). Corporate Social Responsibility (CSR): Theory and Practice in a Developing Country Context. *Journal of Business Ethics*, *72*(3), 243–262.

Jones, T. M. (1995). Instrumental Stakeholder Theory: A Synthesis of Ethics and Economics. *Academy of Management Review*, *20*(2), 404–437.

Jenkins, H., & Obara, L. (2008). Corporate Social Responsibility (CSR) in the Mining Industry-The Risk of Community Dependency. 1–23.

Kakabadse, N. K., Rozuel, É., & Lee-Davies, L. (2005). Corporate Social Responsibility and Stakeholder Approach: A Conceptual Review. *International Journal of Business Governance and Ethics*, *1*(4), 277–302.

Katsaliaki, K., P. Galetsi, and S. Kumar, *Supply chain disruptions and resilience: A major review and future research agenda*. Annals of Operations Research, 2021: p. 1-38

Khan, M.T.I., Q. Ali, and M. Ashfaq, *The nexus between greenhouse gas emission, electricity production, renewable energy, and agriculture in Pakistan*. Renewable Energy, 2018. 118: p. 437-451.

Khan, S.A.R., et al., *A green ideology in Asian emerging economies: From environmental policy and sustainable development*. Sustainable development, 2019. 27(6): p. 1063-1075.

Khlif, H., Guidara, A., & Souissi, M. (2015). Corporate social and environmental disclosure and corporate performance. Journal of Accounting in Emerging Economies, 5(1), 51–69

Kivuitu, M., Yambayamba, K., & Fox, T. (2005). How can Corporate Social Responsibility Deliver in Africa? Insights from Kenya and Zambia. *International Institute for Environment and Development*, *3*, 1–5.

Knupfer, N. N., & McLellan, H. (2001). Descriptive Research Methodologies. Bloomington.

Kothari, C. R. (2004). Research Methodology: Methods & Techniques. New Delhi: New Age International Publishers.

Kotonen, U. (2009). Formal Corporate Social Responsibility Reporting in Finnish Listed Companies. *Journal of Applied Accounting Research*, *10*(3), 176–207.

Krippendorff, K. (2013). Content Analysis: An Introduction to its Methodology (3rd ed.). California: Sage Publications

Krishan, O. and S. Suhag, *Techno-economic analysis of a hybrid renewable energy system for an energy poor rural community.* Journal of Energy Storage, 2019. 23: p. 305-319.

L. (2016). *The role of governance in realising the transition towards sustainable societies.* Journal of Cleaner Production, 113, 755–766.

Lauwo, S., & Otusanya, O. J. (2014). *Corporate Accountability and Human Rights Disclosures: A Case Study of Barrick Gold Mine in Tanzania*. Accounting Forum, 38(2), 1–18

Leal Filho, W., Platje, J., Gerstlberger, W., Ciegis, R., Kääriä, J., Klavins, M., & Kliucininkas,

Le Billon, P., & Kristoffersen, B. (2020). Just cuts for fossil fuels. Supply-side carbon constraints and energy transition. Environment and Planning A: Economy and Space, 52(6), 1072–1092.

Lowenberg-DeBoer, J. and B. Erickson, *Setting the record straight on precision agriculture adoption.* Agronomy Journal, 2019. 111(4): p. 1552-1569.

Lu, Y., et al., *A critical review of sustainable energy policies for the promotion of renewable energy sources.* Sustainability, 2020. 12(12): p. 5078

Lyons-White, J. and A.T. Knight, *Palm oil supply chain complexity impedes implementation of corporate no deforestation commitments*. Global Environmental Change, 2018. 50: p. 303-313.

Maqbool, R., Rashid, Y., & Ashfaq, S. (2022). Renewable energy project success: internal versus external stakeholders' satisfaction and influences of power-interest matrix. Sustainable Development, 30(6), 1542-1561.

Marks, D. F., & Yardley, L. (2004). Content and Thematic Analysis. In Research Methods for Clinical and Health Psychology.

Masse, J., Gerber, P., Halpern, C., & Baedeker, T. (2020). Review: climate finance readiness of the animal protein sector: overview of experience in linking the sector to climate finance, and options to address bottlenecks. Animal, 14, s491-s499.

Mäkitie, T., Andersen, A. D., Hanson, J., Normann, H. E., & Thune, T. M. (2018). Established sectors expediting clean technology industries? The Norwegian oil and gas sector's influence on offshore wind power. Journal of Cleaner Production, 177, 813–823.

M. A. Nyasapoh and S. K. Debrah, “Nuclear Power Contribution Towards a Low-Carbon Electricity Generation for Ghana,” 2020, [Online].

Mensah, J., & Amponsah-Tawiah, K. (2015). Exploring the link between Corporate Social Responsibility and health and safety in the mines. *Journal of Global Responsibility*, *6*(1), 1–26.

Missimer, M., K.-H. Robèrt, and G. Broman, *A strategic approach to social sustainability–Part 1: exploring the social system.* Journal of cleaner production, 2017. 140: p. 32-41.

Mouchou, R., Laseinde, T., Jen, T.C. and Ukoba, K., 2021. Developments in the Application of Nano Materials for Photovoltaic Solar Cell Design, Based on Industry 4.0 Integration Scheme. In *Advances in Artificial Intelligence, Software and Systems Engineering: Proceedings of the AHFE 2021 Virtual Conferences on Human Factors in Software and Systems Engineering, Artificial Intelligence and Social Computing, and Energy, July 25-29, 2021, USA* (pp. 510-521). Springer International Publishing

Muthuri, J. N., & Gilbert, V. (2011). An Institutional Analysis of Corporate Social Responsibility in Kenya. *Journal of Business Ethics*, *98*(3), 467–483.

Myers, M. D. (2008). Qualitative Research in Business & Managemen. Sage.

Ngwenya, N. and Simatele, M. (2020). Unbundling of the green bond market in the economic hubs of africa: case study of kenya, nigeria and south africa. Development Southern Africa, 37(6), 888-903.

Nneji, B. (2010). *Eco-Responsibility. Essays in Philosophy,* 11(1), 31–43.

Nyuur, R. B., Ofori, D. F., & Debrah, Y. (2014). Corporate Social Responsibility in Sub-Saharan Africa: Hindering and Supporting Factors. *African Journal of Economic and Management Studies*, *5*(1), 93–113.

Nzomo, M. and Getachew, Z. (2021). Regional energy integration for sustainable development in eastern africa: the case for geothermal energy. Mediterranean Journal of Social Sciences, 12(5), 38.

Ofori, D., & Wilson, E. (2010). *Integrating Corporate Responsibility and Stakeholder Approaches into Mainstream Strategy: A Stakeholder-Oriented and Integrative Strategic Management Framework*

O'Donovan, G. (2000). LEGITIMACY THEORY AS AN EXPLANATION FOR CORPORATE ENVIRONMENTAL DISCLOSURES.

O'Donovan, G. (2002). Environmental disclosures in the annual report: Extending the applicability and predictive power of legitimacy theory. *Accounting, Auditing & Accountability Journal*, *15*(3), 344–371.

O'Dwyer, B. (2003). Conceptions of Corporate Social Responsibility: The Nature of Managerial Capture. *Accounting, Auditing & Accountability Journal*, *16*(4), 523–557.

O'leary, Z. 2017. The essential guide to doing your research project, Sage.

Othman, K. and Khallaf, R. (2022). Identification of the barriers and key success factors for renewable energy public-private partnership projects: a continental analysis. Buildings, 12(10), 1511.

Pani, S.K., D. Jena, and N.R. Parida, *Agricultural sustainability, and sustainable agribusiness model: A review on economic and environmental perspective.* International Journal of Modern Agriculture, 2020. 9(4): p. 875-883.

Patton, M. Q. (2002). Qualitative research and evaluation methods (3rd ed.). Thousand Oaks, C.A: Sage

Payne, G., & Payne, J. (2004). Key Concepts in Social Research. London: Sage Publications.

Peck, P., & Sinding, K. (2003). *Environmental and Social Disclosure and Data Richness in the Mining Industry.* Business Strategy and the Environment, 12, 131–146

Piggot, G., Verkuijl, C., van Asselt, H., & Lazarus, M. (2020). Curbing fossil fuel supply to achieve climate goals. Climate Policy, 20(8), 881–887.

Piemontese, L., Fetzer, I., Rockström, J., & Jaramillo, F. (2019). Future hydroclimatic impacts on africa: beyond the paris agreement. Earth S Future, 7(7), 748-761.

Post, J. E., Preston, L. E., & Sachs, S. (2002). Redefining the Corporation: Stakeholder Management and Organizational Wealth.

Qadir, S.A., et al., *Incentives and strategies for financing the renewable energy transition: A review.* Energy Reports, 2021. 7: p. 3590-3606

Rana, R.L., C. Tricase, and L. De Cesare, *Blockchain technology for a sustainable agri-food supply chain.* British Food Journal, 2021. 123(11): p. 3471-3485

Rastogi, C. (2018). M-kopa solar: lighting up the dark continent. South Asian Journal of Business and Management Cases, 7(2), 93-103.

Rahman, S.M., et al., *Greenhouse gas emissions from road transportation in Saudi Arabia-a challenging frontier.* Renewable and Sustainable Energy Reviews, 2017. 69: p. 812-821.

Regjeringen. (2021b). A European Green Deal: Norwegian Perspectives and Contributions.

Rowe, F. 2014. What literature review is not: diversity, boundaries, and recommendations. Taylor & Francis

Rowley, J. (2002). Using case studies in research. Management Research News.

Sagel, V.N., K.H. Rouwenhorst, and J.A. Faria, *Green ammonia enables sustainable energy production in small island developing states: A case study on the island of Curaçao.* Renewable and Sustainable Energy Reviews, 2022. 161: p. 112381.

Samuwai, J. and Hills, J. (2018). Assessing climate finance readiness in the Asia-pacific region. Sustainability, 10(4), 1192.

Santiago, A. L. F., & Demajorovic, J. (2016). *Social License to Operate: A Case study from a Brazilian Mining Industry.* Latin American Journal of Management for Sustainable Development, 3(1), 19–34

Sarmiento, L., Burandt, T., Löffler, K., & Oei, P. (2019). Analyzing scenarios for the integration of renewable energy sources in the Mexican energy system—an application of the global energy system model (genesys-mod). Energies, 12(17), 3270.

Sapraz, M. and S. Han, *implicating human values for designing a digital government collaborative platform for environmental issues: A value sensitive design approach*. Sustainability, 2021. 13(11): p. 6240.

Schmitt, R. (2010). *Dealing with Wicked Issues: Open Strategizing and the Camisea Case.* Journal of Business Ethics, 96, 11–19

Scholten, D. and R. Bosman, *The geopolitics of renewables; exploring the political implications of renewable energy systems.* Technological Forecasting and Social Change, 2016. 103: p. 273-*283*

Schwerhoff, G. and Sy, M. (2017). Financing renewable energy in africa – key challenge of the sustainable development goals. Renewable and Sustainable Energy Reviews, 75, 393-401.

Scott, J. (1990). A Matter of Record: Documentary Sources in Social Research. Cambridge, England: Polity Press.

Sen, S. and S. Ganguly, *Opportunities, barriers, and issues with renewable energy development–A discussion.* Renewable and Sustainable Energy Reviews, 2017. 69: p. 1170-1181.

Shekarian, M. and M. Mellat Parast, *An Integrative approach to supply chain disruption risk and resilience management: a literature review*. International Journal of Logistics Research and Applications, 2021. 24(5): p. 427- 455.

Sheriffdeen, M., Nurrochmat, D., Perdinan, P., & Gregorio, M. (2020). Indicators to evaluate the institutional effectiveness of national climate financing mechanisms. Forest and Society, 358-378.

Silveira, A., et al., *The sustainability of agricultural intensification in the early 21st century:insights from the olive oil production in Alentejo (Southern Portugal).* 2018. p. 247-275

Skjølsvold, T. M. (2014). Back to the futures: Retrospecting the prospects of smart grid technology. Futures, 63, 26–36.

Snyder, h. J. J. O. B. R. 2019. Literature review as a research methodology: An overview and guidelines. 104, 333-339.

Steckel, J., Jakob, M., Flachsland, C., Kornek, U., Lessmann, K., & Edenhofer, O. (2016). From climate finance toward sustainable development finance. Wiley Interdisciplinary Reviews Climate Change, 8(1).

Surbhi, S. (n.d.), 2017. *Difference Between Internal and External Stakeholders with Comparison Chart*

Bigerna .S., C.A. Bollino, S. Micheli, The Sustainability of Renewable Energy in Europe, Springer, 2015

Tan, K.M., et al., *Empowering smart grid: A comprehensive review of energy storage technology and application with renewable energy integration*. Journal of Energy Storage, 2021. 39: p. 102591

Taghizadeh-Hesary, F. and Yoshino, N. (2020). Sustainable solutions for green financing and investment in renewable energy projects. Energies, 13(4), 788.

Tight, M., Symonds, P., & Symonds, P. M. (2016). The Case Study as a Research Method. Case Studies, 15–15.

Tilling, M. V. (2004). Some thoughts on legitimacy theory in social and environmental

accounting. *Social and Environmental Accountability Journal*, *24*(2), 3–7

Tshidavhu, F. and Khatleli, N. (2020). An assessment of the causes of schedule and cost overruns in south african megaprojects: a case of the critical energy sector projects of medupi and kusile. Acta Structilia, 27(1), 119-143.

Tolliver, C., Keeley, A., & Managi, S. (2019). Green bonds for the paris agreement and sustainable development goals. Environmental Research Letters, 14(6), 064009.

Twidell, J., *Renewable energy resources.* 2021: Routledge

Ukoba, K.O., Eloka-Eboka, A.C. and Inambao, F.L., 2017. Review of solar energy inclusion in Africa: a case study of Nigeria.

Vakulchuk, R., I. Overland, and D. Scholten, *Renewable energy and geopolitics: A review. Renewable and sustainable energy reviews*, 2020. 122: p. 109547

Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content Analysis and Thematic Analysis: Implications for Conducting a Qualitative Descriptive Study. Nursing and Health Sciences, 15(3), 398–405.

Vanhamäki, S., et al., *Transition towards a circular economy at a regional level: A case study on closing biological loops*. Resources, Conservation and Recycling, 2020. 156: p. 104716.

Vasstrøm, M., & Lysgård, H. K. (2021). What shapes Norwegian wind power policy? Analysing the constructing forces of policymaking and emerging questions of energy justice. Energy Research and Social Science, 77, 1–10.

Vourvachis, P., & Woodward, T. (2015). Content analysis in social and environmental reporting research: Trends and challenges. Journal of Applied Accounting Research, 16(2), 166–195.

Vourvachis, P., & Woodward, T. (2015). Content Analysis in Social and Environmental Reporting Research: Trends and Challenges. Journal of Applied Accounting Research, 16(2), 166–195.

Waris, M., Azlan, Z., Fadzline, M., Ullah, M., & Khan, A. (2019). Analyzing the constructs of stakeholder engagement towards renewable energy projects success in malaysia: a pls approach. Kne Social Sciences.

Wang, Z., Zaman, S., Rasool, S., Zaman, Q., & Amin, A. (2020). <p>exploring the relationships between a toxic workplace environment, workplace stress, and project success with the moderating effect of organizational support: empirical evidence from Pakistan. Risk Management and Healthcare Policy, Volume 13, 1055- 1067.

Waddock, S. A., Bodwell, C., & Graves, S. B. (2002). Responsibility: The new business imperative. *Academy of Management Executive*, *16*(2), 132–149.

Waheed, S. and Waheed, H. (2022). Impact of climate finance on gender equity for sustainable global development: can aid for climate action also aid gender equity? Brazilian Journal of Science, 1(7), 82-94.

Wee, b. V. & banister, d. J. T. R. 2016. How to write a literature review paper? 36, 278-288

White, R., & Hanson, D. (2002). Economic man and Disciplinary Boundaries: A Case study in Corporate Annual Reports. Accounting, Auditing & Accountability Journal, 15(4), 450–477.

Yin, K. (2003). *Case study research: Design and methods* (3rd edition). Applied social methods series.

Zahedi, M., M. Shahin, and M. Ali Babar, *A systematic review of knowledge sharing challenges and practices in global software development.* International Journal of Information Management, 2016. 36(6, Part A): p. 995-1019.

Zapata, O. (2022). Renewable energy and community development.

Zhan, Y. and K.H. Tan, *an analytic infrastructure for harvesting big data to enhance supply chain performance.* European Journal of Operational Research, 2020. 281(3): p. 559-574.

Ziek, P. (2009). *Making sense of CSR communication. Corporate Social Responsibility and Environmental Management*, 16(3), 137–145