Voices of Transition: Understanding Sustainability Transition Leadership

Insights from a senior leadership perspective within the Energy Sector

Thula Clinton & Lise Flarup

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Supervisor:	**Per-Anders Langendahl, Swedish University of Agricultural Sciences, Department of Economics**
Examiner:	Richard Ferguson, Swedish University of Agricultural Sciences, Department of Economics
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Swedish University of Agricultural Sciences
Faculty of Natural Resources and Agricultural Sciences
Department of Economics

Abstract

The energy sector is the largest contributor to global greenhouse gas emissions, accounting for over 75% of emissions in the EU and 68% globally. While technological advancements and the availability of renewable resources offer significant potential for emissions reductions, decarbonizing the energy sector remains a complex challenge due to the scale and duration of the transition required. Addressing this complexity requires not only technological solutions but also effective leadership capable of navigating multi-dimensional sustainability challenges. This study introduces and applies the conceptual framework of Sustainability Transition Leadership (STL), which integrates the concept of sustainability leadership with concepts from transition studies. STL adopts a multi-scalar perspective that encompasses the individual, organizational, and societal levels to analyze how leadership is enacted across these interconnected scales. Drawing on qualitative interviews with three leaders operating in Sweden, a frontrunner in the global energy transition, the findings contribute empirical insights into how leadership practices are employed in real-world sustainability transitions. Theoretically, this study advances the concept of STL, extending the analytical focus beyond individual and organizational scales to include the societal level. In doing so, it provides a deeper understanding of how leadership can intentionally influence systemic change, demonstrating its critical role in advancing sustainability transitions.

Keywords: sustainability transition leadership, sustainability leadership, energy transition, sustainability transition, multi-scalar

Table of contents

Abbreviations

EUGD	European Union Green Deal
GHG	Greenhouse gas [emissions]
SL	Sustainability leadership
STL	Sustainability transition leadership

1. Introduction

The first chapter begins by providing background to the study, offering an overview of related topics and subject context. This is followed by a problem statement addressing the research problem and gap. The study's aim and research questions are then stated, concluding with a discussion of the study's delimitations.

1.1 Problem Background

The current state of our planet and the challenges we are facing are unequivocally a result of human-induced climate change. This has been made undeniably clear by the IPCC report (2022; 2023), which states that unsustainable and unequal practices in energy and land use, combined with over a century of fossil fuel combustion, have beyond a doubt led to global warming. The evidence presented by the report highlights the slow advancement of climate change mitigation efforts and the unprecedented crises that have emerged as a consequence. The dire state of our planet and the issues of climate change and environmental degradation continue to pose pressing existential challenges to Europe and the world (EU, n.d: a). On January 10th, 2025, the World Meteorological Organization (WMO) confirmed that 2024 was the hottest year on record, with a global average surface temperature of 1.55°C (WMO, 2025), marking the first year exceeding 1.5°C.

The need to reduce CO2 emissions, combat the challenges of climate change, and work towards a sustainable future has been discussed globally for decades, gaining increased attention in recent years (UN, 2023). The record high temperatures experienced in the past decade have seen wildfires, hurricanes, floods, and other climate-related disasters across the world, shaking both the global and national economies and exacerbating adverse impacts on already vulnerable communities (ibid.). Reports of biodiversity loss, soil degradation, habitat loss, and water scarcity are widespread and pose threats to the well-being of our planet and the life that inhabits it (IPCC, 2023). The opportunity to achieve a livable and sustainable future for all is closing, and while some changes in the future cannot be avoided, they can be mitigated by significant, rapid, and sustained reductions in global greenhouse gas emissions (IPCC, 2023).

The growing environmental and social issues pose fundamental questions about how life on Earth should progress as we head further into the 21st century. Humans are currently living well beyond our planetary limits, where six of the nine planetary boundaries are now crossed (Stockholm Resilience Center, 2024).

The IPCC (2022; 2023) repeatedly highlights the interdependency between people, climate, and biodiversity, stressing that we depend on the well-being of our planet for our survival. As a result, extensive discussions surrounding sustainability and how to transform our societies towards a more sustainable state are continuously carried out in politics, economics, and society, yet we continue to destroy our natural environment (IPCC, 2022; 2023). To address these pressing issues, there is a compelling need to rethink how we live, act, and relate to our environment.

1.2 The energy transition

Amidst these challenges, the EU adopted the EU Green Deal (EUGD) in 2019 to strengthen its commitment to transforming the EU into a 'clean, resource-efficient and competitive economy, in line with the Paris Agreement' (EU, n.d: a). Achieving this goal requires contributions from all parts of society and economic sectors contribute, including the energy sector, industry, buildings, transport, agriculture, and forestry (EU, n.d: b). These sectors, known as societal systems, provide essential functions, resources, and infrastructure for human life and development (Linnér & Wibeck, 2021; Schaltegger et al., 2022), such as housing, food and mobility (Holden et al., 2021). Tackling the sustainability challenges posed by these sectors demands fundamental changes in the systems supporting these functions (Linnér & Wibeck, 2021), as incremental improvements and technological solutions alone are insufficient to reach a sustainable state (Köhler et al., 2019). These shifts from one socio-technical system to another are called sustainability transitions (ibid.). Such a transition requires achieving significant shifts simultaneously in societal values, behaviors, and frameworks governing these systems (Linnér & Wibeck, 2021).

The energy sector is the largest contributor of GHG emissions, responsible for over 75% of emissions in the EU (n.d: c), and 68% globally by sector (UNEP, 2024). Consequently, the energy transition, aiming for carbon neutrality by 2050, is at the heart of the EUGD (EU, n.d: a). Achieving the EUGD's goals requires creating the right enabling environment, including financial investments, incentives, supportive regulations, and continuous progress measurement (ibid.) Enabling the green transition, cutting GHG emissions by 55% by 2030, and reaching net-zero emissions by 2050 has and will continue to require substantial investments (ECB, 2025). The European Commission, reports an annual average of €764 billion invested between 2011-2020 in the EU, with an additional €477 billion per year needed to meet the 2030 target, totaling around €1.2 trillion annually (ibid.). The European Climate Law makes both the 2050 net-zero goal and the 2030 interim target for reduced GHG emissions by 2030 as legally binding targets (EU, n.d: e), requiring EU institutions and Member States to act

accordingly. The law also includes mechanisms for tracking progress and making adjustments based on NECP governance, EEA reports, and updated climate science (EU, n.d: e; EU, n.d: f). Efforts to accelerate the transition have shown strong progress and commitment in the past decade (Manowska et al., 2024; WEF, 2024). While global momentum to move away from fossil fuels is growing, a few countries stand out as energy transition leaders (WEF, 2024). The top ten leaders account for just 1% of energy-related CO2 emissions, 3% of energy supply and demand, and 2% of the global population (ibid.). Seven of these ten are EU Member States, reflecting the EUGD's progress.

Decarbonizing the energy sector poses challenges due to the large scale of reconfiguration required over a long-term period (Berkhout, 2014). At the same time, it is argued to hold the biggest potential for reduction mainly due to technological advancements and various renewable resources available (UNEP, 2024). While this may be true, it is not solely a question of technological advancements and innovations or large-scale reconfigurations that need to be in place. A sustainable energy system must satisfy energy needs, ensure energy justice, and respect environmental limits (Holden et al., 2021) while simultaneously including and engaging all people, ensuring that no one is left behind (EU, n.d: a). Effective change cannot happen in isolation; people need to be actively involved in any societal transition and recognize their role and responsibility in wider ecological systems (Hopwood et al., 2005; Beery et al., 2023).

In view of the foregoing, scholars often frame the energy transition as a wicked problem due to its complex nature and interconnected factors that impede the transition (e.g., Thollander et al., 2018; Jakimowicz, 2022). Wicked problems are characterized by their complex, ambiguous, and often deceptive nature, with challenges related to the multitude of stakeholders involved and a lack of agreement on their potential solutions (Ritchey, 2013). Many scholars argue that the current perspectives of our role on Earth need to change, calling for sustainability transitions in society to change the current trajectory (Schaltegger et al., 2023; Linnér & Wibeck, 2021; McPhearson et al., 2021; Sajjad et al., 2024).

1.3 Sustainability transition leadership

The inherent complex nature of sustainability and transitions means that achieving a sustainability transition (such as the energy transition) does not come with a single, linear solution (Metcalf & Benn, 2013; Ritchey, 2013; Linnér & Wibeck, 2021). Navigating these complexities and facilitating change requires collective action from several key actors in society (Schaltegger et al., 2023; Köhler et al., 2019) and calls for leadership that can address the complex challenges of the 21st

century (Sajjad et al., 2024; Schaltegger et al., 2023). Organizations, and in particular their leaders, bear significant responsibility in addressing these challenges. Leadership can be described as a process of influence where leaders craft a vision and inspire people to collective action and change, thereby shaping organizational life (Metcalf & Benn, 2013; Visser & Courtice, 2011). Moreover, leaders must understand that organizations function within a wider complex adaptive system. The interpretive role of leaders is crucial, as it can significantly influence the organization's ability to adapt to this complex environment (Metcalf & Benn, 2013).

For all the sustainability commitments, promises of change, and "going green" that organizations communicate to society, it may appear as if organizations are taking on the responsibility for their impact and contributing towards a sustainable future. While this may ring true for some organizations, others have faced judgment for using it merely for promotional purposes and brand enhancement (e.g., Visser, 2011; Earth.Org, 2022). Sustainability efforts are often criticized for being superficial, rather than a guiding principle for strategy and fundamental change (Visser, 2011; Ihlen & Roper, 2011; Throop & Mayberry, 2017; Sajjad et al., 2024). The underlying reasons for this have been widely discussed, albeit with different focus points. Some scholars posit that this is a result of dominating traditional values (e.g., competitiveness and profit over collaboration and shared value), which influence business decisions and lead companies to resist necessary changes for the future in favor of short-term wins (Alvesson, 2003; Visser, 2011; Throop & Mayberry, 2017). Without neglecting the importance of ethical values, other scholars emphasize that leaders increasingly struggle to manage the complexities and tensions that arise from balancing interconnected goals (Metcalf & Benn, 2013; Sajjad et al., 2024). This difficulty is compounded by an ever-changing business environment fraught with societal grand challenges (ibid.). The needs of the present and future call for a new type of leadership, one capable of addressing competing demands, prioritizing necessary change, and long-term sustainability while doing so ethically and responsibly (Throop & Mayberry, 2017; Sajjad et al., 2024).

Sustainability Leadership (SL) is an emerging leadership approach that appears capable of doing so. SL adopts a holistic approach to reconcile conflicting objectives and achieve solutions that are economically viable, socially equitable, and environmentally sustainable (Liao, 2022; Sajjad et al., 2024). This approach emphasizes integrating sustainable values into organizational values and operations, promoting systems thinking and holistic practices. It entails not only aligning products, services, and structures with sustainability but also focusing on capacity building, sustainable change, and long-term outcomes (Hallinger &

Suriyankietkaew, 2018; Iqbal et al., 2020; Liao, 2022). Sustainability leaders act as change agents, inspiring collective action and learning, continuously evaluating their decisions' effect on future generations without compromising organizational viability (Iqbal et al., 2020; Boeske & Murray, 2022; Sajjad et al., 2024).

Insights from a leadership perspective, particularly SL, provide a valuable wat to understand how organizations and leaders navigate fundamental change and drive sustainability (e.g., Liao, 2022; Boeske & Murray, 2022; Sajjad et al., 2024). Contrarily, the transition perspective offers insights into how systems evolve and the challenges of large-scale societal change (e.g. Köhler et al., 2019). The primary strength of SL lies in its ability to explain and support change at the individual and organizational levels, while the transition perspective excels at analyzing systemic, societal-level transformations. However, the primary focus of SL on the individual and organizational level tends to overlook the societal dimension of change, just as the transition perspective often lacks attention to the inner individual and organizational dynamics. By integrating the two perspectives, their respective strengths can complement each other's weaknesses, bridging these perspectives to better understand and support sustainability-oriented change across individual, organizational, and societal levels. Consequently, this study will propose an integrated perspective termed Sustainability Transition Leadership (STL).

1.4 Problem statement

1.4.1 Empirical problem

Organizations are currently positioned at the intersection of responsibility and opportunity, tasked with confronting their past impacts while also shaping the future. The reason for this is that organizations are a major cause of the current unsustainable state of our planet (e.g, Shirvastava & Hart, 1995; Cartwright & Craig, 2006), while also being positioned as key actors to drive and accelerate a sustainability transition (Holden et al., 2021; Schaltegger et al., 2023). Sustainability transitions are largely acknowledged as a complex issue for organizations, particularly leaders (Metcalf & Benn, 2013), requiring a fundamental shift in how organizations and society operate (Samborski, 2022; Throop & Mayberry, 2017). As a result, it is increasingly becoming a necessity for organizations and their leaders to not only consider but proactively engage in sustainability (Sajjad et al., 2015; Sajjad et al., 2024).

Sustainability transitions present intricate challenges that organizations and their leaders must navigate to accelerate the transition to a sustainable energy system. Societal shifts, technological advancements, and new regulations demand

businesses to adopt sustainable business practices (Samborski, 2022), with leadership playing a key role in driving this change (Sajjad et al., 2024). However, many leaders face barriers that discourage them from engaging with the full complexity of their organization's role and impact (Metcalf & Benn, 2013). The energy transition is acknowledged as a super-wicked problem, characterized by its multifaceted and interconnected challenges (Oberthür & von Homeyer, 2023). This is particularly relevant in the energy sector, where decarbonizing efforts are essential for mitigating climate change and may yield significant reductions in global greenhouse gas emissions (UNEP, 2024). The transition itself is fraught with challenges such as the large scale of changes needed, the substantial investments involved, the complexities of building, expanding, and dismantling infrastructure, and the need to secure stakeholder acceptance in a dynamic political landscape. Notably, leadership that relies on a trade-off perspective, often framed as an either/or logic, provides limited insight into the complexities associated with societal grand challenges (Sajjad et al., 2024). This perspective can lead to decisions that completely overlook sustainable practices. In contrast, leaders who adopt an approach with a both/and logic are better equipped to navigate the conflicting sustainability goals and competing demands associated with sustainability (ibid.) and a sustainable energy system (Holden et al., 2021).

Leadership plays a pivotal role in facilitating such transitions, as leaders have a key role in navigating complex, multi-faceted sustainability challenges (Sajjad et al., 2024). This is especially evident within the energy sector, where economic, social, and environmental goals frequently intersect and sometimes compete (Holden et al., 2021,) and leaders are tasked with balancing these competing priorities while ensuring corporate performance and resilience (Liao, 2022).

The current and future challenges require a new kind of leadership capable of managing competing demands, prioritizing essential changes, and ensuring long-term sustainability and survival, all in an ethical and responsible manner (Throop & Mayberry, 2017; Sajjad et al., 2024). A leadership concept that seems capable of achieving this is SL. The concept of SL has evolved in recent decades, reflecting an increasing awareness of the need for leaders to incorporate sustainability principles into their organizational practices. However, despite the abundance of research recognizing the importance of leadership in achieving sustainability objectives, and the potential for handling the complexities and tensions related to societal grand challenges, the concept of SL remains underdeveloped and lacks empirical support, especially in practical real-world business contexts (Gerard et al., 2017; Armani et al., 2020; Sajjad et al., 2024).

1.4.2 Theoretical problem

Research on the concept of SL is still in its infancy, with a lack of consensus on what constitutes SL, limited guiding models, practical definitions, how leaders practice SL and what practices are crucial for facilitating sustainability transitions (Gerard et al., 2017; Boeske & Murray, 2022; Armani et al., 2020). This is particularly evident in sectors experiencing significant changes, such as the energy industry. The predominant perspectives in this field offer limited insight into the lived experiences and decision-making processes of leaders guiding organizations through this transition.

The origins of SL can be traced back to the wider discourse on sustainability and sustainable development, gaining momentum in the late 20th century as environmental concerns became increasingly prominent and the need for solutions urgent (Liao, 2022). Existing literature recognizes SL as a multi-faceted, relational, and context-dependent process that requires leaders to navigate tensions across various levels - individual (micro), organizational (meso), and societal (macro). However, with few exceptions (e.g., Boeske & Murray, 2022; Sajjad et al., 2024), the individual, organizational, and societal levels are often examined separately. These levels are often analyzed independently, indicating a gap in understanding how leadership is conceptualized and implemented across multiple scales. The literature on SL tends to focus primarily on leadership within organizations, emphasizing the improvement of internal dynamics to drive sustainability efforts. For instance, studies highlight re-framing managerial activities to facilitate organizational transitions (Lahtinen & Yrjölä, 2019) or the role of sustainability leaders in increasing employees' pro-environmental behavior (Soni, 2023). Such perspectives underscore the need for a more holistic understanding of SL (Gerard et al., 2017; Sajjad et al., 2024).

The literature on sustainability transitions primarily focuses on the use of socio-technical systems as a framework for understanding transitions between different socio-technical systems. This body of literature can be relevant for gaining knowledge into the decarbonization of systems, particularly energy systems (e.g., Batinge et. al., 2019; Naegler et al., 2020). However, these frameworks are often criticized for not fully capturing the dynamics of agency and leadership across different levels.

1.5 Aim & Research Questions

The aim of this study is to provide in-depth knowledge about how sustainability transition leadership is enacted within organizations undergoing energy transition.

To achieve this aim, the study will address the following research questions:

- What specific attributes and leadership practices define sustainability transition leadership in organizations actively engaged in the energy transition?
- What challenges do leaders face in navigating the energy transition, and how do they address these challenges?
- How can sustainability transition leadership facilitate the energy transition?

1.6 Delimitations

Conceptually, the thesis is delimited to the concept of Sustainability transition leadership, taking on a multi-scale approach. While various other theories and conceptual frameworks could have offered valuable insights and alternative lenses for understanding and analyzing the subject, the decision to concentrate exclusively on sustainability transition leadership stems from its emergence and previous exploration through the lens of other theories and concepts (Liao, 2022; Sajjad et al., 2024). While Sustainability transition leadership is not exclusively confined to the corporate sector and organizational contexts (Liao, 2022), this thesis specifically focuses on organizations with business operations, particularly those navigating an energy transition. This focus is driven by the issues highlighted in the background section. Such organizations play a crucial role in tackling the pressing issues of climate change and sustainability (UNEP, 2024), making their leadership practices of particular interest to the objectives of this thesis. Sweden serves as the geographic focus of this study due to its recognized success in the energy transition (WEF, 2024). As a member of the EU they are directly affected by the policies and initiatives from EU Green Deal influencing the energy transition (EU, n.d: a). Therefore, the authors assume that examining the leadership in this context holds significant value for other countries and organizations that seek to follow suit with Sweden in their own energy transition efforts.

2. Literature Review & Conceptual Framework

This chapter presents the reviewed literature in relevant areas of sustainability, leadership, and transitions to provide a broad understanding of the foundational literature on which the conceptual framework is built. This is followed by a description of a multi-scalar perspective on STL where the scales: individual, organizational and societal are presented. Next, an integrative conceptual framework is introduced. Lastly, this chapter offers a synthesis describing the relevance of the conceptual framework to the study's research questions.

2.1 Sustainability Leadership

To grasp the theoretical development of SL, it is important to understand what came before the emergence of the concept and how it differs from other related leadership concepts. A variety of leadership approaches have been suggested to deal with the complex challenges of the 21st century, emphasizing responsible, ethical, value-based, and transformational approaches. What will follow is not a comprehensive review of the antecedents of SL and other similar approaches but rather a brief description of key elements that, in some ways, overlap with other established concepts on leadership and, in others, distinguish SL. This will be followed by a concise summary of the conceptualizations of SL found in the existing literature.

2.1.1 Antecedents of SL

SL is grounded in moral reasoning and prioritizes the ethical implications of business practices on all stakeholders, emphasizing ethical responsibility in decision-making processes (Sajjad et al., 2024). This overlaps with approaches such as ethical and responsible leadership, which highlight the importance of values such as honesty, trust, and integrity, doing the right thing, and instilling this in organizational members (Brown & Treviño, 2006; Metcalf & Benn, 2013; Nicholson & Kurucz, 2019). However, where ethical leaders have been observed to use punishment as a means to ensure accountability for ethical behavior (Metcalf & Benn, 2013), SL is about inspiring, motivating and learning through an idealised vision (Visser & Courtice, 2011; Boeske & Murray, 2022; Sajjad et al., 2024). Moreover, contrary to responsible leadership, which focuses on cultivating trusting stakeholder relationships with and addressing social responsibility concerns (Nicholson & Kurucz, 2019), SL seeks to balance varied social, economic, and environmental objectives while creating value for present and future generations (Sajjad et al., 2024).

The relational aspect of leadership has been highlighted as crucial in adressing urgent and complex issues (Visser & Courtice, 2011; Nicholson & Kurucz, 2019). The relational leadership approach focuses on interpersonal relationships, prioritizing collaboration, shared vision, stakeholder inclusion, and co-creation (Nicholson & Kurucz, 2019). SL inherently incorporates this relational element but takes on a broader scope, extending it to a strategic vision for long-term sustainable outcomes (Sajjad et al., 2024).

Similar to transformational leadership, SL inspires collective action and engagement toward significant change and shared goals (Visser & Courtice, 2011; Tideman et al., 2013). Both approaches emphasize the importance of motivating followers through a shared vision, aligning their goals with a larger purpose. Fostering change and innovation is at the heart of transformational leadership (Tideman et al., 2013). This is echoed in SL, where innovation targets sustainable practices and addressing sustainability issues (Iqbal & Ahmad, 2021; Boeske & Murray, 2022). While both transformational leadership and SL focus on change and improvement, transformational leadership tends to concentrate more on internal dynamics and performance (Muralidharan & Pathak, 2018). SL goes further by extending its concern to broader ecological and societal contexts (Boeske & Murray, 2022; Sajjad et al., 2024).

Ultimately, SL shares foundational elements with various other leadership styles, particularly regarding moral and ethical behavior, stakeholder considerations, and collaborative vision. However, SL transcends these leadership approaches, integrating their principles into one holistic approach with a broader vision prioritizing long-term sustainability (Liao, 2022; Hallinger & Suriyankietkaew, 2018; Sajjad et al., 2024). The unique focus on ecological and social sustainability, combined with systems thinking and actionable accountability, sets SL apart as a vital framework for promoting significant change in contemporary organizational environments (Tideman et al., 2013; Liao, 2022).

2.1.2 Defining SL

Avery and Bergsteiner (2011) conceives SL as the ability to reconcile economic demands with long-term sustainable development objectives, drive innovation, build employee loyalty while delivering qualitative products, services, and solutions. This approach aims to harmonize the connections between people, planet and profit, while enhancing sustainability through matching management practices (ibid.). This definition suggests that SL goes beyond the internal efficiency and dynamics of the organization to creating a resilient and adaptive organization capable of addressing environmental and social challenges. This

perspective also highlights the leaders ability to be proactive, adaptive and adept at aligning internal operations with broader environmental and societal needs. Further, Visser and Courtice (2011) highlight the critical role of individual leaders' characteristics and actions, stressing the importance of systems understanding, emotional intelligence, and a values-oriented approach. This is suggested as particularly important as they aspire to drive transformative changes towards a sustainable future (ibid.). Accordingly, SL is viewed as a dynamic process that integrates individual competencies with organizational systems to foster long-term sustainability.

Conversely, while recognizing the importance of the individual attributes of leaders for SL, several scholars emphasize the importance of understanding SL across different levels. A review by Sajjad et al. (2024) puts forth a more holistic view of SL, pointing to the multi-level linkages between the leader, the organization, and society. This perspective illustrates how a leader's values, attributes, and decisions at the individual level influence the organization's actions and outcomes at the organizational level, which in turn influence the external environment on the societal level. This understanding of linkages between levels is highlighted in the work by Liao (2022), underscoring the importance of systems thinking to navigate tensions and complexities while addressing societal grand challenges.

SL can be defined as the capacity to inspire and guide others toward achieving sustainable development goals while effectively navigating the complex challenges of sustainability (Sajjad et al., 2024). It is a dynamic and multidimensional process that integrates individual competencies with organizational systems (ibid.), emphasizing ethical considerations, stakeholder engagement, and sustainable decision-making for long-term success. SL fosters an organizational environment where economic, social, and environmental objectives coexist, promoting innovation and social responsibility while balancing profitability with sustainability values. This approach ultimately enables organizations to adapt and thrive in their internal and external contexts, positively impacting society and the environment.

2.2 Towards understanding a multi-scalar approach to understanding STL

Our review on literature on leadership shows a predominant focus on leadership from a micro level perspective, paying attention to the leader and the organization, where the leader has set objectives and capacities and focuses on developing those capacities and reaching organizational goals (e.g. Visser & Courtice, 2011; Metcalf & Benn, 2013; Haddock-Millar et al., 2016). Transition

literature, on the other hand, tends to focus on using macro-level frames such as socio-technical systems to understand change, where the focus is on society, technology and development (e.g. Berkhout, 2014; Köhler et al., 2019, Schaltegger et al., 2023). This division between the two literary fields shows a difference in perspective regarding what the problem is and how change needs to be considered, as it is either grounded in the micro level where organizations are considered the problem (e.g. Visser, 2011, Avery & Bergsteiner, 2011; Boeske, 2023), or in the macro level where technology or society is the problem (e.g. Berkhout, 2014; Linnér & Wibeck, 2021; Schaltegger et al., 2023).

Our study underscores the urgent need for energy transitions, yet it illuminates a gap that there is a lack of research connecting leadership in relation to sustainability transitions. In line with Sajjad et al. (2024), we believe that leadership functions across various scales. We believe that to understand leadership in transitions, one needs to understand that leadership functions across several scales, meaning it is not solely about the individual level and the impact on organizational life, but also on society, beyond the organization. Thus, we propose a merger of these perspectives to integrate insights about leadership within sustainability transition studies. This approach is important to build a conceptual understanding that illuminates how leadership informs the capacity to navigate through complex transitions and tackle super wicked challenges.

Theoretical frameworks in transition studies typically focus on shifts from one socio-technical system to another, often highlighting the role of emerging technologies, which backgrounds leadership. Conversely, research rooted in organizational theories focuses on leadership behaviors and organizational processes to achieve strategic goals, which background emerging technologies and transitions. By merging these approaches and adopting a multi-scalar perspective that integrates transition thinking with leadership studies, our framework recognizes that sustainability transition leadership (STL) is about capacity building at the individual level, to support and achieve objectives at the organizational level and societal level. Thus, a multi-scalar perspective is a valuable and legitimate frame to understand sustainability transition leadership. Below is a multi-scale approach to understanding leadership during transitions, where the scales: individual, organizational, and societal are described.

2.2.1 Individual level

The individual level encompasses the leader's attributes, including their individual values, beliefs, abilities, and capabilities. These attributes are closely intertwined with the organizational practices and the external environment in which the organization operates.

The ethical values of a leader are fundamental and of utmost importance for their behavior and interactions with their surroundings. Key ethical aspects of a sustainability leader include value-based principles, a sense of humility, integrity, honesty, credibility, moral intent, a commitment to the greater common good, environmental stewardship, and social equity (Sajjad et al., 2024). These aspects are paramount for leaders to drive positive change (Boeske & Murray, 2022) and for creating a sustainable organization (Liao, 2022). The sustainability leader recognizes the significance of maintaining ethical standards in their actions and decisions (Sajjad et al., 2024), which allows the leader to participate in ethical decision-making (Metcalf & Benn, 2013).

By crafting and communicating a compelling vision for a sustainable future, leaders can inspire a sense of shared responsibility and inspire people to work towards shared goals (Visser & Courtice, 2011; Metcalf & Benn, 2013; Armani et al., 2020). This approach not only provides strategic direction but also fosters awareness of sustainability within the organization (Visser & Courtice, 2011). By integrating their vision of sustainability into organizational practices, leaders contribute to the development of a sustainable organization (Armani et al., 2020). This underscores the intricate link between individual values and organizational goals.

A key attribute of an effective sustainability transition leader is the capacity for reflective practice and reflexivity. The high level of emotional intelligence exhibited by these leaders is reflected in their self-awareness and empathetic traits (Visser & Courtice, 2011; Sajjad et al., 2024), which enable them to recognize their internal values, attitudes, and behaviors, as well as how these aspects relate to the functioning of their organizations and the surrounding environment (Sajjad et al., 2024). Elements such as self-reflection, critical reflection, a holistic perspective, and the ability to question one’s attitudes, assumptions, and prejudices are integral for the reflective practice and reflexivity of sustainability leaders (ibid.). These capabilities help leaders to understand and assess their relationships, roles, and responsibilities within their organizations, enabling a deeper understanding of the potential implications of one's actions (Visser & Courtice, 2011; Throop & Mayberry, 2017). These attributes serve as a driving force for these leaders to actively engage with the surrounding environment and larger society, actively engaging in larger societal challenges (Sajjad et al., 2024).

A strong systems-thinking capability is essential for effectively navigating the conflicts that arise while trying to achieve economic, social, and environmental objectives simultaneously (Sajjad et al., 2024; Metcalf & Benn, 2013). This

awareness allows the leader to have a nuanced understanding of how changes to one part of the system can impact the whole (Visser & Courtice, 2011). This capability is reflected in attributes such as strategic agility and holistic thinking (Boeske & Murray, 2022; Sajjad et al., 2024).

Achieving sustainability requires a long-term perspective (Avery & Bergesteiner, 2011). This approach allows leaders to think and plan for the future, where the future is not discounted (Visser & Couritce, 2011). In contrast, a short-term perspective can lead to unsustainable outcomes, as it often deprioritizes sustainability initiatives (Avery & Bergsteiner, 2011). Sajjad et al. (2024) emphasize the importance of a leader's long-term vision for enhancing an organization's resilience. By shifting their mindset from reactivity to a focus on recovery and renewal, leaders can effectively navigate complex challenges with a long-term orientation. This trait also empowers organizations to tackle critical paradoxical tensions when striving to maintain a delicate balance between opposing elements, such as present needs and future goals, as well as profit and purpose. Traditionally, the primary concern of leadership was the economic side of operations in organizations. Although this focus has shifted, it remains crucial for companies to maintain economic stability, and sustainability can play a key role in achieving that (ibid.). For STL, organizations need to reshape their financial priorities to include environmental and social considerations into their business practices while still ensuring economic stability.

Metcalf and Benn (2013) emphasize the need for leaders to possess collaborative skills when addressing sustainability challenges. Leaders must be capable of building and maintaining relationships, communicating effectively, and fostering stakeholder collaboration to ensure the successful implementation of sustainability initiatives (ibid.). Similarly, Visser and Courtice (2011) highlight that sustainability leaders often respond to these challenges by cultivating cross-sector partnerships. Although stakeholder relationships are developed at an individual level, relying on the leader's interpersonal skills, the emphasis on collaboration and the network nature of these relationships is more closely associated with the organizational level (Armani et al., 2020; Sajjad et al., 2024). This illustrates how a leader's attributes are intricately linked to the organization's overall operations.

2.2.2 Organizational level

The organizational level of STL can be described as a leadership activity deeply embedded within the entire organization, as it forms a self-reinforcing system through relevant practices (Liao, 2022). This means that sustainable transition leadership is not confined to the individual level but ingrained in the fabric of the

organization itself, influencing its culture and operations and interaction with its environment (Boeske & Murray, 2022). To capture STL at the organizational level, the following presents elements that define and support the role of STL within the organization, such as culture, practices, structures, and people inside and outside of the organization.

When looking at STL at the organizational level, a fundamental aspect to achieving sustainable outcomes is fostering a sustainability-oriented culture and integrating sustainability into the core business model (Boeske & Murray, 2022; Sajjad et al., 2024). Leadership is crucial in shaping an ethical organizational culture through leaders' moral conduct, core values, and ethical recruitment, training, and development of employees (Baldo & Baldarelli, 2017). The organizational culture refers to the foundational set of shared core values, beliefs, norms, and understandings among employees in an organization (Boeske & Murray, 2022). According to Kantabutra and Avery (2011), organizational culture is centeres on collective values and shared vision, where the values and norms exhibited by leaders are reflected in the organizational culture.

Boeske & Murray (2022) highlights that the organizational culture also functions as a process in which both the organization and its members adopt a care for, and commitment to sustainability, thereby making it an essential part of the organization's core values. This is an important part of facilitating the organization's transition to sustainable business practices, supporting the long-term sustainability goals of the organization, and further aiding in building a sustainable economic system (Armani et al., 2020; Liao, 2022). An organizational culture that prioritizes and fosters sustainability serves as a cornerstone for achieving positive sustainability outcomes, guiding employee behavior and decision-making covering economic efficiency, environmental responsibility, and social equity (Avery & Bergsteiner, 2011; Sajjad et al., 2024). Creating such a culture means embracing shared values that promote sustainability across all levels, encouraging open communication, transparency, and inclusiveness (Armani et al., 2020). A strong culture reflecting a shared vision is essential to STL. The core values and beliefs within the organizational culture serve as the foundation for employee behavior, fostering behaviors that are valued and encouraged, further enabling knowledge sharing and collaboration (Kantabutra & Avery, 2011; Lahtinen & Yrjölä, 2019; Sajjad et al., 2024). In this context, leadership and organizational culture can be understood as an interdependent process in which they work together to create a coherent environment within the organization.

STL acknowledges employees as a vital stakeholder and focuses on developing a workforce that is dedicated, engaged, and knowledgeable, all of which are crucial for driving change (Armani et al., 2020; Liao, 2022; Sajjad et al., 2024). Leaders need to engage and empower stakeholders, communicate, and foster collaborative decision-making as these are vital mechanisms for promoting sustainability, allowing organizations to address the social and environmental impacts of their actions (Boeske & Murray, 2022; Sajjad et al., 2024). STL recognizes that sustainable outcomes are more likely when the organizational members are engaged, trusting, and aligned around common goals (Boeske, 2023). Empowering the members of the organization by delegating responsibilities, providing opportunities for learning and development and sharing information enhances individual engagement (Armani et al., 2022; Liao, 2022). A fundamental part of STL is recognizing the importance of employees' experiences, which involves empowering them through tailored training that encourages self-management, awareness of the organization's vision, understanding of the organizational culture, and a sense of being valued (Avery & Bergsteiner, 2011). This empowerment must occur across all levels to motivate and encourage them to work towards shared goals and sustainability efforts (Haddock-Millar et al., 2016).

As organizations exist in a highly dynamic environment, continuously adapting to environmental pressures and market changes, STL promotes reflexive practice as it is vital for managing change and uncertainty (Sajjad et al., 2024). Fostering resilient capabilities is linked to reflexive thinking, which enables members to analyze and respond holistically. This thinking is essential for resilience as it supports adaptive responses (Hallinger & Suriyankietkaew, 2018; Sajjad et al., 2024). STL is not only about building individual resilience but also collective resilience (Sajjad et al., 2024; Hallinger & Suriyankietkaew, 2018). STL seeks to develop more inclusive, collaborative, and reflective processes within organizations (Sajjad et al., 2024). By nurturing a culture that encourages inclusivity, collaboration and reflection, STL promotes processes that allow organizational members to engage in open dialogue. In such an environment, individuals feel safe to reflect on their experiences, challenge prevailing norms, and communicate their opinions without fear of retribution. This openness not only enhances individual and collective learning but also facilitates the sharing of knowledge and experiences among team members, thereby strengthening the organization's overall resilience (Avery & Bergsteiner, 2011; Sajjad et al., 2024).

According to Iqbal et al. (2020), organizations that prioritize learning emphasize systems thinking, collaborative engagement, and the underlying assumptions of their business and objectives. Since learning is inherently a social process,

contextual factors affect how organizations learn (Iqbal et al., 2020). This means that elements such as shared vision, systems thinking, and leadership are critical to this process, and management support is crucial for promoting a learning culture (ibid.). Changing the attitudes and behaviors of employees while fostering a legacy of leaders equipped with the necessary mindset and skills for achieving sustainable development goals is crucial for advancing the shift towards sustainability (Hallinger & Suriyankietkaew, 2018). This approach is an essential part of capacity building, particularly for SL, which focuses on long-term results and vision setting, supported by continuous efforts to enhance skills and knowledge in alignment with sustainability objectives (ibid.). A creative organizational culture has been shown to facilitate the learning of new concepts and practices (Boeske & Murray, 2022), while embracing failure encourages valuable insights, reflection, and adaptation (Whittle et al., 2020), all of which are important for learning.

Over time, the process of organizational learning fosters the transition and diffusion of knowledge, as organizations integrate new understandings of sustainability practices into their structures and systems (Boeske & Murray, 2022). This integration enables organizations to effectively respond to their environment by generating, protecting, and sharing important knowledge (ibid.). Organizations prioritizing ethical principles are more likely to establish practices, structures, mechanisms and systems that uphold these values and ensure accountability (Sajjad et al., 2024).

To achieve a sustainable transition, no organization can address sustainability issues single-handedly (Schaltegger et al., 2022; Holden et al., 2021; Sajjad et al., 2024). Therefore, it is essential for a sustainability leader to foster collaboration beyond organizational boundaries (Sajjad et al., 2024). The sustainability leader fosters external stakeholder actions such as enabling partnerships across different sectors, raising awareness about sustainability, transforming contexts, etc (Visser & Courtice, 2011). Creating opportunities for stakeholders to work together collaboratively generates solutions to address sustainability challenges specific to their context and to adjust these solutions as circumstances evolve (Boeske, 2023), engaging in dialogue with stakeholders and broadening the knowledge base through active involvement in multi-stakeholder networks (Sajjad et al., 2024). The multi-stakeholder network approach has been found essential for effectively addressing societal grand challenges. A multi-stakeholder network is a web of a multitude of stakeholders that come together to tackle a complex and shared issue. Additionally, effective sustainability transition leadership emphasizes the importance of breaking down silos by engaging in ongoing

dialogue with the various stakeholders and integrating these conversations into strategy and business processes (ibid.).

Managing stakeholder relationships is not solely about satisfying the demands of a single stakeholder as leaders need to be equipped to manage the tensions between various stakeholder demands. Rather than focusing on the trade-offs that various stakeholders may create, STL entails recognizing the shared goals that connect them and that value is generated collaboratively through relationships (Iqbal et al., 2020; Boeske & Murray, 2022; Sajjad et al., 2024). Further, the local context in which an organization operates is a vital stakeholder, serving as a potential consumer (Sajjad et al., 2024). Organizations must foster mutually beneficial relationships with local communities and society at large, and recognize the local contextual factors that exist, fostering a positive association between the local context and the organization (ibid.). Thus, STL transcendes traditional stakeholder management, adopting more engaging, shared, democratic, collective, and relational methods that foster collaborative value creation for everyone.

2.2.3 Societal level

Considering that organizations operate within a wider adaptive system, they can influence and are influenced by the system in which they exist (Metcalf & Benn, 2013). The societal level encompasses the organization's interaction and impact on sustainability. The impact can be divided into three pillars: the triple bottom line (TBL), the social, the economic, and the environmental (Kuhlman & Farrington, 2010). For the impact to be considered sustainable, the three dimensions are to be in harmony. However, creating and maintaining this balance is a complex challenge for leaders as the outcomes in the respective spheres depend on the leader's interpretation (Metcalf & Benn, 2013; Sajjad et al., 2024). According to Liao (2022), the outcomes must reflect the ethical leadership practices of the leader, which, according to Sajjad et al. (2024), are supported by the structural mechanisms within the organization.

Being environmentally conscious and responsible involves two key aspects: internal responsibility and a broader impact. Organizations must manage their direct impacts through sustainable practices in their operations, products, services, and processes (Baumgartner, 2014; Soni, 2023). They also have an opportunity to influence larger societal challenges (such as human rights, climate change, environmental degradation, and social inequity), albeit those challenges might be considered outside their direct control (Kantabutra & Avery, 2013; Sajjad et al., 2024). Baumgartner (2014) emphasizes that balancing stakeholder relations is vital in the social sphere, and protecting the environment and increasing environmental performance is fundamental in the environmental sphere.

One single actor engaged is not sufficient for creating a sustainable transition; however, some actors possess the capacity to contribute more effectively to a sustainable transition (Schaltegger et al., 2023). Achieving an economy that meets the demands of a sustainable future requires systemic change. This means that organizations must evolve their businesses, business models, and societal roles. Larger, well-established actors have a greater potential to drive sustainability transitions compared to smaller or less established entities (ibid.). With this influence comes significant responsibility. Moreover, it is crucial to understand how power affects sustainability transitions (Avelino, 2017), as power can either stabilize the system or facilitate change, depending on how an actor enables or hinders progress. When power is exercised in a transformative way, it is understood as the ability to cultivate new structures and institutions. Importantly, 'new' does not imply only the creation of entirely new systems but also entails the substantial challenge and alteration of existing ones (ibid.).

When SL functions effectively at both the individual and organizational level, it can generate a broader impact at the societal level, contributing to the realization of a more sustainable society (Sajjad et al., 2024). A key component of this is systems thinking, the ability to understand this interconnectedness between the organization and the larger societal context. This allows leaders to address sustainability challenges in a holistic way and drive sustainability outcomes across all levels (ibid.). In this context, leaders are also responsible for prioritising long-term value creation over short-term gains (Hallinger & Suriyankiekaew, 2018). Therefore, organizations need to recognize their role within society and their power to influence a sustainability transition, including being able to critically reflect on how their current operations affect this (Schaltegger et al., 2023). Especially as the organization's actions can either reinforce the status quo or drive transformative change (Avelino, 2017; Schaltegger et al., 2023).

2.3 Conceptual Framework

This analytical framework for sustainability transition leadership (STL) takes on a multi-scale perspective, acknowledging that it operates across three interconnected levels: the individual, the organizational, and the societal. This framework emphasizes that leadership for sustainability during transitions extends beyond one scale; instead, it is a dynamic interaction among personal values and skills, organizational frameworks and culture, and the broader societal systems. At the individual level, the focus is on the leaders' personal qualities, drivers, and attributes. This includes traits such as ethical orientation, visionary capacity, reflectivity, systems thinking, long-term perspective, and the capacity to facilitate and encourage collaboration. The organizational level centers on how leadership

becomes embedded within an organization's structures, culture, and practices. Here, leadership is seen not just as a role but as a collective process that involves engaging employees, cultivating a sustainability-oriented culture, building resilience, promoting learning, and enabling collaboration. At the societal level, SL is understood in the context of how organizations interact with and impact the broader system in which they operate. This includes their contribution to environmental and social challenges, their relationships with stakeholders, and their role in shaping and responding to systemic change. This framework creates a holistic lens in which sustainability transition leadership can be explored, enabling a nuanced understanding of how individual leaders, organizational practices, and societal systems are interconnected in driving transformative change. The table below (Table 1.) presents a summary of key themes, elements, and descriptions associated with each level.

Table 1. Conceptual framework STL summary

Level	Key Themes	Elements	Description
Individual	Values & Ethics	Ethics and values e.g., integrity, honesty, moral intent, humility, credibility, environmental and social concern	Ethical and moral foundation of leaders guides behaviors and decision-making
	Vision	Inspirational communication, aligning vision with values, sustainability integrated in vision	Crafting and communicating a compelling vision for a sustainable future. Aligning individual values with organizational sustainability goals, creating shared responsibility towards shared goals
	Reflexivity	Self-awareness, critical reflection, emotional intelligence	Leaders reflect on their own values and assumptions. Assessing their role in the organization and society.
	Systems Thinking	Strategic agility, holistic thinking.	Understanding interconnections within systems and the need to balance conflicting objectives, thinking beyond the organizational boundaries
	Long – term perspective	Long-term orientation, resilience	Planning for a sustainable future, balancing short-term pressures with long-term goals and survival.
	Collaboration & Co-creation	Relationship building, collaborative skills, partnerships	Interpersonal skills foster stakeholder collaboration, shared responsibility, and efforts towards shared goals
Organizational	Organizational Culture	Sustainability integration in culture, shared vision and values, inclusivity, learning, open communication, transparency	Organizational culture grounded in shared values that supports sustainable practices and goals, empowers individuals. Organizational culture guides employee behavior, reinforcing values and contributing to a sustainable business
	Employees	Employee engagement, empowerment, well-being.	Creating enabling conditions for employee well-being, engagement and development. Viewing employees as a key stakeholder.

		Training and inclusivity of employees	
	Resilience	Reflexive practice, holistic thinking, adaptability, inclusivity, knowledge-sharing	Promoting reflective practice within the organization, embracing change, continuous development supporting adaptability and resilience
	Learning	Knowledge-sharing, openness to failure, capacity building	Promoting a learning organization where knowledge and skills are shared. Collective capacity building, integrating sustainability knowledge in the organization
	Collaboration networks	Cross-sector partnerships, co-creation with stakeholders, stakeholder dialogue	Going beyond internal operations, creating shared sustainability solutions across boundaries
Societal	Triple Bottom Line	Social, environmental, and economic balance	Awareness and consideration of all three dimensions, awareness that organizations impact and are impacted by the surrounding environment. Creating positive impacts in all dimensions
	Responsibility and power	Influence, transition, systemic change	Taking responsibility as an organization, leveraging power to influence others, use of influence to accelerate sustainability transition
	Systems thinking	Interconnectedness, societal awareness	Awareness and knowledge regarding organizations existence within broader systems, creating long-term systemic sustainability impact beyond organizational boundaries.
The authors draw upon relevant literature for categorization			

2.4 Synthesis

The authors argue that all levels are necessary in order to analyse and answer each research question. However the degree of insight that each level can provide varies for all questions, which is why different levels are used as main starting points for analysis depending on the research question.
The first question ‘What specific attributes and leadership practices define SL in organizations actively engaged in the energy transition?’ is primarily related to the individual level as it deals with attributes and practices that define SL. The individual level encompasses the leader’s attributes, including their individual values, beliefs, abilities and capabilities but is also interconnected with the organizational level (Liao, 2022; Sajjad et al., 2024). The second question ‘What challenges do leaders face in navigating the energy transition, and how do they address these challenges?’ will also benefit from a multi-scale analysis as challenges are apparent across the individual, organizational, and societal level. The third research question “How can SL facilitate the energy transition?” is primarily related to the societal level as this question is concerned with the large-scale transition in the energy sector.

3. Method

The following chapter first outlines the underlying philosophical assumptions of the study, followed by the research the research strategy and an explanation of the methods used for data collection and analysis. Following this is a discussion of the ethical considerations and quality criteria that have been taken into account to ensure the trustworthiness of the study.

3.1 Research philosophy

This study has identified that there is a lack of empirical studies that consider how STL is enacted in practical real-world contexts which is why the authors have chosen to focus on senior leaders and their perceptions and experiences with SL. Against this background, this study employs an interpretivist approach to research philosophy, which entails certain assumptions and intentions. Research philosophy is the underlying system of beliefs and assumptions influencing knowledge development (Saunders, Lewis & Thornhill, 2009). In essence, it is the lens through which ontological, epistemological, and axiological assumptions shape the understanding of research questions, use of methods, and interpretation of the study's findings (Saunders et al., 2009; Bryman et al., 2019).

The interpretivist approach acknowledges reality as socially constructed (Saunders et al., 2009), taking on the ontological position of constructionism (Bryman et al., 2019). The perspective recognizes that individuals from diverse backgrounds and circumstances create and experience different social realities (Saunders et al., 2009), meaning that constructionism acknowledges multiple realities. It is important to remember that when people adapt their understanding of reality and new situations, this reality shifts, and therefore, reality is in a continuous state of revision (Bryman et al., 2019). Another key point is that the very process of understanding how the social world is constructed involves using categories that are themselves socially produced (ibid.). The authors acknowledge that the conceptual frameworks they apply to interpret the phenomenon of sustainability transition leadership in the context of the energy transition is part of the meaning-making process. In other words, they are actively shaping the understanding of this social phenomenon through the lens of the theories they employ.

This ontological position underspins the epistemology position of interpretivism, as it aims to study and understand this socially constructed reality (Bryman et al., 2019). Therefore, the purpose of interpretivist research is to create a richer understanding and interpretation of this reality (Saunders et al., 2009). By

interviewing people who are considered to have insight into SL and are related to the context of the energy transition, the authors aim to understand the participants' interpretations of the phenomenon. The authors are aware that the perspectives and experiences represented in this study are those of the participating senior leaders. As such, the views of other groups, such as co-workers, employees, and other stakeholders, are not represented and may differ from the views of the senior leaders.

The interpretivist approach to research is inherently subjective, carrying significant axiological implications. This indicates that the researcher's interpretation of research materials and data, along with their personal values and beliefs, shapes the research outcomes (Saunders et al., 2009). The authors acknowledge their influence on the study's design and results such as decisions surrounding selection of methods for sampling, data collection and data analysis.

3.2 Research strategy

With the study's research philosophy, aim, and research questions in mind, a qualitative research strategy was deemed most suitable. Research employing an interpretivist approach typically relies on qualitative methods, as the related philosophy supports the use of qualitative strategies (Mackenzie & Knipe, 2006). As highlighted in the previous chapter (3.1), this study aims to explore the social reality of SL within the energy transition context. Given that qualitative methods are effective for exploring social realities (Bryman et al., 2009), it is logical to deploy this approach.

The emphasis on interpreting and understanding the meanings and experiences of individuals within their specific contexts stands in contrast to quantitative methods, which focus on measurability and generalization (Golafshani, 2003). This distinction forms the basis of a significant critique of qualitative methods, related to quality assurance (ibid.). It is essential to consider the validity and reliability of the study (Bryman et al., 2019). However, applying these criteria to qualitative research can be difficult due to its interpretative nature of the data (ibid.), leading qualitative researchers to explore various strategies (Golfshani, 2003). This critique will be discussed further in chapter 3.6.

Furthermore, the inductive approach to logical reasoning is frequently employed in qualitative and interpretivist research (Mackenzie & Knipe, 2006; Bryman et al., 2019). This implies that theory is a product rather than something that precedes it (Bryman et al., 2019), which was the approach employed in this research. One example of how this is reflected in the study was the development of the research questions throughout the research process, as the final version took

shape during the writing phase. This is a typical practice among qualitative researchers, as noted by Bryman et al. (2019).

3.3 Research design

3.3.1 Case study

This study adopts a collective instrumental case study design (Creswell, 2013), involving the purposeful selection of multiple cases - specifically, senior leaders from three organizations - to investigate the broader concept of SL within the energy transition. Although each participant works in organizations where the context and operations may differ, the focus is not to compare the organizations themselves, but on using these cases to gain a deeper understanding of how SL is perceived and practiced. A collective case study is used to explore an issue through multiple cases (Creswell, 2013), where the focus of analysis in this study is the phenomenon of SL, with individual leaders serving as the units of observation to illustrate the broader concept of SL. This approach allows for the gathering of rich, contextualized insights into leadership practices across varied environments, in line with Creswell's emphasis on in-depth, bounded case studies.

This design/framing is in line with the study's interpretivist and inductive approach as case studies are inherently interpretative, focusing on meaning and context while adopting an inductive approach that encourages theory-building rather than testing (Creswell, 2013; Bryman et al., 2019). According to Creswell's (2013) definition, a case study can be employed to shed light on a concept or issue through several bounded cases, rather than solely comparing organizations as is often the case in multiple case studies. Gaining a comprehensive understanding is achieved by using various data sources, including interviews, published material, and websites (Creswell, 2013; Bryman et al., 2019). Apart from published material and websites, this study has relied heavily on/used semi-structured interviews, aligning with a case study design, particularly in interpretive research approaches.

To gain insight and deeper knowledge about how SL is perceived and practiced in the energy transition, the interview participants have been selected based on predetermined criteria to ensure they have experience and knowledge within this area. The sampling approach began with purposeful sampling, followed by snowball sampling with an element of purposiveness (Bryman et al., 2019), enabling the identification of additional participants who met the criteria and could provide valuable insights into SL.

3.4 Data Collection and Analysis

The data was gathered through semi-structured interviews and empirically oriented questions. To establish a comprehensive foundation of the current knowledge on SL, Transition studies, Sustainability Transitions, Leadership studies, a literature review was conducted. The choice to carry out semi-structured interviews stemmed from the study's objective of gaining an in-depth understanding of SL within the energy transition. Presented below is a more detailed description of data collection followed by data analysis, ethical considerations and quality assurance.

3.4.1 Literature review

The authors of this thesis performed a narrative literature review as part of establishing the foundation for the study, conceptualizing its aim and conceptual framework (Rocco et al., 2009). The narrative approach is common among interpretative and qualitative researchers due to its flexibility in adjusting topic boundaries of the topic area as the research progresses, which aligns with the interpretative epistemology (Bryman et al., 2019) and allows for an overview of the topic (Rocco et al., 2009). In this study, the authors began by deepening their understanding of leadership in energy transitions, ultimately leading to the development of a conceptual framework for SL.

A narrative literature review concludes that there is no specific criterion established for including or excluding studies (Bryman et al., 2019). However, certain keywords were established, such as 'SL`, 'sustainable leadership', 'energy transition', 'leadership in energy', 'leadership for sustainable transitions', and related keywords. The authors used these keywords to identify articles they considered relevant through the search engines Google Scholar and Primo. Although research on the concept of 'SL' is limited, as outlined in the problem statement, there exists a significant amount of literature on related themes, such as leadership for sustainability, which frequently appeared in the search results. Consequently, the authors deemed it essential to review the literature and pinpoint the key research publications, as recommended by Bryman et al. (2019). They accomplished this by locating the most frequently cited articles on the topic and then expanding their search from that point. Additionally, the authors received recommendations from their supervisor, Per-Anders Langedahl, and utilized the selection of literature from previous courses in their master's program in Environmental Economics and Management at the Swedish Agricultural University.

The authors also utilized the search tool 'Scite' to efficiently sort and identify relevant literature. Recognizing the limitations of such AI tools, as they remain in the early research application stages (Wagner et al., 2022), the authors adapted their usage. By cross-checking across Primo and Google Scholar, reading the material thoroughly the authors applied the same review process to suggested literature as they did in traditional searches. Thus, the authors emphasized the importance of approaching AI-research assistants with intent and an awareness that AI may not always produce 'accurate' results based on the input provided. Any findings or statements generated by Scite were consistently verified by reviewing the recommended articles. However, the authors agree with Wagner et al (2022), who argue that AI-tools such as Scite are practical and efficient for managing a substantial volume of articles and can help mitigate human bias in the review process (ibid.).

3.4.2 Selection and Interviews

The sampling approach for this study was purposely conducted, meaning that participants were strategically sampled to ensure relevance to the study's aim and research questions (Bryman et al., 2019). Initially, a purposeful sampling strategy was employed to identify senior leaders with direct experience of navigating an organization in the energy transition. The choice to interview senior leaders within this context was not without its challenges. As explained by Bryman et al. (2019), researchers aiming to interview senior management can often experience specific issues such as gaining access and deciding on an appropriate time for interviews due to their level of power and the many outside requests they often receive. To secure participation, potential interviewees were sent a well-crafted introductory message by LinkedIn or email, followed up, when necessary, with additional information regarding the nature and purpose of the project, study design and time commitment (Bryman et al., 2019). While this resulted in one interview being confirmed, several requests for interviews fell through due to lack of access, scheduling constraints and/or competing organizational pressures. Noting the importance of polite persistence and flexibility (Bryman et al., 2019), the authors reached out to the confirmed participant who provided suggestions and facilitated contact with potential interviewees, which proved key in securing the remaining participants. This evolved the study's sampling approach to snowball sampling (Bryman et al., 2019). As the sampling approach evolved, the decisions made beforehand regarding the type of participants of interest and criteria for participation for this study were kept (i.e 'senior leaders operating in Sweden', 'organizations within the energy sector', and 'organizations undergoing the energy transition') adding an element of purposiveness to the snowball sampling approach.

In order to better understand how STL is perceived and enacted in organizations in the context of the energy transition, this study has chosen to focus on the perspectives of senior leaders (see Table 2.).

Table 2. Interviewed participants

Organization	Name	Role	Date of interview
Vattenfall	Annika Ramsköld	VP of Corporate Sustainability	2025-04-04
Driva Group	Jesper Karpsen	CEO	2025-03-24
Uniper Sweden	Johan Svenningsson	CEO	2025-05-08

Prior to the interviews, the authors reviewed information from annual reports, websites, and news articles to ensure they had a comprehensive understanding of the participants and their organizations and that the interview questions were applicable in their context.

Data was collected through semi-structured interviews, which were guided by a flexible interview guide. The flexibility of semi-structured interviews means that respondents can express themselves more freely, enabling the interviewer to ask follow-up questions and clarify uncertainties (Bryman et al., 2019). While key topics were pre-determined to maintain consistency, the format allowed for adaptability in the order and phrasing of questions, as well as follow-up based on the participant's responses. Contextual information (i.e., facesheet information, Bryman et al., 2019) such as the participants' roles, careers, and organizational backgrounds, was collected to assist interpretation. To create a comfortable and respectful atmosphere, the interviews were conducted online via platforms like Teams or Zoom, accommodating the time constraints of the participants. The interviewees were accustomed to and comfortable with online dialogue, enabling depth of meaning and ability to follow up during the interviews. Both authors were present and actively involved during interviews, with one author taking the lead while the other focused on taking notes.

3.4.3 Data analysis

Prior to beginning the analysis, the interviews were transcribed word-for-word to facilitate a detailed examination of the participants' voices, noting nuances to capture their true essence. Afterward, the data was reviewed to correct any

possible errors that may have occurred, as this correction was essential for maintaining the credibility and integrity of the findings (Bryman et al., 2019). The transcripts were then analyzed thematically using an abductive approach. The abductive approach to coding entails a combination of inductive coding elements (e.g., closeness to data and allowing theories to emerge) and deductive coding (e.g., initial structure and theoretical relevance), making it a blended approach to coding (Linneberg & Korsgaard, 2019). Adopting this method entails a flexible and iterative approach (Bryman et al., 2019; Linneberg & Korsgaard, 2019), which allowed the researchers to remain open to unexpected findings and refine codes from emerging insights as the analysis evolved. This structured and exploratory method enabled the identification of patterns and themes within the data, while allowing the researchers to leverage existing knowledge. As the data was examined, the authors identified recurrent patterns and themes, assigning them the following descriptive codes: *Values & Ethics, Vision, Reflexivity, Systems Thinking, Learning, Long-term Perspective, Challenges, Collaboration, Stakeholders,* and *TBL*. The codes were synthesized into three main themes: *Individual level, Organizational level, and Societal level*, where some codes are represented in more than one level. These overarching themes are closely aligned with the conceptual framework, facilitating an efficient organization of the findings and providing a deeper insight into the essential elements of SL across various scales. The thematic analysis was carried out by multiple researchers to further prevent the influence of personal biases.

3.5 Ethical considerations

The authors ensured that they adhered to the four ethical principles presented by Bryman et al. (2019): avoiding harm, obtaining informed consent, preventing deception, and safeguarding privacy.

Ensuring the well-being and safety of participants involves taking steps to avoid harm and providing the option of anonymity (ibid.). The authors prioritized the comfort of the participants by inviting them to ask questions before, during, and after the interviews, addressing any concerns or discomforts that might arise. Additionally, participants were given the choice of remaining anonymous if they preferred, however, none opted for anonymity.

Informed consent requires the authors to ensure that approached possible participants receive comprehensive information about the study so they can make an informed decision regarding their participation, including an awareness of the use of eventual recording equipment (Bryman et al., 2019). Additionally, the university associated with this thesis mandates that all participants sign a specific consent form. To facilitate informed consent, the authors provided participants

with detailed information about the study's subject, aim, and the topics to be discussed during the interviews. This information was communicated in writing via email when the authors first contacted the participants and reiterated verbally before the interviews began. Participants were given the option to decline being recorded during the interview; however, none chose to do so. As required, each participant was required to sign a consent form agreeing to the processing of their data, utilizing the university's standard consent letter. Participants were also made aware that the study would be published. Further, informed consent is linked with the notion of avoiding deception, as deception happens when researchers portray their work in a manner that misrepresents its true nature (ibid.). As discussed, the authors were diligent in ensuring that the participants were fully informed about the study's subject and objectives, and ensured their understanding.

Moreover, safeguarding privacy is also closely tied to the concept of informed consent, as this consent is based on a thorough understanding of what participation in the research will involve. By giving their consent, participants effectively acknowledge sharing private information in that specific context (ibid.). As previously mentioned, participants were informed in advance about the topics that would be discussed during the interview, specifically focusing on their viewpoints and experiences regarding leadership within their respective organizations in the energy sector.

3.6 Quality assurance

When assessing the quality of research, it is essential to take into account the concepts of validity and reliability (Bryman et al., 2019). However, since reliability and validity stem from a positivist viewpoint, qualitative research employs alternative approaches to evaluate these concepts within a real-world context (Lincoln & Guba, 1985; Golfshani, 2003). Thus, when conducting a qualitative study, a researcher carries a significant obligation to guarantee its rigor and trustworthiness. The criteria through which trustworthiness can be described are known as credibility, transferability, dependability, and confirmability (ibid.), where the criteria for credibility and dependability will be further detailed below.

Credibility refers to the truth value and believability of the research findings (Lincoln & Guba, 1985; Bryman et al., 2019). To maintain strong credibility in the research, it is essential that the findings accurately reflect the researcher’s observations and theoretical frameworks. Strategies for verification entail the use of multiple sources of information, member checking, data triangulation techniques, and auditing (Lincoln & Guba, 1985; Bryman et al., 2019). In this study, the researchers utilized various data sources, including multiple interviews, published reports, and relevant literature to strengthen the research. The

researchers conducted real-time member checking during interviews (e.g. summarizing or clarifying the participants statements) to confirm that the interpretations were accurate, further contributing to the credibility of the study.

Dependability relates to the stability and consistency of the data and findings of the research (Golafshani, 2003; Bryman et al., 2019). Ensuring dependability involves an accessible and thorough description of the research steps, keeping an audit trail of the research process (Lincoln & Guba, 1985; Bryman et al., 2019). The authors have maintained such an audit trail by, for example, keeping notes regarding data collection, interpretations, and analysis. Moreover, the recording and transcribing of interviews bears importance to ensure that the interviewee's perceptions are accurately captured and depicted (Bryman et al., 2019). This is considered good research practice in qualitative data and further enhances the dependability and trustworthiness of the study (ibid.).

4. Empirical findings

This chapter begins with a description of the study's context and participants to provide the reader with an understanding of the setting. The empirical findings from the interviews are then presented, following the themes of the research questions and connecting elements across the scales of the conceptual framework.

4.1 Contextual background

To grasp the Swedish context of the energy transition, it's essential to consider the EU's environmental commitments, which require member states, including Sweden, to actively pursue the objectives set by the EUGD (EU n.d: b). The EUGD aims to reach net-zero greenhouse gas emissions by 2050 (ibid.). Within this framework, the Renewable Energy Directive establishes binding targets for the entire EU, aiming for 45% of energy to come from renewable sources, with a minimum of 42.5% by 2030 (European Parliament, 2023). In 2023, renewable sources accounted for 24.5% of gross final energy consumption in the EU, while Sweden led all EU countries with 66.4% (Eurostat, 2024). Consequently, Sweden has gained recognition as a global leader in the energy transition (Manowska et al., 2024; WEF, 2024).

The current Swedish government has established national targets for energy production, aiming for 100% fossil-free electricity generation by 2040 (Government Offices of Sweden, n.d.). This target was revised from a previous one that exclusively included renewable energy sources. The reassessment allows for the inclusion of nuclear power in the energy mix, aligning with current Swedish government's energy policies (Lejestrand, 2023).

4.2 Case background: leaders

Jesper Karpsen, CEO Driva Group

Karpsen (2025), CEO of Driva Group, previously worked in the energy sector, primarily at Vattenfall. Driva Group comprises two Swedish gas companies, Stockholm Gas and Gasnätet Stockholm (Driva, n.d: a). When Karpsen assumed the CEO position, Driva Group had operated exclusively in gas for 170 years (Karpsen, 2025). Recent shifts have led to diversification into solar energy and charging infrastructure (Driva, n.d: b). Their business model, 'energy-as-a-service,' provides comprehensive energy solutions encompassing planning, execution, and ongoing support (ibid.).

Annika Ramsköld, VP Corporate Sustainability Vattenfall

Ramsköld (2025) has held various in managerial roles at Vattenfall, with a career marked by projects involving change management. Vattenfall is one of Europe's largest electricity and heat producers and retailers, employing about 21,000 people (Vattenfall, 2025). Its integrated operations form a cohesive value chain linking production, distribution, sales, and support functions. Electricity is mainly generated from nuclear, hydro, and wind power, with a smaller fossil fuel share. Vattenfall is wholly owned by the Swedish government (ibid.).

Johan Svenningsson, CEO Uniper Sweden

Svenningsson (2025), CEO of Uniper Sweden, has extensive leadership experience in the energy sector. He became the CEO of Oskarshamn Nuclear Power Plant in 2012. He now oversees Uniper's Swedish operations and global nuclear power activities (ibid.). Uniper operates in over 40 countries, with key markets in Germany, the Netherlands, Sweden, and the UK (Uniper, n.d: a). In Sweden, Uniper's portfolio includes hydropower, nuclear power, a standby oil-fired thermal power plant, and a natural gas-fired power plant. Additionally, the company is tasked with dismantling the Barsebäck nuclear power plant in Sweden (Uniper, n.d: b).

4.3 Results

4.3.1 Sustainability transition leadership and key elements

The results show that all leaders empahsize their significant responsibility for influencing the organization, its members, and the external environment. They also stress the importance of strong ethical values in leadership, particulary when driving change. Commonly mentioned values include honesty, transparency, trust, bravery, courage, inclusivity, respect and care for others are expressed. Examples of this are:

> "If you are to drive change then you need to be a bit of a visionary or at least convey energy, convey joy, because once again change is not driven by a vision in itself or a product, it is driven by people and then there needs to be someone who stands there.[...] You need to care about the people around you […] daring to listen to all stakeholders and really wanting to understand their situation, and that's when you can do things. [...] So I think that it is the human part that many people forget, you can't drive change if you don't get people's hearts to beat a little extra and dare to show where we are headed and what value that gives. If the value isn't there it won't happen". (Ramsköld, 2025)

> "We have a basic philosophy that we want to delegate and give as much responsibility as possible to our organization, we work a lot with our values, we are a very values-driven company. So we have clear values, what we stand for from all aspects such as transparency, equal opportunities, diversity, inclusivity so that everyone has a place in our company to contribute." (Svenningsson, 2025)

> “We need to respect people with different cultures and different backgrounds. We talk a lot about diversity and that is something I very much believe in [...] diversity is about having a team with different backgrounds and different cultures and different ideas about what we are doing.” (Karpsen, 2025)

All leaders emphasize the importance of a compelling vision as essentialfor driving organizational change, especially in the energy transition. They stress the need for a clear, well-communicated vision that inspires people. Since change is driven by people, employees must understand their value and feel part of the journey. This requires leaders to listen to stakeholders, engage and empower employees at all levels, and build trust through strong relationships. Examples of this are:

> “In a transformation, if you are not able to show where you are going, why, and how it creates value for everyone of those a part of it, then it won’t happen. Because a change journey is dependent on that those involved are on board.” (Ramsköld, 2025)

> “It is important for leaders to be engaged in what’s happening [...] I think that’s extremely important as a leader, for people to feel seen and feel like they are able to give me input as CEO of the company, I think that’s the key to transitions, to functioning [...] people are often interested in telling me about what they do, many are proud of the work they do and recognizing and acknowledging the work they do is very important for us. I think that’s incredibly important for a transition to gain trust in the organization.” (Karpsen, 2025)

> “ My job is to see the bigger picture. So my core philosophy is to delegate as much as possible and then provide everyone with the best possible conditions to succeed.” (Svenningsson, 2025)

The importance of listening and understanding is not only related to stakeholders within the organization but also the environment in which the company exists. This is reflected by all leaders who point to the importance of knowing the context and understanding what role the organization has in both the context and the energy transition. Sustainability values are reflected among all leaders who point to the importance of understanding where the organizations’ impact lies, and opportunities in the economic, social and environmental spheres. This is based not only in a belief and care for planetary survival but also a belief that balancing these dimensions are important for organizational continuity and long-term survival:

> “ For me sustainability is very much taking responsibility and being able to balance and handle all three dimensions within sustainability, namely the economic, social and the environmental. [...]. And you only have a sustainable solution, a sustainable decision, a sustainable company if you have handled all three dimensions. If you only focus on environmental or the social parts then you don't have a sustainable solution, all you've done is handle the social or environmental questions. So responsibility and balance between these three dimensions is what I view as sustainability.” (Ramsköld, 2025)

> "I think many people misinterpret sustainability as being nice and pleasant, but it is about making long-term results. Results are an extremely important part of sustainability. And I'm sorry to say, but economics is a large part of what we are doing, if we cannot make money on it then it isn't sustainable. [...] Sustainability for me is about much more than just being green. Of course our planet needs to survive, this is something we work a lot with, but also how we can help our customers and how we can make money, otherwise it isn't sustainable." (Karpsen, 2025)

The leaders acknowledge continuous improvement as an important element of leadership highlighting that leaders should strive to develop themselves, the organization, the people within it, and society. All leaders reflected on the importance of learning, to remain adaptable and grow, innovate and continuously improve. Aspects such as curiosity, knowledge-sharing, and open communication were explained as an important part to enable the growth and development of the leaders themselves and the people within the organization as well as broader society. For example, Svenningsson (2025) pointed out:

> "I think that basic curiosity and wanting to learn new things and going outside your ordinary bubbles, being curious about learning - and that can be different technical parts, it can be human, it can be sectors, and seeing 'what can I learn'- and being open to change. And then being a bit laidback too, [...] it doesn't have to be perfect from the start, daring to test, daring to try, and being open to change. Above all, trusting your employees and trusting in that, they often know best." (Svenningsson, 2025)

The leaders all posit that they need to embrace change while also embracing failure as it is a vital part of learning, further instilling this in the organizational members. As illustrated by Karpsen (2025) and Svenningsson (2025):

> "I think curiosity is a really important quality. Being attentive, truly listening, is also key. It's about having a clear perspective and your own view on things, but at the same time being open to change. So much is being turned upside down, so much is shifting, and that requires a willingness to adapt. But I also think it's important to combine that with perseverance and a strong belief in where you're headed" (Svenningsson, 2025)

> "Get Shit Done (one of Karpsens three guiding values) is really about testing, trial and not sitting behind our desks and doing everything, we need to go and test it on the market and I tell all my managers 'I want you to make mistakes, I want you to come back and tell me that you made a mistake' because if they never make mistakes then we've only played it safe. We need to make mistakes sometimes, fail and learn from them. And that is not about making the same mistakes three times in a row. But we need to fail and make mistakes so that we can retry and get better." (Karpsen, 2025)

4.3.2 Perceived challenges of leaders in the energy transition

The enormity of the energy transition and the changes that need to happen to realize it, entail several challenges. One of the main challenges that was raised in all interviews is that of stakeholder acceptance and support, recognizing both internal and external stakeholders. An example of an important stakeholder to consider is top management, which is mentioned by both Karpsen (2025) and Ramsköld (2025). Ramsköld (2025) explains:

> "If you don't have support from the board or the CEO or the CFO, any of the important key actors, if you don't have their support and a clear orientation of where you're going then you will never be able to drive change, you cannot drive change by yourself. I have had insights of how I have wanted to drive change in an early stage and then I have, even if the support has not existed from the start, I have been clear with expressing what the value is. And then ensuring that I have someone who agrees with me, be it the owner, the board or the CEO or CFO or whoever. But if you can't succeed in that then you have to let that part go because otherwise you'll only turn into don quijote waving to a windmill, that doesn't really work." (Ramsköld, 2025)

Employee support and acceptance is emphasized across all interviews. On the one hand, inclusivity and engagement are mentioned by all leaders as important facilitators for driving change. On the other hand, changes in the organization such as the transition can also pose challenges if there is a lack of engagement and understanding for why the transition and changes are happening. Ramsköld (2025) reflects on a situation related to this:

> "We had a previous purpose that was 'making electricity clean' and that didn't manage to mobilize everyone, and that had to do with that only the people who were working on the production side felt like they could identify with 'making electricity clean'. So the people who worked in sales or within different staff or those working with power grids, etc., [...] they couldn't feel that 'well, we're making electricity clean'. So then we couldn't get everyone on board but when we saw to it that it was about 'enabling a fossil free life' well then all of a sudden everyone could recognize that you could contribute." (Ramsköld, 2025)

Another example related to this is given by Karpsen (2025) who points out that Driva Group is currently undergoing a significant transformation, moving from being exclusively a gas company to investing in new business areas such as solar energy. Reflecting on that employees within the old business area may feel neglected as their area can be perceived as the "boring" part, he explains:

> "I think it's important that you are open and honest about what is happening on the one side, the people that are there and the challenges we are facing. But also this inspiring visionary 'look at what we can do, everything we know for the old part we can apply it to the new part', and that makes an incredible company in the long run. [...] It is important for me at least and the stage where at where we are a company doing many different things but as employees we all work towards the same thing. We need to ensure

> that we are making money on the old business so that we can finance all the new things we want to do, and everyone is a part of this transition. This is important to communicate so that everyone feels like what they are doing is of use for the company." (Karpsen, 2025)

A related challenge that is expressed by all leaders is managing employee competencies, both by upskilling existing staff and by attracting new talent with the expertise required for the energy transition.

A recurring theme in all interviews were challenges related to making informed and balanced decisions in regards to sustainability and the energy transition. These challenges are described by all leaders to involve several different aspects and demand leaders that are informed and aware of the importance of sustainability and why the energy transition needs to happen. For example, Ramsköld (2025) recounts:

> "Leaders need to be able to handle multiple things at the same time and make decisions between them. [...] I think the hardest thing is getting people to not think of it as overwhelmingly complicated because 'there are so many things that one needs to consider, so it's a challenge that many feel like sustainability includes everything and therefore too many things. But that is why you need to pick out the things that are most essential to the company as a whole and go down through the company level by level to see 'do others also find this prioritisation to be true?'. [...]and then many leaders are looking for 'just tell me what's most important' no, the most important thing is that you consider all three and make the decision that makes the most business sense for you. And that is probably the hardest thing, it demands leaders that are mature enough and that have understood that the reason for working with sustainability is to secure the company for the future and finding the right priorities" (Ramsköld, 2025)

The leaders underscore that even if a leader is knowledgeable and equipped to navigate competing interests one actor cannot go about this transition alone and collaboration is key to addressing the enormity of the challenges related to investments, infrastructure, knowledge and capacity building. However, collaboration with actors who are both partners and competitors can sometimes pose challenges. As Svenningsson (2025) noted:

> "You need to work together and there it's important to hold the rough boundary. I mean one moment you're bitter - or maybe not bitter - competitors but in the next you're working together to create conditions, because we believe Sweden will be better if we grow the fossil free electricity production for example [...] you really need to be able to compartmentalize where you collaborate and where you are competitors." (Svenningsson, 2025)

Another challenge that leaders may face is that of public acceptance. Although all leaders describe that there seems to be awareness regarding that the energy

transition needs to happen and that the idea of it may be supported, gaining public acceptance and understanding can, in reality, prove difficult:

> "For years, it's been wind versus nuclear versus hydropower, but the truth is we need all of it. If we're going to succeed in tackling the climate challenge, we need all fossil-free, green technologies [...]. As a leader, this presents a real challenge: staying focused on the main objective. If the goal is to transition to a green, sustainable society, then sometimes we have to be willing to let go of certain personal preferences or principles. For example, someone might say, 'I support renewables, but I don't want wind turbines near me - they ruin the view.' Or, 'I don't like nuclear power.' But the alternative might be coal or oil, and that's clearly worse. So the key question is: What's most important? If it's solving the climate crisis, then we have to use all the tools in the toolbox. " (Svenningsson, 2025)

> " [...] no one wants it to be visible and noticed and we know that, it will require claiming a lot of land and sea. But on the other hand that is what enables us to handle climate change, so the question of acceptance for claiming land is one of the toughest challenges regarding the public. And what we do is that we are really meticulous with considering all various stakeholders and opening up for dialogue. But if we take the whole transition happening in the north, there are a lot of people who need to use the same land and there is reindeer herding, there is tourism, there is hunting and fishing, beyond that we also need power lines and we need wind turbines, we might need railroads, we have forests that need to be managed, I mean there are so many things and then you think everything is supposed be the way it was while at the same time we know that the climate makes nothing the way it used to be." (Ramsköld, 2025)

Ramsköld (2025) further reflects on the importance of being aware of the expectations that stakeholders and society have on the organization, and clarifying any inconsistencies between the expectations and what the organization is capable of achieving in reality:

> " Some people I think believe that there is a famous silver bullet solution but we all know that all fossil-free power forces will be needed and here it's the same thing that there is a belief among the public that 'it's enough to make one power source', but that will never be enough." (Ramsköld, 2025)

> "We need to understand what the perceived expectations are of local communities when we are there, and do they have expectations on us that are not at all in line with what we can deliver, then we need to be clear why and take that discussion and then instead show them what it is that we can contribute with. And that goes for all different stakeholders, considering we are a state owned firm there are some that think we are a government agency and then the expectations are wrong. So it is about constantly checking the expectations with what we de facto can deliver and be clear on that. So again being clear on that and that is something we very often discuss. There are also politicians that sometimes think that 'well, all we have to do is tell you to do something and then you'll do it', no, we are dependant on government agencies, we are dependent on capital, we are dependent on a range of different things, and just because 'you' say that we need to

> do something we can't just do it if it isn't profitable' because then we overturn our entire business and the company's operations. So being clear on expectations is needed." (Ramsköld, 2025)

Another challenge that was revealed during the interviews were those related to the large-scale investments in relation to the life cycles of energy infrastructure and systems. For example, Ramsköld (2025) explains:

> "There is a lot of infrastructure, it is extremely capital intensive, the life cycles are very long, so I mean if we take hydropower that needs to survive for over 100 years. [...] It's enormous, there is so much capital that needs to go in that it can be hard to count home sometimes." (Ramsköld, 2025)

Further, all leaders highlight that the government and political actors are important stakeholders to consider within the energy transition but pose specific challenges. This is in part because the challenges related to the large investments and long time-frames are exacerbated by the dynamic political landscape in Sweden:

> "People say that we have a deregulated market and that is only partly true, it is very politically regulated and if you want nuclear power, biopower, if you want wind, if you want sun or anything else then the regulatory part or the political part is extremely important to handle. So that's a stakeholder that is really important and that can be [...] hard to steer or keep track of because it can change from one government to another, and we invest in infrastructure that lasts. The gas grid has existed for over 170 years, you get through quite a lot of government changes in 170 years, so that's important." (Karpsen, 2025)

> "And then you are very dependent on the views of stakeholders on different power sources, you are very dependent on the surrounding regulations and frameworks. [...] It is very dependent on not having politicians who swing to and forth between different energy types and solutions. Because that means that you really risk investing in the wrong thing, so that's probably one of the most difficult things" (Ramsköld, 2025)

> "Energy is politics and you can say that politics is energy sometimes. And it is not about politics being in the details to govern but when we make decisions about large investments, it might be a decision 20,40,80 years ahead, and then there needs to be a very clear political orientation which is sustainable over time because that then creates conditions for me and us to act, to make decisions." (Svenningsson, 2025)

Taken together, the interviews revealed several challenges that leaders face in the energy transition

4.3.3 How STL facilitates the energy transition

It is clear across all interviews that a critical part of leading an organization through the energy transition is that leaders need to have awareness of the organizations role in, and impact on society. All leaders underscore the

importance of recognizing and taking responsibility for the organization's direct impact on its surrounding environment, considering societal challenges and the people this affects. As Ramsköld (2025) described:

> " I always say that when you are going on a change journey and when you need to redirect, then you need to sit down and think about what challenges that we as a company have, what challenges does society have, and the most important question is really how can we with our competencies, with our products, our services, how can we contribute to solving the societal challenges and our own challenges. And it is when you can find that, that's when you have found your clear purpose and when you are clear with what we're doing but also clear on how it contributes to a better society, that is when you have the driving force to drive change." (Ramsköld, 2025)

Svenningsson (2025) and Karpsen (2025) further reflect on how their organizations' work with taking responsibility for the organizational impact on the environment, society, and people:

> " I mean our foundational mission the way I see it is that by creating enabling conditions for green and fossil free energy, both energy and hydrogen gas and so on, we are helping to ensure that we can transform the whole society. [...] Then we also have, in regards to both chemical usage and use of resources, circularity [...], we have a clear goal to ensure that we recycle as much as possible so that we in the end only have around 5 % of the refuse/waste that needs to be finally stored as radioactive waste/refuse and we have, currently I think we recycle around 50% of all demolition waste to really work towards minimizing our material utilization. So we try to mirror that and that permeates our organization." (Svenningsson, 2025)

> " [...] finding the balance of 'how can you build something where you have the different parts: where it's cheap for the consumer, it's green and it works, it's a triangle, and I think it's extremely important to get it to work over time. [...] The triangle, from my energy perspective is about being able to deliver cheap costs for the energy to the customer, that's one part. The second part is that I need to be able to do something which I call green energy (sun, wind or something similar). The last part is for me about how it needs to work 24/7. [...] It's our job to ensure that it works" (Karpsen, 2025)

In all cases, the leaders put forth that communication is a cornerstone of building and maintaining stakeholder relations and to ensure transparency, responsibility and trust. Explanations for this are that it is important to highlight and be open about what the organizations are doing in regards to the energy transition, both the positive (e.g. opportunities) and the negative (e.g. challenges), to try and create positive associations between the organizations and their stakeholders. Ramsköld (2025) and Svenningsson (2025) reflects on this:

> " [...] you need to be very clear on what areas of conflict exist, and try to have dialogues with those that will be affected. [...] There are alot of conflicts but we can handle them. But we have to raise all these problems and be clear with them and describe what the possible solutions are and discuss possible solutions. Dialogue is key to be able to cope with the transition." (Ramsköld, 2025)

> "I think it goes back to [...] our ability to truly communicate all the opportunities that exist within the energy sector. Everything we talk about, everything we aim for - and everything the younger generation wants to see - that's what we're actually working on every day in the energy sector. But we're not always great at explaining that clearly." (Svenningsson, 2025)

A common understanding among the leaders is that successfully navigating the energy transition requires collaboration with a diverse array of stakeholders. Whether they are referring to employees, investors, regulators, customers, suppliers, or local communities, all leaders stress that their organization cannot affect meaningful change in isolation:

> "By working together we can ensure the transition of society and what we learn in the collaborations we have are things that can be used not only for our markets but that can also become a blueprint for how we can work in other markets too [...]. If we are to get to it we need to work together to share risks, to share investments, to share knowledge, because otherwise the changes will not happen fast enough. And we also need to innovate in a way we have not before because we will not be fast enough with the transition if we do 'business as usual'. We need to think in a new way and to do that we need to include all actors in the value chain because otherwise we risk missing a few pieces and that is why we need these collaborations and a common shared goal that we want to achieve." (Ramsköld, 2025)

> "I see a change in Sweden for the past 10 years [...] that we are significantly more unanimous among big stakeholders, both competitors, suppliers, customers, politics, government, where we want to go. So you cooperate a lot with different actors because we know that no one is going to be able to do this alone [...]." (Svenningsson, 2025)

Reflecting on the organizations role in the energy transition, Ramsköld (2025) and Svenningsson (2025) show awareness that their respective companies, Vattenfall and Uniper, are large actors that hold both power and influence in regards to the sector, the market and other stakeholders in the value chain:

> " If we take the Swedish context then naturally Vattenfall is very important considering it is one of the larger companies, that we are active throughout the value chain (meaning production, distribution, sales), active on the energy market and also involved in electricity and heat. So with that we are very important because we are one of the companies that are most integrated, that have all of these parts. And for us it about constantly seeing how the whole system should work and having a very clear dialogue with Svenska Kraftnät . [..] We need to cooperate together with them and not least with the other network companies so that we can gain a balance in the whole system. Then we also have a role by being the largest actor in showing what's possible, and opening up for collaboration." (Ramsköld, 2025)

> " We can say that we are Sweden's leading actor on that (in the energy transition). But we have several different roles, the basis is that 99% of the electricity we produce is fossilfree, it's green. The only thing we have is that is really important is what maintains the security of supply in the system. We have (...) gas turbines which ensure that if we

> get a disturbance on the power grid we are able to handle it, so we don't get a situation like in Spain and Portugal (major power outage in April 2025). [...] we say that we operate in all areas of the energy system. Many might be electricity suppliers or hydrogen gas suppliers but we work in all the different areas." (Svenningsson, 2025)

Karpsen (2025) reflects on Driva Group's role as a smaller actor:

> " We are a little smaller, we currently have 50 employees, so we're smaller. And here it's important that we are clear on where we are in the value chain, what we are doing, what we are good at. [...] We have several small transitions that I think are really important" (Karpsen, 2025)

A theme throughout the interviews was that all leaders underscored that change that the energy transition aims to achieve needs to happen. A crucial part of this is explained by all leaders as being able to critically reflect on the organizations' activities and impact. As described by the leaders:

> " The energy transition, what we're trying to achieve, is a marathon. It's going to take a long time so we need endurance and conviction. At the same time, we need to be able to adjust course along the way. You can't just be stubborn and say, 'We've decided to do this,' and stick to it no matter what. So it's that combination of curiosity, attentiveness, flexibility, and at the same time having clarity and commitment to what we believe in. But if it turns out we're wrong, then we need to be able to change direction. Some people struggle with that, but I believe it's crucial." (Svenningsson, 2025)

> "Being responsive is incredibly important, but if you are driving change you have to be brave because you have to be able (as humans we don't like change, so you have to be brave enough) to challenge the status quo, because what we are doing today is not the way we need to do things tomorrow. So the courage to dare to challenge but you also have to be incredibly responsive and listen to everyone who is a part of this journey and understand their concern, understand how you can add value to each and everyone." (Ramsköld, 2025)

> " [...] you have to try it a few times but then be pretty good at saying 'what we did didn't work' and move on. The other side of this is the ability to see 'is something going really well, how do I scale this up pretty fast', and how do you prioritise between these products, and that I think is a really important ability in this transition. Because as I said, you have both a customer that has an opinion, you have a regulator or a government that has some type of opinion, you have the world market which is dynamic." (Karpsen, 2025)

5. Analysis & Discussion

This chapter will delve deeper into the empirical findings where these will be discussed with reference to the conceptual framework and the underpinning literature streams on sustainability, leadership, and transitions. The analysis and discussion will be presented in accordance with the key themes of the research questions to assist the study's aim.

5.1 Analysis

5.1.1 Key elements of STL

The findings show that all leaders note that they have significant responsibility towards and influence over the organization, its members, and the external environment. The interviews reflect the strong ethical values of the leaders and their belief that leaders need to understand the organizational impacts and opportunities in the environmental, social and economic spheres. Liao (2022), Sajjad et al., (2024) and, Boeske and Murray (2022) asserts that the ethical values of a leader are crucial as they influence leader behavior and interactions with their surroundings. The findings show that the leaders believe that considering planetary survival and balancing sustainability dimensions are fundamental to survive, permeating the organization to contribute to a positive impact on the surrounding environment. This is particularly evident in Ramsköld's (2025) explanation that a sustainable solution, company or decision can only be realized if consideration is taken to all three spheres of sustainability. This is in line with Metcalf & Benn (2013), who explain that the ethical values of a leader allows leaders to engage in ethical decision-making. The findings show that leaders consider how decisions affect broader society and the people within it to ensure long-term survival which aligns with the individual capability of system thinking (Sajjad et al., 2024; Metcalf & Benn, 2013) and long-term perspective (Avery & Bergesteiner, 2011). These individual scale elements of STL posit that a system-thinking enables strategic agility and holistic thinking as the leader sees the connection between the organization and its surroundings, which is important for understanding how decisions in one part can affect the whole (Sajjad et al., 2024 & Metcalf & Benn, 2013). While all leaders acknowledge the importance of environmental and social pillars, the importance of the economic sphere is raised as particularly important as organizations need to make a profit to survive and transition. This point is particularly stressed by Karpsen (2025) when explaining that results are fundamental. The care for planetary and organizational survival connects to the individual capability of long-term thinking where the future is not

discounted (Visser and Courtice, 2011) and long-term perspective which is important to enhance the organizations resilience (Sajjad et al., 2024).

The findings show that leaders express the importance of being able to convey a vision in a way that inspires the people around them and reflects their values and a bigger purpose. All leaders describe that working with their values and ensuring that they are reflected in their organizations' structures, vision and people is important to drive change, as change is driven by people. These findings emphasize the significance of clear and effective communication of a vision that seeks to engage and inspire (Metcalf & Benn, 2013; Visser & Courtice, 2011; Armani et al., 2020), an individual scale element. Not only does the vision provide strategic direction (Visser & Courtice, 2011), but the emphasis on creating a shared vision to guide, inspire and engage people to work towards shared goals and a more sustainable future, is a fundamental aspect of creating an organizational environment that facilitates a sense of shared responsibility and guides employee behavior (Avery & Bergsteiner, 2011; Sajjad et al., 2024), which in turn is an aspect of the organizational scale. All leaders stress that ensuring that employees are aware that they are valued, included and that this is felt by the employees, is an important part of leading during the energy transition. These findings align with the work of Armani et al. (2020), Liao (2022), and Sajjad et al. (2024), all of whom emphasize that leaders need to recognize employees as essential stakeholders to drive organizational change. In the findings, the leaders display their core values such as care and trust for their employees, identified by Sajjad et al. (2024) as an individual scale element, while creating enabling conditions for the employees to develop are in line with (Boeske & Murray, 2022) and part of the organizational scale.

In all cases, the leaders acknowledged the importance of continuous improvement for leadership. Svenningsson (2025) and Ramsköld (2025) pointed out that being curious and learning new things is important. They both reflect that an important part of learning and growing is that leaders need to have an openness to change and the courage to try different things. This was mirrored by Karpsen (2025) who stated that making mistakes is an important part of improvement. This is an important element of STL as embracing openness is an important part of fostering individual and collective learning, while also contributing to organizational resilience (Avery & Bergsteiner, 2011; Sajjad et al., 2024). The notion of openness is also described by Armani et al. (2020) who connect this to communication, transparency, and inclusiveness, highlighting these aspects as important for the organizational culture and resilience.

5.1.2 Perceived challenges in the energy transition

The findings reveal that a key challenge mentioned by all leaders is related to the size of the energy transition and the different factors that need to be in place for it to happen. As explained by the leaders, this includes the large investments needed, dismantling, building and extending infrastructure and power grids, technology and innovation, knowledge and capacity building, and stakeholder acceptance. The leaders all explain how they need to be aware of how changes in one part affects another, underscoring that these challenges are complex and interconnected. This aligns with the view of the energy transition as a wicked problem (Ritchey, 2013; Thollander et al., 2018). The findings further show the need for collaboration among all actors to achieve the energy transition, highlighting that all actors need to unite under a shared goal, working together and sharing investments, risk, knowledge and capacities which connect to the interpersonal skills needed at the individual scale and collaboration in networks in the organizational scale, as explained by Armani et al. (2020) and Sajjad et al. (2024).

The findings show that a common challenge experienced by the leaders is making informed and balanced decisions in regards to sustainability and the energy transition. This is explained as being due to the multitude of factors that leaders need to consider at the same time. As Ramsköld (2025) contemplated, leaders can feel overwhelmed if they lack information or understanding regarding why they are working with sustainability and what the organization needs to prioritize, where some want to be told what is most important. She points out the importance of leaders considering all three spheres and making the decision that makes most sense to them. The complexity of finding and maintaining a balance across social, environmental, and economic pillars is also highlighted as challenging by Kuhlman & Farrington (2010) and Sajjad et al. (2024). This further connects to Metcalf & Benn (2013) who explain that a leader's interpretive role is crucial as it can have a considerable impact on the organization’s ability to adapt to its environment, reinforcing the importance that leaders need to understand their organization and its environment to work towards sustainability and the energy transition.

Another key challenge involves securing stakeholder acceptance and support, which includes both internal stakeholders (such as employees and top management) and external stakeholders (like the public and government). All leaders agreed that while employee support is crucial for driving change it can also prove challenging if there is a lack of engagement or understanding regarding why the transition is happening. Both Ramsköld (2025) and Karpsen (2025) mention the importance of employees seeing their contribution and alignment

with organizational goals. This aligns with Avery & Bergsteiner (2011), who explain that leaders need to recognize the employees experience and sense of value. Ensuring that organizational values resonate with all employees is further highlighted by Haddock-Millar (2016) as crucial for working towards shared goals.

As mentioned by all leaders, gaining public acceptance can be difficult and is seen as a large challenge. All leaders highlight the importance of clarifying expectations among stakeholders, ensuring that all stakeholders understand the need for the energy transition, why it needs to happen and what the organizations are able to achieve. This aligns with Visser and Courtice (2011), who stress the necessity of fostering partnerships and raising awareness about sustainability.

All leaders highlight challenges related to stakeholders in the political and government environment where one main challenge identified is the discrepancy between time-frames. For example, Karpsen (2025) explains that the decisions they make regarding energy and investments span several years whereas politicians' orientation regarding energy solutions can shift from one government term to another, which means that leaders may risk investing in the wrong thing.

This is echoed by Svenningsson (2025) who underlines that to create conditions which enable action and decision-making there is a need for a clear political orientation that is sustainable over time. This further shows the complexity of the energy transition as explained by Thollander et al. (2018) while also connecting to the elements of long-term orientation and system-thinking as explained by Sajjad et al.(2024).

When leaders share their approach to handling these challenges, various elements of STL emerge. To begin with, leaders emphasize the importance of clear communication and being able to inspire, which is believed to be essential for gathering the support of employees and top management. This perspective aligns with that of Visser and Courtice (2011), Metcalf and Benn (2013), and Armani et al., (2020). Moreover, when addressing challenges that pertain to external stakeholders, leaders illustrate several STL elements. For instance, Svenningsson (2025) highlights the necessity for collaboration with other organizations within the industry to facilitate the transition, despite otherwise being competitors. This notion resonates with the ideas presented by Visser and Courtice (2011), which advocate for cross-sector relationships. Additionally, Sajjad et al. (2024) stress that organizations need to cultivate relationships with local communities to foster a positive association with those in the local community. This sentiment is echoed in Ramsköld’s (2025) reflection on the importance of understanding local community expectations and building a mutual understanding.

5.1.3 How STL facilitates the energy transition

All leaders highlight that a fundamental part of leading an organization in the energy transition requires that leaders are aware of their organizations' role and impact on society. This illustrates that the leaders have an awareness of operating within a larger system as explained by Metcalf & Benn (2013). This awareness of the leaders further shows the internal aspect of environmental consciousness, as they acknowledge and manage the direct impacts of the organization by adapting their organizational practices, processes, and products (Baumgartner, 2014; Soni, 2023). For Ramsköld (2025) the primary question when driving change is to see how an organization - with its competencies, products, services - can contribute to solving both their own challenges as well as society's. She further highlights that finding out how the organization can contribute to a better society works as a driving force for change. Similarly, Svenningsson (2025) describes that as a large actor, their role is to create enabling conditions to transition to fossil free energy, not only on an organizational level but on a societal level. He explains that part of this is ensuring that the internal operations are aligned with their broader sustainability values e.g. waste reduction and circularity needs to permeate the organization. Karpsen (2025) describes that it is important to find how the organization can offer something to its customers that is sustainable, affordable and works over time. This connects to the fundamental aspects of achieving a sustainable energy system (Holden et al., 2021). This is also in line with the second aspect of environmental consciousness which entails that organizations need to contribute to broader societal challenges (Sajjad et al., 2024).

Another key aspect of leading through the transition is acknowledging the influence and power that come with the role of organization in society and the opportunities that entails (Metcalf & Benn, 2017; Avelino, 2017; Schaltegger et al., 2023). Ramsköld (2025) and Svenningsson (2025) both assert that they are leaders in organizations that hold significant power and influence in society due to the size of their respective companies. This connects to Schaltegger et al. (2023), who explains that certain actors, especially those that are large and well-established, possess the capacity to contribute more effectively to a sustainability transition. The leaders all recognize that the energy transition demands that all actors are involved and actively contribute to transitioning to a sustainable energy system, in line with (Schaltegger et al., 2023). This was reflected during the interview with Karpsen (2025), who acknowledged that considering the size of the organization the focus needs to be on their position in the value chain and the opportunities that entail.

Further, the leaders all recognize that achieving the energy transition is not possible without collaboration among all actors, which aligns with Schatlegger et

al. (2023) who explains that effective change for any societal transition requires active participation and collaboration. All leaders emphasize that the enormity of the challenge requires organizations and stakeholders to work together. Stressing the importance of having a shared goal where knowledge, risks, and investments are shared to accelerate the transition. This is consistent with the viewpoints of Iqbal et al. (2020), Boeske and Murray (2022) and, Sajjad et al., (2024) who emphasize the importance of shared goals and the understanding that value is co-created through collaborative relationships.

5.2 Discussion

This study set out to provide in-depth knowledge about how sustainability transition leadership is enacted within organizations undergoing energy transition by answering three research questions.

The study's first question sought to answer what specific attributes and leadership practices define sustainability transition leadership in organizations actively engaged in the energy transition.The findings reveal that the leadership attributes and practices of the interviewed leaders align with those outlined in the conceptual framework. As such, a wide range of STL elements were identified including ethical values, reflective practices, systems thinking, collaboration, vision and communication, and long-term perspective. One interesting finding was the role of ethical values. The study found that the leaders ethical values such as care for others, honesty, trust and integrity influence leaders actions and decision-making where maintaining consistency between the leaders values and decisions is important, in line with the findings of Sajjad et al. (2024), Metcalf & Benn (2013), and Liao (2022). Boeske and Murray (2022), have identified that ethical values such as those highlighted in this study, are important for driving change. This suggests that leaders who do not ground their actions in ethical values may struggle with driving a sustainability transition as these attributes are not only confined to the individual scale but influence the entire organization. These findings provide support of the STL framework, demonstrating its applicability to real-world leadership in the context of the energy transition.

Research question two explored the challenges leaders face in navigating the energy transition and how they address them. The findings revealed a range of complex and interrelated challenges, including securing stakeholder acceptance and support, fostering engagement among organizational members, navigating conflicting objectives both within the organization and among external stakeholders, mobilizing large-scale investments, and responding to a shifting political landscape. The findings connect to various different elements of STL when leaders address and make sense of the challenges they face in regards to the

energy transition. The findings show that the capabilities that leaders develop at the individual level such as systems-thinking, critical reflection, and ethical values enable them to view challenges holistically aligning with the findings of Sajjad et al. (2024). Leadership plays a pivotal role in facilitating sustainability transitions, as leaders are central to navigating the complex and multifaceted challenges these transitions entail (Sajjad et al., 2024) which this study has shown. Accordingly, the findings of this study are significant in advancing our understanding of how leaders can effectively address these challenges in ways that support and accelerate the progress of the energy transition.

The third research question of this study sought to examine the role of STL in enabling and facilitating the energy transition. The findings suggest that STL facilitates the energy transition through a combination of elements such as, systems thinking, strategic alignment of organizational practices with societal needs, and the effective use of organizational influence and collaboration. A part of this is how leaders enact STL by embedding sustainability values throughout the organization, leveraging their position to catalyze wider change, and fostering partnerships that enable coordinated, large-scale transition. This reflects an interconnectedness between the individual, organizational, and societal scales. Previous studies have also acknowledged that leadership functions across scales (e.g, Liao, 2022; Sajjad et al., 2024). However, the impact on a societal level is often treated as a spill-over effect resulting from leadership behaviour and organizational processes, rather than as intentional outcomes as this study suggests. As a result, the potential of leaders to contribute to broader societal transitions is underexplored. This study has responded to this gap by adopting a multi-scalar approach, seeking to expand the discourse beyond the micro level (individual and organizational scale) to also include the societal scale. The findings further suggest that leaders are not only capable of driving change within their organizations but can also have intentional and strategic influence on the societal level, contributing to what transition studies define as a sustainability transition (Köhler et al., 2019).

6. Conclusion

The aim of this study was to provide in-depth knowledge about how sustainability transition leadership is enacted within organizations undergoing the energy transition by generating insights from leaders with first hand experience within this context. The conclusions of the study are stated below, as well as a critical reflection regarding limitations of the study and possible future research directions.

6.1 Conclusion

The study provides insights into the attributes and practices of STL, demonstrating a strong alignment between the elements in the conceptual framework and the leader attributes and practices. These findings further enhance our understanding of how leaders enact STL in practice, addressing challenges in ways that support and accelerate the energy transition. Furthermore, findings suggest that leaders possess not only the capacity to drive change within the individual and organizational scale but also exert intentional and strategic influence at the societal level. Taken together, these insights reinforce the relevance and applicability of the STL conceptual framework.

The theoretical contribution of this study lies in the development and application of the STL conceptual framework, which builds upon and extends the existing framework of SL by integrating perspectives from the field of transition studies. The STL framework introduces an extended multi-scalar approach, adding the societal level to the traditionally emphasized individual and organizational levels. This expansion allows for a more comprehensive understanding of how leadership is enacted across interconnected scales. In doing so, the framework illustrates how leaders can act intentionally and strategically to influence not only individual and organizational scale change but also broader societal transformations. Specifically, it highlights leadership's potential role in facilitating sustainability transitions, such as the energy transition. Highlighting how leadership is enacted across three scales, individual, organizational and societal levels. Empirically, this study offers valuable insights into the enactment of leadership in real-world settings, specifically within the context of sustainability transitions and, more precisely, the energy transition. Demonstrating how leadership actively engages and facilitates the energy transition, through intentional practices and decision-making.

The scope of this study is limited in terms of its geographic focus, Sweden, and its sample size. Nonetheless, the choice of Sweden and its leaders is justified

concerning the practical contributions of the research. Given that Sweden is recognized for its success in the energy transition, this choice adds significant value, enhancing the relevance of the findings for effectively leading through the energy transition. However, the authors acknowledge the study's limitations. Since the participants were solely senior leaders, the findings should be interpreted as reflecting only their perspectives. The authors are aware that the exclusion of other potential participants (e.g. stakeholders and employees) may limit the study's scope. Given the timeframe and resources of this study, the participants were selected as they all hold senior leadership positions within the studied context, resulting in the authors deeming them most suitable to ensure relevance to the study's research questions. Further research on this topic is recommended, suggesting the inclusion of other stakeholders, such as middle managers, employees, or other actors to enrich the empirical context and demonstrate the framework's broader applicability.

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Interview guide

1. Tell us about your role as a leader at organizations name.
2. How do you view leadership?
3. How do you view sustainability?
4. How do you view your organization's role in contributing to the energy transition?
5. What are the key enabling conditions for you as a leader to lead towards sustainability in the organization?
6. What challenges do you perceive concerning leaders leading the energy transition?
7. How do you handle these challenges to achieve your sustainability goals?
8. What attributes do you feel are key for leaders navigating similar challenges in the energy transition?

Popular science summary

The energy sector is the world's largest source of greenhouse gas emissions, making it a key player in tackling climate change. Although renewable energy technologies have made huge progress, shifting the entire system away from fossil fuels is a long-term and complex process. It's not just about having the right technology; it is also about having the right kind of leadership. This study investigates how leadership can help move the energy sector toward a more sustainable future. It introduces a new framework called Sustainability Transition Leadership (STL), which brings together ideas from leadership and transition studies. STL focuses on how leaders create change, not only within their organizations boundaries but also at a societal level. To explore how this plays out in practive, the study intervirwed three leaders in Sweden, a country widely recognized as a global frontrunner in the energy transistion. The interviews revealed how these leaders lead change by aligning their values, company goals, and wider societal needs. In short, the study shows that leadership matters. It's not just about managing change inside a company; it's also about shaping broader societal progress. By expanding how we think about leadership, the STL framework helps us understand how leaders can drive real change in the energy transition.

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