Drivers and Barriers for Decarbonizing Norway's Buildings and Construction Industry

Vilde Herrem Bøhleng

Dissertation written under the supervision of
Nuno Moreira da Cruz

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ABSTRACT

Meeting Norway's Agenda 2030 and 2050 net-zero goals requires alignments between external policy environment and internal organizational practices. The thesis explores drivers and barriers for decarbonization in the Norwegian buildings and construction sector. First, it examines the external factors of international, EU, and Norwegian policies, frameworks, and regulations. Second, it examines the internal organisational factors of strategy, economic, methodology and data, and behavioural. By focusing on policy implementation, this study directly relates to the United Nations Sustainable Development Goal 17.14.1 on policy coherence for sustainable development. The study employs a qualitative research design, comprising a comprehensive review of literature, together with findings from six semi-structured interviews with industry experts working with sustainability. Findings show that while the external policy environment provide important guidance, tools, and set sector-wide expectations, the effectiveness depends on organizations' ability to coordinate them with internal factors. As a qualitative, exploratory study, the findings are context-specific and have limited generalizability. The study provides practical insights for industry stakeholders by highlighting key enablers and barriers to decarbonization, important for the design of strategies, organizational processes, and policy alignment. The research emphasises the societal relevance of decarbonization, particularly in relation to sustainable development and responsible business.

Author: Vilde Herrem Bøhleng

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RESUMO

O cumprimento das metas da Agenda 2030 e do objetivo de neutralidade carbónica até 2050 da Noruega exige o alinhamento entre políticas externas e práticas organizacionais internas. Esta dissertação analisa fatores impulsionadores e barreiras à descarbonização no setor norueguês da construção e dos edifícios. Examina fatores externos, como políticas, enquadramentos e regulamentações climáticas internacionais, europeias e nacionais, e fatores internos, incluindo estratégia, aspetos económicos, metodologias, dados e comportamento organizacional. Ao focar-se na implementação de políticas, o estudo relaciona-se com o Objetivo de Desenvolvimento Sustentável 17.14.1 das Nações Unidas, relativo à coerência das políticas para o desenvolvimento sustentável.

A investigação qualitativa combina revisão da literatura com seis entrevistas semiestruturadas com especialistas do setor da sustentabilidade. Os resultados mostram que, embora o ambiente externo forneça orientações e expectativas setoriais, a eficácia depende da capacidade das organizações de integrar estes fatores internamente. O estudo fornece contributos práticos, identificando facilitadores e obstáculos à descarbonização e destacando a relevância social da descarbonização para o desenvolvimento sustentável e a responsabilidade empresarial.

Autora: Vilde Herrem Bøhleng

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Palavras-chave: Redução de Carbono, Setor Norueguês da Construção e dos Edifícios, Estratégia de Sustentabilidade, Coerência de Políticas, Agenda 2030, Objetivo de Desenvolvimento Sustentável 17.14.1

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List of Abbreviations

BREEAM – Building Research Establishment Environmental Assessment Method

CRREM – Carbon Risk Real Estate Monitor

CSR - Corporate Social Responsibility

CSRD – Corporate Sustainability Reporting Directive

CE – Circular Economy

EEA – European Economic Area

EU – European Union

ESG – Environmental, Social, Governance

GHG– Greenhouse Gas

GRI – Global Reporting Initiative

IPCC - Intergovernmental Panel on Climate

KPI – Key Performance Indicator

LCA – Life Cycle Assessment

NZC – Net Zero Carbon

NDC - Nationally Determined Contributions

TEK – The Norwegian Building Regulation

UNEP - United Nations Environment Programme

UN SDGs – United Nations' Sustainable Development Goals

1. Introduction

1.1. Contextual Background

Global warming is rapidly reducing the likelihood of maintaining a liveable environment for all, highlighting the urgent need for transformative actions across sectors and geographies (Intergovernmental Panel on Climate Change [IPCC], 2023). The IPCC report stresses that a transition with decisive actions towards sustainability has never been more urgent. Greenhouse gas (GHG) emissions are continuously increasing, and the report states that with high confidence this is largely due to unsustainable energy use, land use and land-use change, and consumption and production patterns (IPCC, 2023, P.42). Norway is committing through the Nationally Determined Contributions (NDC) to reduce national GHG emissions by at least 55 percent by 2030 compared to 1990 levels, a pledge central in guiding decarbonization efforts (Parlamentet, 2016). Nevertheless, the 2025 United Nations Environment Programme's [UNEP] emissions gap report states that global progress on emission reduction remains insufficient, with current efforts falling short of the 1.5 °C target outlined in the Paris Agreement.

The buildings and construction industry accounts for roughly 35 percent of global CO_2 emissions and 32 percent of global energy consumption, demonstrating its severe operational and material demands (Bienert et al., 2022; UNEP, 2025). According to the Global Buildings Climate Tracker, the CO_2 emissions from the buildings sector has risen 5.4 percent since 2015 making the sector significantly off track to reach its decarbonization goal (UNEP, 2025). Reducing embodied and operational carbon emissions is essential for advancing sustainability in the sector, mitigating its environmental impact across the entire lifecycle and built environment. This imperative becomes even more critical given that the global floorspace is projected to double by 2060, amplifying resource demand and negative carbon impacts if current practises remain unchanged (GlobalABC, 2021).

At national level, Norway is responding to the severe sectoral emissions through explicit targets for decarbonization. Oslo and six other major cities in Norway have set the goal of emission-free construction activities by 2030 (Fjellheim et al., 2024), requiring a coordinated transition across all stages of the value chain. The Norwegian Environment Agency defines an emission-free construction site as having zero CO_2 or harmful emissions arise from on-site

energy use. In practice, this involves replacing fossil-based energy or machinery with low- or zero-emission alternatives across construction processes, including vehicles, machinery, equipment, heating, and transport. Given the sector's scale, growth trajectory, and climate impact, rapid and credible decarbonization of the buildings and construction sector is a necessary condition for achieving Norway's climate targets and limiting global warming to well below 1.5 °C.

1.2. Objectives and Research Question

Despite the growing importance of sustainability in the buildings and construction sector, scientific assessments, policy reports, and sectoral analysis consistently demonstrates that current efforts remain insufficient, with a persistent gap between stated ambitions and measurable outcomes (UNEP, 2025; IPCC, 2023; Enova, 2023). Norway's climate policy frameworks aim to achieve net-zero by 2030, and have a legally binding target to become a low-emission society by 2050 through the Climate Change Act. Accomplishing these goals require more coherency in organisational strategies that effectively translate sustainability ambitions into measurable and verifiable carbon reductions.

Accordingly, this thesis adopts a qualitative approach to examine drivers, barriers and the coherence of decarbonization efforts across policy and organisational levels in the Norwegian buildings and construction sector. In line with the conceptual framing of SDG 17 *Partnerships for the Goals*, indicator 17.14.1. on policy coherence for sustainable development, the analysis is structured in two complementary stages. First, the thesis examines how international, EU, and Norwegian policies, frameworks, and regulations shape external expectations and requirements for decarbonization. Second, it investigates how these externally defined ambitions and requirements are translated into practice by examine internal organizational enablers and barriers related to strategy, economic, data and methodology, and behavioural factors. By linking policy-level ambitious with organisational-level implementation, the thesis seeks to explore the drivers and barriers contributing to the persistent gap between stated decarbonisation ambitious and measurable carbon reduction outcomes in the sector. Drawing on this approach, the research objectives of this paper are:

(1) To examine how international, EU, and Norwegian policies, frameworks, and regulations create requirements, expectations, and strategies for decarbonization in the Norwegian buildings and construction sector.
(2) To examine how enablers and constrains in the internal organizational categories of strategy, economic, methodology and data, and behavioural affects decarbonization in the Norwegian buildings and construction sector.

The study is guided by the following research question:
What are the main drivers and barriers to decarbonizing the Norwegian buildings and construction sector?

This overarching question is addressed through two sub-research questions:
RQ1: How do international, EU, and Norwegian policies, frameworks, and regulations shape decarbonization expectations, requirements, and strategies in the Norwegian building and construction sector?
RQ2: How do the internal organizational categories of strategy, economic, methodology and data, and behavioural enable or constrain the implementation of decarbonization in the Norwegian construction and buildings sector?

1.3. Contributions to the Academic Literature

While existing literature has examined various drivers and barriers to sustainability transitions, the underlying reasons for their emerge are often context-specific, varying across factors like sectors, regulatory environments, and national settings. This thesis addresses a gap in the literature by providing an in-depth analysis of the drivers and barriers affecting decarbonization of the Norwegian buildings and construction sector. The findings offer practical insights to stakeholders by highlighting where existing practices succeed and where improvements are needed to strengthen policy coherence for sustainable development. At an organizational level, the result could help businesses identify priority areas for actions, strengthen strategic integration of sustainability, and address barriers that hinder or slow implementation. More broadly, by mirroring the SDG 17.14.1 approach of identifying gaps and areas for improvement, the study contributes to ongoing policy and industry discussions on how greater coherence between policy frameworks and organizational practices can accelerate carbon reduction in one of the most emission-intensive sectors of the economy.

1.4. Dissertation Structure

Chapter 1 - Introduction

Sets the context of global warming and Norway's net-zero ambitions. Presents the urgency of decarbonization and highlights the buildings and construction sector as a key contributor to the high global and national emissions. Furthermore, it presents the objectives, research question, and guiding questions.

Chapter 2 - Literature Review

Examine key concepts such as sustainability, ESG, CSR, UNs 17 SDGs, and lifecycle emissions in buildings. It provides a detailed descriptions of the carbon emission profile of the sector and reviews efforts to reduce them, such as circular economy, agreements, reporting frameworks, and regulations. Moreover, it discusses relevant literature on enablers and barriers for decarbonization.

Chapter 3 - Methods

Describes the research's framework, approach, and strategy. Moreover, it explains the data collection process and analytical approach used to interpret stakeholder perspectives across the value chain of the buildings and construction sector.

Chapter 4 - Results

Presents the main findings from the interviews, organized around regulatory, strategy, economic, data and methodology, and behavioural factors. It systematically presents different enablers and barriers using a structured coding process.

Chapter 5 - Discussion

Interprets the results through the theoretical framework. It discusses how the findings of the thesis relate to existing literature on sustainability, international, EU, and Norwegian policies, frameworks, regulations, and identifies enablers and barriers to implementation.

Chapter 6 - Conclusion

Summarizes the main contributions of the study, discusses practical implications, identifies limitations, and suggests directions for future research.

2. Literature review

This section provides the literature for understanding decarbonization in Norway's buildings and construction sector. First, it outlines the development of sustainability, before it examines international, EU, and Norwegian polices, frameworks, and regulations and how they influence expectations, requirements, and strategies in the industry. Next, it reviews the sources, types, and scale of carbon emissions and waste in the sector, as well as sectoral carbon reduction strategies. Lastly, it examines drivers and barriers in the stated external and internal categories for decarbonization.

2.1. Sustainability

2.1.1. Definition and Conceptual Development of Sustainability

Sustainable development was first defined in the publication of "*Our Common Future*" (World Commission on Environment and Development) in 1987, as "*meeting the needs of the present without compromising the ability of future generations to meet their own needs*." Although broad in scope, this definition provides a normative foundation for academic concepts, and guides policies and business strategies. Over time, sustainable development has evolved into a multidimensional framework often conceptualized through different takes on the three pillars of sustainability: *social, environmental, and economic (ESG)*. Building on this, John Elkington (1994) introduced the concept of the *Triple Bottom Line (TBL),* proposing that organizations should measure success by including people and planet, alongside the more common measure of profit. This approach inspired corporate sustainability discourse by expanding the definition of value creation beyond financial performance and shareholder returns. By challenging companies to adopt broader success metrics, the TBL emphasises that true sustainability can only be achieved when environmental protection, economic viability, and social equity are addressed simultaneously. Similarly, Carroll's (1991) model of *Pyramid of Corporate Social Responsibility (CSR)* articulated the layered responsibilities of firms as economic, legal, ethical, and philanthropic, thereby translating sustainability principles into corporate practises.

ESG frameworks have become a widely recognized standard within the business world, where companies establish specific goals, strategies, and performance indicators (i.e. Key Performance Indicator [KPIs]) to demonstrate their commitment to sustainable corporate practises. Decarbonization targets are generally embedded within ESG strategies (Wuni et al.,

2021). As environmental governance increasingly involves stakeholders across multiple levels, international frameworks have become central in coordinating efforts toward sustainable and accountable climate action (Biermann et al., 2009). In the policy sphere, these concepts have been fundamental for the creation of global frameworks and international agreements, signalling a shift from normative ideals to performance-based accountability (Bäckstrand, K. et al, 2017). Notably, the UN's 17 Sustainable Development Goals is a central framework, recognizing the interconnection of tackle all aspects of ESG to reach the 2030 Agenda for sustainability (UN, n.d.; European Commission, n.d.).

2.2. International Policies, Frameworks, and Regulations

2.2.1. History of International Agreements on Carbon Reduction

The timeline (Fig. 1) illustrates the progression of important international climate governance from the creation of the IPCC in 1979 to the projected carbon emissions targets for 2030 and 2050. It shows international agreements and sector specific initiatives that has shaped global efforts to reduce GHG emissions. Notably, in 2015, the Paris Agreement, including the Nationally Determined Contributions, and the Agenda 2030 for Sustainable Development and its 17 SDGs were adopted as interconnected frameworks to guide sustainable development, establishing 2030 as the target for achieving the NDC and SDG objectives, and 2050 for reaching global net-zero.

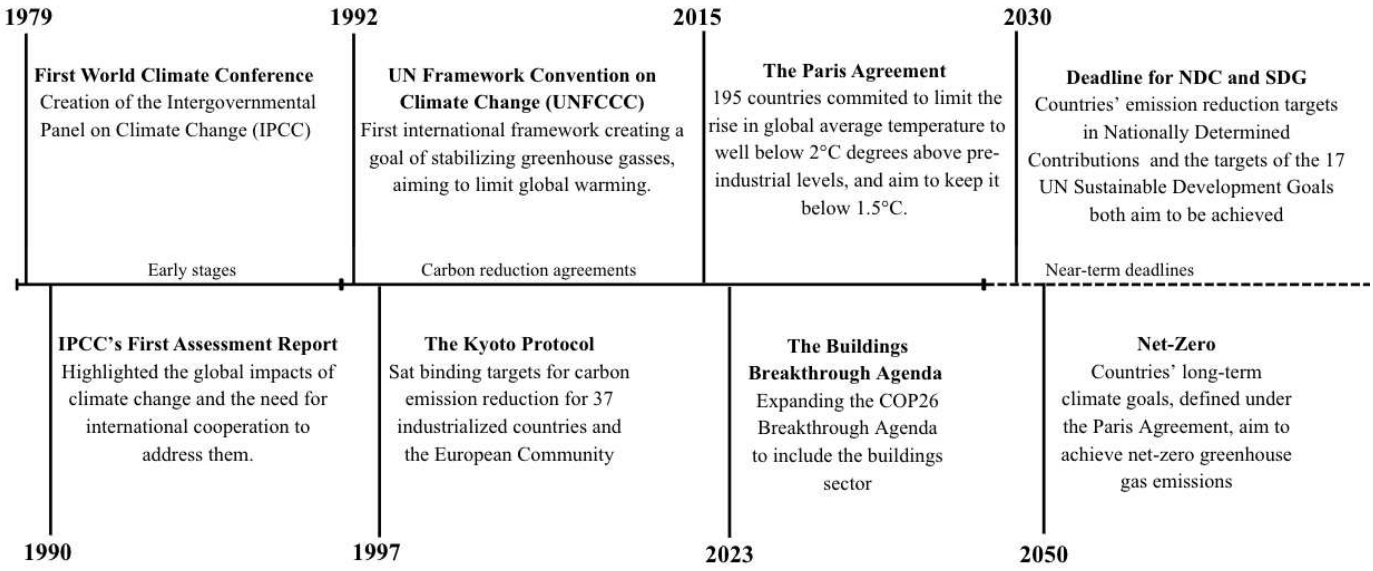

Figure 1 Timeline of Important Agreements and Targets. Categorized in Early Stages, Carbon Reduction Agreements, and Near-Term Deadlines.

2.2.2. SBTi and Net-Zero

The Science Based Target Initiative (SBTi) was established as a collaboration between World Resources Institute, Carbon Disclosure Project, The United Nations Global Compact, and the World Wide Fund for Nature (SBTi, n.d.). Whereas the Paris Agreement defines the overarching decarbonization timeline, the SBTi provides actions for businesses to align their operations with the timeline (UN, n.d.; SBTi, n.d.). The framework places emissions into three different categories based on where they originate from. Scope 1 emissions are direct GHG emissions, whereas scope 2 and 3 covers indirect emissions. Moreover, scope 3 emissions cover all GHG emitting activities happening in the value chain, which is often the scope with the prevalent climate impact (UN, n.d.; SBTi, 2024). In October 2021, the SBTi launched the Corporate Net-Zero Standard to provide guidance for companies committing to net-zero.

2.2.3. Decarbonization Strategies under the European Union

The European Green Deal is EU's overarching strategy to fulfil its climate commitments under the Paris Agreement (European Commission, 2019). It aims to transform EU's economy, including energy, transport and industries, into more sustainable sectors by setting legally binding targets for GHG emissions reduction of at least 50-55 percent by 2030 and climate neutrality by 2050 (European Commission, 2019). Its main objectives for the buildings and construction sector includes *"building and renovating in an energy and resource effective way"* and "*mobilizing for a circular economy".* To support implementation, the EU developed the EU Taxonomy, a classification system providing a shared framework to define which economic activities can be considered environmentally sustainable in a net zero transition (European Commission, 2019). The EU Taxonomy is widely regarded as a potential global standard for sustainability, capable of shaping international norms, clarifying requirements of sustainable economic activities, and directing capital toward green investments.

Through the European Economic Area (EEA), Norway is required to implement relevant EU climate legislations, including the EU Taxonomy and the EU Emissions Trading System (EU ETS). The EU ETS is European Union's emissions trading system, a cap-and-trade mechanism that establishes a market price for carbon emissions (European Commission, n.d.) While the buildings and construction sector is not fully covered by the EU ETS yet, a significant share of value chain emissions, particularly from the production of steel, cement,

aluminium, and other building materials, occurs in relevant ETS schemes (European Commission, n.d). From 2027, the ETS2 carbon trading scheme will be fully operational, introducing carbon pricing for buildings and transport, which, together with the EU Carbon Border Adjustment Mechanism, is expected to incentivize low-carbon materials, circular economy solutions, and reduce fossil energy use (The European Commission, n.d.).

2.3. Carbon Emissions in the Building and Construction Sector

2.3.1. Global Emissions Profile of the Sector

The buildings and construction sector is responsible for approximately 35 percent of all greenhouse gas emissions, making it the sector with the highest global emissions (UNEP, 2025; IEA, 2024). The value chain contains multiple processes such as raw material extraction, building materials manufacturing, on-site constructions, building operations, maintenance, and demolition (Huang et al., 2023). These sequential phases involve distinct actors whose decisions influence the emission profiles. Large emissions occurring in the construction processes are often consequences of decisions made earlier by different actors in earlier processes. The assessment of the building's life cycle (Fig. 2) is defined in EN 15978 / NS 3720 and provide a visual overview of lifecycle stages of a building. The following sections will reference information from figure 2 to help with the understanding of the life-cycle stages and their corresponding emissions.

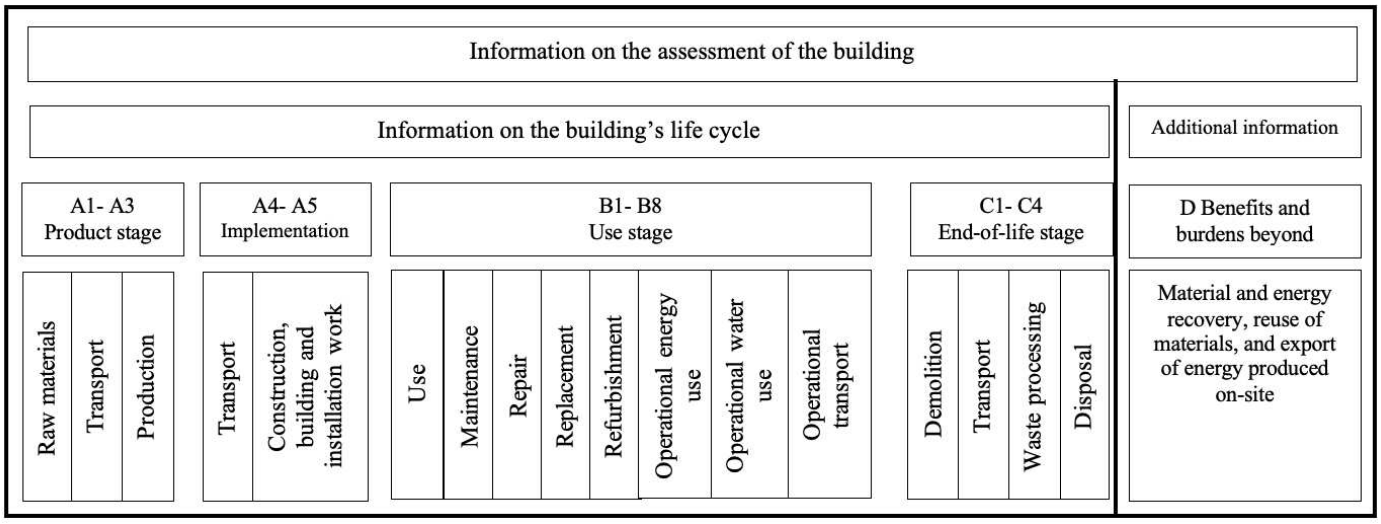

Figure 2 Information on the Assessment of the Building based on EN 15978 / NS 3720

The sector's high emissions mainly stem from extensive resource use in the early stages (A1-A5, see fig. 2), including land-use changes and large energy, water, and material consumption (Wiik, 2025). If operational transport (module B8) is excluded, operational energy use (module B6) and emissions from the production stage (modules A1-A3) accounts for the largest GHG emissions. Especially emission-intensive materials like concrete, steel, and aluminium explains the high production stage emissions (Wiik, 2025). Moreover, the sector's overall emissions profile includes emissions from other sectors involved in processes, such as energy production. Additionally, the sector accounts for a large share of imported emissions[1] as it relies on materials produced abroad (UNEP, 2025). In effect, the sector's fragmented value chain obscures emission responsibility, allowing for poor environmental performance across the entire value chain.

2.3.2. Types and Scale of Carbon Emissions

Commonly, emissions in the buildings sector are classified as either operational or embodied carbon emissions (UN, 2023). Operational carbon refers to emissions generated through the energy use to operate the buildings, including heating, hot water production, cooling, ventilation, equipment operations, and elevator use (mostly in B1-B8). Embodied carbon, as defined by European Standard EN 15978: 2011, includes all other emissions associated with materials and construction processes lasting throughout the lifecycle of a building or infrastructure (European Committee for Standardization, 2011). This includes processes, materials, and products used to construct, maintain, repair, refurbish, or demolish a building.

According to the Global Status Report for Buildings and Construction from UNEP published in 2021, around 75 percent of the sector's emissions came from operational emissions, while the remaining 25 percent from embodied carbon. Moreover, the sector account for around 32 percent of the global energy demand (UNEP, 2025). However, operational carbon emissions are declining as buildings become more energy-efficient, renewable energy use expands, and building performance standards improve. New estimations from UNEP estimates future carbon profile to even out to a 50/50 relationship (GlobalABC, n.d.). Consequently, reducing embodied carbon has become an increasingly critical component of the sector's decarbonization strategy despite representing a smaller share of emissions.

[1] Imported emissions: GHG generated in one country to produce goods or services consumed in a different country. Classified as embodied carbon.

Commonly, the industry uses the Life Cycle Assessment (LCA) method to quantify the environmental impact of a building's life cycle (Wiik, 2025). Defined in the EN 15978, the LCA evaluates impacts associated with lifecycle phases, from products and construction to end-of-life, to identify and provide more environmentally beneficial processes and solutions (Wiik, 2025). Also, the LCA creates the foundation for the Environmental Product Declaration (EPD). EPDs are standardized and verified documents made in accordance with ISO 14025, showing the environmental impact of a product (EPD International, n.d.).

Minimizing construction and demolition waste is critical for advancing sectoral decarbonization as the sector is responsible for one-third of global waste (UNEP, 2025). Despite the potential for lowering embodied carbon emissions by integrating materials into a circular economy, most of the waste is sent to landfills or incinerated (UNEP, 2025, p. 32). This is creating a linear waste management system failing to recover materials or reduce environmental impacts. As the production and construction stages (A1-A5) contribute to the largest share of emissions, reducing material use, energy intensity, and fossil fuel reliance at this stage is important to mitigate the sector's carbon footprint. Hence, achieving net-zero by 2050 requires addressing operational and embodied emissions, imported carbon, and waste through coordinated solutions (GABS, 2021; UNFCCC, 2021).

2.3.3. Carbon Emissions in the Norwegian Buildings and Construction Sector

The buildings and construction sector account for around 16-21 percent of all of Norway's on-land CO_2 emissions (Enova, 2023; Wiik, 2025). As discussed, the sectoral emissions profile is complex due to the number of processes and actors across the value chain. Estimates from Asplan Viak (2022) states that the sector direct emissions (scope 1 emissions) are around 2100 thousand tonnes of CO_{2e} yearly, mainly emerging from the combustion of fossil fuels in construction machinery, vehicles, and building dryers. As Norwegian electricity production is mainly based on hydropower, emissions from electricity consumptions are low. Still, the building and construction sector represents nearly 40 percent of Norway's total energy consumption (Palm et al., 2022). Indirect emissions (scope 2 and 3 emissions) are estimated at around 14–18 million tonnes of CO_2 equivalents annually (Nersund et al., 2024; Palm et al., 2022).

Approximately 40 percent of all materials used nationally are allocated to the buildings and construction sector, reflecting its high material intensity (Palm et al., 2022). On an annual basis, around 70 percent of the sectoral emissions are associated with new construction (Palm et al., 2022), highlighting the critical importance of expanding a building's life cycle and targeting emissions at early stages. Moreover, since 2014, the construction and buildings sector has consistently been the largest waste-producing industry in Norway (SSB, 2024). Material production, transportation, and waste management processes such as landfilling and incineration are significant sources of sectoral carbon emissions. In Norway, most construction waste consist of relatively uncontaminated materials that can be put into a circular economy or energy recovery (SSB, 2024). Total construction waste in Norway increased by around 16 percent from 1.82 million tonnes in 2021 to 2.11 million tonnes in 2022, primarily because of demolition and renovation activities (SSB, 2024). Waste management problems highlight the challenges associated with the sector's reliance on a linear economic model.

2.4. Carbon Emission Reduction Initiatives in the Sector

Based on the overview of the Norwegian buildings and construction sector's carbon emissions and waste profile, it is evident that the sector faces complex challenges covering operational and embodied carbon, and material waste. This part will present key decarbonization methods discussed in the literature and applied in practice.

2.4.1. Circular Economy

The aim of a circular economy is to expand product lifecycles as long as possible by the strategies of reduce, reuse, repair, and recycle (European Parliament, 2023). This includes a shift from the linear "take-make-waste" model that has dominated the buildings and construction sector. Given that a large part of the sector's GHG emissions occur in the production stage of materials (modules A1-A3), circular business practices target the phase by reducing demand for new materials and energy-intensive manufacturing processes. The circular economic model can lower waste generation and embodied carbon by focusing on refurbishment, recovery, and reuse of construction materials.

The transition to a circular economy involves changes in design, production methods, and consumption patterns. From the design perspective, this includes designing buildings for

flexibility and future reuse, enabling components to retain value beyond a single-phase use. At the production and construction stage (A1-A5), circularity requires new procurement practices, like the LCA and EPDs, to support informed decisions on material selection and carbon optimisation. Moreover, circular implementation depends on coordinated systems across the value chain, ensuring traceability, quality, and compliance with technical standards.

As of today, Norway is 2.4 percent circular, a score significantly lower than the global average of around 8 percent (Circular Economy, 2025). The same report highlights construction as the main consumer of raw material (Circular Economy, 2025). Recycling construction and demolition materials could cut the need for virgin resources[2], reduce the material footprint by 15 percent, and increase Norway's Circularity Metric to 7 percent (Circular Economy, 2025). Hence, by prioritizing material efficiency, reuse, and recycling early in the value chain, circular practices can reduce emissions associated with material production and construction significantly, directly addressing one of the sector's primary sources of carbon. The waste hierarchy is often used to show the prioritized options from most to least environmentally sustainable (Fig. 3). In the context of the buildings and construction sector, it illustrates how waste should be managed by prioritising reduction at the design stage, followed by reuse and recycle of materials, with recovery and disposal used only when other options are not feasible.

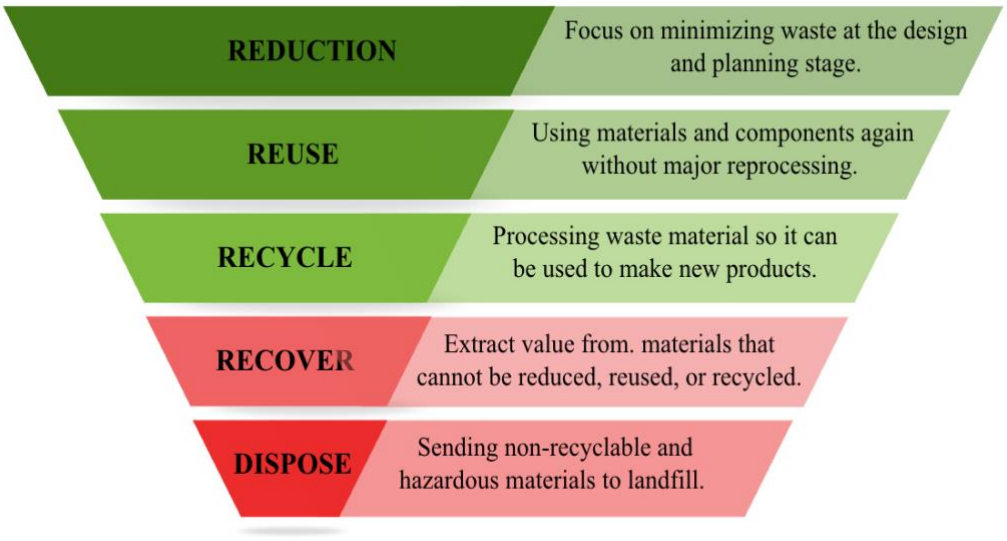

Figure 3 The Waste Hierarchy

[2] Virgin Resources: raw materials extracted directly from nature for the first time and untouched by previous processing.

Effective implementation of circular economy practices in construction requires close collaboration among all relevant stakeholders. Early involvement of clients, consultants, contractors, and waste management companies is important for developing comprehensive waste management plans, ensuring proper on-site sorting, and supporting compliance with environmental certifications. In addition, collaboration provides additional benefits as facilitate responsibility allocation, training and experience sharing, and provision of adequate infrastructure.

2.4.2. Innovation for Reduced Emissions and Circular Practices

Carbon emissions innovations in construction and building aims at creating materials, products, and techniques reducing emissions and improving circularity. Resource efficiency and energy-related innovation are critical for emission reductions, particularly for operational carbon. Historically has energy efficiency been the dominant mitigation strategy in the sector, which is reflected in strict building codes, energy performance standards, and investments in energy-efficient building design and retrofitting (Palm et al., 2022). Technological advances further reinforce these efforts. New technology and data tools like Artificial Intelligence, Machine Learning, Reinforcement Learning, and Building Information Modelling optimize energy use, integrate distributed resources, and enable performance tracking via KPIs (Miljødirektoratet, 2025).

Construction materials can be both capital and energy-intensive to produce, which makes emission reductions demanding without innovation and technological breakthroughs. Material innovation, such as ultra-low carbon and biobased materials, (e.g. cellulose insulation and timber-based solutions) and emerging construction techniques like rammed earth, offer substantial potential to reduce embodied carbon by lower emissions associated with energy-intensive material production (Tekna, 2023). For instance, in the construction of Veidekke's new headquarters, the initial design and material choices resulted in a 65 percent reduction in emissions compared to similar buildings, most of which was achieved through the selection of ultra-low carbon concrete (Veidekke, 2024). Moreover, increased opportunities for material reuse and recycle, including reclaimed bricks, timber, and glass, contribute both to emission reductions and to improve resource efficiency by extending their lifecycles. Innovation in buildings, such as the adoption of lithium iron phosphate batteries for energy storage, also

support emission reduction by enabling more efficient integration of renewable energy sources and improving energy flexibility at the building level (Malling, 2025).

2.4.3. Policies, Frameworks, and Regulations

In summary, a coordinated strategy for decarbonizing the buildings and construction sector is established by international, EU, and Norwegian policies, frameworks, and standards. The following table (Fig. 4) provides an overview of the most important ones for reducing emissions within this sector. Rather that providing a complete list, it highlights the mechanisms considered most relevant and commonly applied for decarbonization efforts.

International	Norwegian
Nationally Determined Contributions: Countries' national climate action plans for GHG reduction commitments in the Paris Agreement **United Nation's 17 Sustainable Development Goals:** Global framework to achieve sustainable development across ESG (Agenda 2030) **Science Based Targets Initiative:** Framework and guidance for emissions reductions **Net-Zero:** Long-term target used in planning and reporting. **European Green Deal:** EU's overarching strategy to fulfil its climate commitments under the Paris Agreement **EU Taxonomy:** Classification system for ESG activities **EU Directives:** Binding legislative acts for EU member states **EU Regulations:** Legally binding acts (Notably: 2024/1781 sets eco-design requirements targeting products' LCA; EU Construction and Demolition Waste Management Protocol) **European Committee for Standardization:** Standard setting body **European Sustainability Reporting Standard:** Serve as the technical framework for operationalizes the CSRD **Corporate Sustainability Reporting Directive:** Regulation for standardized CSR **Energy Performance of Buildings Directive /Energy Performance Certificates:** Rating showing building's energy efficiency **International Energy Conservation Code:** Legally binding minimum energy efficiency standards **International Building Code:** Global building standards **Global Reporting Initiative:** Standardized framework for ESG and carbon reporting **Carbon Risk Real Estate Monitor:** Assess climate and carbon risks in real estate portfolio	**Planning and Building Act:** Law on land-use planning and building regulations **Norwegian Accounting Act:** *3-3.c* states that bigger companies must inform and report on sustainability. The law incorporates the overarching requirements of the EU's regulatory framework for non-financial reporting **Building Technical Regulations (TEK):** Requirements for building design, energy, indoor climate, safety, and technical solutions. TEK17 is the latest updated standard **Norwegian Standard [Norsk Standard] (NS):** Develop and manage national standards (Notably: NS6450 Commissioning and trial operations of technical building installations; NS3935 ITB Standard; NS3720 Calculation method for GHG emissions for buildings) **NS-ISO:** Norwegian adaption of ISO (Notably: NS-ISO 14001: Environmental management standard; NS-ISO 5000: energy management standard; NS-EN 15643: sustainability assessment of buildings and infrastructure, NS-EN 15978: LCA for A1-C4; NS-EN 15804: rules for EPDs; and NS-ISO 21930 international **Law on Sustainable Products:** Enforce criteria for product lifespan, reparability, recycled content, and carbon footprint **Energy Performance Certificates (EPC):** Mandatory in Norway, indicate energy performance and inherent qualities providing a rating from A-G **BREEAM-NOR / BREEAM-NOR In-Use:**

Carbon Disclosure Project: GHG emissions and climate risks reporting system **International Standard for Organizations (ISO):** Global standard-setting body (ISO 14001 environmental management system, ISO 50001 energy performance) **Building Research Establishment Environmental Assessment Method (BREEAM):** Oldest and most used building certification assessing sustainability, energy, and environmental performance. Award points for meeting specific criteria **Leadership in Energy and Environmental Design:** Voluntary green building rating system evaluating energy efficiency, water use, materials, and environmental impact **Life Cycle Assessment (LCA):** Method for evaluating environmental impacts of a product/building through its lifecycle (ISO 14040) **Environmental Product Declaration (EPD):** Standard quantifying a product/service's environmental impact (ISO 14025)	Norwegian adaption with criteria tailored to national context. **Nordic Swan:** Certification scheme for products and buildings. Sets detailed criteria for CO_2 intensive materials, construction and renovation

Figure 4 Overview of the Most Relevant Policy Frameworks, International and National Policies, and Standards

2.5. Drivers and Barriers for Decarbonization

Drivers and barriers for implementation of sustainability commitments are categorized in numerous ways and there is no unified approach to interpret them. The categories applied in this section are derived from the research question. Therefore, the following section synthesizes they key drivers and barriers across the categories of the external categories policies, frameworks, and regulations, and the internal categories of strategy, economic, data and methodology, and behavioural.

2.5.1. External Drivers and Barriers

2.5.1.1. Policies, Frameworks, and Regulations

Regulatory frameworks are a fundamental driver of ESG supporting transparency for market forces and stakeholder pressures (Osei-Kyei et al., 2024). Given the urgency for sustainability transitions, as reflected in EU strategies for a climate-neutral Europe and related policy frameworks, coordinated environmental actions become important (EEA, 2019). Through

binding international agreements such as the Paris Accord, countries within the EEA commit to overarching decarbonization targets that are further reinforced by for instance EU directives and frameworks. These regional policies are further translated into national and municipal measures, exemplified by Oslo's zero emissions construction initiatives. These decarbonization requirements and expectations are operationalized through standards, certifications, and building codes, such as BREEAM-NOR. This ensures that sustainable practices are properly implemented and formally recognized, rewarding compliance and good environmental performance.

Moreover, regulations reduce uncertainty and facilitate collective actions by aligning developers, contractors, suppliers, and investors with climate objectives. Hence, in a fragmented industry with dispersed responsibilities, regulatory mechanisms function as a key enabler of coherence and coordination, providing guidance, incentives, and long-term stability that support the transition toward sustainable and low-carbon construction. By complementing EU regulations with stricter standards, financial incentives, and targeted initiatives, the Norwegian government shapes sector-level strategies and internal organizational practices, as illustrated by the energy efficiency legislation (Tekna, 2023; Enova, 2023). In addition, market forces, including client demand, competitive advantage, and stakeholder pressure, drive firms to adopt sustainable practices (Dharmarathna et al., 2025; UNEP, 2025). Moreover, regulatory frameworks accompanied by financial mechanisms lower transition costs and support investments in low-carbon solutions, for instance through innovation funding and access to green financing (Miljødirektoratet, 2025).

Despite these enabling factors, substantial barriers persist. Complex and evolving regulations creates uncertainty and administrative burdens, slowing decision-making and implementation of low-carbon practices across organizations. The lack of standardization and unclear guidelines further exacerbate these challenges, creating uncertainty for developers and contractors (Nordic Innovation, 2025; Tekna, 2023). In addition, strong competition among industry actors can make it harder to adopt innovative, sustainable practices while remaining economically viable (Nordic Innovation, 2025).

2.5.2. Internal Enablers and Constrains

2.5.2.1. Strategy

According to Porter (1980) requires a successful business strategy a clear choice of where and how to compete, to create a sustainable competitive advantage. Therefore, to succussed with decarbonization, the firm must make sure sustainability becomes a key element of the total business strategy. Today, integrating decarbonization objectives into corporate strategy is essential to achieve both regulatory compliance and maintain a strong market position. Firms failing to adapt their resources, capabilities, and business model to address climate-related risks, low-carbon products, and circular economy solutions risk losing competitive advantage (França et al., 2023). Proactive strategic alignment, on the other hand, can create new sources of value. When setting strategies, such as absolute net-zero emissions targets, firms must integrate sustainability objectives in every strategic decision and organisational activity to ensure successful implementation (Mintzberg, 1994). Importantly, when setting climate strategies, companies should focus on areas changes can make the greatest effect.

Sustainability strategies can also bring significant challenges and barriers. For instance, initiatives at this scale are costly, as carbon reduction processes often require high upfront investments. Implementing specific measures can involve high maintenance costs and organizational complexities, as they demand both time and resources. Moreover, the success of these strategies relies on the organization's ability to coordinate them across the all levels, from leadership to operational teams.

2.5.2.2. Economic

Economic benefits are a major driver of sustainability as strong sustainability profiles is associated with advantages such as higher credibility and improved market valuations (Malling, 2025; Bonini et Gorner, 2011). Moreover, sustainability initiatives can provide cost-saving outcomes such as reduced material and energy use, minimize waste, and address operational inefficiencies. For example, buildings with improved water and energy efficiency reduce operational emissions and costs (Dharmarathna et al., 2025). Circular economy practices, strategic procurement, and low-carbon materials, can be cost-reduction practices while give additional benefits like improve access to capital, boost investor confidence, and create long-term market value (Miljødirektoratet, 2025; Wiik, 2025; Malling, 2025). Investment in low- and zero-carbon procurement, such as electrical sub-meters or electrified

construction machinery, further lower operating and maintenance costs over time (Osei-Kyei et al., 2024; Dharmarathna, 2025). In Norway, government incentives, subsidies, and innovation funding make low- and zero-carbon investments economically attractive, especially under stricter building codes and energy performance requirements (Enova, 2023; Solnørdal & Foss, 2028).

However, several economic barriers can hinder the adoption of low-carbon practices. High upfront costs of innovative materials and green technologies, first-mover disadvantages, long pay-off periods, and the risk of stranded assets, can deter investments (Nawarathna et al., 2021; Tekna, 2023). Split incentives, where the actor bearing the cost does not directly benefit, further complicates financial decision-making (Lindkvist et al., 2014; Melvin, 2018). In Norway, the small market size has given limited data which makes it difficult to benchmark performance across buildings and projects, which has reduced the confidence in linking certification or energy labelling to financial benefits (Malling, 2025). Moreover, geopolitical uncertainty affects financial risks as firms face unpredicted energy prices, supply chain disruptions, and potential regulatory changes.

2.5.2.3. Data and Methodology

Access to digital tools and automation, including smart systems, digital twins, and energy monitoring systems, allows firms to effectively track energy use and operational efficiency, supporting informed sustainability decisions (Dharmarathna et al., 2025). For example, real-time data on scope 1-3 emissions enable accurate monitoring, reporting, and assessment of carbon reduction initiatives, allowing organisations to prioritize actions with the greatest impact (Dharmarathna et al., 2025). Moreover, national tools and centralized databases provide standardized reporting frameworks, improving consistency and comparability across projects (Enova, 2023).

Yet, the implementation of new methodologies faces several challenges increasing risk and complexity. Inconsistent and difficult-to-apply methods can cause errors, uneven data quality, and hinder emissions reporting and certification processes (Nordic Innovation, 2025). For example, faulty meters or missing CSRD data reduce tracking, compliance, and transparency (Malling, 2025). New technologies can raise costs and uncertainties around their feasibility and system interoperability, complicating adoption (Nordic Innovation, 2025; Bonini et

Gorner, 2011). In Norway, builders and designers often lack experiences in sustainable construction resulting in practical and infrastructural limitations (Tekna, 2023). Moreover, insufficient infrastructure and availability for electric machinery constrains scalability needed to achieve zero-emission sites (Enova, 2023; Tekna, 2023; Nordic Innovation, 2025).

2.5.2.4. Behavioural

Behavioural change in business shapes employees' actions, attitudes, and habits, further enabling effective implementation of strategies and a culture working for continuous improvement. This can help a business achieve higher performance, innovation, and organizational success. Both individual and organisational leadership plays a critical role in enabling behavioural changes within a company. For instance, designers and contractors who understand life-cycle carbon impacts are more likely to specify low-carbon materials and construction methods. Moreover, high industry standard shape behaviour, as seen in the example of when low-carbon design and construction practises are perceived as industry standards, adoption increases. Gaining competence in sustainability and decarbonization requires employees to be motivated and actively engage in learning new technologies, methods, and practices that support environmentally responsible operations. As construction projects are high-risk and high cost, actors tend to take risk aversion to avoid solutions that could provide more risks. In Norway, it's been a general slow industry uptake on sustainability initiatives (Tekna, 2023). Moreover, the risk aversion is reinforced by the Norwegian public procurement culture. As a large share of construction projects are public, companies fear scrutiny, audits, or criticism.

3. Methodology

This chapter presents the research methodology applied in this study. First, the research framework, approach, and strategy are outlined. Second, the data collection process, including the interview guide and the selection of informants are described. Third, it discusses the use of primary and secondary data, data analysis, and the consideration related to reliability and validity. Finally, a table summarizing the methodical components is provided.

3.1. Research Framework – Saunders' Research Onion

The onion framework for business students is a theoretical framework for research in business and social science. The framework provides a structured, step-by-step guide that supports the development of a coherent and methodologically consistent research design. By systematically progressing through each layer, such as research philosophy, methodological approach, and data collection techniques, researchers are encouraged to make deliberate and well-informed choices. This process enhances the overall clarity and structure of the research. Furthermore, it contributes to the credibility and reliability of the findings by ensuring that all methodological components are logically aligned (Saunders et al., 2016).

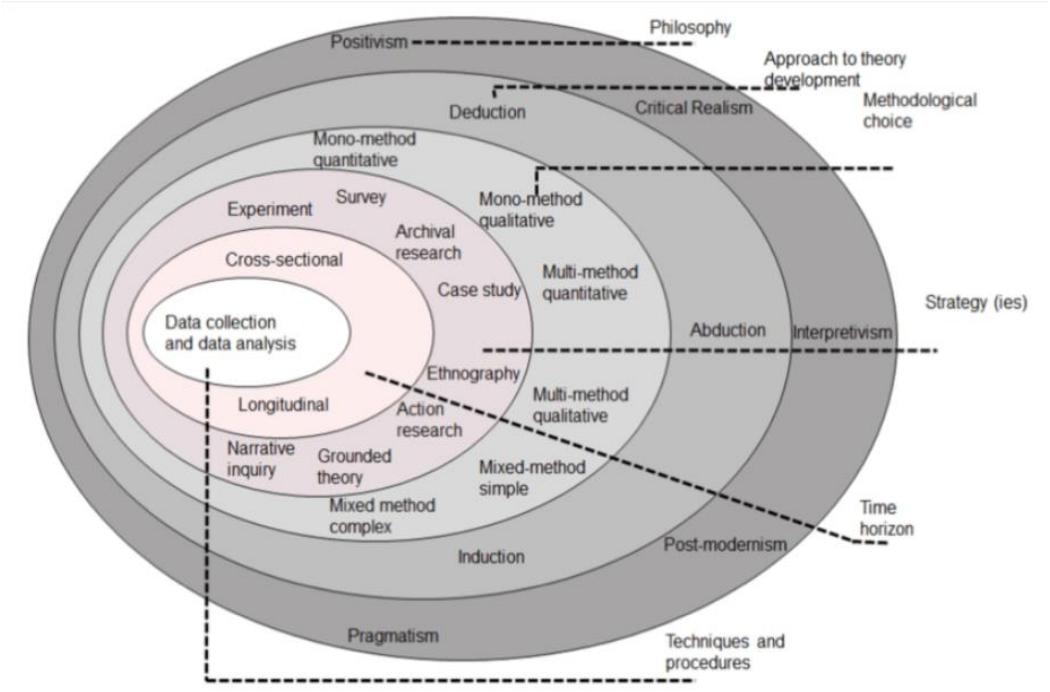

Figure 5 Saunders' Research Onion Framework

3.2. Research Approach

Saunders et al. (2019) states that a research approach can be either inductive, deductive, or abductive. The inductive approach develops theory through systematic analysis of empirical data, the deductive approach draws conclusions from established theoretical premises, while the abductive approach integrates both by using data to explore phenomena, identify patterns, and construct or refine theoretical explanations (Saunders et al., 2016). This study adopts an inductive research approach to collect data exploring decarbonization in the buildings and construction sector. An inductive approach is useful in sustainability transition strategies where practices and standards change rapidly, and where stakeholders' experiences may differ significantly given regulatory, economic, data and methodical, and behavioural constraints. By grounding the analysis in the perspective of those involved, the inductive approach allows for the development of context-sensitive insights to enablers, barriers, and strategies for decarbonization in the buildings and construction sector. This ensures that the theoretical contributions build on real-world practices and challenges.

3.3. Research Strategy

This study uses an exploratory research design, which is appropriate when aiming to get in-depth insights by asking open-ended questions (Saunders et al., 2009). By doing this, the research seeks to identify underlying mechanisms and deepen knowledge in areas with limited existing theory. The thesis uses a qualitative research methodology, primarily based on semi-structured interviews. Semi-structured interviews is a valuable method to uncover nuanced understandings and practical knowledge that may not emerge from more structured or quantitative approaches. The research takes a cross-sectional approach, focusing on a particular phenomenon at a particular time (Saunders et al., 2019).

3.4. Data Collection

The research's first phase was to gain a better contextual understanding by reading existing literature on topics related to the Norwegian buildings and construction industry. Secondary sources were obtained from online reports (e.g. sustainability, government, and annual reports), academic articles, and company websites. Additionally, company websites were useful for interview preparation, verify information discussed during interviews, and gain more information around discussed topics. Academic literature provided theoretical

frameworks and helped deepen the understanding of key topics such as sustainable development, decarbonization, and relevant regulatory frameworks, including their intended functions and limitations. The most important and relevant findings from this phase are found in the literature review.

To collect primary data, this study employed semi-structured interviews. The method aligns with both the exploratory purpose of the research and its quality design. For this research, individual interviews were chosen as most appropriate, and the interview participants chose between in-person or digital meetings. Due to the flexibility of video interviews, this option was preferred by three of the participants. The other interviews were conducted at the participants' workplaces. The interviews aimed to get in-depth insights into how actors across the buildings and construction sector perceive challenges and opportunities related to sustainable development and the transition toward decarbonization. The semi-structured format provided balanced thematic consistency and conversational flexibility, allowing for guidance around the discussion on core themes, while remaining responsive to issues raised spontaneously by the participants. This was essential for capturing interviewees' experiences, sector-specific knowledge, and contextual reflections. Moreover, it provided the opportunity to tailor follow-up questions in real-time, based on the interviewees' responses and areas of specialization, thereby enriching the quality and depth of the data collected. Conducting interviews with participants from different companies and with different positions resulted in varying perspectives on the same questions.

3.5. Interview Guide

Each interview began with the participant introducing themselves, the company, and their experiences within the field. This provides contextual understanding in which their views are formed. Importantly, Saunders et al. (2019) states that beginning the interviews with an introductory phase can establish a comfortable atmosphere. The interview guide consists of six core questions posed to all participants, followed by a set of company- or role specific questions. Beginning each interview with identical initial questions creates a consistent baseline that makes participants' responses easier to compare and analyze. After the interviews, the data was structured into discrete thematic sections.

The interview questions are shown in the table below.

Interview Questions	
1	How does sustainability frameworks, regulations, and reporting influence the company's operations in climate actions and in relation to reducing carbon emissions?
2	In your experience, what are the main enablers that support the adoption of low-carbon materials, circular economy practices, and energy-efficient building operations?
3	What do you perceive as the most significant barriers, whether regulatory, financial, technical or organizational?
4	To what extent does collaboration across the value chain facilitate or hinder progress towards climate actions and carbon reductions?
5	How does challenges related to data availability, emissions measurement, and reporting methodologies impact the ability to track and manage operational and embodied carbon?
6	Looking ahead, what measurers or changes, whether in regulations, reporting standards, or industry practices, would most effectively accelerate the net-zero transition in Norway's buildings and construction sector?

3.6. Selection of Informants

To ensure a collection of rich, context-specific, and experience-based insights, several criteria were established to select suitable participants. The participants were mainly recruited through a chain-referral processes, also called a snowball sampling. By relying on referrals from initial informants, snowball sampling enabled access to participants with high industry knowledge and with direct experience on the sector's decarbonization transformation. The sampling method was chosen because the study examines specialised knowledge situated in a relatively complex profession and discusses a rapidly changing and relatively new topic. The following table provides an overview of the interview participants, their affiliated company, and the participant's position within the company.

Interview #	Company	Organization Type	Position of interview
1	Implement Consulting Group	Consulting firm	Partner, Entrepreneur, former head of ESG at KPMG, Co-chair UNEP
2	Bane Nor	Real Estate Developer	CSO
3	Bane Nor	Real Estate Developer	Industry Expert
4	Construction City	Innovation Hub	Project leader climate and environment
5	Storebrand	Investor	INED (Independent non-executive Director, former CSO at Allianz SE)
6	Veidekke	Contractor	CSO

To ensure in-depth insights while allowing for comparison and capturing different expert perspectives, six interviews were conducted. The participants represent different roles and segments, including consulting and advisory, investor, contractor and construction, project execution, property development, innovation and collaboration facilitation, and strategic sustainability expertise. The participants gave insights across multiple dimensions, including regulatory challenges, operational and project-level sustainability practices, sustainable development strategies, and collaborative innovation and knowledge sharing. The table below summarise the date, length, and format for the interviews.

Interview #	Date	Length	Format
1	3.12.2025	35 min	Digital
2	4.12.2025	1 hour	In-person
3	4.12.2025	1 hour	In-person
4	3.12.2025	40 min	Digital
5	3.12.2025	40 min	In-person
6	17.12.2025	30 min	Digital

3.7. Data Analysis

The data was analysed using Braun and Clarke's (2009) *Phases of thematic analysis (see Fig. 6).* The thematic analysis followed an iterative approach, in which the new and existing material was repeatedly read, creating a non-linear process, moving back and forth between transcription, coding, and theme development. Each interview was recorded and transcribed. Then, the transcription was proof-read and complemented by notes taken during the interviews. The final transcription document was uploaded to an artificial intelligence tool to create a coding table of the findings. The table was subsequently manually reviewed, refined, and finalized to ensure accuracy, contextual relevance, and alignment with research objectives.

Figure 6: Phases of Thematic Analysis (Braun & Clarke 2006/2009)

Subsequently, inspired by the Gioia Methodology, findings from the interviews were categorized in 1st order concepts, 2nd order themes, and aggregate dimensions (visualised in fig. 7), providing a structure to find and analyze patterns, relationships, and insights across

participants. This method follows an inductive process, building on principles of thematic analysis. This includes moving from participants' own words to broader, theory-based themes. It is especially useful for exploring complex and evolving issues, as it allows new insights to emerge directly from the data. By maintaining a clear link between raw data and interpretation, the approach enhances the credibility and analytical objectivity of the study.

Figure 7 Coding Table of 1st order concepts and the six identified 2nd order themes

The full coding table can be found in the appendices.

3.8. Reliability and Validity

Reliability refers to the consistency of results if the study were repeated. Given that the research is based on qualitative interviews, it is not designed to be replicated. Variations may occur as it captures participants ideas and opinions of the subject at that time (Saunders et al., 2019). Detailed descriptions of the research strategy and data analysis is provided to support the reliability of the study. To address participant bias, the risk of false or influenced responses, I emphasized the possibility of anonymity of answers. Qualitative analyses are perceived to be less objective. Consequently, it is important to strive for objectivity

throughout the research (Saunders et al., 2019). To minimize researcher error, I carefully designed the study, prepared for each interview, and scheduled them for suitable times. For the digital interviews, the duration was set in advance to 30-45 minutes, allowing for a thorough exploration of participants' perspectives without risking loss of attention. To further reduce researcher bias, I followed a standardized interview guide and maintained a neutral stance throughout each conversation. In addition to the recording, I took detailed notes during and immediately after the interviews to ensure insights was captured and available for analysis. Validity refers to how well the research measures what it is intended to examine. To strengthen validity, multiple data sources were used, including interviews, company websites, and public reports, to provide a more accurate and comprehensive understanding of sustainability practises and decarbonisation in the Norwegian building and construction sector. Moreover, cross-checking interview information with additional sources strengthened validity.

3.9. Overview of Methodology

The following table summarize the study's methodology.

Area	**Methodological Choice**
Research Approach	Inductive
Research Purpose	Explanatory
Research Method	Qualitative
Time Horizon	Cross-sectional
Primary Data	Semi-structured interviews
Secondary Data	Reports, academic articles, companies' sites and other websites

Figure 8 Overview of the Methodology

4. Findings

The following chapter presents the findings, categorized after the 2nd order themes identified from the Gioia inspired coding table. The first section examines the findings related to external category of (A) Regulatory, Reporting, and Frameworks, while the second section examines the findings related to the internal categories of (B) Strategy, (C) Economic, (D) Data and Methodologies, (E) Behavioural, and lastly the external and internal category of (F) Future Outlook. All data in this section was gathered from the interviews, thus, there are no citations from literature.

4.1. Category A – External: Policies, Frameworks, and Regulations

Core insight: Sustainability reporting and regulatory frameworks drive climate action, but also introduce complexity and administrative burden, particularly for small and medium-sized actors.

Driver A-1: Drivers of Climate Initiatives and Strategies

All participants highlighted sustainability frameworks and regulatory developments as significant factors for shaping how companies operationalize climate initiatives and carbon reduction strategies. Participant 1 emphasized that "*compliance is increasingly linked to long-term transitions goals and everything must in some way be linked to the UN Sustainable Development Goals, the 2030 targets, and the 2050 net-zero ambitions".* According to Participant 1, the regulatory wave triggered by the EU Green Deal has: "*created enormous amounts of new laws and regulations, which ultimately aim to improve European competitiveness by ensuring that firms better understand climate-related risks."* Participant 4 emphasized a complementary dimension: *"frameworks and regulations serve not only as compliance mechanisms, but as catalysts for collective action on complex climate challengers."* Participant 5 emphasizes*: "the transparency created with reporting help investors making more informed decisions when investing in the buildings and construction sector."*

Driver A-2: Providing Valuable Experiences

Participant 6 highlighted the value of previous regulatory frameworks in supporting their sustainability efforts, giving the example that the company began early with GRI reporting and has now incorporated the EU Taxonomy and CSRD requirements. Participant 6 emphasized "*there was a lot to manage last year when the changes came into effect, but now we have a good flow, with a solid knowledge base allowing us to efficiently navigate current and upcoming reporting requirements."*

Barrier A-1: Rigid Regulatory Frameworks

Several interviewees noted that policy requirements and certification schemes occasionally direct attention toward measures that are not necessarily optimal from a sectoral or climate perspective. For example, Participant 2 pointed out that BREEAM criteria reward the reuse of materials from the existing building, but do not allow the use of reclaimed materials from

other projects to earn equivalent points. While this may encourage circularity within a single site, it does not always result in the most efficient environmental outcome. Moreover, Participant 4 stated: "*circular business models often face barriers because regulations do not fully accommodate innovative solutions."*

Barrier A-2: Regulatory Instability Undermines Effective Implementation

Participants highlighted concerns regarding the stability and coherence of regulatory frameworks such as the CSRD and EU Taxonomy. According to Participant 4: *"small and medium-sized companies invest significant time and resources in learning how to comply with the evolving requirements, only for many of these regulations to be revised or removed.*" Participant 1 similarly agreed by stating *"this lack of continuity leads to inefficiencies and wasted investment.*" Both participants cautioned that frequent regulatory changes risk creating tiredness within organizations, potentially shifting sustainability from being perceived crucial, to becoming a burdensome compliance exercise. Participant 5 stated: "*simplification in CSRD coming with the Omnibus changes has benefits, but the changes also reduce the credibility of the regulator when changes are made too frequently."*

4.2. Category B – Internal: Strategy

Core insight: To maximise the impact of sustainability efforts a company should integrate sustainability strategies into its core business. By identifying where these efforts can make the greatest difference and aligning strategy accordingly, the outcomes are significantly improved.

Enabler B1- Aligning Actions with Company Strategy

There is a strong agreement among all interviewees that companies should prioritize sustainability efforts where they generate the highest environmental and strategic value. Participant 1 emphasized this by saying: "a *company must determine which issues are most closely aligned with itself and its strategy."* Moreover, the participant stated that: "*Given that sustainability frameworks are broad and sometimes prescriptive, firms must assess the cost-benefit implications of different measures and focus on those that produce meaningful outcomes in their specific context."* Participant 2 further stated that: "*climate measures like adopting low-carbon materials or piloting carbon capture technologies often succeed not because they align neatly with certification schemes, but because companies are*

reputationally motivated and financial incentives are available." Participant 4 emphasized the importance of: "*aligning efforts with topics like climate, nature, waste, and supplier chain issues, integrating sustainability into the core business strategy not treating it as a standalone function."* All participants emphasized that the strategy prioritization must be guided by industry knowledge, rather than external targets only. In this context, interviewees underscored that companies often have the best understanding of where climate actions yield genuine benefits.

Barrier B1 – Priority of Short-Term Strategy

All participants agreed that lack of focus and short-term financial priorities slow sustainability adoption. Participant 1 emphasized that quarterly pressures can override long-term goals. Moreover, Participant 6 stated: "*Short-term strategies are often prioritized in this sector because of project-based contracts, tight budgets, and time constraints. Actors focus on cost and delivery."* Participant 5 stated "*With the ESG Backlash of the last year, there is a risk that companies will down prioritize decarbonization in the short term."*

4.3. Category C – Internal: Economic

Core insight: Economic instruments and incentives significantly influence adoption of sustainable practises, particularly when they are aligned with strategic and operational benefits.

Enabler C-1: Green Financing and Incentives

Participants highlighted financial mechanisms such as preferential interest rates for certified projects reduce barriers for adoption. Participant 4 noted that Innovation Norway[3] and research funding help overcome short-term resource limitations. Moreover, Participant 2 highlighted that: *"The risk appetite is so much higher for green projects, and tenants demonstrates a greater willingness to pay."* Participants highlighted that testing and implementing new, more environmentally friendly innovative solutions are costly, making financial support crucial for successful adoption.

[3] Innovation Norway: Norwegian Government's instrument for innovation and development of Norwegian enterprises and industry

Enabler C-2: Cost-Sharing

Moreover, cost-sharing arrangements are described by all participants as a key enabler in the process, as they allow for actors to distribute both financial effort and risk. Participant 1 highlighted that: "… *this will reduce first-mover disadvantages*." While Participant 4 stated: *"Cost-sharing among contractors, developers, tenants, and governments would lower resistance to low-carbon innovation. By sharing costs and risks, no single actor bears a disproportionate burden, which in turn mitigates concerns related to uneven competition and uncertain economic returns."*

Enabler C-3: Financial Gains

Referring to sustainability strategy in business and implementation of carbon reduction strategies, Participant 1 stated: "*the people who work very systematic and well with this, they earn a lot of money by doing it. For instance, due to their savings on energy efficiency. They integrate sustainability from the design phase, investing early in climate and nature risk assessment that prevent costly impact later. By understanding physical climate risks upfront, companies can avoid financial losses and operational disruptions that would have occurred had they not embedded this competence before construction begins."* Moreover, Participant 1 and 2 highlighted the importance of avoiding stranded assets[4] due to not investing in required sustainability efforts. Participant 6 highlighted that focus on carbon reduction from the design phase, and cost-benefit analysis, has proven in their projects to reduce costs and carbon emissions.

Barriers C-1: Misaligned Financial Incentives

Despite available technology and solutions, participants reported that misaligned incentives hinder actions. Participant 2 mentioned that energy efficiency often depends on tenant engagement, yet, contracts rarely incentivize desired behaviour. Participant 1 emphasized that companies hesitate to invest in solutions without clear economic returns or supportive financial instruments, limiting implementations of reduction measurements such as circular materials and low-carbon materials. Participant 1 stated: *"If sustainability is perceived merely as a recurring cost on the quarterly report, it becomes difficult to justify. However, if customers are willing to pay a premium, for instance, because circular materials are used throughout a building, the situation change. Currently, given the political climate and the*

[4] Stranded asset: Assets worth less than expected. In the context of sustainable transitions, the discussion of stranded assets is often related to companies closely depending on fossil fuels.

challenging economic period, consumers' willingness to pay for such sustainable features is unfortunately limited."

4.4. Category D – Internal: Methodology and Data

Core insight: Strong data collection, measurement, and methodological frameworks enable effective decision-making and scenario planning for carbon reduction.

Enabler D-1: Data-driven Decision Making

Participants highlighted that linking economic and physical emissions data supports planning and risk assessment. Participant 2 described project-level data collection (e.g. EPDs, contractor inputs) as key for scenario modelling. Moreover, the participant emphasized that: *"In my opinion, Norway has strong methodological capacity and data availability… it is easy to obtain EPDs from manufactures and if one specific producer does not have one, one can easily find a substitute and make comparable data sets*." Moreover, Participant 4 stated: "*AI and digital tools enable measurement of embodied and operation carbon."* Lastly, Participant 1 emphasized that visualizing outcomes enhances engagement and strategic focus.

Enabler D-2: Methodologies and Standardization for Sector Learning

Participants reported that standardized approaches, such as EPDs and carbon accounting frameworks facilitate comparisons and adoption of best practises. Participant 2 and 4 both stressed that learning from pilot projects and adapting international solutions to the Norwegian context improves the sector's knowledge base. Also, participant 3 highlighted the role of help from certification schemes stating: *"In our experience, especially BREEAM are excellent at helping us understand how to report and how to improve, and it helps with the motivation."* Participant 5 stated: "*As an investor with high sustainability ambitions, we prioritise investing in companies with high data and methodology capacities."*

Barrier D-1: Data Gaps and Complexity

Participant 2 highlighted that successful circular economy and carbon reduction projects require aligned data and methodological consistency across multiple actors. Participant 4 exemplified this by saying: *"Small firms face high costs and resource demands due to diverse data requirements and constantly changing reporting standards like the CSRD. Frequent adjustments consume time and investment with little return, proving burdensome for smaller*

businesses." Participant 2 stated: *"due to risks, board members want the company to be in the front but not as the leading company."*

4.5. Category E – Internal: Behavioural

Core insight: Effective sustainability implementation relies on willingness to change, organizational capabilities, and cross-sector collaboration leading to knowledge sharing.

Enabler E-1: Change in Behaviour

There is a noticeable shift occurring within the building and construction sector as the industry appears to be opening up and becoming more collaborative. This perception was echoed by all participants, suggesting a broader recognition that increased knowledge sharing and openness are becoming integral to sector development. Participant 3 highlighted this as one of the main enablers to advancing and scaling carbon reduction initiatives.

Enabler E-2: Collaborative Networks and Knowledge Sharing

Participant 4 highlighted sector-wide networks, workshops, and cluster initiatives as enablers for addressing "*wicked problems*" in construction. The participant stated: "*sharing lessons from pilots, including failures, creates learning across developers, contractors, and architects."* Participant 2 stressed that: "*ecosystem alignment across contractors, suppliers, and financial institutes is essential for circular economy initiatives".* Participant 4 highlighted the importance of adopting a global perspective to address climate change and technological innovation, arguing that sustainability regulations create attention and drive cross-sectoral collaboration. Lastly, Participant 4 stated that: *"frameworks increase organizational commitment, particularly when actors must co-operate across disciplines to address emissions in sectors where challenges cannot be solved individually."*

Enabler E-3: Healthy Competition between Actors

All participants talked about behavioural changes within the sector and a healthier competition between actors. Participant 6 highlighted: "*The industry is now driven by a desire for high standards and benchmarking against one another."* Moreover, Participant 1 noted that: *"peer benchmarking creates sector momentum."* Participant 3 further illustrated this drive by saying: "*We want to be the actors receiving BREEAM Excellent or BREEAM*

Outstanding." Participant 5 stated: *"We want to be leading in the financial industry, setting ambitions for how we invest."*

Barrier E-1: Conservative Mindset

All participants mentioned that the building and construction sector is a conservative and slow-paced industry. Participant 4 highlighted this by saying: "*The construction sector has a fragmented value chain with little tradition of collaboration, despite high interdependence among actors. The sector faces major common challenges, including the green transition, low production growth, weak reputation, and recruitment difficulties. Companies rarely share information. Many firms independently test similar solutions, which is costly and resource intensive."* Attitudes toward circular economy and innovative solutions varied, but all the interviewees stated they were hoping for a rapid change in the industry, with the time pressuring for tight deadlines (e.g. UN SDG 2030; Net Zero 2050).

4.6. Category F – External and Internal: Future Outlook

Core insight: Accelerating the transition to net-zero requires policy evolution, market mechanisms, and sectoral momentum, alongside continued collaboration, knowledge sharing, and visibility.

Enabler F-1: Policy and Regulatory Signals

Participants agreed that planning and buildings laws enabling net-zero requirements are crucial drivers, but stronger policies and regulations are needed. Participant 2 emphasized that carbon tax and carbon pricing are good tools that should be used more to incentives reduction. Both Participant 1 and 2 noted that attention to transition risks, such as stranded assets, encourage proactive climate actions. Moreover, Participant 5 told that: "*Finance Norway has the idea of including CSRD in the Brønnøysund [5]Register, which would centralize sustainability reporting, making compliance and access to ESG data more efficient. This would result in greater transparency, comparability, and accessibility of corporate sustainability information for stakeholders."*

[5] Brønnøysund Register: Norwegian Government agency that managers official registers for businesses and legal entities.

Enabler F-2: Visibility, Reputation, and Competitive Pressure

Participants reported that demonstrating sustainability progress relative to peers and competitions generates momentum. Participant 1 highlighted that benchmarking, public visibility, and sector reputation influence adoption. Participant 4 added that showing success in pilot projects encourages other actors to follow.

Enabler F-3: Knowledge Sharing and Cooperation

Participants emphasized that seeing the benefits of collaborations encourages further cooperation. Sharing experiences allows other firms to gain advantages, examples mentioned includes improved projects efficiency and cost saving. Moreover, participants brought up collaborations as an important enabler to help raise standards, improve the industry as a whole, and improve motivation to showcase how stakeholders can drive these improvements.

Barrier F-1: Behavioural and Market Constraints

Adoption depends on actors' willingness to pay for sustainable solutions and accept long-term investments. Participant 2 emphasised that low awareness, risk aversion, or misalignment between stakeholders can slow progress, even when financial and regulatory conditions are favourable. Despite this, Participant 5 highlighted that: "*in boards these days, the dilemmas around how to best move ahead with decarbonization and sustainability in general, given the ESG backlash as of the last year, is increasingly being discussed."*

5. Discussion

This chapter discusses the findings in the previous section considering existing research to answer the study's overarching research questions. The analysis shows that carbon reduction strategies in the Norwegian construction and buildings sector emerge from regulatory pressure, market expectations, technological innovation, and organisational attitudes. The discussion is structured according to the two research questions.

5.1. The Influence of External Policies, Frameworks, and Regulations

How do international, EU, and Norwegian climate policies, frameworks, and regulations create decarbonization requirments, expectations, and strategies in the Norwegian buildings and construction sector?

Regulations are important to set requirements and expectations for decarbonisation. However, there is no uniform effect of the regulations. Some frameworks stimulate innovation and investment, whereas they can also create uncertainty, administrative burdens, or practical constraints that slow adoption.

5.1.1. The Role of Sustainability Reporting

International agreements and EU-level directives create global, long-term expectations of decarbonisation by setting legally binding targets, provide guidance for actions, and establish overarching goals. Both the literature review and the participants attribute the Agenda 2030, EU Taxonomy, and the CSRD as particularly strong drivers. These frameworks signals that future competitiveness require alignment with climate neutrality and resource efficiency. Firstly, the findings align with existing literature showing that regulatory signalling reduces financial uncertainty and guides investment choices in greener investments and technologies (Palm et al., 2022; Solnørdal & Foss, 2018). The participants stated that EU frameworks enhance their ability to plan long-term due to increased predictable requirements on energy efficiency, embodied carbon, and reporting. This is consistent with theoretical expectations that stable regulation reduces transition risk and encourage proactive compliance behaviour. Moreover, the study finds reporting as a driver of decarbonization actions by making emissions transparent, enable benchmarking, and reduce information asymmetry between companies and investors. Findings from the interviews shows that companies are motivated by reaching standards and getting certifications. Moreover, policies are an important driver for circular economy practices. Collectively, climate policies, frameworks, and regulations require firms to ensure sustainable practices are embedded across the building lifecycle.

However, the findings shows that policy uncertainty creates transition risks. This is aligned with research in the literature review indicating that climate policy uncertainty can adversely affect investor confidence when regulations evolve rapidly or lack coherency across jurisdictions. Moreover, uncertainty and inconsistencies in reporting methodology makes companies hold back on investments because previous experiences show that, in some cases, resources, time, and money have been spent on regulations that were impermanent. Moreover, inconsistencies in methodologies make companies prone to mistakes when implementing them (Nordic Innovation, 2025; Tekna, 2023). Participants stated uncertainty as a factor

negatively affecting businesses' opinions and willingness to spend time and money on sustainability efforts.

5.1.2. Norwegian Regulation

Regulations act as a major driver by creating predictable expectations for emissions reduction. The study shows that national regulation reinforces EU ambitions, however, often with stricter requirements and shorter timeframes. Examples mentioned in the interviews includes energy efficiency, materials, and machinery electrification. Participants stated that they view regulations as minimum requirements and that they often operate with higher standards. The literature consistently finds that effective climate transitions require both carrots and sticks. The interviews confirmed this by highlighting that both regulations and requirements, and incentives and benefits are important enablers to implement decarbonization efforts.

However, a problem identified in the literature and interviews are the adoption of sustainability practises that introduce high compliance cost and administrative complexity, particularly for small and medium sized actors. Identified examples of this are:

- The point system in BREEAM
- Strict rules on material reuse slow down circular practises
- Insufficient strong or predictable carbon pricing signal

These findings reflect the literature identifying Norway's regulations as both an accelerator and a constraint, depending on the maturity of the solution (Nordic Innovation, 2025). Together, the findings suggest that sustainability reporting is most effective when supported by clear methodological guidelines. Moreover, the reporting system can be complex, making it harder for businesses to adapt to sustainability practises or getting enough recognition for the efforts they are doing.

5.2. Identified Internal Enablers or Constrains

How do the internal factors of strategy, economic, data and methodology, and behavioural enable or constrain the implementation of decarbonization in the Norwegian construction and buildings sector?

The drivers and barriers identified in this study confirms much of the existing literature, but also highlight several dynamics specific to the Norwegian context.

5.2.1. Strategy

The findings from the interviews indicate that alignment between sustainability efforts and the company's core strategy is a main driver for effective carbon reduction. Companies in this study all highlighted the importance of prioritizing actions that generate highest strategic value. This aligns with literature emphasising strategic fit as a determinant for successful sustainability implementation (Dharmarathna et al., 2025). While regulatory pressure and reporting frameworks provide guidance and set long-term expectations, companies that internalize sustainability goals within their strategic planning are better to translate them into meaningful operational practices. Participants highlighted that integrating climate actions into design, procurement, and supply chain decisions creates measurable benefits and enhance long-term competitiveness. This is consistent with studies showing that internal strategic alignment reduces transition risks and improves the efficiency of carbon reduction investments (Palm et al., 2022).

5.2.2. Economic

Findings from the interviews shows that cost saving remain a dominant driver, which aligns with broader research showing that economic feasibility is a precursor to environmental actions (Miljødirektoratet, 2025). Participants consistently highlighted subsidies and innovation funding as important tools to significantly lower the financial barriers to adopt new technologies and methods. Participant listed these as important outcomes of adopting decarbonization measures:

- Reduced material demand and construction waste
- Decreased operational costs through energy efficiency
- Increased rental yields and occupancy rates in sustainable buildings
- Reduced financial risk and improved access to capital

A noteworthy insight from the interviews, was the increasingly use of EPDs, data and technological tools, and experience sharing to identify the most cost-efficient, low-carbon

materials. This shows the importance of evidence-based decision-making, supported by improved data availability and increased familiarity with lifecycle assessment methodologies.

5.2.3. Data and Methodology

Reliable data and standardized methodologies are essential enablers for carbon reduction in the sector. Participants emphasized that accurate data collection, transparent reporting, and consistent frameworks improve decision-making and enable scenario planning for low-carbon solutions. This is consistent with literature highlighting the importance of reliable measurement and benchmarking for effective sustainability management (Tekna, 2023; Nordic Innovation, 2025). Key enablers include standardized tools like EPDs, pilot projects, and digital tools. Barriers arise when data availability, consistency, and complexity are insufficient.

5.2.4. Behavioural

Behavioural factors emerged as a central driver for sustainability adoption, reflecting changes in the sector's culture and collaboration patterns. Moreover, behavioural change is identified as important to increase competence, helping with employees' motivation and willingness to learn new technologies and methodologies. Findings from the literature and interviews shows a shift towards increased openness, knowledge sharing, and healthy competition among actors. Sector-wide networks, workshops, and benchmarking create motivation and positive peer pressure. This encourages broader engagement with carbon reduction initiatives. This confirms research indicating that social norms and peer influence can accelerate environmental actions (Barnes, 2022; UNEP, 2025).

6. Conclusion

In the final section I will present the key findings, limitations with the study, and recommendation for future research.

6.1. Key Findings

The thesis explores drivers and barriers shaping carbon reduction efforts in the Norwegian buildings and construction sector, examining the gap between stated policy ambitions and measurable decarbonization. The findings reveal that while international, EU, and Norwegian

policies, frameworks, and regulations shape decarbonization expectations, requirements and strategies, their impact depends on organizations' willingness to prioritize and align internal strategies. This study identifies that effectiveness is maximized when policy requirements, organizational strategies, financial incentives, robust data, and collaborative behaviours are addressed together. Furthermore, gaps in coherence and coordination at the organizational level indicate that full policy effectiveness is not realized in line with the SDG 17.14.1's emphasis on coherent policy implementation for sustainable development. Improving the coherence between external policies and internal organisational factors is essential to enable the sector to move effectively toward Norway's 2030 and 2050 climate targets.

6.2. Limitations

Despite providing in-depth insights from six interviews, the qualitative approach and relatively small sample of interviews limit the generalizability of the findings across the broader Norwegian buildings and construction sector. Second, variations in respondents' roles and experiences may have affected the completeness and consistency of the information collected. Finally, the study captures current strategies and behaviours without accounting for how practices may evolve, limiting the ability to assess long-term effectiveness of decarbonization efforts.

6.3. Further Research

Achieving net-zero emissions by 2050 will require urgent, interdisciplinary research, targeted finance, and innovation across all sectors and disciplines. Sustaining momentum on the sustainability agenda is essential, and a comprehensive understanding of decarbonisation processes is needed. Within the buildings and construction sector, additional research should examine the implications of current initiatives and explore innovative, scalable solutions. Further studies could explore how policy coherence across international, EU, and national frameworks can be strengthened and more effectively translated into internal organizational practices, using mixed-method approaches integrating qualitative insights within quantitative evidence to strengthen analytical depth and provide more empirical support.

Sources

Amarasinghe, I., Liu, T., Stewart, R.A., Mostafa, S. (2025) Paving the way for lowering embodied carbon emissions in the building and construction sector. *Clean Technologies and Environmental Policy* **27**, 1825–1843. https://doi.org/10.1007/s10098-024-03023-6

Bäckstrand, K., Kuyper, J. W., Linnér, B.-O., & Lövbrand, E. (2017). Non-state actors in global climate governance: From Copenhagen to Paris and beyond. *Environmental Politics*, **26** (4), 561–579. https://doi.org/10.1080/09644016.2017.1327485

Barnes, C. C. (2022) *Embodied Carbon in Real Estate: Reducing Barriers, reducing emissions* Ramboll *https://www.ramboll.com/insights/decarbonise-for-net-zero/embodied-carbon-in-real-estate-reducing-barriers-reducing-emissions*

Bienert, S, Wein, J., Spanner, M., Kuhlwein, H., Huber, V., Künzle, C., Ulterino, M., Carlin, D., Arshad, M., (2022) *Managing Transition Risk in Real Estate: Aligning to the Paris Climate Accord*. ISSN 2663-7634 Wörgl, Austria.: United Nation Environment Programme Finance Initiative [UNEFI].

Biermann, F., Pattberg, P., van Asselt, H., & Zelli, F. (2009). The Fragmentation of Global Governance Architectures: a Framework for Analysis. *Global Environmental Politics,* **9** (4), 14-40 DOI:10.1162/glep.2009.9.4.14

Bonini, S., and Gorner, S. (2011) *The Business of Sustainability.* McKinsey Sustainability https://www.mckinsey.com/business-functions/sustainability/our-insights/the-business-of-sustainability-mckinsey-global-survey-results

Braun, V., & Clarke, V. (2019) Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, **11**(4), 589-597* https://doi.org/10.1080/2159676X.2019.1628806

Brundtland, G.H. (1987) Our Common Future: Report of the World Commission on Environment and Development. United Nation Geneva, UN-Dokument A/42/427. http://www.un-documents.net/ocf-ov.htm

Carroll, A. (1991) The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders. *Business Horizons,* **34**, 39-48. http://dx.doi.org/10.1016/0007-6813(91)90005-G

COP26 Presidency (2021). The Breakthrough Agenda. Web archive UK Government https://webarchive.nationalarchives.gov.uk/ukgwa/20230311221206/https://ukcop26.org/cop26-world-leaders-summit-statement-on-the-breakthrough-agenda/.

Dharmarathna, D., Bunster, V., and Graham, P. (2025) Barriers and drivers of sustainable building adoption and influencing factor dynamics: A systematic review and meta-analysis, *Renewable and Sustainable Energy Reviews,* Volume 226, Part C, 2026, 116361, ISSN 1364-0321, DOI: 10.1016/j.rser.2025.116361

Dodd N., Donatello S. and Cordella M. (2021) *Level(s) – A common EU framework of core sustainability indicators for office and residential buildings, User Manual 1: Introduction to the Level(s) common framework* (Publication version 1.1) European Commission

Elkington, J. (1994) Towards the Sustainable Corporation: Win-Win-Win Business Strategies for Sustainable Development. *California Management Review,* **36** (2), 90-100. http://dx.doi.org/10.2307/41165746

European Commission (2019) *The European Green Deal* https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex:52019DC0640

European Commission (n.d.) *About the EU ETS* https://climate.ec.europa.eu/eu-action/carbon-markets/about-eu-ets_en

European Commission (n.d.) *Sustainable Development Goals* https://commission.europa.eu/strategy-and-policy/sustainable-development-goals_en

European Environment Agency (2019) Sustainability Transitions. Policy and Practice. European Environment Agency EEA Report No 09/2019 ISBN 978-92-9480-086-2 ISSN 1977-8449 doi:10.2800/641030

Enova (2023) *Bygg og anlegg i et klimaperspektiv* https://2023.enova.no/markedsutvikling-med-enova/bygg-og-anlegg/bygg-og-anlegg-status

Fjellheim, K. & Vignisdottir, H. (2024) *Utviklingen av utslippsfrie byggeplasser i Norge* SINTEF https://www.sintef.no/fagomrader/utslippsfrie-byggeplasser/utslippsfrie-byggeplasser-i-norge/

França, A., López-Manuel, L., Sartal, A., Vazquez, X (2023). Adapting corporations to climate change: How decarbonization impacts the business strategy–performance nexus. *Business Strategy and the Environment.* **32**. 5615-5632. DOI:10.1002/bse.3439.

Global Alliance for Buildings and Construction (2021). *Decarbonizing the Building Sector: 10 Key Measures.* https://key-trends-and-opportunities-to-2025-q3-2021.globalabc.org/sites/default/files/2021-08/Decarbonizing%20The%20Building%20Sector%20-%2010%20Key%20Measures.

Government (2025). *Norway submits its new NDC under the Paris Agreement* https://www.regjeringen.no/en/whats-new/norge-har-meldt-inn-sitt-nye-klimamal-til-fn/id3112346/

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

Lélé, S. M. (1991) Sustianable development: a critical review. *World development* **19** (6), 607-621 doi:10.1016/0305-750X(91)90197-P

Lindkvist, C., Karlsson, A., Sørnes, K., & Wyckmans, A. (2014). Barriers and challenges in nZEB projects in Sweden and Norway. *Energy Procedia*, 58, 199–206.

Malling (2025) *Bærekraft i næringseiendom - Fra strategi til resultater.* E-Book

Melvin, J. (2018). The split incentives energy efficiency problem: Evidence of underinvestment by landlords (article). *Energy Policy*, **115**, 342–352. Doi:10.1016/j.enpol.2017.11.069

Miljødirektoratet (2025) *Klimatiltak i Norge: Kunnskapsgrunnlag 2025* Miljødirektoratet Raport M-2920/2025

Mintzberg, H. (1994). *The rise and fall of strategic planning*. Prentice Hall

Nawarathna A, Siriwardana M, and Alwan Z (2021) Embodied carbon as a material selection criterion: Insights from Sri Lankan construction sector. *Sustainability* 13(4) DOI:10.3390/su13042202

Nersund Larsen H, Steen-Olsen K., Baltruszewicz, M., Kubban Larsen, M., Skaar, C. and Solli, C. (2024) *Klimafotavtrykk bygg og anlegg. En analyse av alle direkte og indirekte klimagassutslipp fra bygg- og anleggssektoren i Norge* (Oslo: Asplan Viak) *chrome extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.dibk.no/verktoy-og-veivisere/rapporter-og-publikasjoner/klimafotavtrykk-bygg-og-anlegg/AsplanViak_Klimafotavtrykk%20bygg%20og%20anlegg_v4.1.pdf*

OECD (2022), *Climate Change and Corporate Governance*, Corporate Governance, OECD Publishing, Paris, https://doi.org/10.1787/272d85c3-en.

Okereke, C. (2007) An exploration of motivations, drivers, and barriers to carbon management: The UK FTSE 100 *Eur. Manag. J.,* **25** (6) (2007), pp. 475-486, doi:10.1016/j.emj.2007.08.002

Osei-Kyei, R., Timur N., Jin X., Ursa K., Akomea-Frimpong, A., and Castelblanco, G., (2024) Critical review of the drivers and barriers for adopting net zero carbon procurement for construction projects, *Sustainable Futures,* Volume **8**, 2024, 100284, https://doi.org/10.1016/j.sftr.2024.100284.

Palm L., Bramslev, K. and Nohre-Walldén, A. (2022) *Miljørapportering for eiendomssektoren 2022* Grønn Byggallianse ISBN 978-82-692810-0-2

Parliament (2016) *Samtykke til ratifikasjon av Parisavtalen av 12. Desember 2015 under FNs rammekonvensjon om klimaendring av 9. Mai 1992*, Prop. 115 S (2015-2016), Norway. https://www.regjeringen.no/no/dokumenter/prop.-115-s-20152016/id2498557/

Porter, M. E. (1980). *Competitive strategy: Techniques for analyzing industries and competitors*. The Free Press.

Redclift, M. (2005) *Sustainable development (1987-2005):* an oxymoron comes of age. *Sustainable Development* **13** (4), 212-227 doi: https://doi.org/10.1002/sd.281

Sankaran, A. (2021). *Financial hurdles could be the biggest barrier to achieve net zero targets*. EY. https://www.ey.com/en_gl/news/2021/05/financial-hurdles-could-be-the-biggest-barrier-to-achieve-net-zero-targets

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (5th Edition). Pearson Education Limited.

Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research Methods for Business Students* (7th Edition). Pearson Education Limited.

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research Methods for Business Students* (8th Edition). Pearson Education Limited.

Science Based Targets initiative (2024). *Aligning corporate value chains to global climate goals: SBTi research: Scope 3 discussion paper*. https://sciencebasedtargets.org/

Science Based Targets initiative (n.d.). *About us* https://sciencebasedtargets.org/about-us

Solnørdal, M. T., & Foss, L. (2018). Closing the energy efficiency gap—A systematic review of empirical articles on drivers to energy efficiency in manufacturing firms. *Energies*, **11**(3), 518.

SSB (2024) Statistikk om avfall fra byggeaktivitet Available from: https://www.ssb.no/natur-og-miljo/avfall/statistikk/avfall-fra-byggeaktivitet Accessed 3. January 2026

Steingrímsdóttir, Á., et al. (2025) *How barriers and Policies Influence the Transition to Emission-Free Construction Sites* Nordic Innovation https://pub.norden.org/nordicinnovation2025-01

Veidekke (2024) Års- og bærekraftsrapport chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://mb.cision.com/Main/17348/4122644/3337722.pdf

United Nations (n.d.) *Greenwashing – the descriptive tatctics behind environmental claims https://www.un.org/en/climatechange/science/climate-issues/greenwashing*

United Nations Framework Convention on Climate Change [UNFCCC], (2018) *100+ Global Corporations Commit to Science-Based Targets Aligned With The Paris Agreement*

United Nations Framework Convention on Climate Change (2021). Human Settlements – Climate Action Pathway. https://unfccc.int/climate-action/marrakech-partnership/reporting-tracking/pathways/human-settlements-climate-action-pathway.

United Nation Environment Programme Finance Initiative [UNEFI] (2022). Managing Transition Risk in Real Estate: Aligning to the Paris Climate Accord https://www.unepfi.org/wordpress/wp-content/uploads/2022/03/Managing-transition-risk-in-real-estate.pdf

United Nations Environment Programme [UNEP] (2025). Adaptation Gap Report 2025: Running on empty. The world is gearing up for climate resilience — without the money to get there [Neufeldt, H., Hammill, A., Leiter, T., Magnan, A., Watkiss, P., Bakhtiari, F., Bueno Rubial,

P., Butera, B., Canales, N., Chapagain, D., Christiansen, L., Dale, T., Milford, F., Niles, K., Njuguna, L., Pauw, P., Singh, C. and Yang, G.]. Nairobi. https://wedocs.unep.org/20.500.11822/48798.

United Nations Environment Programme, & Yale Center for Ecosystems + Architecture (2023). *Building Materials and the Climate: Constructing a New Future*. https://wedocs.unep.org/20.500.11822/43293.

United Nations Environment Programme (2021) Global status report for buildings and construction: towards a zero-emission, efficient and resilient buildings and construction sector. Report. Kenya: UNEP; 2021 Oct.

United Nations Environment Programme (n.d.) Indicator 17.14.1 https://www.unep.org/topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-17-0

Wuni, I., Wu Z, Shen GQ (2021) Exploring the challenges of implementing design for excellence in industrialized construction projects in China. *Build Res Inf* **51**(3):301–315. https://doi.org/10.1080/09613218.2021.1961574

APPENDIX

The use of AI:

ChatGPT was used to assist in the initial analysis of interview data, where it helped structure and organize material, making the process of identifying patterns and developing the coding used in the Gioia table. It was also used to translate and summarize the interviews for the appendix. Moreover, in the finale reviews ChatGPT was used to check for grammar. https://chat.openai.com/

Gioia Method Table

1st Order Concepts	2nd Order Themes	Aggregated Dimensions
External		
Reporting requirements vary and keep changing, can be a heavy burden especially for small companies Frameworks increase internal commitments to climate actions Regulations set a shared direction across the sector Different data formats and inconsistent working methods hinder comparability and efficiency Standards like CSRD, EU Taxonomy, BREEAM are used, but need clearer guidance and benchmarking Regulations drive long-term strategic thinking It works as a catalyst for collective actions Reporting is mainly valuable for external stakeholders like banks and students Frameworks provide clear guidance Makes collaboration easier	Reporting complicity creates barriers Lack of harmonization and comparability External compliance logic drives internal work Adaption of standards to context Regulations are a strategic orientation and coordination mechanism	Regulatory
Internal		
Long-term sustainability implementation requires ongoing learning, businesses need to be active Projects require commitment, trust, and visible benefits for collaboration Benchmark with each other Prioritizing of activities with the highest impact for that business	Data support strategic decisions Benchmarking Impact	Strategy/ Business

Green financing options provide better rates and financial benefits Cost sharing for sustainable practices for stakeholders in the value chain Reporting links sustainability to financial reporting Financial baselines allow estimations of emissions Fear of first-mover disadvantage Actors want to avoid stranded assets Risk aversion limits early adoption	Financial incentives support sustainability adoption Shared investment reduces individual burden Emerging demand for sustainable solutions Transparency drives investors and stakeholder confidence Risk management Transition uncertainty	Financial
Competence is uneven; smaller actors struggle while larger ones have dedicated teams Workshops and networking are useful for knowledge sharing and new skills Data can be imprecise, estimated and lacking standard assumptions Tools like EPDs, digital inventories, and transaction-based data improve measurement Building regulation set minimum standard, energy labels influence investment decisions Harmonization of reporting standards is needed to improve quality and comparability Linking financial and emissions data support scenario planning Visualisation of data improves engagement and decision-making	Competence gap between actors Long-term competence building Collaboration reduce duplication and accelerates learning Distribute risks Weakness in sustainability data quality Tools support reliable environmental metrics	Data and methodologies
Opinion that sustainability should be embedded in long-term business strategy Difficult to commit resources to joint projects Trust and acceptance are essential for implementation Trust and acceptance are essential for implementation, need for opening the sector Companies rarely share information, a problem in the sector Lack of trust prevents joint sustainability projects	Strategic integration, not peripheral Collaboration requires relational investment Culture shift to more openness Trust and relations are enablers of sustainability	Behavioural /Culture

Trust is needed to share data, risk, and costs Lack of prioritization slows sustainability transition The public sector must take action		
Policy signals influence long-term investment decisions Visibility of sustainable performance creates momentum Benchmarking drives competitive pressure Market willingness to pay is uncertain but evolving	Future-oriented expectations Market signals	Future outlook

Information on interviews

All interviews were done in Norwegian. Because of that, and the limitation of pages allowed in the appendix, the following section provides a summary of every interview. For recorded interviews, audio recordings are available upon request. Transcripts are available upon request for all interviews.

Participant 1

External Policies, Frameworks, and Regulations

The participant emphasized that sustainability efforts in the construction industry are heavily influenced by international, EU, and Norwegian regulatory frameworks. Key drivers include EU directives under the Green Deal and national regulations, which aim to make European businesses more competitive while addressing climate-related risks. While these frameworks encourage decarbonization, the participant noted that the rapid proliferation of new laws has created a "cost-bearing perspective," particularly challenging for small and medium-sized companies. Large firms, in contrast, are more capable of complying with regulations like CSRD. Overall, there is a noticeable polarization in the sector: some actors proactively integrate sustainability, while others minimally comply or see the requirements as burdensome.

Internal Organizational Enablers and Barriers

Strategy

Sustainability is most effective when integrated into core business strategies rather than treated as a standalone initiative. The participant highlighted that implementing sustainability

within existing strategies yields greater value and more measurable results than creating separate sustainability strategies. Organizations that understand their operational risks and opportunities related to sustainability tend to advance more decisively, seeing long-term strategic benefits even amid regulatory pressures and market uncertainties.

Economic

Economic considerations are central to implementation. Investments in sustainable construction practices, such as circular materials, energy efficiency, and water management, can reduce emissions but often come at high upfront costs. The participant stressed that long-term investments are challenging when short-term financial pressures dominate, particularly for quarterly-reported companies. However, when clients are willing to pay a premium for sustainable solutions, adoption accelerates. Overall, the economics of sustainability are influenced by market demand, policy requirements, and perceived long-term value creation.

Data and Methodology

The participant emphasized the importance of establishing a regulatory and operational "foundation" for sustainability, including data collection and systematization. Automation and integration of sustainability metrics into existing processes allow firms to track compliance and prepare for reporting obligations. Large companies tend to have these systems in place, while smaller companies often struggle due to resource constraints.

Behavioral

Behavioral barriers include fatigue from rapid regulatory changes, perceived overload of sustainability requirements, and varying motivation across firms of different sizes. The participant observed a paradox: some companies offer solutions that consumers do not yet demand, while others face consumer demand without available solutions. In addition, geopolitical uncertainty and economic pressures can shift organizational focus away from sustainability temporarily. Nevertheless, companies that internalize sustainability as part of risk management or long-term value creation tend to maintain momentum despite external challenges.

Participant 2

External Policies, Frameworks, and Regulations

The participant described that sustainability efforts are strongly guided by both national and international standards, including alignment with the United Nations Sustainable Development Goals. CSRD reporting is central, providing a framework for measuring performance and communicating progress to external stakeholders. The participant noted that regulations, municipal planning requirements, and government climate goals shape project priorities, including investments in energy efficiency and sustainable urban development. While compliance with regulations is mandatory, they focus on integrating these frameworks strategically to maximize environmental impact, rather than treating them as purely administrative tasks. Moreover, the participant stated that Norway has come a long way with reporting and that in their experience it works well.

Internal Organizational Enablers and Barriers

Strategy

Sustainability is integrated into core business priorities, particularly in urban development, mobility, property transformation, and heritage management. These strategies ensure that sustainability is not an afterthought but a guiding principle in project planning, enabling measurable improvements in energy efficiency, material reuse, and climate impact.

Economic

Economic factors are key in determining which sustainability measures are implemented. Investment decisions consider payback periods, and initiatives are prioritized when long-term financial benefits align with environmental objectives. High upfront costs and lack of immediate financial returns can present challenges, but when incentives, regulatory support, and tenant willingness align, sustainability measures are more widely adopted.

Data and Methodology

The participant emphasized that rigorous data collection and analysis are essential for tracking environmental impact and guiding decision-making. Environmental Product Declarations are used to quantify material impacts, while energy monitoring systems measure operational performance across buildings. Contractors report emissions during construction phases, and Environmental Product Declarations are increasingly used to assess the environmental impact of materials across the value chain. Where no EPD exists, substitutes are used based on

comparable products. Life-cycle assessments and other measurement tools help prioritize interventions with the highest impact. The participant also highlighted that standardizing data and making material inventories transparent supports circular economy initiatives and enables accurate reporting to both internal and external stakeholders.

Behavioral Factors

The participant observed that coordination among stakeholders is critical, as architects, contractors, suppliers, and tenants all need to participate actively in circular economy and energy efficiency initiatives. Motivation can vary across the value chain, with some stakeholders more willing to embrace sustainability than others. Tenant willingness to support green projects further reinforces behavioral incentives, encouraging consistent adoption of sustainable practices.

Participant 3

External Policies, Frameworks, and Regulations

The participant explained that the companies' sustainability work is strongly guided by EU directives and Norwegian climate policies, particularly the CSRD framework. These frameworks provide the foundation for reporting and decision-making and ensure that long-term sustainability ambitions are aligned with governmental climate goals.

Internal Organizational Enablers and Barriers

Strategy

Sustainability is embedded into long-term strategic planning rather than being treated as an isolated initiative. The participant emphasized that the company integrates sustainability into decisions about urban development, commercial properties, and transport hubs, ensuring that each project contributes to emission reductions and climate resilience. By aligning sustainability goals with operational and construction projects, the company ensures that energy efficiency, circular economy principles, and carbon-conscious procurement are considered from the earliest stages of project planning. Certification schemes, such as BREEAM, are used strategically to support decision-making, particularly for commercial properties, while private projects rely more on climate budgets and tailored KPIs.

Economic

Financial considerations are central to implementation. Cost-sharing arrangements between contractors, manufacturers, tenants, and government support are necessary to make projects economically viable. At the same time, short-term financial pressures, such as quarterly reporting requirements, can slow down adoption, even when long-term benefits are clear.

Data and Methodology

The participant highlighted the importance of accurate data and robust methodologies to track emissions and evaluate progress. Financial baselines are combined with physical emissions data to estimate carbon footprints accurately. Monitoring energy performance through KPIs and tenant engagement allows Bane NOR to implement operational optimizations that reduce emissions and support reporting obligations.

Behavioral Factors

Behavioral dynamics influence how sustainability initiatives are implemented. The participant observed that organizational priorities can sometimes slow progress, particularly when sustainability is perceived as a secondary concern. Market behavior also plays a role, as companies are influenced by peer actions and reputational considerations. Transition risks, such as the potential difficulty in renting buildings with poor energy performance, create additional incentives to maintain momentum. Tenants who perceive value in sustainable buildings are more likely to support initiatives, but motivational differences among stakeholders in the value chain can affect the speed and consistency of implementation.

Participant 4

External Policies, Frameworks, and Regulations

The participant emphasized that sustainability efforts in the Norwegian construction industry are influenced by both EU and national regulations, such as CSRD and related reporting requirements. While these frameworks aim to improve climate accountability and transparency, they can create significant burdens for smaller firms due to inconsistent reporting formats and resource demands. Large companies are generally better equipped to comply, while smaller firms may face disproportionate effort relative to capacity. The participant also noted that EU initiatives, though well-intentioned, can inadvertently generate anxiety and mistrust among industry actors, highlighting the importance of careful rollout and support for smaller companies.

Internal Organizational Enablers and Barriers

Strategy

Sustainability is most effective when embedded into core business operations and collaborative projects rather than as a separate initiative. Clusters play a key role in helping firms integrate sustainability by facilitating cross-company collaboration, knowledge sharing, and co-creation of solutions for complex problems. Participants who view sustainability as part of risk management and long-term value creation tend to engage more actively, even when immediate economic returns are unclear.

Economic

Financial constraints are a major barrier to implementing sustainable construction practices. The participant noted that economic downturns and tight budgets make it difficult for companies to allocate resources to innovation or sustainability projects. Previously, high-conjuncture periods allowed firms to invest in initiatives like cross-company workshops, but today projects often require research grants or public funding to offset costs. Demonstrating tangible post-project value, such as efficiency gains or cost savings, is critical to justify investments.

Data and Methodology

The participant highlighted the importance of knowledge sharing and standardization of data to reduce duplication of effort and support sustainability reporting. While larger firms often have systems to track metrics, smaller firms may struggle with manual reporting and inconsistent data collection. Clusters facilitate workshops and platforms to exchange lessons learned, enabling firms to collectively test solutions and implement best practices more efficiently.

Behavioral

Cultural and behavioral barriers include a reluctance to share knowledge due to competitive concerns, difficulty committing time to collaborative projects, and regulatory fatigue caused by shifting EU and national requirements. The participant stressed that clusters help transform competitor relationships into collaborative networks during projects, building trust and a willingness to experiment despite risks. Companies that internalize sustainability as part of strategic collaboration maintain momentum even amid economic pressures.

Participant 5

External Policies, Frameworks, and Regulations

Participant 5 emphasized the importance of transparency and centralized reporting frameworks in shaping investment decisions and sector-wide sustainability progress. They also highlighted potential improvements in regulatory systems, noting that Finance Norway has the idea of including CSRD in the Brønnøysund Register. This would result in greater transparency, comparability, and accessibility of corporate sustainability information for stakeholders. At the same time, Participant 5 expressed concerns over regulatory instability, and the Omnibus changes.

Internal Organizational Enablers and Barriers

Strategy

Participant 5 highlighted that the financial sector's approach to sustainability requires aligning corporate strategy with climate ambitions and long-term value creation. They explained that short-term pressures in organizations, including responses to market sentiment, can sometimes deprioritize decarbonization, noting the ESG Backlash. At the same time, strategic alignment, clear targets, and the integration of sustainability considerations into investment decisions were described as essential to maintain momentum and credibility within the sector.

Economic

From a financial perspective, Participant 5 emphasized the role of incentives, reputational gains, and competitive positioning in driving sustainability initiatives. They described a strong desire to lead in the financial sector and setting investment ambitious. This illustrates how financial actors leverage sustainability as both a risk management tool and a source of competitive advantage. By prioritizing investments in companies with high data and methodological capacities, Participant 5 indicated that economic decision-making is tightly intertwined with environmental performance and reporting transparency.

Data and Methodology

Participant 5 stressed the importance of robust data and methodological rigor in guiding investment decisions and evaluating climate risk. They noted that, as an investor with high sustainability ambitions they prioritise investing in companies with high data and methodology capacities. Access to accurate and standardized sustainability data allows for

informed decision-making, reliable risk assessments, and scenario planning, which are particularly crucial for large-scale investments in the buildings and construction sector.

Behavioural

Participant 5 highlighted the role of corporate boards and leadership in fostering sustainability discussions, and how to move forward. This reflects a growing awareness of behavioral and organizational dynamics, including the influence of market pressures, peer benchmarking, and sector reputation on sustainability adoption. Participants like 5 indicate that maintaining momentum in climate initiatives requires strong leadership, visibility, and a proactive approach to reputation and governance.

Participant 6

External Policies, Frameworks, and Regulations

Participant 6 emphasized their extensive experience with sustainability reporting frameworks, describing how long-term engagement with standards such as GRI, CSRD, and the EU Taxonomy has shaped the company's approach. They noted that "there was a lot to manage last year when the changes came into effect, but now we have a good flow, with a solid knowledge base allowing us to efficiently navigate current and upcoming reporting requirements." This experience has created a strong foundation for aligning sustainability initiatives with regulatory and financial frameworks, allowing the company to plan projects with confidence. Participant 6 highlighted that legal and reporting frameworks, such as the Norwegian Accounting Act in alignment with ESRS standards, provide crucial guidance for decision-making and facilitate transparency across the sector, making it easier to implement ambitious sustainability initiatives when encouraged to take good choices.

Internal Organizational Enablers and Barriers

Strategy

Participant 6 stressed the importance of integrating sustainability into core strategy and long-term planning. They explained that the company is still developing its maturity in circular economy practices but is planning significant improvements, focusing on using fewer resources, extending material lifespans, and prioritizing reuse. Participant 6 highlighted the importance of careful planning and informed choices in driving substantial emissions reductions, giving the example that the company's headquarters project achieved a 65% emissions reduction compared to similar developments. They further noted that "short-term

strategies are often prioritized in this sector because of project-based contracts, tight budgets, and time constraints. Actors focus on cost and delivery," illustrating the tension between operational demands and long-term climate objectives. Strategic planning, cost-benefit assessment, and deliberate material selection were described as critical for achieving both environmental and operational success.

Economic

Economic considerations play a central role in Participant 6's sustainability approach. They emphasized that focusing on carbon reduction from the design phase, combined with cost-benefit analyses, has "proven in their projects to reduce costs and carbon emissions." The participant described how informed investment decisions—choosing materials, construction methods, and energy solutions—generate measurable savings while also delivering high environmental impact. The broader industry context, driven by high standards and peer benchmarking, encourages firms to prioritize sustainability, creating positive competition that aligns environmental and financial benefits.

Data and Methodology

Participant 6 highlighted the importance of building a solid knowledge base for sustainability decision-making. They stressed that prior experience with reporting frameworks allows the organization to efficiently navigate complex regulatory requirements, supporting scenario planning, project monitoring, and risk management. Standardized approaches to data collection, including carbon accounting and life-cycle assessment, were described as key enablers for consistent, replicable, and scalable sustainability strategies. Participant 6 noted that learning curves for material innovation are improving, allowing the company to make more evidence-based choices that maximize both cost-effectiveness and environmental outcomes.

Behavioural Factors

Participant 6 observed that the industry is increasingly motivated by high standards and benchmarking between actors. They explained that a desire to compare performance and achieve sector-leading results drives companies to implement better sustainability practices and pursue ambitious emissions reductions. This cultural shift fosters collaboration, encourages the adoption of circular economy principles, and strengthens commitment to long-term climate objectives.