Green Transition of Oil and Gas Companies: comparing Corporations’ Long-Term Strategies, Narratives and Actions in the frame of EU Climate Policies

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List of Abbreviations

CCS: Carbon Capture Storage

CCUS: Carbon Capture Utilization Storage

CHP: Combined Heat and Power

CNG: Compressed Natural Gas

CSRD: Corporate Sustainability Reporting Directive

EBITDA: Earning Before Income and Taxes Depreciation and Amortization

EOL: End-of-lifecycle

ESG: Environment, Social, Governance

ESRS: European Sustainability Reporting Systems

ETS: Emission Trading Systems

EV: Electric Vehicle

GHG: Greenhouse gas

IOCs: International Oil Companies

IRENA: International Renewable Energy Agency

LNG: Liquid Natural Gas

MLG: Multilevel Governance

NDCs: Nationally Determined Contributions

NGO: Non-governmental Organization

NOCs: National Oil Companies

O&G: Oil and Gas

RED: Renewable Energy Directive

SAF: Sustainable Aviation Fuel

UNFCCC: United Nations Framework Convention on Climate Change

WWF: Worldwide Fund for Nature

1. INTRODUCTION

The global community is facing an escalating climate crisis, evidenced by persistently rising greenhouse gas (GHG) emissions and an increasing frequency and severity of extreme weather events. Despite heightened international awareness and an expanding regulatory architecture, global emissions have continued to climb toward historically unprecedented levels, underscoring the urgent need for more decisive and coordinated action on decarbonisation. Achieving the objectives of the Paris Agreement therefore requires not only strengthened public policy and international cooperation, but also substantial changes in the strategies, investment decisions, and business models of major corporate actors. Within this context, the oil and gas industry occupies a particularly important position. Its structural contribution to global energy supply, its extensive capital-intensive infrastructure, and its integration across upstream, midstream and downstream activities make the transformation of the sector critical to the achievement of long-term climate objectives.

The adoption and the ratification of the Paris Agreement in 2015 - 2016, constituted a critical tone in global climate governance by placing decarbonization at the centre of international policy agendas (Akrofi et al. 2022). The Agreement introduced a predominantly bottom-up governance architecture relying on nationally determined contributions (NDCs), thereby assigning a substantial share of responsibility for implementation to national governments and indirectly, to private-sector actors operating within national jurisdiction (Falkner, 2016; William et al. 2020). This governance architecture is particularly relevant to the oil and gas industry because the achievement of national and international climate objectives depends to a considerable extent on the strategic decisions of energy companies whose investments determine the persistence or transformation of carbon-intensive assets.

European oil and gas companies have faced increasing pressure to adapt their business models to a changing regulatory and societal environment. In response, sustainability, and environmental, social and governance (ESG) dimensions, and climate-transition considerations have become increasingly prominent within corporate strategies and public communications. Companies have established long-term emissions-reduction targets, announced investments in renewable and low-carbon technologies, and articulated strategies intended to position their businesses within an increasingly decarbonised energy system.

Nevertheless, the emergence of increasingly ambitious transition narratives has occurred alongside the continued economic significance of fossil-fuel-based activities and revenues. This coexistence raises a fundamental question concerning the extent to which changes in corporate discourse correspond to substantive changes in corporate behaviour.

The distinction between corporate climate ambition and climate action therefore constitutes the central analytical problem of this dissertation. The existence of a publicly stated transition strategy does not necessarily imply a corresponding transformation of capital allocation, asset portfolios, or emissions trajectories. Corporate narratives may communicate long-term strategic intentions, while actual investment decisions continue to reflect profitability requirements, existing asset structures, technological uncertainty, market conditions, and shareholder expectations. Conversely, divestment of carbon-intensive assets may improve the reported emissions profile of a company without necessarily resulting in a corresponding reduction in global emissions if the assets continue operating under different ownership. Examining these potential discrepancies is therefore essential for assessing the substantive nature and credibility of corporate green transformation.

The urgency of understanding corporate green transformation is reinforced by the increasing divergence between international climate objectives and observed implementation. Recent statements by United Nations Secretary-General António Guterres have emphasised that global efforts remain insufficient to maintain the 1.5°C temperature objective, highlighting the continuing gap between political commitments and their implementation. In this context, the European Union has positioned itself as a leading regulatory actor in global climate governance. Nevertheless, the effectiveness of European climate ambitions ultimately depends on their transmission into national policy frameworks and corporate decision-making (António Guterres, 2025). The transition generates new opportunities for technological innovation and portfolio diversification into renewable and low-carbon sources, while simultaneously intensifying external pressures from the society, regulators, investors and shareholders, thereby shaping corporate strategic responses. Although climate change represents a global issue, significant differences persist among companies in terms of their strategic responses and their degree of involvement in transition paths (Bartalos & Sárvári, 2025).

This heterogeneity provides the principal rationale for the comparative approach adopted in this dissertation. Rather than if regulatory pressure generates a uniform corporate response, the research examines how EU-level regulatory pressures interact with national institutional environments and firm-specific characteristics. Attention is given to state ownership, national climate-policy commitments, corporate size and organisational structure, dependence on vertically integrated hydrocarbon operations, technological capabilities, and the strategic positioning of companies within emerging renewable and low-carbon markets.

The oil and gas sector is particularly relevant for this analysis because of its substantial contribution to global GHG emissions. Oil and gas activities, including emissions generated across their direct operations and downstream value chains, contribute significant amount to the global GHG emissions (Beck et al., 2020). Transforming this sector is therefore indispensable to achieving the temperature-stabilisation objectives established under the Paris Agreement. However, transformation is complicated by the economic and strategic importance of existing fossil-fuel infrastructure and by the continued demand for hydrocarbons. The resulting tension between climate objectives and economic rationality constitutes a central structural challenge for incumbent energy companies.

The war between Russia and Ukraine, disruptions in energy markets, and renewed concerns regarding energy security have demonstrated that decarbonisation does not occur independently of broader geopolitical and economic dynamics. Energy security considerations may reinforce the strategic importance of conventional energy sources even as climate policies seek to accelerate their reduction. The post-Paris transition must therefore be understood as occurring within a broader political economy in which climate objectives interact with profitability, competitiveness, energy security, technological development, and geopolitical risk. In response to mounting social, political and investor pressure within the European Union (EU), majority of the oil and gas companies have promulgated various narratives of how they intend to transform their activities to remain legitimate actors in a decarbonizing economy. Green narratives emphasize commitments to reduce carbon-intensive operations and expand investments in renewable and low-carbon technologies. However, announced strategic directions do not always align with the investment and divestment patterns. The scale of fossil-asset divestments and portion of green investments provide tangible indicators to critically evaluate green transformation based on the publicly disclosed green narratives by the oil and gas companies. Besides those dimensions, the emission data serve as an empirical backbone of the green transformation of the six selected cases.

This dissertation conceptualises corporate green transformation as a multidimensional process involving at least three interconnected dimensions: investment, divestment, and emissions performance. Green and low-carbon investments provide an indication of the direction of future capital allocation; divestments provide evidence of changes in the existing asset portfolio; and Scope 1, 2 and 3 emissions provide an additional indicator of whether these strategic and financial changes are accompanied by changes in corporate emissions trajectories. Analysing these dimensions alongside corporate narratives makes it possible to distinguish between declared transition ambition and observable transition behaviour. The analytical framework distinguished between green investments, low-carbon and brown-field investments to provide a more accurate assessment of corporate capital allocations.

The existing literature provides extensive analyses of corporate responses to climate change, including the influence of regulation, stakeholder pressure, sustainability communication, corporate strategy, technological innovation, and financial considerations. Nevertheless, an important gap remains concerning the systematic relationship between corporate transition narratives and actual capital-allocation behaviour. Previous research has frequently examined regulatory drivers, corporate sustainability strategies, or corporate climate narratives as distinct analytical dimensions. Comparatively less attention has been given to whether and how these narratives are translated into observable investment and divestment decisions and whether such decisions are subsequently reflected in corporate emissions trajectories. This is particularly relevant in the European oil and gas sector, where companies operate under a common overarching EU climate-policy framework while simultaneously differing considerably in ownership structure, portfolio composition, technological capabilities, national institutional environments, and dependence on hydrocarbon activities.

To address this research gap, the dissertation develops an integrated analytical framework drawing upon multilevel governance theory, goal framing theory, compliance theory, and narrative theory. The combination of these theoretical perspectives allows the green transformation of oil and gas companies to be conceptualised as a process shaped simultaneously by external institutional pressures and internal corporate decision-making. Multilevel governance provides the basis for examining the interaction between EU-level climate regulation, national policy frameworks, and corporate responses. It recognises that corporate behaviour is embedded within multiple and overlapping levels of governance rather than being determined exclusively by either international or national regulation. Goal framing theory contributes to the analysis of competing corporate objectives. Climate-related goals may coexist with economic and strategic objectives, including profitability, competitiveness, energy security, shareholder value, and reputation. Compliance theory provides an additional perspective through which corporate responses to regulatory and institutional pressures can be examined. Companies may respond to external expectations through substantive behavioural change, symbolic compliance, or combinations of both. This perspective is particularly relevant to the analysis of potential divergence between corporate sustainability commitments and actual investment behaviour.

Finally, narrative approach provides the analytical basis for examining how companies construct and communicate their transition strategies. Corporate narratives are treated not simply as descriptions of existing activities, but as strategic representations through which companies articulate future intentions, establish legitimacy, and respond to external expectations. This dissertation makes a substantive theoretical contribution by developing an integrated analytical framework to capture heterogenous and structurally constrained character of green transformation of the European oil and gas companies (Bartalos & Sárvári, 2025). By synthetizing multilevel governance, goal framing theory, compliance and narrative theories the research formulates green transformation as a multi-dimensional and path-dependent process shaped by the international frameworks, national institutions, and entities' strategic decisions. The overarching objective of this dissertation is to assess the extent to which European oil and gas companies' post-Paris climate-transition narratives correspond to observable changes in their investment, divestment, and emissions trajectories, and to identify the factors that explain variation among companies.

The central research question of the dissertation is:
To what extent do European oil and gas companies' post-Paris climate-transition narratives correspond to measurable changes in capital allocation, divestment behaviour, and emissions trajectories between 2017 and 2024?

The following sub-questions are supporting the central question:
How do the companies' green narratives relate to their divestments and investments actions?

Which firm-level, national-level, and EU-level factors explain variation in the alignment between transition narratives and capital-allocation patterns?

These questions are designed to establish a direct analytical link between corporate discourse and observable corporate behaviour. The first sub-question examines the degree of alignment between narratives and actions, while the second seeks to explain why this alignment varies across the selected cases. To address the research questions, the dissertation adopts a comparative case-study design incorporating qualitative and quantitative evidence. The empirical analysis focuses on six European-headquartered energy, oil and gas companies: Royal Dutch Shell (Shell), British Petroleum (BP), OMV, Orlen Group, Neste, and Ørsted. The cases were selected based on their sustainability ambitions, size, ownership structure, geographical context, technological positioning (Bartalos & Sárvári, 2025). The empirical analysis focusing on the period between 2017 and 2024. The starting point reflects the post-Paris period in which corporate climate strategies increasingly developed in response to the implementation of the Paris Agreement and the strengthening of European climate governance. The endpoint enables the analysis to capture more recent developments in corporate transition strategies, including changes associated with energy-market disruption, geopolitical developments, and the evolution of European climate regulation.

The quantitative dimension examines corporate investment and divestment patterns as indicators of strategic capital allocation and portfolio restructuring. Additionally, it incorporates Scope 1, 2, and 3 emissions data to assess whether changes in corporate strategies and portfolios correspond to observable changes in emissions trajectories. The primary sources include annual reports, financial reports, sustainability reports, and other publicly disclosed corporate information. The qualitative method analyses corporate transition narratives through sustainability reports, strategic documents, public announcements, executive statements, and semi-structured interviews with corporate representatives and climate experts affiliated with public institutions and non-governmental organisations. The combination of these sources enables the research to compare formal corporate commitments with observed strategic behaviour and external assessments. The methodology is further strengthened through process tracing and comparative pattern matching, enabling the research to examine not only whether outcomes occur, but also how potential explanatory mechanisms operate within and across cases.

The research advances the understanding of the tension between corporate narratives and actual capital allocation. Therefore, the green transformation is not linear process but rather a contested process affected by regulatory and social pressures, profitability constraints and geopolitical dynamics. The extent of misalignment between strategic narratives and actual investment and divestment patterns are assessed in each case across 2017-2024 period. By embedding this assessment within a comparative case-study design anchored in explicit strategic goals and narratives, the thesis contributes a critical, measurement-oriented perspective to the academic literature. In addition, the research highlights the credibility and adaptability of green transformation which constrained by profitability, economic rationality, regulatory pressure, assets structure and global, national market dynamics.

Building on the theoretical framework and comparative literature, the dissertation develops hypotheses concerning the relationship between corporate green-transition narratives, capital allocation, portfolio transformation, and emissions performance:

H1a: Companies headquartered in countries with stronger national climate-policy commitment exhibit higher green CAPEX ratios and faster emissions reduction.

H1b: Companies with lower dependence on vertically integrated hydrocarbon operations exhibit stronger alignment between green narratives and capital allocation.

H1c: Companies with deeper technological partnerships in renewable or low-carbon sectors exhibit faster transition in portfolio structure.

H2: Corporate sustainability narratives are systematically misaligned with actual decarbonisation.

H3: Fossil-asset divestments improve corporate transition indicators more than they reduce real-world emission.

The hypotheses are operationalised through a combination of quantitative comparison, qualitative analysis, and process tracing. Below table provides a high-level mapping between each hypothesis and the corresponding methodological approach, primary data sources, and analytical procedure. The detailed operationalisation of the variables and methodological procedures is presented in Chapter 3, while their empirical application and results are discussed in Chapters 5 and 6.

Table 1. Bridge Hypothesis with the Research Design

Hypothesis	Core Claim	Method	Primary Data Source(s)	Analytical Procedure
H1a	Stronger national climate-policy commitment → higher green CAPEX ratio and faster emissions reduction	Comparative cross-case analysis	National energy/climate policy documents; green CAPEX ratio; Scope 1–3 emissions	Ranking of national policy stringency against green CAPEX ratio and emissions trajectory across the six cases; qualitative pattern-matching
H1b	Lower dependence on vertically integrated hydrocarbon operations → stronger narrative–capital-allocation alignment	Within-case process tracing (causal link L3→L4) combined with cross-case comparison	Annual and sustainability reports (narrative coding); segment reporting (upstream/downstream share); green CAPEX ratio	Diagnostic-test coding (hoop, smoking-gun) of the narrative-to-capital-allocation link per case; cross-case sequence matrix
H1c	Deeper technological partnerships in renewables/low-carbon sectors → faster transition in portfolio structure	Qualitative document analysis combined with divestment/acquisition event tracking	Partnership announcements and MoUs; M&A and divestment disclosures; segment revenue data	Timeline/event analysis linking partnership formation to subsequent portfolio change (causal link L4→L5)
H2	Corporate sustainability narratives are systematically misaligned with actual decarbonisation	Narrative analysis combined with process tracing at the narrative-to-capital-allocation link (L3→L4)	Corporate strategic narratives, CEO discourse, sustainability reports; green CAPEX ratio	Discourse coding against diagnostic-test criteria (Van Evera, 1997); comparison of narrative content against capital-allocation and emissions trend data
H3	Fossil-asset divestments improve corporate transition indicators more than they reduce real-world emissions	Buyer-identity and post-divestment emissions tracking combined with process tracing at the portfolio-to-emissions link (L4→L5)	Divestment/acquisition disclosures; buyer sustainability disclosures where available; Scope 1–3 emissions	Comparison of divestment volume/frequency (transition indicator) against Scope 3 emissions trend; qualitative assessment of buyer's location

Source: author's own construction, based on Chapter 2 and 3

The table establishes the methodological bridge between the theoretical propositions and their empirical assessment. It clarifies how the hypotheses are translated into observable indicators and how the combination of quantitative and qualitative evidence is used to assess the proposed relationships. The detailed methodological justification, operationalisation of variables, case selection criteria, and process-tracing procedures are presented in Chapter 3.

The dissertation contributes to the academic literature in three principal respects. First, it provides an integrated analytical framework for examining corporate green transformation by connecting institutional pressures, corporate narratives, strategic decision-making, capital allocation, divestment, and emissions performance. Second, the dissertation makes an empirical contribution through the systematic comparison of six European-headquartered energy companies with substantially different ownership structures, portfolio compositions, technological capabilities, and national institutional contexts. This comparative design enables the research to identify both common patterns and important sources of variation in corporate transition pathways. Third, the research makes a measurement-oriented contribution by assessing corporate transition through actual investment and divestment behaviour rather than relying exclusively on stated climate targets. The distinction between green, low-carbon, and brownfield investments provides a more differentiated assessment of capital allocation, while the integration of Scope 1, 2 and 3 emissions data provides an additional basis for evaluating the relationship between corporate portfolio decisions and environmental outcomes.

The dissertation is organised into a sequence of theoretical, methodological, contextual, and empirical chapters. Chapter 2 develops the conceptual and theoretical foundations of the research. It reviews the literature on corporate green transformation, corporate sustainability narratives. The chapter establishes the theoretical framework and identifies the principal gaps in the existing literature. Chapter 3 presents the methodological framework of the dissertation. It explains the comparative case-study design, case selection, data sources, operationalisation of key variables, and process-tracing methodology. Chapter 4 provides the institutional and contextual background for the empirical analysis. It examines the development of EU climate and energy policy and considers national climate-policy frameworks and energy-system characteristics relevant to the six selected cases. Chapters 5 and 6 constitute the empirical core of the dissertation. Chapter 7 discusses the empirical findings in relation to the theoretical framework and hypotheses. It synthesises the cross-case evidence and evaluates the extent to which the findings support, qualify, or challenge the hypotheses.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK OF GREEN TRANSITION

The green transition of oil and gas companies has been examined from multiple analytical perspectives within the existing academic literature. A substantial and interdisciplinary literature addresses the decarbonization of the oil sector, drawing on various theoretical frameworks to highlight its economic, political and institutional implications. This dissertation critically reviews the principal theoretical approaches and empirical studies that engage multidimensional nature of corporate green transition. Building on this literature, the dissertation seeks to address an important gap by developing a comprehensive analytical framework for assessing the factors that shape green transition strategies of oil and gas corporations. Existing research has largely focused on individual determinants of transition, including market incentives, regulatory pressures, investor expectations, societal demands and technological isolation.

Consequently, limited attention has been devoted to understanding how these determinants interact to influence corporate transition strategies and whether they are consistently reflected in firms' strategic decision and investment behaviour. Relatively few studies have simultaneously examined the interplay between transition drivers, green investments, fossil-fuel divestments and strategic corporate narratives within a single analytical framework. By integrating these dimensions, this dissertation provides a more holistic assessment of corporate green transition strategies and contributes to understanding the alignment between sustainability commitments and strategic implementation in the oil and gas sector.

2.1 Key concepts in the research

This research contains some important concepts such as net-zero economy, green transformation, Corporate Sustainability Reporting Directive (CSRD) as part of the European Climate Policy, narratives, divestments and investments (Bartalos, 2023) which evolve during the whole dissertation.

Net-zero economy framed in the net-zero emissions which according to IPCC (2018) *"are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period. Where multiple greenhouse gases are involved, the quantification of net-zero emissions depends on the climate metric chosen to compare emissions of different gases (such as global warming potential, global temperature change potential, and others, as well as the chosen time horizon)"* (IPCC, 2018, p. 555). The oil and gas companies during their decarbonization path imply the net-zero economy in their strategic narratives. Especially after the year of 2016 when the Paris Agreement was implemented by the countries. The importance to define key elements of the goals to achieve net-zero emissions by removing and storing carbon (Correa & Voigt, 2021). The companies from this point of time started to shape their strategies and investment plans to include the net-zero economy targets where carbon capture storage (CCS) plays crucial role.

The distinction between green and energy transitions are crucial, as they are used actively in the recent work. The former refers to more systematic change in fossil fuel-based operations to renewables (Peña et al., 2022). The transition dominantly involving technology and system change including all production and operational requirements (Grubler, 2012). On the other hand, the green transition means broader distinction from energy transition, because it refers to achieve net-zero economy. The energy transition applies for broader economic and social structural change including power and justice (Newell, 2021). According to Professor Hall (2025), the green transition warrants a level of analytical attention comparable to that accorded to investment, political and economic decision-making processes. She emphasises a multidimensional approach to the green transition, wherein the state assumes a pivotal role in shaping processes within specific geographic context. Although Professor Hall's disciplinary background is in geography, her analysis is notable for its capacity to capture the principal dimensions of transformation, demonstrating that the process is shaped not solely by technological development and capabilities, but equally by political, economic and institutional factors. This constitutes one of the principal explanations for the spatial differentiation of the transformation observed even within the European Union, whereby member states and regions exhibit divergent trajectories despite operating within a shared regulatory framework (Hall, 2018). This differentiation is further examined in this dissertation, where varying levels of achieved sustainability outcomes are presented through six comparative case studies of European-headquartered oil and gas companies.

The green transition of oil and gas companies is shaped by a complex set of institutional, regulatory and market-based drivers that collectively influence corporate strategic decision-making. Within this dissertation, these factors constitute the external explanatory framework through which differences in corporate green transition strategies are interpreted. The European regulatory framework is considered as an essential dimension as the selected case companies operate within a common institutional context established by the European Union's climate governance. Among these regulatory instruments, the Corporate Sustainability Reporting Directive (CSRD) has been chosen for this research, because it represents principal governance framework for corporate sustainability disclosure within the European Union. By introducing mandatory sustainability reporting in accordance with the European Sustainability Reporting Standards (ESRS), the CSRD significantly enhances the transparency, comparability and accountability of corporate climate-related disclosures. Beyond requiring the reporting of greenhouse gas emissions and transition plans, the directive strengthens the credibility of corporate sustainability reporting through the application of the double materiality principle and external assurance requirements. Consequently, the CSRD constitutes the overarching regulatory framework that shapes how oil and gas companies communicate and disclose their green transition strategies (European Commission, 2026c).

Complementing the CSRD, the EU Taxonomy Regulation provides harmonised classification system for environmentally sustainable economic activities. Rather than functioning as an independent reporting framework, the Taxonomy defining technical screening criteria for environmentally sustainable investments. It establishes objective criteria for assessing the environmental sustainability of economic activities and requires companies to disclose the taxonomy alignment of their revenues, capital expenditure and operating expenditure (European Union, 2022; Bartalos, 2023). The Taxonomy was launched to establish a clear framework for the sustainable activities and support the corporations to boost their climate-friendly initiatives. The clear criteria might eliminate the different understanding of sustainable activities and in this way might accelerate successful transformations (Bartalos, 2023). All in all, the taxonomy reduces information asymmetries and enhances the comparability of corporate disclosures.

The introduction of the CSRD and the EU Taxonomy represents a substantial shift from the previous reporting landscape, in which companies largely prepared sustainability reports using heterogenous reporting frameworks, and voluntary disclosures. Through the standardization of sustainability reporting and the establishment of common classification criteria, these regulatory instruments contribute to greater consistency in evaluating corporate transition performance. However, the critics stating that the elements of the Taxonomy matrix including various dimensions, such as transport section is well-established and constructed with indicative measurable items whereas other sectors including oil and gas remain subject to interpretative flexibility. The criteria can be applied either on firm or project levels such as renewable power plant, industrial production facilities, and energy infrastructure (Bartalos, 2023; Schütze, 2020).

Besides the EU policy instruments, the fiscal incentives will be investigated, and their relationship with the transformation of oil and gas companies. This topic is articulated from two angles, firstly, the continuously increasing carbon taxes are accelerating the transition path of the companies while secondly the available funds for green projects providing enough incentives for the domestic governments to boost the transformation process in the O&G industry (Bartalos, 2023). Additionally, the Environmental, Social and Government (ESG) targets are the newly introduced dimensions at the corporations to boost the transformation and measure the achievements in this area. As it is a significant measuring tool for the performance of the companies which are actively working on the transformation in line with the external factors which are continuously articulated and shaped by the EU institutions. The ESG dimensions could be used for the quantitative analysis while measuring the maturity of the transformation of the companies within EU compared to the American and Middle Eastern ones. However, such an extensive research implication is not decided yet. ESG is an important indicator which supports the compliance method of the corporations in relations with the environmental laws and criteria articulated by the supranational organizations. ESG means a safeguard for the corporations by contributing to maintain cashflow and secure environment for investments (Beck, 2020; Bartalos; 2023).

The term of divestment refers to the sale of physical assets. More accurately to define it means a partial or complete disposal of physical and organizational assets (Capron et al., 2001). The strategic divestment decisions are made by the corporations' management to support long-term goals of the entities by converting operations more profitable (Davis, 1974) or more sustainable. If the assets are divested, their market values are recovered by investing in other parts of the business (Davis, 1974). In this thesis, the divestments appeared in two forms in the narratives, one is when divestments mean synchronization of the operations and portfolio, and from the efficiency point of view the assets are sold. The second form of the divestments in the discourse is the due to climate commitments the returns on sold assets will be invested into green portfolio to reach the overarching net-zero economy by 2050.

Another key quantitative measurement is the investments which indicate the pace and maturity of the green transformation of the companies. According to the OECD (2026) the proper investment supposes to accelerate both economic productivity and sustainable development. Green investments are assessed and applied in this thesis refer to the investments activities which reduce GHG emissions and air pollution without substantially decrease the productivity (Eyraud et al., 2013). The investment in the green energy refers to shifting carbon intensive operations and products towards less polluting alternatives. Ranging from electricity generations based on renewables – wind, solar, hydropower or direct sources of energy such as biofuel. The green investment also refers to efficiency, which includes technological solutions reducing amount of energy necessary to provide goods and services. In this context, it is crucial to differentiate green and brown investments. Green energy sources linked to renewables, while conventional brown energy refers to coal, oil and gas based (Eyraud et al., 2013).

Narratives emerging in the strategic goals of the annual reports of the companies interlinked with a structured communication where besides corporate mission and vision, strategic priorities, the response to the external environment appear (Deegan, 2002). In case of this research the external pressures are coming from the external regulators, shareholders and society to tackle climate change and focus on energy transition. Therefore, the corporate narratives not only serve as an information channel, but also as strategic instruments of legitimacy (Deegan, 2002). These urge of proving the sufficient engagement with the green transition, the narratives result in a discursive gap between the publicly announced green transition targets and actual corporate actions. To understand the companies' role in green transition, the analysis of the corporate narratives is essential in comparison with their investment and divestment actions.

The precise conceptualisation and operationalisation of these concepts applied in the research constitute a fundamental prerequisite for ensuring measurement validity and analytical rigour in the empirical analysis presented in Chapter 5. Establishing clear, consistent, and theoretically grounded definitions of the key concepts and indicators contributes to solid methodological foundation for the subsequent empirical investigation and ensured the comparability and reliability of the findings across cases. Emphasis placed on the systematic classification of green and brown-field investments, as well as on the distinction between divestments motivated primarily by operational or financial efficiency and those undertaken explicitly to achieve emission reduction purposes. These classifications are interpreted in conjunction with the corresponding corporate sustainability narratives to assess the consistency between publicly articulated strategic commitments and observed corporate actions. By applying these definitions consistently across all six cases, the dissertation enhances the identification and explanation of differences in the green transformation of the selected oil and gas companies.

2.2 The Green Transformation of the Oil and Gas Industry: Critical Evaluation and Literature Gaps

The green transformation of the oil and gas (O&G) industry has emerged as a significant area of interdisciplinary research, containing perspectives from energy economics, political economy, environmental governance, socio-technical transitions, corporate strategy, and sustainability studies (Seto et al., 2016; Sovacool, 2016; Sovacool et al., 2024; Christophers, 2024; Durand; 2024; Healy & Barry, 2017; Pickl, 2019). The literature broadly demonstrates that the transformation of incumbent energy companies cannot be understood as a purely technological shift from fossil fuels towards renewable energy. Rather, it constitutes a multidimensional restructuring process shaped by regulatory pressure, economic incentives, corporate capabilities, institutional environments, technological development, stakeholder expectations, and the structural characteristics of existing energy systems (Bartalos & Sárvári, 2025).

2.2.1 Political Economy of Incumbent Energy Companies

A substantial part of the literature examines the green transformation of O&G companies through the lenses of political economy and corporate strategy. From a political economy perspective, scholars such as Benjamin Sovacool (2016, 2024) and Brett Christophers (2024) critically emphasize the structural and profitability constraints that impede large-scale investments in renewable and low-carbon alternatives. The persistence of hydrocarbon-based business models is associated not only with technological lock-in but also with the profitability, scale, infrastructure, and established capabilities of conventional energy operations. Corporate transformation involves a fundamental strategic dilemma: firms must respond to increasing pressure for decarbonisation while simultaneously protecting existing revenue streams, shareholder value, and competitiveness (Christophers, 2024; Pickl, 2019; Durand, 2024).

Investment and divestment decisions are particularly important within this context because they provide observable indicators of whether transition commitments are accompanied by material changes in corporate resource allocation. Firms continuously make choices regarding the allocation of capital expenditure between conventional hydrocarbon assets and renewable or low-carbon activities (Fattouh et al., 2019; IEA, 2021). Although declining technology costs have improved the economic viability of renewable energy, significant differences remain in the risk-return characteristics of renewable and conventional energy investments. Thus, the transition can be constrained by the expectation that conventional hydrocarbon activities continue to generate comparatively attractive and predictable returns (Christophers, 2024; Pickl, 2019).

Shareholder and investor expectations constitute an additional external mechanism influencing corporate responses to the energy transition. Growing investor attention to environmental, social and governance (ESG) considerations has increased pressure on oil and gas companies to reassess carbon-intensive assets and demonstrate greater consistency between publicly stated climate commitments and capital-allocation decisions. This influence can operate through both exits, whereby investors reduce or withdraw capital from firms perceived as insufficiently responsive to climate risks, and voice, whereby shareholders seek to influence corporate strategy through engagement, voting, and direct dialogue with management (Edmans, 2023). However, shareholder pressure should not be interpreted as a sufficient condition for accelerating corporate green transformation. Investor preferences are mediated by firms' underlying profitability expectations, governance structures, strategic capabilities, and the financial attractiveness of alternative investments. Divestments alter the ownership structure of carbon-intensive assets without necessarily resulting in their immediate closure or elimination, thereby potentially transferring rather than eliminating the associated emissions. This distinction is particularly relevant to the present dissertation, which differentiates between corporate-level portfolio transformation and changes in real-world emissions. The literature on socially responsible investment similarly suggests that exit and engagement can generate different incentives for corporate behaviour and that blanket divestment does not necessarily constitute the most effective mechanism for inducing firms to undertake corrective action (Edmans et al., 2023).

The influence of shareholders may therefore be strengthened when external expectations are translated into internal corporate governance mechanisms. One such mechanism is the incorporation of sustainability-related performance indicators into executive and board remuneration. The increasing integration of ESG considerations into executive compensation reflects an attempt to align managerial incentives with longer-term environmental and strategic objectives. Edmans (2023), for example, notes the growing practice of linking executive remuneration to ESG metrics, illustrating the institutionalisation of sustainability considerations within corporate governance systems. Nevertheless, the effectiveness of such mechanisms depends on the selection, measurability, and materiality of the indicators used, as well as on the extent to which they influence substantive managerial decision-making rather than merely reinforcing corporate disclosure practices.

Within the analytical framework of this dissertation, shareholder pressure and governance mechanisms are consequently conceptualised as intermediary drivers of corporate capital allocation rather than independent determinants of green transformation. Their significance lies in the extent to which external expectations concerning climate performance are translated into binding or incentive-compatible internal objectives and subsequently reflected in observable investment, divestment, and portfolio-allocation decisions. This provides an important link between the external institutional environment and firm-level strategic behaviour: investor expectations may create pressure for change, while corporate governance mechanisms determine whether such pressure is incorporated into managerial incentives and ultimately translated into measurable changes in capital allocation. Accordingly, the empirical analysis examines shareholder expectations and governance arrangements alongside investment and divestment patterns to assess whether the increasing institutionalisation of ESG considerations corresponds to substantive changes in the business models and capital structures of the selected oil and gas companies.

This political-economic literature is highly relevant to the present research because it demonstrates why corporate climate commitments cannot be interpreted independently of financial incentives and existing business structures. Nevertheless, a limitation is that profitability and capital allocation are often analysed primarily as economic outcomes or constraints, rather than being systematically compared with the sustainability narratives through which companies publicly justify their strategic positioning. Thus, the literature provides substantial insight into why firms may be reluctant to reallocate capital but provides less systematic evidence concerning the extent to which their publicly articulated transition strategies correspond to those allocation decisions.

2.2.2 Regulatory and institutional determinants of corporate transformation

A second major strand of literature emphasises the importance of institutional and regulatory conditions in shaping corporate responses to climate change. The green transformation of O&G companies occurs within a multilayered governance environment in which international climate commitments, European Union (EU) regulations, national policies, carbon-pricing mechanisms, fiscal incentives, and stakeholder pressures interact. The literature therefore increasingly recognises that corporate transition strategies are embedded within broader political and institutional contexts rather than being determined exclusively by firm-level preferences. Regulatory instruments such as emissions trading systems, carbon taxation, renewable-energy incentives, and mandatory sustainability disclosure requirements can alter the economic and reputational incentives facing companies. Carbon pricing mechanisms, for example, seek to internalise part of the environmental costs associated with carbon-intensive activities and thereby alter the relative attractiveness of high- and low-carbon investments (Akindote et al., 2023; Zhang et al., 2022). Similarly, the development of the EU sustainability reporting framework, including the Corporate Sustainability Reporting Directive (CSRD), has strengthened the institutionalisation, standardisation, and accountability of corporate sustainability disclosure (Baumüller & Grbenic, 2021).

However, the existing literature addressing regulatory influences on corporate transformation remains subject to an important limitation. Regulatory impacts are frequently examined from a macroeconomic, policy, or political-economy perspective, with comparatively less attention given to how specific regulatory pressures are translated into the actual strategic and financial decisions of individual firms. Moreover, regulatory exposure varies considerably across national institutional environments. Differences in carbon taxation, energy-system structure, state ownership, renewable-energy potential, and national climate-policy ambition may create substantially different incentives for otherwise comparable companies. This limitation is particularly important for European O&G companies, because the existence of a common EU climate-policy framework does not imply uniform corporate operating environments. National implementation, fiscal instruments, energy-system characteristics, and political priorities mediate the effects of European-level policies. As a result, understanding corporate green transformation requires a comparative analysis capable of linking EU-level regulatory pressures to national institutional conditions and firm-level responses.

2.2.3 Organisational structure and heterogeneous transition pathways

The literature further demonstrates that O&G companies should not be treated as a homogeneous category. The distinction between International Oil Companies (IOCs) and National Oil Companies (NOCs) provides an established analytical lens for examining differences in ownership structures, strategic objectives, and relationships with governments (Bradshaw, 2010). IOCs are generally more directly exposed to capital-market expectations, international investors, and shareholder pressure, whereas NOCs may simultaneously pursue commercial objectives and broader national priorities relating to energy security, employment, economic development, and strategic resource control. However, companies with different portfolio structures may face fundamentally different transition constraints. Vertically integrated companies with substantial upstream operations remain structurally dependent on hydrocarbon extraction and therefore face different strategic challenges from companies with comparatively leaner portfolios or limited upstream exposure. Similarly, companies possessing technological capabilities, strategic partnerships, and access to capital in renewable-energy markets may have greater capacity to diversify away from conventional hydrocarbons.

The literature therefore points towards a concept of heterogeneous transition pathways, sometimes described as different *"shades of green"* (Hartmann et al., 2021). Firm-level characteristics, including management commitment, organisational culture, technological capabilities, financial resources, resource endowments, and portfolio structure, interact with external factors such as national regulation, ownership, market expectations, and stakeholder pressure. Nevertheless, comparative empirical research systematically testing these factors across multiple European O&G companies remains limited. Existing studies frequently examine individual companies, particular countries, or specific determinants of transformation. Accordingly, there remains insufficient comparative evidence regarding why companies operating within a broadly common European climate-policy environment nevertheless demonstrate substantially different patterns of green investment, fossil-asset divestment, and portfolio transformation.

Notable frontrunner examples, such as Ørsted's structural pivot from an NOC to a pure-play renewable energy leader (Abraham-Dukuma, 2021) or Neste's R&D-driven biofuel transition, illustrate how technological capabilities and resource constraints can compel a fundamental reorientation of business models. Conversely, major international oil companies (e.g., Shell, BP) have historically articulated ambitious transition strategies—such as Shell's "*Powering Progress"* or BP's net-zero pledges - while continuing to direct the vast majority of capital expenditure toward upstream oil, gas, and liquefied natural gas (LNG) expansion (Bartalos & Sárvári, 2025; Shell, 2019; BP, 2019).

2.2.4 Technological capabilities, partnerships and first-mover strategies

Technological capabilities constitute another important determinant of corporate transition. The literature suggests that innovation, research and development, and collaboration with technologically advanced firms can facilitate diversification into renewable and low-carbon activities (Alagoz et al., 2023; Gonzalez et al., 2023; Hoxha et al., 2023). Strategic partnerships may reduce technological uncertainty and provide incumbent energy companies with access to capabilities that are not available internally. Neste and Ørsted illustrates the importance of technological capabilities and early strategic positioning. Ørsted's transformation towards offshore wind demonstrates how existing organisational and technological capabilities can be redirected towards a fundamentally different energy portfolio. While Neste's development of renewable fuels illustrates the role of technological specialisation and innovation in establishing new low-carbon business models. These cases are important because they indicate that green transformation may depend not only on external pressure but also on the internal capacity of firms to identify, develop, and scale alternative technologies. However, the existing literature tends to treat technological capabilities and partnerships as enabling factors without systematically examining their relationship with subsequent changes in corporate capital allocation and portfolio structure. This dissertation therefore examines technological partnerships as one potential explanatory factor for variation in the speed and depth of corporate transformation.

2.2.5 Methodological and Thematic Limitations in Existing Scholarship

Despite the extensive volume of research dedicated to energy transitions, a critical appraisal of the literature reveals three major analytical limitations that this dissertation seeks to address:

(i) Scarcity of Structured Cross-Case Comparisons: while numerous studies provide valuable conceptual insights or single-case analyses (for instance BP or Shell), there is a notable lack of systematic, multi-case comparative frameworks that evaluate a diverse pool of energy incumbents between the period of 2017 and 2024

(ii) Measurable empirical benchmarks related to the firm-level decarbonization: existing political economy and policy literature often treats regulatory instruments (such as carbon pricing, ETS, or CSRD) and financial metrics at a high, macro-level abstraction. Prior studies frequently lack detailed, measurable empirical benchmarks, such as concrete capital expenditure (CAPEX) allocations to green versus brown-field projects, annual Scope 1, 2, and 3 emissions data, and financial figures linked to asset divestments and restructuring. Therefore, the actual operational and financial impact of regulation on firm-level behaviour remains underexplored.

(iii) Discursive-action gap: mainstream energy transition literature treats corporate sustainability narratives, annual reports, and strategic pledges largely at face value or addresses them through isolated qualitative critiques, without systematically testing whether public discourse aligns with audited financial data. While scholars examine economic and institutional drivers, almost no empirical research integrates narrative analysis with quantitative financial and physical emissions data to test whether discursive compliance precedes, accompanies, or substitutes for real-world capital reallocation.

To overcome these limitations, this literature review establishes the contextual foundation for a novel, multi-tiered analytical framework. By moving beyond purely qualitative descriptions or isolated policy overviews, this dissertation bridges the gap between macro-institutional pressures (Multilevel Governance), meso-level organizational decision-making (Goal Framing and Compliance Theory), and micro-discursive strategies (Jameson's concept of narrative). The next sub-chapter is going to elaborate in more details the main theoretical architecture of the dissertation. Then the subsequent chapters combine qualitative insights with rigorous quantitative evidence - tracking capital expenditures, divestment flows, production volumes, and emissions metrics across six comparative European energy cases - to provide a definitive empirical assessment of the alignment between corporate green discourse and actual business practice.

2.3 Theoretical Framework and Analytical Architecture

As the previous chapter highlighted the literature provides an important foundation for understanding why O&G companies respond differently to the energy transition. However, an important limitation is that these dimensions have predominantly been examined separately or through relatively broad conceptual frameworks. Studies frequently focus either on technological and socio-technical transitions, political-economic constraints, regulatory drivers, corporate strategy, or sustainability communication. Comparatively fewer studies systematically integrate these dimensions to examine how external institutional pressures are translated into firm-level strategic decisions and, ultimately, into measurable changes in corporate portfolios. This dissertation addresses this limitation by connecting the institutional environment in which firms operate with their corporate narratives and observable investment, divestment, and emissions trajectories.

This dissertation draws upon three complementary theoretical approaches that together provide a multi-level analytical framework for examining green transformation. At the highest, macro-institutional level, Multilevel Governance (MLG) theory provides the overarching institutional architecture spanning international, national and subnational tiers. Rather than operating within a single domestic or market environment, energy incumbents navigate a dispersed regulatory arena where supranational authorities - such as the European Union, European Commission - establish overarching decarbonization targets, mandatory reporting standards such as Corporate Sustainability Reporting Directive (CSRD), and market-based mechanisms for instance Emissions Trading System (ETS). At the same time, the actual translation of these supranational pressures into firm-level capital allocation and operational restructuring is mediated by national governments through heterogeneous fiscal incentives, carbon pricing, and state equity ownership: it explains where the pressure to transform originates and how it cascades from international climate agreements through EU-level directives down to national fiscal and coercive instruments (Bartalos & Sárvári, 2025).

At the intermediate, firm-behavioural level, this dissertation fuses Goal Framing Theory and Compliance Theory into a single explanatory logic rather than treating them as two parallel approaches of the same phenomenon. According to Lindenberg & Steg (2013) Goal Framing Theory explains why normative and gain-oriented motivational frames can coexist within the same corporate actor, while Compliance Theory (Becker, 1968; Suchman, 1995) specifies the cost-benefit and legitimacy-seeking mechanism through which a profit-oriented, rational firm selects among those frames under regulatory pressure. Compliance theories further highlighting that entities' green transformation is driven by cost-benefit calculations, affected by the regulatory pressure, carbon pricing and reputational risks (Bolton & Kacperczyk, 2021) Collectively, the two theoretical perspectives provide a coherent explanation for a recurring pattern identified throughout the empirical analysis: in the oil and gas sector, profitability and sustainability objectives are neither pursued sequentially nor treated as mutually exclusive.

Finally, at the discursive and analytical level, Fredric Jameson's conceptualization of narrative is applied as the methodological bridge that connects the first two levels to the empirical evidence. This narrative approach is used to establish whether the internal reconciliation of profit and sustainability goals reflected in strategic behaviour - such as capital allocation and portfolio change - or whether it remains confined to communicative discourse (Jameson, 1982). Narrative analysis occupies a pivotal position within the overall analytical framework by connecting the theoretical architecture to the empirical investigation of the relationship between corporate discourse and action. It provides the basis for comparing public sustainability commitments with subsequent strategic and financial decisions across the six cases. This comparative assessment forms a central component of the empirical analysis presented in Chapters 5 and 6, where the consistency, divergence, and evolution of corporate transition narratives are examined alongside observable investment, divestment, and emissions trajectories.

Furthermore, the narrative assessment provides an important conceptual foundation for the process-tracing strategy outlined in Section 3.1.5. By treating strategic narratives as observable points within the hypothesised causal sequence, the analysis traces whether stated commitments are subsequently translated into concrete investment decisions, changes in portfolio structure, and measurable environmental outcomes. Narrative analysis thus serves both a substantive and methodological function: substantively, it captures how firms articulate and frame their transition strategies; methodologically, it establishes an analytical link through which the relationship between stated intentions and subsequent corporate actions can be systematically investigated. Accordingly, the role of narrative analysis within this dissertation is not to assume that corporate discourse causes corporate transformation, but to examine the degree of correspondence between discursive commitments and material corporate behaviour. This distinction is central to the dissertation's research problem, as it enables the empirical analysis to identify whether the increasing prominence of sustainability narratives among European oil and gas companies represents substantive strategic transformation or a predominantly communicative response to changing institutional, regulatory, and stakeholder expectations.

The following sections present each theory in the order of the above-outlined hierarchy: multilevel governance as the macro-institutional framework, the fused Goal Framing and Compliance Theory explains the firm-level behavioural logic and narrative theory last, as the analytical tool bridging corporate discourse and action.

2.3.1 Multilevel Governance

Multilevel governance is relevant for analysing the green transformation of oil and gas companies, as climate regulation emerges from a multi-layered institutional architecture across international agreements, European Union’s policy frameworks and national level of implementation (Hooghe & Marks, 2002) distinguish between two types of multilevel governance: (i) the dispersed, general-purpose jurisdictions with non-overlapping boundaries and (ii) specialized, task-specific governance structures. At the former one the authority has multiple tasks with limited number of units either from jurisdiction or territorial spheres. The latter one has largened number of jurisdiction and the authority has more specialized tasks. In the context of the European Union (EU), dispersed governance acknowledges the enduring role national authority while emphasizing that decision-making is increasingly an outcome of interactions among supranational, national and subnational actors. In the European policies national governments are playing vital role, however, involvement of domestic, subnational players is inevitable. This theoretical framework is instrumental in analysing the green transformation of oil and gas companies as climate regulations are fundamentally dispersed across these varying levels of authority (Bartalos, 2023). The relationship between MLG and corporate green transformation is operationalized through dispersal of climate policy and regulatory instruments. Supranational organization, the EU establish environmental targets, and the European Commission (EC) introduces directives, mandates - for instance Corporate Sustainability Reporting Standards (CSRD) - to reshape how the corporations decide to invest their capital and innovate (Spijker & Grison, 2025).

National authorities employ a combination of fiscal, regulatory and coercive instruments, including taxation, subsidies, energy policies, and other economic incentives on different scale which can alter the fossil-fuel-based investments. Therefore, carbon taxation provides particularly illustrative example of the differentiated institutional environment. For instance, Denmark has developed a relatively comprehensive approach to impose taxes for fossil-fuel usage. Finland has applied carbon taxation across areas including power production, transport and heating fuels (Hájek et al., 2019). Such differences demonstrate that companies operating within the same overarching EU climate-policy framework may nevertheless face substantially different economic incentives to decarbonise. National institutional variation influences the relative costs of carbon-intensive activities, the expected returns from low-carbon investments, and the strategic attractiveness of different transition pathways.

In 2019 the European climate policy has reached a new advance level with the introduction of European Green Deal which aims at making Europe the first climate-neutral continent. Therefore, the most influential supranational commitment, the Paris Agreement (PA) triggered more ambitious targets and directives introduced by the European Commission after the ratification of PA. Within this context, multilevel governance provides an appropriate theoretical lens for analysing the EU's multidimensional approach in climate target-settings and decision-making as it captures the interactions among international institutions, supranational community and national governments in shaping and influencing corporations' long-term sustainable strategies (Skjaerseth, 2021). The European Commission (EC) occupies a pivotal role to incentivize the green transition within policy frameworks via normative mandates and monetary mechanism (Bartalos & Sárvári, 2025). In recent years the regulatory role has intensified by the EC is expecting accelerated decarbonization to achieve a 55% reduction in GHG emissions by 2030 relative to the 1990 level. This target is operationalized by member states commitments and the application of specialized regulatory instruments. While MLG explains the external, multi-layered architecture of regulatory pressure, it leaves open the question of how individual company internally processes and acts according to the regulatory pressure, this question is addressed in the following section.

While MLG explains the external, multi-layered architecture of regulatory pressure (Hooghe & Marks, 2002), it leaves open the critical question of how individual companies internally process and act according to the regulatory pressure. this question is addressed in the following section. Macro-institutional frameworks alone cannot predict firm-level variance, as external mandates do not dictate a uniform corporate response. Instead, as organizational theorists and institutional economists emphasize, regulatory pressure must be filtered through internal corporate decision-making structures, resource endowments, and behavioural motivations. As Gary Becker's (1968) economic model of compliance and Lindenberg and Steg's (2013) Goal Framing Theory suggest, firms do not react mechanically to rules; rather, they internally evaluate compliance costs, carbon-pricing burdens, and reputational risks against traditional profit-maximizing imperatives. How an energy incumbent processes regulatory pressure depends on its internal *"gain"* and *"normative"* frames - determining whether supranational directives result in substantive asset reconfiguration or merely symbolic compliance. This internal firm-level mechanism is addressed in the following section

2.3.2 Goal Framing and Compliance Theory: Reconciling Profitability and Sustainability

While moral and regulatory motivations behind fossil-fuel divestments are undoubtedly present, financial reasoning remains a dominant driver of corporate behaviour (Healy & Barry, 2017). This dissertation treats Goal Framing and Compliance Theory as a fused, analytical lens on firm-level decision-making related to the green transition (Bartalos & Sárvári, 2025). Siegwart Lindenberg's Goal Framing Theory identifies the heterogenous and often competing motivational frames – normative, hedonic and gain – that may coexist within a corporate actor's strategic decision-making (Lindenberg & Steg, 2013). Applied to the oil and gas sector, this framework explains why a company can simultaneously articulate a normative net-zero narrative while expanding acreage in new exploration to protect revenue. These strategic contradictions reflect the parallel activation of differing goal frames within the same organization (Lindenberg & Steg, 2013), an empirical tension widely documented in political economy analyses and corporate disclosures of energy majors (Christophers, 2024; BP, 2019; BP, 2024).

Corporate responses to the green transformation encompass three primary dimensions (Lindenberg & Steg, 2013; Etienne, 2011):

(i) Normative and ethical motivations: The moral imperative of protecting the planet for future generations, which dominates public corporate narratives;

(ii) Rational and material motivations: Fiscal incentives to invest in profitable green projects and safeguard long-term asset value

(iii) Regulatory and market-based drivers: The imperative to avoid severe financial and legal penalties if EU greenhouse gas (GHG) reduction targets are missed.

The normative approach of protecting the planet for future generations is dominant in companies' public narratives, while fiscal incentives to invest in green projects, and the avoidance of significant penalties for EU companies if miss GHG reduction targets, remain central to long-term strategic decisions. Goal Framing Theory therefore establishes that the green transition of oil and gas companies is shaped by a genuine mix of material, emotional and normative factors (Etienne, 2011; Bartalos & Sárvári, 2025), but it does not specify which frame a rational firm will privilege.

The compliance theory provides an analytical framework to analyse the motivations behind the green transformation of carbon emitters. Gary S. Becker (1968) early on in his academic work has highlighted that enterprises comply with regulations once the expected cost of non-compliance (carbon pricing, reputational damage, higher cost of capital) exceeds the cost of compliance. This specifies the decision rule that governs the gain frame identified by Lindenberg and Steg. Compliance is accordingly not purely a legal or ethical outcome but calculated response to shifting cost structure (Bolton & Kacperczyk, 2021). Suchman's (1995) extension of compliance toward organisational legitimacy adds a further dimension: four actor groups – shareholders, civil society, policymakers and financial institutions – raise the reputational and social cost of non-compliance through their scrutiny, reinforcing rather than competing with the gain frame. Thus, not only financial and rational, but also social mechanism raising in the compliance of the oil and gas companies (Suchman, 1995; Bartalos, 2023).

Goal Framing and Compliance Theory support dissertation's central behavioural claim: in the oil and gas sector, the profitability and sustainability do not operates as sequential objectives, pursued only once the other is secured, but as concurrently activated goal frames whose relative weighting shifts with the regulatory and reputational cost structure that Compliance Theory specifies (Bansal & Roth, 2000). This combined logic generates a testable expectation for the empirical chapters: variation across the six case-study companies in the balance between green and brownfield capital allocation. Each company is analysed by the exposure to carbon pricing, national regulatory stringency and ESG scrutiny rather than a simple, linear replacement of fossil-fuel profitability by sustainable commitment.

2.3.3 Discursive-analytical Approach: Bridge Between Corporate Discourse and Corporate Action

Positioned at the discursive level of the analytical hierarchy established above, narrative approach does not compete with Multilevel Governance, or the combined Goal Framing and Compliance theories. Rather, it provides the discursive and analytical mechanism through which the broader analytical framework is operationalised empirically. It enables the dissertation to examine how oil and gas companies construct, communicate, and legitimise their role in the green transition and, critically, whether the objectives articulated through these narratives are subsequently translated into observable strategic and financial behaviour.

Fredric Jameson's conceptualisation of narrative provides the critical foundation for this analytical approach. Jameson (1982) claims narrative as a socially symbolic act embedded within broader ideological and socio-economic structures. From this perspective, narratives can be understood as mechanisms through which underlying structural tensions and contradictions are mediated. Applied to the oil and gas sector, this perspective is particularly relevant to the tension between the continued economic importance of fossil-fuel-based activities and the growing regulatory, societal, and investor expectations for decarbonisation. Corporate sustainability narratives can therefore be interpreted as discursive mechanisms through which companies articulate and negotiate these competing demands.

The post-Paris period provides a particularly important context for this analytical perspective. Following the adoption of the Paris Agreement, corporate sustainability communication became increasingly central to how oil and gas companies presented their strategic positioning within the energy transition. Narratives concerning *"net-zero by 2050",* decarbonisation, and a *"better energy future"* emerged within an environment characterised simultaneously by increasing shareholder, regulatory, and societal pressure for emissions reduction and the continued allocation of capital to conventional hydrocarbon and brownfield activities (Bartalos, 2023). The resulting tension is analytically significant because the existence of an ambitious transition narrative does not necessarily imply a corresponding transformation of the underlying business model.

This tension is further reinforced by the scale of transformation required to achieve international climate objectives. The International Energy Agency (IEA, 2021), concludes that, under its Net Zero Emissions by 2050 pathway, no new oil and gas fields should be developed beyond projects already committed at the time of the analysis. Continued investment in new or expanded fossil-fuel capacity raises an important question concerning the corporate transition commitments. The issue is not simply whether companies communicate ambitious climate objectives, but whether such objectives are reflected in the allocation of financial resources and the restructuring of corporate portfolios.

Within this dissertation, narrative approach therefore functions as an analytical bridge between corporate discourse and observable corporate behaviour. It provides the conceptual basis for systematically examining whether the internal reconciliation of profitability and sustainability objectives, as conceptualised through the combined Goal Framing and Compliance perspectives, is reflected in actual strategic decisions or remains predominantly at the level of corporate communication. Accordingly, the analysis does not treat corporate narratives as direct evidence of green transformation. Rather, narratives are treated as an empirical object of analysis against which subsequent corporate actions can be systematically assessed, enabling the dissertation to evaluate the extent to which discursive commitments are translated into observable changes in investment, divestment, capital allocation, and portfolio structure.

This approach enables a systematic comparison between publicly articulated transition commitments and observable evidence derived from capital allocation, investment decisions, fossil-asset divestments, portfolio restructuring, and emissions trajectories. The degree of correspondence between these dimensions provides an empirical basis for assessing the credibility of corporate transition strategies across the six cases. The relationship between narrative and corporate action is subsequently formalised within the process-tracing framework presented in Section 3.1.5. In this framework, the transition from articulated strategic commitments to subsequent capital-allocation decisions constitutes a critical analytical link in the hypothesised causal sequence. Process tracing is therefore used to examine whether the commitments expressed through corporate narratives are followed by observable changes in investment and portfolio behaviour, or whether a persistent divergence emerges between discursive commitment and material action.

"Oil is not simply a source of energy: mere fuel, brute input. It is inextricably social. To describe oil in this way is to view the problem of energy transition from an unfamiliar perspective: not simply as the site of a new technical difficulty that must be solved but as the object of a social challenge. For to transition from oil to some other energy source will entail – whether we like it or not, whether we participate in the process or opt out – the unmaking and remaking of our social worlds." (Petroculture Research Group, 2016)

Recognizing with the Petroculture Research Group (2016) that oil is not merely a technical fuel input but an inextricably social object—whose transition entails the fundamental unmaking and remaking of our social worlds—requires an analytical framework capable of capturing multiple tiers of change. To synthesize the relationship between the theoretical approaches introduced across these sub-chapters, these perspectives do not represent competing explanations; rather, they are integrated hierarchically, with each addressing a distinct analytical tier. Multilevel Governance models the transmission of external macro-institutional and regulatory pressures; the fused Goal Framing and Compliance perspective accounts for how firms internally interpret and reconcile these pressures; and Jameson's concept of narrative provides the empirical lens through which the alignment between strategic discourse and corporate capital allocation can be systematically assessed. This theoretical hierarchy establishes a coherent explanatory framework in which each perspective performs a specific analytical function, ensuring conceptual clarity while avoiding theoretical overextension.

Table 2. Logical arc and hierarchy among the theoretical approaches

Theoretical Approach	Level of Analysis	Core Question Answered	Key Mechanism	Relationship to Adjacent Theory in the Hierarchy
Multilevel Governance	Macro-institutional	Where does regulatory pressure originate, and how does it cascade across jurisdictions?	Vertical and horizontal dispersion of authority across supranational, national and sub-national tiers	Supplies the external stimulus that the fused Goal Framing/Compliance framework processes internally
Goal Framing and Compliance (fused)	Meso / firm-behavioural	How does a firm internally reconcile competing motives under that external pressure?	Coexisting normative, hedonic and gain frames, selected via a cost-benefit and legitimacy calculus	Translates MLG's external pressure into an internal decision logic; generates the behavioural prediction tested via narrative theory

Theoretical Approach	Level of Analysis	Core Question Answered	Key Mechanism	Relationship to Adjacent Theory in the Hierarchy
Narrative as a socially symbolic act	Micro / discursive-analytical	Is the internally predicted reconciliation enacted in strategy, or only communicated?	Narrative as socially symbolic action; discourse-action gap	Operationalises the fused theory's prediction into an empirically testable discourse-versus-action comparison (Section 3.1.5)

2.4 European Climate Policy Impacts on Green Transition

The analytical architecture of this dissertation rests upon core concepts that evolve dynamically throughout the research: the net-zero economy, industrial decarbonization, the operational distinction between broad energy transformation and narrow green restructuring, and the overarching framework of European Climate Policy (Bartalos, 2023). Tracing the trajectory of this policy domain requires distinguishing between purely empirical descriptions of regulatory instruments and their conceptual integration into the theoretical pillars of the thesis. As scholarship notes, public and societal engagement remains a critical dimension of low-carbon transitions, dictating how national, regional, and local environments adopt or resist shifting economic paradigms (Brown et al., 2023). However, to understand corporate adaptation, the focus must shift from general societal attitudes to the institutional mechanisms governing industrial behaviour. Since the formal establishment of international climate commitments via the 1992 UNFCCC and subsequent framework developments, European climate policy has progressively intensified its reduction targets, surging from an initial 40% reduction goal to an ambitious 55% net emissions reduction by 2030 compared to 1990 levels. The European Council reinforced this trajectory through the Energy Union framework, aligning member states around core dimensions of energy security, internal market integration, energy efficiency, and decarbonization (Kengyel, 2020; Bartalos, 2023).

2.4.1 Regulatory and Market Instruments of the Green Deal

The European Green Deal serves as the overarching structural catalyst, orchestrating a multi-dimensional green energy transition through a combination of regulatory mandates, market-based mechanisms, and financial tools designed to align industrial operations with net-zero objectives. Within this architecture, specific instruments operate as external institutional pressures that corporations must internally process:

(i) EU Emissions Trading System (ETS): A market-based mechanism that internalizes the economic cost of carbon, imposing direct financial liabilities on absolute emissions (European Commission, 2024; Cao, 2024)

(ii) EU Taxonomy: A sophisticated classification framework designed to standardize green investment criteria, curb greenwashing, and direct capital toward sustainable activities (European Union, 2022; Bartalos, 2023). While critical scholars note that its application varies across sectors - being highly structured for transport but less transparent elsewhere (Schütze, 2020) - it functions theoretically as a key institutional rule shaping corporate capital allocation frameworks

(iii) Complementary Directives: The European Climate Law, carbon border adjustments, and the Renewable Energy Directives (RED II and RED III) collectively establish legally binding absolute emission reductions and force structural investments into renewable portfolios (European Climate Law, 2023)

2.4.2 From Regulatory Requirements to Corporate Response: The Role of CSRD and ESG

A central oversight in traditional policy reviews is treating regulatory tools and financial metrics as purely empirical phenomena detached from organizational theory. In this dissertation, instruments such as the Corporate Sustainability Reporting Directive (CSRD), European Sustainability Reporting Standards (ESRS), and Environment, Social and Governance (ESG) metrics are not merely descriptive data points; they represent the precise operational transmission belts linking macro-institutional pressure to meso-behavioural and micro-discursive responses.

Historically, corporate sustainability disclosures remained voluntary, fragmented and characterised by considerable variation in scope, comparability, and reporting quality. The introduction of the CSRD represent a significant shift towards a more standardised and mandatory sustainability reporting architecture, requiring companies to disclose sustainability-related information in a more systematic, comparable, and verifiable manner (Baumüller & Grbenic, 2021). Importantly, the CSRD extends the significance of sustainability reporting beyond voluntary corporate communication by embedding sustainability-related information within formal corporate reporting and accountability structures.

Within the theoretical framework of this study, these reporting mechanisms and fiscal incentives interact directly with Goal Framing and Compliance Theory (Lindenberg & Steg, 2013) and Jameson’s concept of narrative. Within the theoretical framework of this dissertation, these regulatory reporting requirements, together with fiscal and other policy instruments, constitute important external institutional pressures that shape the environment in which firms formulate and communicate their transition strategies. Their effects can be further interpreted through the complementary lenses of Goal Framing Theory and Compliance Theory (Lindenberg & Steg, 2013) and Jameson’s conceptualisation of narrative (Jameson, 1982). Goal Framing Theory helps explain how firms reconcile competing sustainability, profitability, and strategic objectives in response to changing institutional expectations, while Compliance Theory provides a basis for examining how corporations respond to regulatory requirements and external pressures. Jameson’s narrative perspective, in turn, enables the analysis of how these responses are discursively constructed and legitimised through corporate sustainability and transition narratives. Taken together, these perspectives establish a theoretical link between regulatory requirements, ESG metrics, corporate interpretation, sustainability discourse, and observable corporate behaviour.

2.5 Green Transformation Through the Lenses of Investments, Divestments and Emissions

The green transformation of oil and gas companies is frequently characterized by a structural misalignment between public strategic narratives and business actions. Addressing this complexity requires a holistic energy governance perspective that evaluates the entire corporate value chain, particularly regarding downstream Scope 3 emissions arising from the combustion of sold products (Goldthau & Sovacool, 2012; York & Bell, 2019). The mechanics of capital allocation are central to this dynamic, as the energy transition demands more than incremental portfolio diversification into renewable energy assets; it necessitates a fundamental restructuring of established business models, organizational capabilities, technological competencies, and physical asset bases (Johnstone & Newell, 2018).

Oil and gas incumbents have historically forged their core competitive advantages around the exploration, extraction, refining, and distribution of hydrocarbons. Transitioning toward low-carbon operations requires firms to adapt, replace, or completely reconfigure capabilities that have historically underpinned their profitability. Ljungquist (2007) conceptualizes core competencies as an interconnected matrix of capabilities, skills, and strategic resources, emphasizing their continuous adaptation in dynamic business environments. Applied to the energy sector, this perspective dictates that green transformation must be understood not as the superficial addition of green energy projects to an existing fossil fuel portfolio, but as a deep process of organizational and strategic renewal (Markard et al., 2012). To evaluate whether this renewal is substantive or symbolic, the literature underscores three indispensable empirical lenses: investments, divestments, and emissions. Investment decisions reveal how financial capital is deployed to shape future energy portfolios; divestments demonstrate how legacy carbon-intensive assets are restructured, sold off, or retired; and emissions trajectories provide direct evidence of the environmental outcomes generated by these corporate maneuvers. Crucially, this relationship is neither automatic nor linear. As recent energy transition scholarship highlights, a robust public sustainability narrative does not automatically produce corresponding capital reallocation. Capital reallocation does not necessarily generate absolute portfolio transformation, and portfolio transformation does not invariably yield an equivalent reduction in absolute global emissions (Pickl, 2019; Li et al., 2022).

This triad addresses a major limitation in existing academic research. Prior studies have generated valuable insights into fossil-fuel divestment (Braungardt et al., 2019), corporate climate strategies (Kolk & Pinkse, 2008), and carbon emissions accounting (Krueger et al., 2020), yet these dimensions are frequently examined in isolation. Specifically, there remains a distinct scarcity of comparative research that systematically investigates whether the sustainability narratives of European oil and gas majors correspond simultaneously to coordinated shifts in investment, divestment, and emissions. Furthermore, the environmental consequences of carbon-asset divestment, such as whether divested assets merely migrate to private or less-regulated operators without reducing global emissions, remain conceptually disconnected from corporate-level transition indicators. This dissertation addresses these critical gaps by integrating investments, divestments, and emissions within a unified comparative framework, providing the empirical foundation necessary to test the alignment between corporate discourse and action.

3. RESEARCH METHODOLOGY AND CASE STUDY SELECTION

The overall empirical part of the dissertation consists of both qualitative and quantitative methodology. The application of mixed approach is essential as the energy transition is a multidimensional process involved with ambiguous challenges and opportunities for oil and gas companies. Despite of the regulatory pressure to decarbonize, several international and national companies are still heavily investing into carbon heavy portfolio. These investments are claimed to be a necessity to sustain cashflow for the future green projects. The following methodological chapter outlines the approach which was applied to analyse the companies' actions compared to their narratives. The research highlights whether the green transformation is part of the rhetoric, or it has real action and tangible results behind it. Measurable investments and divestments are assessed to achieve meaningful results in the area. Moreover, the research method explores linkage between corporate strategies and EU's ambitious climate initiatives.

3.1 Research Design

A comparative case study analysis was selected to examine globally operating oil and gas companies headquartered in the European Union. The deliberate selection of globally operating entities within this region allows for granular investigation of divergent approaches to the green transition under a common European climate governance framework. The design contains both qualitative and quantitative analysis utilizing methodological triangulation to evaluate the coherence between strategic goals, narratives compared with capital expenditure and divestment data. Specifically, the analysis contrast institutional net-zero targets and sustainability commitments, as articulated in the corporate reports, against tangible indicators of the transition, namely capital expenditure (CAPEX) and divestment activities. By juxtaposing strategic corporate discourses - such as BP's *'reimagine energy'* initiative (BP, 2020) – with actual capital allocation, this comparative framework aims to identify and analyse the presence of discursive misalignment within the sector. This comparative analysis seeks to identify the extent to which green transition narratives are substantiated by strategic actions or, conversely, discrepancies emerge between corporate discourse and actual investment, divestment practices. Therefore, the research contributes to the growing literature on the analysis of corporate climate commitments by examining potential discursive misalignment between sustainability narratives and the strategic allocation of financial resources.

3.1.1 The Main Research Method

The research anchored a mixed methodological design combining both qualitative and quantitative analytical practices to provide a comprehensive. The former is based on semi-structured interviews with representatives of the oil and gas companies, mainly from the business and sustainability departments. From the non-competitive side the NGOs' and EU's representatives such as Directorate General of Energy and Directorate General of Climate were asked. Additionally, the qualitative method incorporates narrative analysis based on the long-term strategies of the companies published in the annual reports. The quantitative approach includes collection and analysis of firm-level data on capital expenditure and divestment activities. These financial indicators are compared with the qualitative findings.

In the methodological framework a hybrid approach is applied that combines comparative multiple-case analysis with process tracing to examine causal mechanisms underlying the green transformation of oil and gas companies. While the comparative case study identifies similarities and differences across cases through a common set of variables and indicators, process tracing enables an in-depth examination of the causal processes operating within each case (Beach & Pedersen, 2013; George & Bennett, 2005). The integration of these approaches facilitates both cross-case comparison and within-case causal inference, thereby strengthening the explanatory power and internal validity of the research design.

Collier (2011) provides a rigorous reformulation of a fundamental qualitative method defining process tracing as the systematic examination of diagnostic evidence considering specific research questions and hypothesis. Rather than merely reconstructing chronological developments, the method seeks to identify and evaluate the causal mechanisms that connect explanatory factors with observed outcomes through a sequence of intervening events and decisions (George & Bennett, 2005; Beach & Pedersen, 2013). In process tracing, causal mechanism is conceptualised as a series of linked entities and activities through which an initial cause generates a specific outcome. Hence, the analysis focuses not only on whether a relationship exists but also on how and why the relationship evolves in the specific timeframe.

Accordingly, process tracing specifies an explicit hypothesised causal pathway linking external institutional pressures to corporate green transformation. The proposed mechanism assumes that European Union regulatory pressure, particularly through the Corporate Sustainability

Reporting Directive (CSRD) including national policy incentives, influences the corporate strategic narrative concerning sustainability and energy transition. These strategic commitments are expected to shape capital allocation decisions, including investments in renewable energy, low-carbon technologies, and research and development. Changes in investment priorities subsequently lead to portfolio transformation, reflected in asset restructuring, divestments from carbon-intensive activities, and expansion into cleaner energy businesses, contributing to measurable environmental outcomes.

One of the key elements of the process tracing is the systematic examination where the evolution of the green transformation of the selected cases is examined through structured and theory-driven analysis. Each case is systematically examined to determine whether the expected sequence of events is empirically observable, interrupted, modified or contradicted by the available evidence. Process tracing evaluates whether each step in proposed mechanism is supported by observable implications derived from the theoretical framework (Beach & Pedersen, 2013; Bennett & Checkel, 2015). Evidence is collected from corporate sustainability and annual reports, investments announcements, strategic plans, policy documents, regulations to assess whether the anticipated causal links are present.

Another advantage that specific evidence is in the focus which can prove causal mechanism through documents, decisions or sequences of actions. Next element is theory-driven evidence which is compared to pre-existing hypothesis. By providing rigorous basis for inferring causes, process tracing aims at identifying specific mechanism, mitigating researchers' bias and reconciling theoretical approaches. The empirical evidence is linked to the predicted causal pathway (Collier, 2011). As the existing scholarship remaining descriptive focusing on either on corporate green strategies, or transition patterns, structural change highlighting macro-level transition dynamics and firms' responses without revealing causal mechanism and often lack the explanatory depth regarding green transformation (Sovacool, 2016). Although the above mentioned researchers provide valuable analysis into patterns of corporate adaptation, they generally offer limited explanation of causal mechanism which factors affecting the green transformation of the com This dissertation seeks to address this gap to systematically apply process tracing to assess causal mechanism linking multiple factors from the market, the EU and national policies and corporate responses contributing to more integrated and explanatory understanding of green transformation.

Within the comparative case study analysis, both regulatory and fiscal dimensions are examined, in parallel, the consumer and shareholder expectations are considered in relation to firms' ambition to pursue more sustainable operations and to offer greener products. These relationships are systematically analysed through the comparative case study method. The table of variables provides the conceptual and operational foundation for assessing green transition, establishing clear analytical distinction between dependent and independent variables, the latter capturing observable outcomes at corporation level.

The independent variables identified in this study operate within a multilevel governance environment and collaborative ecosystem within which oil and gas companies are embedded. At the supranational level, EU policies establish a regulatory framework comprising instruments that shape green transformation, most notably the European Green Deal, and Corporate Sustainability Reporting Directive (CSRD). The CSRD occupies a central position within this framework, as it mandates enhanced corporate transparency and standardised non-financial disclosure. These mechanisms compelling companies to systematically report on climate-related risks, decarbonization strategies and environmental performance. Overall, the CSRD functions not only as a reporting obligation but as a substantive mechanism through which regulatory pressure is translated into firm-level strategic and operational adjustments. At the next level, the involvement of national governments captures the role of domestic policy implementation, which varies considerably across EU member states, reflecting the significance of interorganisational dynamics in facilitating green transformation. divergent institutional capacities, political priorities and energy security considerations. The third dimension highlights inter-firm collaboration, reflecting the role of inter-organizational dynamics in facilitating green transformation. This includes strategic partnership and joint venture to exchange technological knowledge and risk-sharing in the development of low-carbon solutions.

Shareholders and consumers expectations constitute a further critical dimension, capturing the growing significance of societal and financial market pressure on corporate behaviour. These indirect effects are operationalized through ESG ratings, which have become an increasingly important mechanism by which shareholders and investors evaluate, benchmark and discipline corporate environmental performance. The portion of the state ownership influence strategic priorities as state-controlled firms can be more aligned with national objectives, and more flexible towards the transformation compared to the more market-oriented entities. The firms' structure and characteristics such as company size, asset composition, portion of upstream operations influence the adaptability of the companies towards green transformation. All these aspects supporting in-depth analysis regarding the dependent variables of green transformation of oil and gas companies. The extent of state ownership further influences strategic priorities, as state-controlled firms may exhibit greater alignment with national policy objectives, in some instances, greater flexibility in pursuing transformation compared to more market-oriented entities. Finally, firm-level structural characteristics – including company size, asset composition and the share of upstream operations – shape adaptability of firms' green transformation.

Collectively, these dimensions provide the analytical foundation for the in-dept examination of the dependent variables associated with the green transformation of oil and gas companies. By tracing the causal pathways by connecting these independent variables to observed outcomes at the corporate level, this dissertation employs process tracing as its core methodological approach (Beach & Pedersen, 2013). Process tracing enables the systematic reconstruction of the sequential mechanism through which regulatory instruments – particularly CSRD disclosure requirements – interact with ESG-driven market pressures, national policy variation, inter-firm collaboration, and firm-specific characteristics to produce differentiated green transformation trajectories across the selected case studies. By examining within-case sequence of decision-making disclosure, and strategic response, process tracing allows for identification of the specific causal mechanism linking regulatory and market pressure to firm-level decarbonisation outcomes, thereby offering explanatory depth (George & Bennett, 2005).

Table 3. Comparative case study with variables

Variable Type	Variable Name	Definition	Indicators
Independent Variable 1	EU Policies	Directives to accelerate energy transition	**EU Green Deal, Fit for 55, CSRD, EU Taxonomy**
Independent Variable 2	National Government Involvement	National policies, incentives supporting the green transformation	**Tax incentives, subsidies to support companies' transformation, carbon prices**
Independent Variable 3	Collaboration with other companies	Technological exchange, joint green projects	**Joint ventures with other companies and cooperation to expand green transformation**
Independent Variables 4	State ownership	Portion of the state vs private ownership structure	**State ownership (%)**
Independent Variables 5	Firm structure	Internal structure, asset base and financial capacity	**Size, lean structure without upstream operation**
Dependent Variables 1	Green transformation of the companies	Strategic adaptation of green transformation	**Green Capital Expenditures, Divestments**

Source: author's own work

The empirical part applied another key qualitative method, the semi-structured interview which is powerful tool to collect data from the participants related to the research topic. The main purpose of the semi structured interview is that it collects essential information from the interviewees who has personal expertise and perception about the research topic. It is essential to follow the required steps of the successful semi-structure interviews which were highlighted in the DeJonckheere and Vaughn (2019) analysis. They identified the main requirements of the properly built-up interview process:

(i) Determination accurately the purpose and the scope of the study
(ii) Identification of the participants
(iii) Consideration of the ethical topics
(iv) Set-up logistical aspects
(v) Development of interview guidance
(vi) Establishment trust
(vii) Proceeding with the interview
(viii) Conducting memos
(ix) Analysis of the data
(x) Demonstration of the results and the implications for the research
(xi) Presentations of the findings

Following the above highlighted design ensure a quality interview process with over thirty participants and contribute to the validation of the collected data and derived hypothesis. Thorough interview process serves as the backbone for the quantitative analysis of the researched data and produce evidence in the research process (DeJonckheere & Vaughn, 2019; Fontana & Frey, 1994). The interviews were conducted anonymously to maintain as detailed information flow as possible within a limited time. The confidential approach during the interviews were important aspects as some of the participants were representatives of publicly traded companies who needed to discuss publicly quite sensitive topics (Brinkmann & Kvale, 2014). The regular length of the semi-structure interviews was between 60 – 75 minutes. There were ten questions prepared in advance; however I have allowed reflection on each question, which might have generated 1 – 2 extra questions which deterred from the prepared ones. Overall, the semi structured interview process essential part of the empirical data analysis as via the interview process that information might be captured which were missed during the quantitative analysis or were validating the main findings (DeJonckheere & Vaughn, 2019; McGrath et al, 2019). The semi-structured interview is the most preferred option when the goal is to collect the interviewees perception about the phenomenon rather the receive a general understanding of the researched concepts and trends. In addition to that, ideas and perceptions which emerged during the interview process fully enhance the collected quantitative data (Adeoye-Olatunde & Olenik, 2021).

The qualitative interviews enable the collection of interviewees' experiences from diverse professional and institutional background, thereby providing more comprehensive understanding of the research topic. The interviewees were categorised into two groups. The first group comprised representatives of oil and gas companies operating within the competitive sector, drawn from the six selected case studies. The second group includes stakeholders from the non-competitive sector, specifically from climate focused non-governmental organisations as well as policy representatives at the EU level:

(i) Competitive sector: representatives of the oil and gas companies from BP, Shell, OMV, Orlen Group, Neste and Orsted
(ii) Non-competitive sector: experts of NGOs specialized in climate protection, sustainability and policy representatives at the EU

The diverse professional background and different level of professional experiences of the two target groups were essential for capturing the complex and multidimensional character of the green transformation of the oil and gas companies (Bartalos & Sárvári, 2025). To tackle all the aspects and relevant actors of the process was necessary to extend the interviewees circle with different professional background, thus maintain a close linkage to the transformation process. The professionals from the oil and gas companies were approached from the six selected cases – Shell, BP, OMV, Orlen Group, Neste and Ørsted. The interviewees were approached and selected from the Strategy, Finance and Reporting departments, and from the business segments. Specifically, Renewable and New Energy business departments, and Financial and Reporting Directors, and Strategy Heads. In the non-competitive sectors advisors were asked from Big4s and the Top-tier consulting companies like BCG and McKinsey. Among the NGOs the representatives of Fair Trade and Green Policy Centre, and Climate institutes were asked. Finally, from the EU representatives pool, the Investment Policy Officers and supporting colleagues of Directorate General of Climate and Energy were approached. The detailed description of the interviews' results will be elaborated in the empirical part of the dissertation.

3.1.2 Operationalisation of the Key Variables

This research identifies and analysis the key variables associated with the green transition of oil and gas companies. To evaluate the extent of corporate green transformation, the empirical analysis focuses on three primary outcome indicators:

(i) Green capital expenditure (CAPEX) ratio, measured as the proportion of total capital expenditure allocated to low-carbon and renewable energy projects

(ii) Divestment activities, assessed through value of divested assets and the characteristics and geographical location of the acquiring entities to evaluate the implications for portfolio decarbonisation

(iii) Corporate green transition narratives, analysed through strategic documents, sustainability reports, and public communications to assess the evolution and credibility of companies' transition commitments

One of the most significant indicators of corporate commitment to the green transformation is the level of actual financial resources allocated to low-carbon projects, commonly referred to as green capital expenditure (CAPEX). Data on green CAPEX were collected from the publicly available annual reports and sustainability disclosures of the selected companies (Shell, 2017;

Shell, 2018; BP, 2020; Bp, 2021; Neste, 2024). The ratios were simply calculated by dividing total capital expenditures with the green project spendings. To assess the green and low-carbon investments in case of each company, the green CAPEX ratio was calculated by dividing actual capital expenditure allocated to the green projects by total annual CAPEX. Additionally, the volume of the divestments shows how the companies reduce their dependence on fossil-based operations and assets. Divestments were analysed from the angle that which companies were bought the carbon-heavy assets and under which ownership they are going to continue emission of carbon-dioxide. In this regards the policy makers have impact on decarbonization from the ESG point of view where Scope 1 and 2 emissions need to be stated clearly based on the Corporate Sustainability Reporting Directives (CSRD).

To ensure systematic coding and empirical consistency across the comparative case analysis, capital expenditure allocations are categorized into three distinct operational classifications based on the European Union Sustainable Finance Taxonomy (EUR-Lex, 2020):

(i) Green Investments, which comprise zero-emission infrastructure

(ii) Low-Carbon Investments, which encompass transitional, circular, and abatement technologies

(iii) Brown-Field Investments, which cover legacy fossil-fuel extraction and refining operations. Establishing these definitions upfront in the methodology operationalizes the financial variables necessary to test the alignment between corporate strategy and actual capital reallocation in Chapters 5 and 6.

Table 4. Categorization of Capital Expenditures

Investment Category	Characteristics	Key Activities & Asset Types
Green Investment	Zero-emission infrastructure, absolute net-zero assets that do not rely on fossil fuels or hydrocarbon inputs	Offshore, onshore wind farms, Solar photovoltaic (PV) installations, green hydrogen produced by water electrolysis
Low-carbon Investment	Transitional, circular, carbon-mitigating technologies which significantly lower emission intensity while still operating within industrial value chain	Sustainable aviation fuels (SAF), biofuels, circular economy, plastic mechanical & chemical recycling, waste-to-energy, Carbon Capture, Utilization and Storage (CCUS), low-emission chemical & polyolefin
Brown-field Investment	Exploration, extraction, production, refining & distribution of traditional fossil fuels (oil, gas and coal)	Upstream oil & gas exploration, field development & extraction, midstream pipelines & liquified natural gas (LNG) capacity expansion

Source: Author's own work based on EUR-lex Taxonomy

Additionally, the empirical part of the dissertation contains Scope 1, 2 and 3 emissions between 2017 and 2024 for the six selected cases. This data is indication for the carbon reduction, and it is a fact-based interpretation of the narratives and strategic targets of the companies. The interlink can be drawn between the actual emission trends and targets officially disclosed by the companies. The evolution of these metrics is important to analyse the green character of the operational dimensions including entire value chain in line with the companies' activities. Furthermore, the empirical assessment focuses on the ownership structure as well of the six selected entities. The portion of the state ownership might influence the strategic directions of the companies in the green transformation (Bartalos, 2023) which appears as the alternative variable in the process tracing framework. Those governments which are committed to the climate policies will step in and support green transition for those companies which are willing to take ownership over the substantial portfolio shift.

3.1.3 Case Study Selection

The six cases – Shell Royal Dutch, British Petroleum, OMV, Orlen Group, Neste, and Ørsted – were selected based on their climate ambitions, size, ownership structure and geographical positioning. Primarily the focus has been on the European O&G companies due to the EU's frontrunner role globally in climate governance, particularly in the implementation of the Paris Agreement, and subsequent policy frameworks such as the European Green Deal. The selected companies represent sufficient variation across key factors nurturing the comparative design of the companies. One of the most influential aspects are the size of the entity like supermajors Shell and BP, mid-sized like OMV and Orlen Group and the small companies represented by Neste and Ørsted. Other factors influencing transition are linked to the ownership structure and characteristic of the oil and gas companies' portfolio. In the former the main different dimension is state-influenced versus market-driven entities, and the latter refers to hydrocarbon-intensive versus diversified or renewable-focused models Shell, OMV versus Neste and Ørsted. These companies provide empirical base for green transition analysis, as they are transparent in disclosing extensive data set and information about capital expenditures, divestments and sustainability strategies. Each of the six cases are strategic players among global oil and gas companies with varying commitments towards renewable business segment and green transformation under the EU. These aspects make them suitable for successful cross-case comparison in line with examining corporate behaviour and their narratives.

The empirical analysis of this dissertation was conducted between 2017 and 2024, timeframe of the post Paris Agreement-era which is particularly relevant for the green transformation of oil and gas companies (Bartalos & Sárvári, 2025). The time scope of the analysis starts after one year of ratification of the Paris Agreement during which climate commitments became operationalized through supranational and national regulatory measures and corporate strategies in the frame of the European Green Deal (Skjaerseth, 2021). Starting the observation from 2017 allows to reveal strategic responses by entities to the global and European regional climate commitments, including the increasing integration of the sustainability narratives into the annual and sustainability reporting and long-term strategic goals. The timeframe is methodologically sufficient for capturing the evolution of the green transition as it enables structured observation of changes in capital allocation patterns and portfolio restructuring among the six selected oil and gas companies (Bartalos, 2023). The period is appropriate to identify trends and asses the pace of green transformation, and to evaluate the depth of strategic adaptation of sustainability. Moreover, the empirical evidence suggests that prior to 2017 majority of the selected cases demonstrated limited correlation between green narratives and strategic investments, divestments activities. The annual and shareholders reports lacked references to sustainability and green transition. The chosen starting date, 2017, advances analytical relevance of the thesis by representing a period where green transition evolves measurable and strategically articulated.

Table 5. Case study pool of Oil and Gas Companies based on number of employees and size of their Revenue (Bartalos & Sárvári, 2025)

Oil and Gas Companies	Number of Employees	Revenue in 2023	EBITDA 2023	Size Clusters	Headquartered
Shell	93 000	USD 323 billion	USD 68 billion	Big	Western Europe
BP	67 600	USD 210 billion	USD 43 billion		
OMV	22 308	USD 42 billion	USD 7.5 billion	Medium	Central & Eastern Europe
PKN Orlen	21 109	USD 81 billion	USD 17 billion		
Neste	4 872	USD 24 billion	USD 4 billion	Small	North Europe
Orsted	6 836	USD 11 billion	USD 3 billion		

Source: own edition based on the annual reports of Shell, BP, OMV, PKN Orlen, Ørsted and Neste 2023

Table 6. Ownership structure of the 6 oil and gas companies

Oil & Gas Companies	State	Private + Funds	Institutional
Shell	0.01%	33%	67%
BP	0.04%	47%	53%
OMV	32%	68%	-
PKN Orlen	50%	44%	6%
Neste	50%	50%	-
Orsted	51%	37%	12%

Source: Author's own data collection from the companies' website

Leveraging successful performance of Neste and Ørsted in implementing green transformation strategies, the following hypothesis are formulated based on their strategic developments and achievements during the 2017 – 2024 periods. The high portion, more than half of the ownership structure owned by the state in case of Neste and Ørsted, both Finland and Denmark have a progressive approach to protect the environment and accelerate green transformation of these companies. Besides having strong commitments of their CEOs to go through a complete portfolio shift, the state involvement is inevitable.

3.1.4 Data Collection and Analysis

Both qualitative and quantitative methodologies will be applied to articulate and support the findings of the research and the hypothesis. The main part of the qualitative method will be in-depth interviews with prominent state officials at Climate and Energy Policy Department, legal representatives of oil and gas companies responsible for EU regulations and international relations, head of business development and strategy departments and outstanding experts at environmental NGOs. The interviews were structured and recorded, prepared questions were asked, and there was a platform provided for further nurture conversation. The interviewees' identity is going to be handled anonym throughout the whole research scheme. However, there position and institution will be marked openly.

Table 7. Overview of Interviewees

Interviewees	Stated Positions	Sector	Location
Shell	Central and Eastern European Representative of Strategy	Competitive	Hungary
Shell	ESG Head	Competitive	United Kingdom
BP	Business Representative	Competitive	United Kingdom
OMV	Business Head at RomPetrom	Competitive	Romania
Orlen Group	Business Representative	Competitive	Poland
Neste	Business and Strategy	Competitive	Finnland
Boston Consulting Group (BCG)	Energy and Climate Advisor	Competitive	Hungary
Fair Carbon	Climate Expert	Non-Competitive	Switzerland
Reuters	Oil & Gas Correspondent	Non-Competitive	United Kingdom
Non-governmental Sector	Climate Ambassador	Non-Competitive	Hungary
EU	Directorate General for Energy	Non-Competitive	Belgium
EU	Directorate General for Climate	Non-Competitive	Belgium

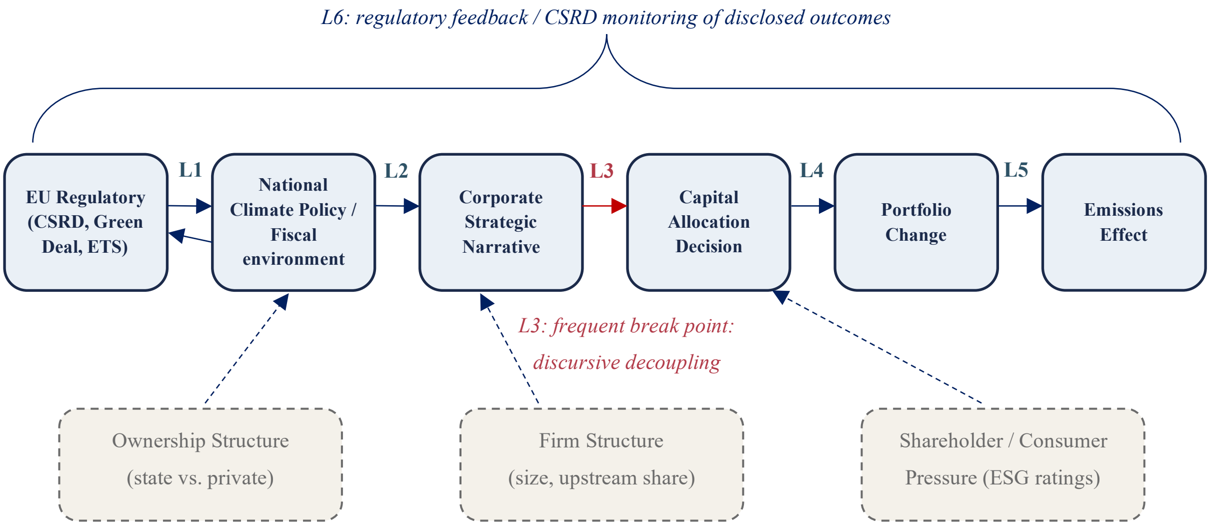
Source: Author's own data collection from the companies' website

The results of the interviews would be built in the dissertation along with the fusional chain of the theoretical framework. In the frame of the quantitative method I have applied secondary data analysis and gathered information about the direct impacts of the EC directives on decarbonization. The secondary data have supported the analysis how the oil and gas companies are responding to the CO_2 emission reduction targets, and to measure the impact of the solutions they apply. The source of the secondary data was mainly the annual report of each of the selected cases, and their sustainability report which has gone through on evolution between 2017 and 2024 period. The observation proved that the sustainability dimensions and information were more detailed in the early 2020s compared to the information share in the late 2010s. The greenhouse gas emissions calculations, Scope 1, 2 and 3 figures are published and included in the short- and long-term strategic targets.

3.2 Process Tracing Design: Hypothesised Causal Mechanism and Observable Implications

Building on the process-tracing foundations introduced above (Beach & Pedersen, 2013; Collier, 2011), this subsection formalises the specific causal-mechanism design applied to the six case studies. Mechanistic process tracing required analyst to specify, ex ante, hypothesized causal chain linking the independent variables to the dependent variable. The hypothesized mechanism connecting supranational regulation to firm-level environmental outcomes is decomposed into six sequential and theoretically ordered causal links (Figure 1): (1) EU regulatory pressure, operationalised principally through the Corporate Sustainability Reporting Directive (CSRD). The next link is (L) national policy incentives, comprising carbon pricing, subsidies and impact of state ownership in green transition, (3) corporate strategic narrative observed in strategy documents, and sustainability reporting. The (4) capital allocation decision measured by green and brownfield investment and divestment activity, (5) portfolio change, reflected in the size of upstream, downstream and renewable business segments. The (6) emission effect tracked through Scope 1, 2 and 3 trends between 2017 and 2024.

Figure 1. Casual sequence in the Process Tracing from EU Regulations to Emission Effects & Portfolio Change



Source: The author's own work

Table 8. Hypothesised Causal Mechanism and Observable Implications by Causal Link

Causal Link	Hypothesised Causal Mechanism	Observable Implication	Process Tracing Test	Primary Evidence
L1. EU regulatory pressure → national policy implementation	EU Climate initiatives: CSRD disclosure obligations, Green Deal create binding reporting, target-setting pressure that member states transpose into national policy instruments supporting decarbonisation	Adoption of national carbon pricing, subsidy schemes, renewable incentives, transition strategies or state-led policy initiatives following EU legislation	Hoop test. National policy implementation constitutes a necessary intermediary between EU regulations and firm-level responses	EU legislation, national climate and energy strategies, CSRD transposition documents, government policy papers
L2. National incentives → corporate strategic response	National policy incentives and regulatory expectations affecting firms to incorporate decarbonisation objectives into corporate strategy and sustainability commitments.	Corporate strategies, sustainability reports and CEO statements reference national policy objectives, transition targets or regulatory compliance.	Straw-in-the-wind. Strategic narrative is consistent with the mechanism but could result from market or stakeholder pressures.	Annual reports, sustainability strategic goals, semi-structured interviews.
L3. Corporate narrative → Capital allocation decision	Strategic commitments are linked to increasing share of green CAPEX and divestment of carbon-intensive assets.	Green CAPEX ratio rises and divestment proceeds are redirected toward low-carbon assets in the periods following narrative commitments.	Smoking-gun test. Evidence of strategic commitments are followed by measurable investment decision provides strong support for hypothesised mechanism	Green CAPEX, divestment data (Table 17), financial statements in annual reports.
L4. Capital allocation decision → Portfolio change	Sustained investment reallocation towards green and low-carbon activities.	Increasing share of renewable or low-carbon assets, acquisition of green energy portfolio, technologies and divestment of upstream fossil fuel segment and changing revenue composition.	Hoop test. Portfolio transformation is a necessary intermediate outcome linking investment decisions to environmental performance. The absence of portfolio change interrupts the causal mechanism.	Segment reporting, divestment and acquisition records, corporate portfolio disclosures.
L5. Portfolio change → Emissions effect	Structural transformation of the corporate portfolio contributes to long-term reduction in GHG emission and sustained reduction in Scope 1, 2 and 3 emissions.	Scope 1/2 emissions decline in absolute and intensity terms, as well as Scope 3 reduction	Smoking gun. Sustained improvements in environmental performance provide evidence that portfolio transformation has transtlated into measurable outcomes.	Companies' sustainability and GHG disclosures, 2017–2024.

Source: author's own construction, based on Beach & Pedersen (2013), Collier (2011), and Bennett & Checkel (2015)

For each of the six cases, the observed sequence is classified according to three mutually exclusive outcomes, following the logic of within-case sequence elaboration proposed by Mahoney and Goertz (2012) and applied to comparative case-study research by George and Bennett (2005):

(i) Supported – evidence is consistent with the hypothesised direction of causation at each link

(ii) Partially supported – evidence supports the hypothesised mechanism, however, the causal links' chain breaks and only partially present

(iii) Rejected – evidence at one or more links run counter to the hypothesised direction, capital allocation moves toward brownfield assets despite intensifying regulatory pressure and narrative

The above analytical classification enables the dissertation to move beyond binary distinction between hypothesis confirmation and rejection by identifying the specific chain at which the hypothesised causal mechanism is either sustained, interrupted or contradicted. Overall, the analysis supports the understanding of how European Union regulatory pressure, national policy implementation, stakeholder expectations, and firm-level strategic response interact to shape heterogenous pathways of corporate green transformation. The framework facilitates systematic comparison across six cases to enhance transparency and analytical rigour. The findings during the empirical analysis will be further elaborated in Chapter 6 following the examination of empirical evidence relating to corporate strategy, green capital expenditure and divestments and greenhouse gas emissions for each case.

3.3 Overview of the Hypothesis, Research Questions, Theories, Data Sources, Method and Relevant Chapters

Below overview (Table 9.) presents the core methodological architecture of the dissertation by establishing a systematic link between the research questions, theoretical propositions, hypotheses, empirical indicators, data sources, and analytical procedures. Rather than treating the theoretical framework and empirical analysis as separate components, the table specifies how the conceptual assumptions developed in Chapter 2 are translated into empirically observable relationships and subsequently examined in Chapters 5 and 6. Each hypothesis is therefore linked to a clearly defined research question and theoretical mechanism, which is operationalised through specific corporate and contextual indicators, including green capital expenditure, fossil-asset divestments, portfolio structure, technological partnerships, and Scope 1, 2 and 3 greenhouse gas emissions.

The table further identifies the primary documentary and quantitative sources used to assess these indicators and specifies the methodological procedures through which the hypothesised relationships are examined, including comparative cross-case analysis, qualitative document and narrative analysis, event analysis, and within-case process tracing. The below overview provides the methodological basis for assessing whether publicly articulated transition commitments are translated into observable corporate action. Furthermore, it identifies the firm-level, national-level, and EU-level conditions that account for variation across the six cases. The assessment thereby operationalises the dissertation's central analytical proposition that green transformation is a multidimensional and path-dependent process emerging from the interaction between institutional pressures, corporate strategic choices, economic incentives, technological capabilities, and discursive constructions of sustainability.

To move beyond descriptive correlation, the study uses process tracing and diagnostic testing (Van Evera, 1997). When testing whether corporate sustainability narratives translate into actual capital allocation (H1b) or serve as a rhetorical shield masking continued fossil investment (H2), the methodology applies "hoop tests" and "smoking-gun tests". In case of hoop test a company claiming a deep strategic pivot must clear the "hoop" of dedicating a measurable, non-marginal share of its capital expenditure (CAPEX) to low-carbon technologies. If CAPEX remains heavily concentrated upstream, the hoop test fails, exposing a discursive-action gap. At smoking-gun test, if internal documents, strategic roadmaps, or explicit capital-allocation disclosures reveal that low-carbon joint ventures, such as offshore wind or solar portfolios, are treated as marginal profit centres while core cash flows are intentionally preserved for legacy oil and gas expansion, this serves as definitive evidence of strategic misalignment.

The cross-case comparative matrix evaluates six European energy cases across a consistent temporal window (2017–2024). By establishing a structured protocol for data collection, the research controls for variations in national policy stringency (MLG framework) and corporate ownership structures (H1a). For H3, the methodology directly addresses divestment data in corporate reporting. The phenomenon where "greening" a corporate balance sheet via fossil asset divestment does not equate to global decarbonization. By tracking buyers of the divested assets (e.g., private equity or less-regulated operators) and monitoring subsequent Scope 3 emissions, the study distinguishes between genuine transition and administrative emissions displacement.

The analytical framework integrates evidence from diverse data sources and translates it into a coherent set of operational indicators. Qualitative evidence is analysed through structured and systematic textual analysis of corporate annual and sustainability reports, CEO communications, public statements and consultations, as well as relevant regulatory and policy documents. The analysis codes the material according to predefined analytical categories to identify and compare normative, rational, and institutional frames through which companies articulate their climate-transition objectives, strategic priorities, and responses to external regulatory and societal pressures. Quantitative evidence comprises standardised financial, operational, investment, divestment, and environmental indicators, including green CAPEX ratios, segment revenues, investment and divestment values, portfolio composition, and reported absolute GHG emissions across Scope 1, Scope 2, and Scope 3. These data are primarily derived from the audited annual reports, sustainability reports, and other publicly disclosed corporate financial and environmental reporting of the selected companies, supplemented, where appropriate, by established sectoral and institutional databases. To facilitate cross-case comparison, the reported data are systematically reviewed and, where necessary, normalised according to consistent definitions and measurement procedures.

Below assessment provides the basis for evaluating the hypotheses systematically and for ensuring consistency between the theoretical framework, empirical evidence, and main thesis of the dissertation.

Table 9. Logical Arc among Hypothesis, Research Questions, Theories, Data Sources, Method and Relevant Chapters

Hypothesis	Research Questions	Theoretical Basis	Data Source(s)	Method	Relevant Chapter(s)
H1a: National pro-climate-policy commitment → higher green CAPEX ratio, faster emissions reduction	Central RQ: To what extent have long-term climate goals led European oil and gas companies to adapt their activities?	Comparative cross-case analysis	National energy/climate policy documents (Section 4.2); green CAPEX ratio (Table 17); Scope 1–3 emissions (Table 18)	Ranking of national policy stringency against green CAPEX ratio and emissions trajectory across the six cases; qualitative pattern-matching (Section 6.1)	2.2.1, 2.3; 3.1, 3.1.5; 5; 6.1
H1b: Lower dependence on vertically integrated hydrocarbon operations → stronger narrative–capital-allocation alignment	Sub-RQ1: How do the companies' green narratives relate to their divestment and investment actions?	Within-case process tracing (causal link L3→L4) combined with cross-case comparison	Annual and sustainability reports (narrative coding); segment reporting (upstream/downstream share); green CAPEX ratio (Table 17)	Diagnostic-test coding (hoop, smoking-gun) of the narrative-to-capital-allocation link per case; cross-case sequence matrix (Table 6.1 / Figure 6.1)	2.2.2, 2.4; 3.1.5; 5; 6.1
H1c: Deeper technological partnerships in renewables/low-carbon sectors → faster transition in portfolio structure	Sub-RQ2: What factors shaped companies' green ambitions?	Qualitative document analysis combined with divestment/acquisition event tracking	Partnership announcements and MoUs; M&A and divestment disclosures; segment revenue data	Timeline/event analysis linking partnership formation to subsequent portfolio change (causal link L4→L5)	2.4, 2.5; 3.1.3; 5; 6.1
H2: Corporate sustainability narratives are systematically misaligned with actual decarbonisation	Sub-RQ1: How do the companies' green narratives relate to their divestment and investment actions?	Narrative analysis combined with process tracing at the narrative-to-capital-allocation link (L3→L4)	Corporate strategic narratives, CEO discourse, sustainability reports; green CAPEX ratio (Table 17)	Discourse coding against diagnostic-test criteria (Van Evera, 1997); comparison of narrative content against capital-allocation and emissions trend data (Table 18)	2.2.3; 3.1.5; 5; 6.1
H3: Fossil-based asset divestments improve corporate transition indicators more than they reduce real-world emissions	Central RQ: To what extent have long-term climate goals led European oil and gas companies to adapt their activities?	Buyer-identity and post-divestment emissions tracking combined with process tracing at the portfolio-to-emissions link (L4→L5)	Divestment/acquisition disclosures; buyer sustainability disclosures where available; Scope 1–3 emissions (Table 18)	Comparison of divestment volume/frequency (transition indicator) against Scope 3 emissions trend; qualitative assessment of buyer's location	2.6; 3.1.5; 5; 6.1, 6.1.7

Source: Author's own data collection based on Chapter 2 and 3.

3.4 Limitations of the Research

This dissertation is subject to several limitations which was revealed through the substantial research scheme. First, the analysis relies on a combination of qualitative assessment and selected quantitative indicators, which provide valuable insights into corporate strategies and behaviour, however, cannot fully capture the dynamic nature of the green transformation process. The transition of oil and gas companies is influenced by rapidly changing market conditions, business performance, shareholder expectations, and evolving policy frameworks, meaning that conclusions drawn from a defined period may not fully reflect longer-term developments or future strategic shifts (Bartalos, 2023).

The principal limitation of the analytics relates to the availability, consistency and transparency of the capital expenditure data. In many cases, the financial details of the acquired and divested assets are not shared publicly which poses hurdles to accurately assess the scale of green investments. Therefore, the precision of the calculated amount is limited to determine the portion of green, low-carbon and brownfield investments of the total disclosed capital expenditure amounts. Another challenging area is that many of the companies' reporting standards and disclosure practices are different which cause complexity in comparing the results of the six cases. Comparability of corporate GHG emissions data is nevertheless subject to methodological limitations, as companies may apply different organisational and operational boundaries, calculation methodologies, emission factors, and data assumptions when quantifying and reporting their emissions. These methodological differences can affect the reported magnitude and scope of GHG emissions and consequently constrain the comparability of emissions trajectories across firms and over time (GHG Protocol, 2026). Thus, to evaluate the progress of the cases is a challenging process. Nevertheless, the above-mentioned limitations are not undermining the reliability of the research findings. To address the data limitation multiple sources were used primarily annual and sustainability reports and independent publications about the results of these companies. The contextual analysis of the narratives supported the data analysis and forged a coherent outcome about the green transformation of oil and gas companies.

The study is constrained by the availability and consistency of data. A significant limitation lies in the absence of standardized and comprehensive quantitative reporting across the oil and gas sector, particularly in relation to green investment capital, research and development

(R&D) expenditure, Scope 1, 2, and 3 emissions reductions, and renewable energy production capacities. Differences in corporate disclosure practices, reporting methodologies, and transparency levels make cross-company comparisons challenging and may affect the robustness of the empirical analysis. While this dissertation attempts to address these gaps by applying a more data-driven and comparative framework, the reliability of the findings remains partially dependent on the quality and completeness of publicly available data. In future, based on the CSRD requirements more standardized approach will emerge in the reporting standards which will result in more reliable data.

A significant methodological limitation of this research concerns the cross-case comparability and consistency of greenhouse gas (GHG) accounting among the six examined companies. While Scope 1, 2, and 3 disclosures provide critical indicators of corporate decarbonization performance, the underlying calculations rely on heterogeneous reporting standards, evolving baseline definitions, and differing organizational boundary assumptions. In particular, Scope 3 Category 11 (Use of Sold Products) metrics vary substantially between integrated oil majors, Shell, BP and downstream or renewable-oriented transformers, Neste and Ørsted due to divergent estimation models for equity-share versus operational-control emissions, changes in portfolio consolidation following major acquisitions such as Orlen Group's integration of LOTOS and PGNiG and shifting lifecycle assessment methodologies. Furthermore, corporate carbon accounting often reflects reporting improvements achieved through asset divestments and operational boundary shifts rather than direct atmospheric emissions abatement. While emissions trends offer valuable insights, these measurement discrepancies introduce unavoidable empirical limitations, requiring emissions data to be triangulated alongside audited capital expenditures and transaction-level asset tracking. The research focuses primarily on capital allocation patterns - such as investments, divestments, and write-offs - across different business segments (e.g., upstream, downstream, and retail) as proxies for green transformation. However, these financial indicators may not fully capture the broader strategic and operational changes within firms, including organisational restructuring, innovation capacity, or long-term technological development. Furthermore, the lack of standardized definitions for green, low-carbon, and brownfield investments introduces potential ambiguities, thereby posing challenges to the reliability of the collected data's categorization.

Finally, while the dissertation highlights the importance of financial discipline and profitability considerations in shaping corporate decision-making, it does not fully account for all internal strategic deliberations or external pressures that may influence these choices. Although the proposed framework contributes to a more systematic evaluation of green transformation, further research incorporating more granular, standardised data, involving more external and internal factors would be necessary to deepen understanding and improve comparability across the sector.

4. FROM THE EU TO THE NATION-STATE: IMPACT OF CLIMATE POLICIES ON THE OIL AND GAS COMPANIES

The European Union has steadily developed encompassing climate-related policies since 1990; however, those measures appeared only on voluntarily basis at the beginning. At that time the EU has more limited competences in environment protection and climate targets compared to the years after 2000. Over a decade it has become the frontrunner in environment protection, and the targets has been transformed into legally binding actions. The mitigation process of climate change has been converted into the adaptation to the changes which have been triggered by the consequences of rising temperature. The dilemma between the mitigation and adaptation has been emerged after the United Nations Climate Change Conference in 2009 hosted by Denmark could not achieve real commitment to keep the temperature rising below 2 Celsius. The governing dilemmas have arisen when the focus was on a question at what level – centrally on multinational level or locally – should be the actions formed and taken? (Rayner & Jordan, 2010). These dilemmas are proven and analysed in more details in the selected cases which will elaborated further in the empirical part of the dissertation. According to the EU Climate Law the 55% reduction in net emissions by 2030 and climate neutrality by 2050 is more than aspirations and ambitions, it is legally binding since the European Climate Law was introduced (European Commission, 2021).

This chapter operationalises the highest tier of the theoretical hierarchy, the multi-level governance introduced in Section 2.2. Within this framework, regulatory pressures are transmitted across governance levels, cascading from supranational institutions to national and sub-national authorities (Hooghe & Marks, 2002). The following sections supply the empirical analysis corresponding to the countries where the case-study cases are headquartered. Consistent with process tracing design outlined in Section 3.1.5, Section 4.1. establishes the empirical evidence for causal mechanism L1, namely EU-level regulatory pressure, while Sections 4.2 - 4.3 examine causal mechanism L2, focusing on national-level incentives and constraints. Together, the relationship between EU regulatory pressure and national policy incentives and constraints provides the empirical basis for testing hypothesis H1a claiming that stronger national climate-policy commitment is associated with higher levels of green CAPEX and faster emission reduction.

4.1 EU Climate policies

Consistent with the vertical dimension of multilevel governance, the instruments reviewed in this section – for instance CSRD reporting, ESG, Fit For 55 package – represent the supranational tier from which the regulatory pressure originates before cascading to national level examined in sub-chapter 4.2. As a global frontrunner in climate governance and advancement of green transformation, the EU has introduced Fit for 55 packages in 2021 as a comprehensive policy framework designed to address the industrial, social and economic challenges associated with climate mitigation while supporting substantial reduction in greenhouse gas emission (European Commission, 2021). The package represents a critical step in operationalising the EU's ambition to achieve climate neutrality by 2050, by establishing an intermediate target of reducing net GHG emissions by at least 55% by 2030 compared with 1990 levels. The introduction of the Fit for 55 packages coincided with a broader shift in the EU's approach towards industrial transformation. Recognising that decarbonisation requires systemic changes across entire value chains, the European Commission emphasized the development of an industrial transition framework extending beyond individual companies and sectors. Climate policies and regulatory measures have increasingly been designed through cooperation with industrial ecosystems, integrating the perspectives of businesses, public authorities and societal stakeholders (European Commission, 2021).

The policy has targeted emission-intensives sectors, including energy, transport and construction, where technological transformation and investment decisions are expected to have significant implications for achieving the EU's climate objectives. Therefore, several measures within the Fit for 55 packages directly address these sectors by accelerating renewable energy deployment, improving energy efficiency, reforming carbon pricing mechanism, and promoting the transition towards low-carbon technologies. Importantly, the Fit for 55 framework reflects the EU's recognition that the green transition cannot be achieved solely through regulatory interventions but requires coordinated action among industrial actors, governments and society. While the Fit for 55 package encompasses a broad range of policy initiatives aimed at reducing net GHG emissions by 55% by 2030, one of its central pillars linked to the acceleration of renewable energy deployment. Accordingly, the Renewable Energy Directive (RED), revised under the Fit for 55 frameworks, represents a key regulatory instrument for increasing the share of renewable energy sources and supporting the decarbonization of the European energy system (European Parliament, 2024). Through these interconnected policy measures, the EU seeks to create an integrated governance framework that aligns industrial transformation, investment decisions, and societal adaptation with its long-term climate neutrality objective.

This section defines specific EU instruments, regulatory or institutional variable that can be compared and traced through the empirical chapters: technology support mechanism, carbon tax and price level, and disclosure requirements.

Table 10. Regulatory and Institutional Variables derived from EU climate policy instruments

Regulatory / Institutional Variable	EU Instrument	Operational Indicator / Data Source	Companies Most Directly Exposed	Theoretical Link
Technology-support enablement	Industrial Carbon Management (ICM) Strategy	CCUS-related capital expenditure disclosed in annual/sustainability reports	Shell, BP, Orlen Group	Goal Framing gain-frame accommodation of continued hydrocarbon operation (Section 2.3.2)
Disclosure stringency	Corporate Sustainability Reporting Directive (CSRD) / ESG reporting architecture	Scope, granularity and audit status of sustainability disclosures, 2017–2024	All six cases	Discursive-analytical Approach (Section 2.3.3); evidentiary basis for the discourse side of the L3→L4 comparison
Carbon-price and tax stringency	EU Emissions Trading System (ETS), Carbon Tax	EU ETS allowance price (EUR/tCO_2); national carbon tax rate (Table 5)	All six cases, weighted by upstream/refining exposure	Compliance Theory cost-benefit calculus (Section 2.3.2); causal link L1→L2
National transposition and enforcement	Member-state implementation of EU directives (Section 4.2)	National carbon tax rate; fossil-fuel subsidy regime; state-ownership share	Orlen Group (Poland), OMV (Austria), Neste (Finland), Ørsted (Denmark), Shell/BP (UK)	Multilevel Governance horizontal dimension (Section 2.3.1)

Source: author's own work based on Chapter 4

4.1.1 Industrial Carbon Management

Doubtless the EU is one of the key actors in the climate protection and mission to reduce GHG emissions. One of the most important legislative frameworks which ensure to capture, transport and store CO2 is the Industrial Carbon Management (ICM) Strategy published by the European Union in February 2024. The policy went through a quite vivid consultation between policymakers on the European and national level. The carbon management is quite challenging topic in the green transformation as it has a meaningful impact not only on the environment, but also on the economy (Määttä, 2025). It is important to investigate and analyse the impact of EU climate policies on the national and sub-national actors; their interactions and diverse perspectives shape the pace and level of green transition. The transition of oil and gas companies has induced in interconnected systems where policy, economic incentives, and social expectations jointly influence outcomes. In case of oil and gas sector, significant adjustment is needed in the long-term corporate strategies, along with the capital allocation and underlying economic priorities which together result in effective climate action. This EU-level framework is not merely a contextual background: it is the supranational regulatory condition that directly enables and incentivises carbon capture, utilisation and storage (CCUS) investments observed empirically in three of the six case-study companies. This tendency is captured in the Chapter 5 where it is further elaborated that oil majors - Shell & BP – have long-term reliance on CCUS, and Orlen Group is dedicated toward CCUS development programs. The ICM forms part of regulatory cost-benefit calculus which shapes whether a company's gain frame favours continued fossil fuel operation offset by carbon capture rather than a more fundamental portfolio shift.

4.1.2 ESG as an accelerator of green transition or an administrative burden

Among the EU climate directives, this research is concentrated on the Environment ("E"), Social ("S"), and Government ("G") principles which was first introduced by Kofi Annan, the Secretary-General of the United Nations in 2004. The international companies are required to comply the ESG standards incorporate them into the long-term strategies in line with financial obligations and GHG reduction (Mammadov & Roman, 2025). Compared to the ETS systems where the non-EU assets are excluded from the quota calculation, the GHG emissions including Scope 1 and 2 calculations linked to portfolio on global level. Therefore, the transition of oil and gas companies is interlinked with the ESG assessments including the main administrative framework, the Corporate Sustainability Reporting Directive 2022/2464 (CSRD) which were introduced in 2024 gauging investors, society, consumers and other stakeholders and companies in the evaluation of sustainability performance. The legally binding goals of 55% reduction of GHG emission in the framework of the European Green Deal is fully supported and stabilized via publicly reported sustainability and financial data along with strategic narratives in the ESG categories. To be compliant with the complex environmental, social and governance data the European Sustainability Reporting Standard (ESRS) provide helping hand (European Commission, 2025b).

Since COP21, the ratification of the Paris Agreement the green transformation of the carbon-intensive industries - particularly the oil and gas sector - was impelled by the financial sectors. Since 2016 the financial investors and institutions has linked relatively high financial risk to carbon emission. As a result, oil and gas companies, as a major emitter, have been exposed to growing carbon risk in capital markets, a high carbon emitter carry carbon risk on the capital markets which indicate materiality on climate change (Bolton & Kacperczyk, 2021; Krueger et al., 2020). Developments on the market and regulatory dimensions have further intensified this trend since 2021. Therefore, the CSRD based sustainability and financial reporting are essential for the market actors to understand what level of risk the companies are carrying due to the climate impact and how do they mitigate those climate risks which have financial consequence. Besides EU policymakers the major Western investment banks stepping out as the climate agents. They have direct influence how the capital flows towards the companies. In that way the oil and gas companies are leading active carbon management and started to report and disclose publicly their Scope 1 and 2 emission reductions. As many oil and gas companies, indicated in the below case study analysis, launching active divestment activities as even those assets which are outside of the EU are under the same calculation methodology. This is one the main reasons why the newly introduced ESG reporting is essential in green transition, because the companies can be compared to each other and instead of overarching narratives sustainability data are disclosed.

More recent development in 2025, indicate a partial recalibration of the above trends. The introduction of the 'Omnibus' regulatory adjustment by the European Commission aimed at simplifying the consolidated sustainability reporting including elements of CSRD and EU Taxonomy. The aim is to simplify and consolidate sustainability reporting requirements which has accompanied with potential dilution of disclosure obligation and temporary step back in reporting stringency (European Commission, 2025c). Partially the adjustment in the regulations reflect rising tension between economic competitiveness and ambitious sustainability standards, especially in the evolving economic and geopolitical pressures. Therefore, oil and gas companies face an increasingly complex investment environment in which financing, and shareholder expectations are conditioned to credible transition strategies.

At the same time the recent changes in the disclosure requirements reflect the process in climate commitment which indirectly impacting the pace of the green transition process.

4.1.3 The EU Emissions Trading System (ETS) and Carbon Pricing

The European Union Emission Trading System (EU ETS) represents one of the central market-based instruments of the EU climate policy framework. Since its introduction in 2005, the ETS has established a binding carbon pricing mechanism designed to reduce greenhouse gas emissions by placing an economic cost on carbon-intensive production. As a cap-and-trade system, it combines a progressively declining emissions cap with the trading emission allowances (Ellerman et al., 2016). The EU ETS has become a key regulatory mechanism influencing long-term corporate investment decisions, capital allocation, and decarbonisation strategies across energy-intensive industries. The strategic relevance of the ETS extends beyond environmental regulation by embedding carbon cost directly into firms' financial decision-making. Several oil majors, including BP and Shell, have publicly recognized as one of the most effective policy instruments for green transition (Bartalos, 2023).

For the oil and gas industry, the ETS represents a significant source of regulatory pressure, particularly for refining operations, and upstream extraction activities (Delarue et al., 2010; Grubb et al., 2014). The relevance of ETS has been increased, in parallel with the rising allowance prices, together with the regulatory stringency, have required firms to integrate explicit carbon costs into investment plans, project evaluation, and long-term capital expenditure planning. Carbon pricing has impacted investment decision regarding CCUS, green hydrogen, energy efficiency improvements, and other low-carbon technologies to reduce future compliance costs. BP has incorporated an internal carbon price at level of USD 80 per tonne of CO_2 when evaluating major capital investment decisions (BP, 2019), illustrating how external regulatory pressure has become internalised within corporate financial planning.

The EU carbon pricing framework has been further strengthened through the complementary use of carbon taxation. While the EU ETS establishes a market-based carbon price for covered installations through the trading of emission allowances, several Member States have introduced national carbon taxes targeting sectors or emissions that fall outside the scope of the ETS. Carbon taxes provide a fixed price signal by directly taxing the carbon content of fossil fuels or greenhouse gas emissions, thereby complementing the price incentives created by the ETS (OECD, 2023b; World Bank, 2024). These instruments constitute a multi-layered carbon pricing architecture that increases the cost of carbon-intensive activities while providing a flexibility in policy design across member states. As a result, multinational firms operating across the EU are simultaneously exposed to supranational regulatory pressure through the EU ETS and heterogeneous national carbon tax regimes, reinforcing the multi-level governance dynamics analysed in this dissertation.

Table 11. Main Instruments could affect the green transition of the oil and gas companies (Bartalos & Sárvári, 2025)

EU Instruments	Implication geographically	Relevancy in green transformation
ETS	Assets within the EU	**Pricing carbon emissions**
GHG Protocol (Scope 1 & 2)	Portfolio in and outside of the EU	**Measuring emissions performance**
CSRD	Global Corporate Reporting	**Increasing transparency, accountability and comparability**

Source: authors own work

As the table shows above the major difference between ETS based quota and GHG Protocol systems is that it is applied for the production and exploration sites only within the EU boundaries, while the GHG emission are including the global operations.

4.2 European Climate Policies through the lens of nation-states

This section operationalizes the Multilevel Governance (MLG) framework to examine how supranational EU climate obligations are transposed and financially incentivized across member states. This chapter avoids simple geographical determinism by assuming that heavy national coal reliance automatically dictates corporate decarbonization. Instead, it investigates the specific regulatory transmission belts and administrative decision points that mediate between EU law and corporate behaviour. Under Hypothesis H1a, national institutional contexts are treated not merely as background context, but as an empirical variable (L2) capturing the differentiated national implementation of the EU directives. Because EU climate policy does not reach oil and gas incumbents uniformly, it operates as a two-tier cascade: supranational architecture for instance launching the Corporate Sustainability Reporting Directive (CSRD), and Renewable Energy Directives interacts with domestic transposition mechanisms, national energy security priorities, state-ownership stakes, and fiscal interventions. This section evaluates specific national structural features such as fossil-fuel and import dependencies, the specific legal provisions of national energy policies, the mechanics of national policy transposition, and state equity ownership in national energy champions.

4.2.1 Poland's Energy Structure and Its Influence on Orlen Group's Strategic Transformation

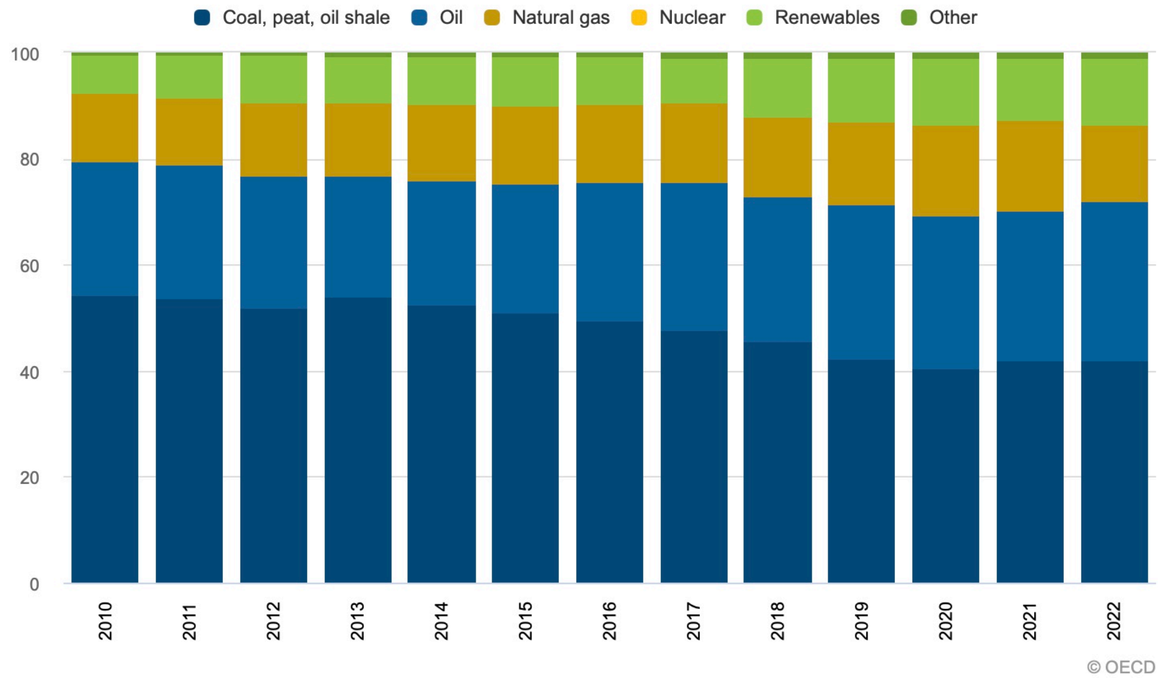
The case of Poland and its national energy champion, Orlen Group, illustrates how domestic institutional mediation shapes the transmission of EU climate targets. Poland's macroeconomic energy profile has historically been anchored in domestic solid fossil fuels; OECD (2023) data indicate that fossil fuels accounted for approximately 87% of Poland's total primary energy supply. This structural characteristic provides an important contextual condition for understanding the operating environment of Orlen Group; however, fossil-fuel dependence should not be treated as a sufficient causal explanation for the company's relatively gradual transition. Rather, the relevant analytical question is how Poland's energy structure interacts with national policy choices, regulatory instruments, energy-security considerations, and the implementation of EU climate policy to shape the incentives and constraints confronting Orlen Group.

Figure 2 illustrates the evolution of Poland's energy mix following the Paris Agreement. The increasing contribution of renewable energy sources has been accompanied by a gradual reduction in coal dependence, while natural gas has assumed an increasingly important role in the energy system. Nevertheless, the pace of structural change has remained relatively limited compared with the transformation required to achieve long-term climate neutrality. This trajectory is significant for the analysis of Orlen because the company operates within, and is strategically embedded in, a national energy system in which security of supply, affordability, domestic energy production, and the gradual replacement of coal remain important policy objectives. Accordingly, the persistence of fossil-fuel-based activities cannot be interpreted exclusively as a corporate preference; it is also situated within a broader institutional environment in which decarbonisation competes with other national policy priorities. To conclude the brief overview, still in 2022 the fossil fuel[1]-based industry has received quite

[1] Fossil fuels are energy sources formed over millions of years sourced from the remained dead plants and animals that have been buried and stayed under heat and pressure in the Earh's crust. The fossil fuel energy sources contain

remarkable subsidies from the state in the form of tax incentives and direct transfers. To highlight a few measurements, there was VAT reduction from 23% to 8% for some fuel, another VAT reduction for natural gas to 8% in January 2022 and 0% as of February 2022 (OECD, 2023). Due to its structural dependence on coal Poland has adopted gradual transition approach emphasizing the importance of renewable and nuclear energy, and application of natural gas as a transition fuel. Technology upgrade is needed and robust capital inflow to green transition. The national approach towards sustainability is in line with a cautious transition model of Orlen Group (Hebda, 2022).

Figure 2. Poland's Energy Mix



Sources: IEA (2022). World Energy Statistics. IEA World Energy Statistics and Balances

The principal national policy framework relevant to this context is the Energy Policy of Poland until 2040 (PEP2040), adopted by the Council of Ministers in February 2021. illustrates why the country's national policy incentive variable remains comparatively weak. PEP2040 sets a coal-fired generation ceiling of 56% by 2030 but a conservatively estimated coal exit date of

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three categores: coal, oil (petroleum) and natural gas (Taipabu et al., 2025). Burning fossil fuels dominantly contribute to global climate change and air polition which triggers the momentum to shift towards cleaner energy sources such as renewables: sun, wind and hydroelectric power (Pang et al., 2023).

only 2049 (IEA Policy Database, 2021a; Poland, Ministry of Climate and Environment, 2021). The significance of PEP2040 for this dissertation therefore lies not in demonstrating that Polish policy directly caused Orlen's investment behaviour, but in establishing the institutional context within which corporate strategic choices were established. Compared with countries in which national energy strategies have more explicitly accelerated the displacement of fossil fuels, the Polish framework provided greater continuity for carbon-intensive energy activities during the period examined. However, the national policy framework did not reject decarbonisation; rather, it embedded decarbonisation within a gradual transformation model in which coal reduction, renewable deployment, nuclear development, energy security, and economic competitiveness were pursued simultaneously.

By interpreting Orlen Group's corporate strategy, the following sequence can be observed: historical energy-system dependence shapes national policy priorities; these priorities influence the design and timing of domestic regulatory and fiscal instruments; and that instruments, interacting with EU-level requirements and market conditions, affect the incentives and constraints facing Orlen Group. This interaction is consistent with Skjærseth's (2018) argument that the implementation and effects of EU climate and energy policies are conditioned by domestic institutional arrangements and policy feedback. The Polish case therefore demonstrates that EU climate governance does not produce identical corporate incentives across Member States. Common European regulatory requirements are filtered through nationally specific energy systems, fiscal measures, implementation choices, and political-economic priorities. The analytical significance of Poland consequently lies not in the strength or weakness of its climate policy in isolation, but in the way its domestic policy mix mediates the economic incentives generated by European climate regulation.

The national policy environment further reinforced these structural constraints. Although Poland participates in the EU Emission Trading System (EU ETS), its domestic carbon taxation has remained among the lowest in Europe. In 2025, Poland's explicit carbon tax amounted to approximately USD 0.1 per tonne of CO_2 (Mengden, 2025), substantially below the levels observed to other EU Countries (See Table 8.). The national policy environment should therefore be understood not as a simple function of the level of domestic carbon taxation, but as a policy mix in which EU-level carbon pricing interacts with national fiscal, energy and industrial policies. Poland participates in the EU Emissions Trading System (EU ETS), which establishes the principal carbon-pricing mechanism for emissions from covered installations.

Unlike a conventional carbon tax, the EU ETS operates through a declining emissions cap and a market for tradable allowances, with the resulting allowance price creating an economic incentive to reduce emissions and invest in lower-carbon technologies (European Commission, 2026). Consequently, the relatively low level of Poland's separate explicit carbon tax should not be interpreted as evidence of weak carbon-price exposure for EU ETS-covered activities. OECD data indicate that installations covered by the EU ETS are generally exempt from the Polish carbon tax, making the ETS allowance price the more relevant carbon-pricing signal for these activities (OECD, 2024).

The analytical relevance of Poland lies in the interaction between this common European carbon-pricing mechanism and nationally determined policy instruments. Although the EU ETS creates a common economic cost for covered carbon-intensive activities, national governments retain substantial influence over the wider investment environment through energy taxation, subsidies, regulated energy prices, infrastructure policy, state support and the sequencing of energy-system transformation. In Poland, these instruments have at various points been used to address energy affordability and security alongside decarbonisation objectives (OECD, 2023). The resulting policy configuration may therefore moderate the transmission of the EU carbon-price signal to corporate investment decisions. For Orlen Group, the relevant incentive structure is consequently produced by the interaction of EU ETS exposure with Poland's broader energy and fiscal policy environment, rather than by the absence or presence of a national carbon tax alone.

To sum up, Orlen Group occupies a strategically important position within Poland's energy system and maintains an extensive, vertically integrated hydrocarbon portfolio. Its transition therefore involves not only compliance with European decarbonisation requirements but also the restructuring of activities connected to refining, fuels, petrochemicals, mobility, and energy security. The empirical analysis subsequently examines whether and how this institutional environment is reflected in Orlen Group's corporate narratives, green capital expenditure, divestment decisions, portfolio restructuring, and emissions trajectory. The Polish case is thus used not to establish that national fossil-fuel dependence causes slower corporate decarbonisation, but to investigate whether domestic policy mediation helps explain variation in the transmission of common EU climate objectives into firm-level capital-allocation decisions. This distinction is central to the comparative design of the dissertation. The analysis treats national conditions as an intervening institutional mechanism between EU-level climate governance and corporate behaviour rather than as an independent explanation of transition performance. This allows the Orlen case to contribute to the broader argument that corporate green transformation emerges from the interaction of supranational regulatory pressure, national implementation and policy choices, and firm-level strategic and organisational characteristics.

4.2.2 Austria's Energy Structure and the Strategic Response of OMV to the Green Transition

Austria provides a contrasting case to Poland by illustrating how a comparatively supportive national climate-policy environment may coexist with a slower and more complex corporate transition. The Austrian federal government holds a direct stake of approximately 31.5% in OMV AG through Österreichische Beteiligungs AG (ÖBAG), while the state also holds a 51% stake in Verbund AG, Austria's largest electricity producer (ÖBAG, 2026; VERBUND, 2025; ICLG, 2025). This ownership structure creates a direct institutional connection between national policy objectives and strategically important energy companies. Within the integrated Goal Framing and Compliance framework developed in Section 2.3.2, such institutional proximity could be expected to facilitate the transmission of national climate objectives into corporate strategic priorities. However, the OMV case demonstrates that state ownership and supportive national policy do not automatically translate into rapid corporate decarbonisation.

Austria presents a distinct structural duality: a highly decarbonized domestic electricity sector coexisting with a macroeconomic dependency on liquid fuels. The country has achieved a renewable energy share of 32% of its total energy supply (TES)[2] with the following components biofuels, hydropower and combustible waste. Despite this progress, oil has remained in relatively stable position in the energy mix, staying between 35% - 36% between 2017 and 2022 (OECD, 2022). As the largest integrated energy company in Central Europe with 31% of state ownership, OMV represents a strategic position in Austria's energy sector and carries substantial responsibility in shaping the country's energy transition. While company has continuously emphasized the commitments towards net-zero economy in post

[2] Total energy supply (TES) represents the total amount of energy available within a country in a given period. It is calculated as the sum of all energy produced domestically plus energy imported minus the export and international bunkers (IEA, 2020).

2017 strategy, its core operations remain deeply embedded in fossil fuel value chain. The strategic position is shaped by Schwechat refinery and three natural-gas-storages. The two main energy components oil is primarily exported from Kazakhstan while natural gas was imported from Russia even after February 2022 when the Russian Ukrainian war has started.

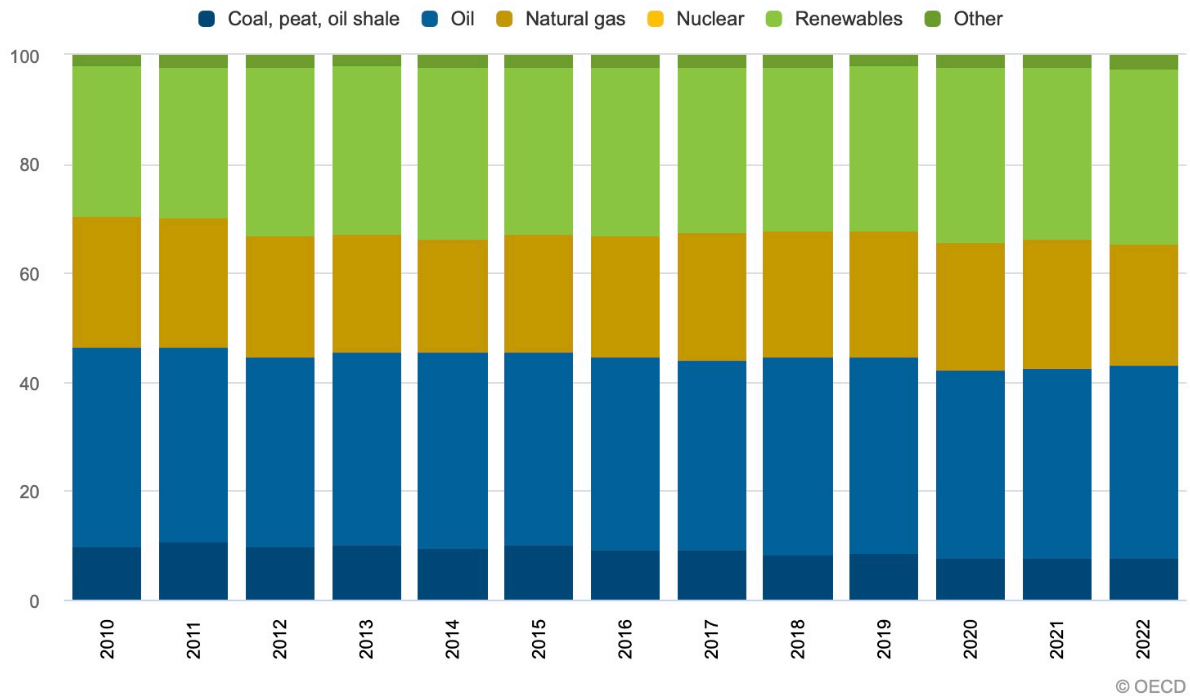
Austria's national policy framework has established the Renewable Energy Expansion Act (Erneuerbaren-Ausbau-Gesetz, EAG), which entered into force in July 2021, commits approximately EUR 1 billion annually in investment grants and market premiums to achieve 100% of national electricity consumption from renewable sources by 2030 (IEA Policy Database, 2021b; Climate Change Laws of the World, 2021). Furthermore, Austria accelerated its supply-side exit from solid fossil fuels by shuttering its final coal-fired power plant at Mellach in 2020 (IEA Policy Database, 2021c) and instituting a national carbon pricing and trading scheme accompanied by a household climate bonus in October 2022 (Austria, Federal Ministry for Climate Action, 2022).

Overall, OMV’s strategic position demonstrates a key tension within Austria’s energy transition: while the electricity sector is on the decarbonization path, however, the broader energy system remains structurally tied to fossil fuels. Austria’s supportive policy environment and relatively advanced renewable electricity system create favourable institutional conditions for decarbonisation, while OMV’s vertically integrated hydrocarbon portfolio, international asset base and continued exposure to upstream and petrochemical activities create countervailing structural constraints. The interaction between these conditions provides a more appropriate explanation for the company’s transition trajectory than either national policy stringency or state ownership considered in isolation.

Accordingly, Austria is operationalised in the comparative framework as a case of strong domestic policy support combined with significant firm-level structural constraints. The national context constitutes the L2 institutional condition, while OMV’s portfolio structure, ownership characteristics and exposure to international hydrocarbon operations represent firm-level conditions that mediate the transmission of national and European climate objectives into corporate decisions. The resulting configuration provides an important empirical test of H1a: strong national climate-policy commitment may create enabling conditions for green investment and emissions reduction, but its effect is expected to be conditional upon the firm’s structural dependence on hydrocarbon activities and the geographical distribution of its assets.

The empirical analysis in Chapters 5 and 6 therefore examines whether Austria's comparatively supportive policy environment is reflected in OMV's actual capital allocation and portfolio transformation. In particular, the analysis compares the company's publicly articulated sustainability commitments with its green, low-carbon and brownfield investments, divestment decisions and emissions trajectory. This comparison is essential because a supportive institutional environment may facilitate the adoption of ambitious sustainability narratives without necessarily producing a proportional reallocation of capital. The OMV case thus contributes to the dissertation's broader argument that corporate green transformation emerges from the interaction of multilevel regulatory pressure, national policy mediation, ownership structures, asset configuration and corporate strategic priorities, rather than from national climate policy alone.

Figure 3. Austria's Energy Mix



Sources: IEA (2022). World Energy Statistics. IEA World Energy Statistics and Balances

4.2.3 Finland's Energy Overview as a Determinant of Neste's Green Transition Strategy

Unlike countries with substantial domestic fossil-fuel resources, Finland has no significant domestic reserves of coal, crude oil or natural gas therefore 39% of energy needs are coming through imports. At the same time, its energy demand is relatively high, reflecting its energy-intensive industrial structure and climatic conditions (OECD, 2022). These structural characteristics have increased the importance of energy diversification and security while creating a policy environment in which renewable energy and low-carbon technologies have acquired strategic importance.

The national policy framework is particularly relevant to Neste because Finnish climate and transport policies have created specific market incentives for renewable fuels, rather than merely establishing broad decarbonisation objectives. The Act on the Promotion of the Use of Biofuels in Transport (Distribution Obligation Act) established a progressively increasing minimum share of renewable fuels in transport. The obligation reached 20% in 2020 and was subsequently placed on a statutory pathway towards 30% by 2029–2030 (Ministry of Transport and Communications, 2021; IEA-AMF, 2021). This policy instrument is analytically important because it generated domestic demand for precisely the products in which Neste had developed technological and production capabilities, particularly renewable diesel and sustainable aviation fuel. The relationship therefore extends beyond a simple association between *"strong climate policy"* and *"green investment"*. The Finnish regulatory framework reduced market uncertainty and created demand conditions that complemented Neste's existing technological capabilities and strategic positioning.

Fiscal policy has provided an additional, although more indirect, transmission mechanism. Finland gradually reduced tax incentives associated with conventional diesel and light fuel used in mobile machinery while strengthening the carbon component of fuel taxation (OECD, 2022). Such measures increased the relative attractiveness of lower-carbon fuel alternatives and reinforced the broader policy direction towards transport-sector decarbonisation. Nevertheless, these instruments should not be interpreted as deterministic drivers of Neste's transformation. Rather, they formed part of an institutional environment in which regulatory incentives, market demand and Neste's technological capabilities became mutually reinforcing.

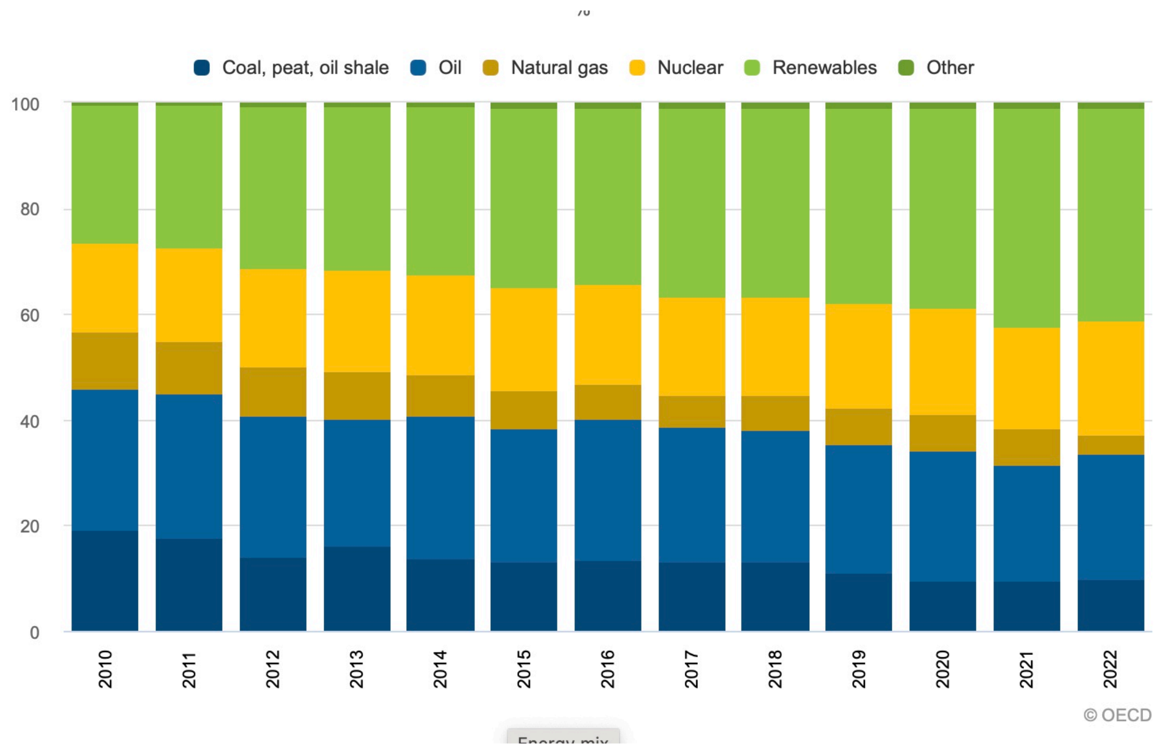
State ownership represents a further dimension of this institutional configuration. The Finnish state holds approximately 46.5% of Neste, providing a significant ownership relationship between the government and the company. Within the analytical framework of this dissertation, state ownership is therefore considered an important conditioning factor in the transmission of national policy preferences into corporate strategy. However, ownership alone cannot establish causality. Its analytical relevance lies in its interaction with Finland's policy environment and

Neste’s firm-specific capabilities. In contrast to Poland, where national energy policy largely accommodates continued fossil-fuel dependence, Finland provides a context in which state ownership operates alongside relatively strong policy support for renewable energy and low-carbon fuels.

The interaction between these factors is particularly visible in Neste’s transformation from a conventional oil-refining company towards a business model increasingly centred on renewable and circular solutions. The adaptation of the Porvoo refinery and associated production infrastructure illustrates how existing hydrocarbon-related capabilities and physical assets can be redirected towards lower-carbon activities. Neste’s transformation is therefore not adequately explained by national climate policy alone. Rather, the Finnish case suggests a policy, capability and ownership interaction, whereby supportive regulation and emerging market demand were combined with technological capabilities, existing refining infrastructure and a strategic decision to develop renewable-fuel activities.

Accordingly, Finland provides a comparatively strong value for the national policy incentive variable (L2) in the cross-case analysis, but this value should not be interpreted as evidence that national policy independently caused Neste’s transformation. Rather, the case demonstrates how supportive national policy, state ownership, resource constraints, technological capabilities and firm-level strategic choices can reinforce one another. This configuration provides qualified support for H1a, which proposes that companies operating in countries with stronger national climate-policy commitments tend to exhibit higher green CAPEX ratios and faster emissions reduction. At the same time, the temporary relaxation of the renewable-fuel mandate illustrates the limits of national policy as a stable causal driver and reinforces the broader argument of this dissertation that corporate green transformation emerges from the interaction of multilevel regulatory pressures and firm-specific strategic and structural conditions.

Figure 4. Finland's Energy Mix



Sources: IEA (2022). World Energy Statistics. IEA World Energy Statistics and Balances

4.2.4 Denmark's Energy Structure and Its Influence on Ørsted's Green Transition

Denmark's energy system has undergone a substantial structural transformation over the past several decades. Although the country possesses significant North Sea oil and gas resources and was a major European hydrocarbon producer, its domestic energy strategy progressively shifted towards renewable energy. Denmark became a net exporter of oil and natural gas during the late twentieth century, while subsequently reducing its dependence on fossil-based electricity generation. Renewable energy, particularly wind power, became increasingly important in the national electricity mix, with wind and bioenergy constituting major components of renewable generation (OECD, 2022). This transformation created a distinctive institutional and technological environment in which renewable-energy development was not positioned merely as a long-term environmental objective but increasingly became an integral component of national energy policy and infrastructure development.

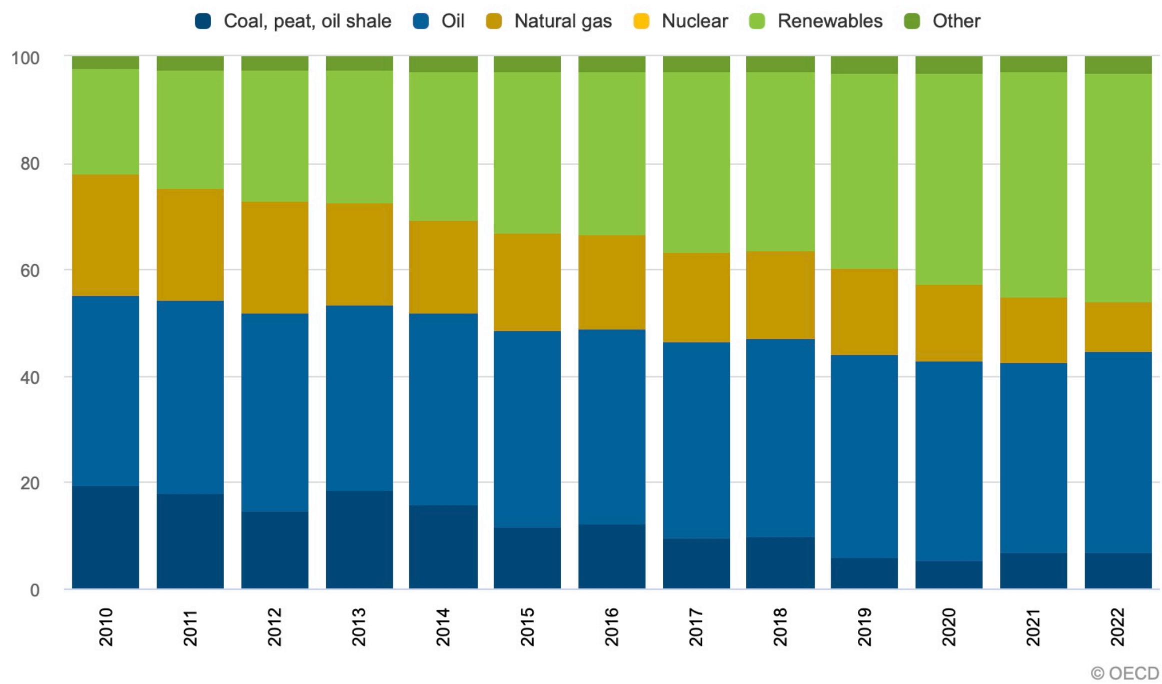
The development of offshore wind was particularly important in establishing the conditions for Ørsted's subsequent transformation. Denmark developed Vindeby, the world's first offshore wind farm, in 1991, during the period when the company was still operating as DONG Energy and remained state-owned. From the mid-2000s, Danish renewable-energy policy provided additional support for offshore wind development through mechanisms including price premiums and other forms of state-backed project support (IRENA/GWEC, 2013). These policies reduced investment uncertainty and contributed to the emergence of domestic technological and organisational capabilities in offshore wind.

State ownership constitutes an important component of the analysis. The Danish state retained majority ownership throughout DONG Energy's transformation and currently holds approximately 50.1% of Ørsted (Ørsted, 2025). This ownership structure provided the state with a direct governance relationship with the company and created institutional conditions under which national energy-policy priorities could be incorporated into corporate strategic decisions. Most significantly, Ørsted's transformation involved the progressive reduction of its exposure to upstream oil and gas and the subsequent divestment of its oil and gas business in 2017. The case therefore provides particularly strong evidence that state ownership can facilitate the transmission of national policy preferences into corporate portfolio decisions when combined with a clear strategic direction and supportive market conditions (Natural Resource Governance Institute, 2022; Ørsted, 2023). Nevertheless, state ownership should not be considered a sufficient explanation for Ørsted's transformation. The company also possessed and developed technological and organisational capabilities that allowed it to exploit the emerging offshore-wind market.

Denmark's Energy Agreement 2012–2020 further institutionalised the country's transition trajectory by establishing ambitious renewable-energy and emissions-reduction objectives, including a target for renewable sources to provide approximately half of electricity consumption by 2020, with wind power playing a central role (OECD, 2019). These objectives were complemented by broader Danish climate-policy commitments and comparatively high taxation of fossil-fuel use. The resulting policy configuration created stronger incentives for renewable-energy investment than those observed in the Polish and Austrian cases. Importantly, however, the policy environment operated together with Ørsted's state ownership, technological capabilities and strategic decision to exit upstream oil and gas.

Accordingly, Denmark provides strong support for H1a, which proposes that companies headquartered in countries with stronger national climate-policy commitments exhibit higher green CAPEX ratios and faster transformation of their portfolios. However, the evidence should be interpreted as comparative and conditional rather than deterministic. Ørsted's transformation cannot be attributed to national climate policy alone. Within the analytical framework of this dissertation, Denmark's national policy incentive variable (L2) supports the firm's green transition. In contrast to Poland, where national energy-system characteristics can moderate the transmission of EU climate pressure, while in Austria, corporate asset structures constrain the effects of a relatively supportive national policy environment. Denmark demonstrates a configuration in which national institutions and firm-level capabilities reinforce one another. The Ørsted case provides the clearest empirical illustration within the sample of how multilevel climate governance can be translated into observable corporate transformation through changes in capital allocation, asset divestment and portfolio structure. At the same time, the continuing dependence of offshore-wind investment on state support demonstrates that even the most advanced transition pathway remains economically and institutionally contingent.

Figure 5. Denmark's Energy Mix



Sources: IEA (2022). World Energy Statistics. IEA World Energy Statistics and Balances

4.2.5 United Kingdom’s Energy Review and the Institutional Conditions Underpinning BP’s and Shell’s Green Transformation

The United Kingdom’s energy system combines a progressively decarbonising electricity sector with continued dependence on oil and natural gas production, creating a policy environment in which decarbonisation objectives coexist with considerations of energy security, domestic production and economic competitiveness. The country has historically been a significant producer of oil and natural gas, particularly from the North Sea, although production has declined as mature reserves have been depleted (OECD, 2024). Over the period examined in this dissertation, the energy structure nevertheless indicates a gradual increase in the contribution of renewable sources and a continued decline in coal use, while oil and natural gas remained important components of the wider energy system. This configuration is significant for understanding the regulatory environment in which BP and Shell operate because national climate policy does not act upon a structurally homogeneous energy system. Rather, policy instruments operate simultaneously on an expanding low-carbon electricity sector and on an established hydrocarbon industry with substantial economic and strategic importance.

The institutional environment was further reconfigured following the United Kingdom’s withdrawal (BREXIT) from the European Union. From 2021, the UK operated its own Emissions Trading Scheme (UK ETS), replacing participation in the EU ETS for installations covered by the UK system. The UK retained emissions trading as a central market-based mechanism, while the separation of the two schemes created differences in market size, allowance supply and carbon-price formation. During subsequent years, the UK ETS allowance price generally remained below the EU ETS price (European Parliament Research Service, 2025). The significance of this institutional divergence lies therefore not simply in the absolute carbon price, but in the altered transmission mechanism through which carbon costs are incorporated into corporate operating and investment decisions.

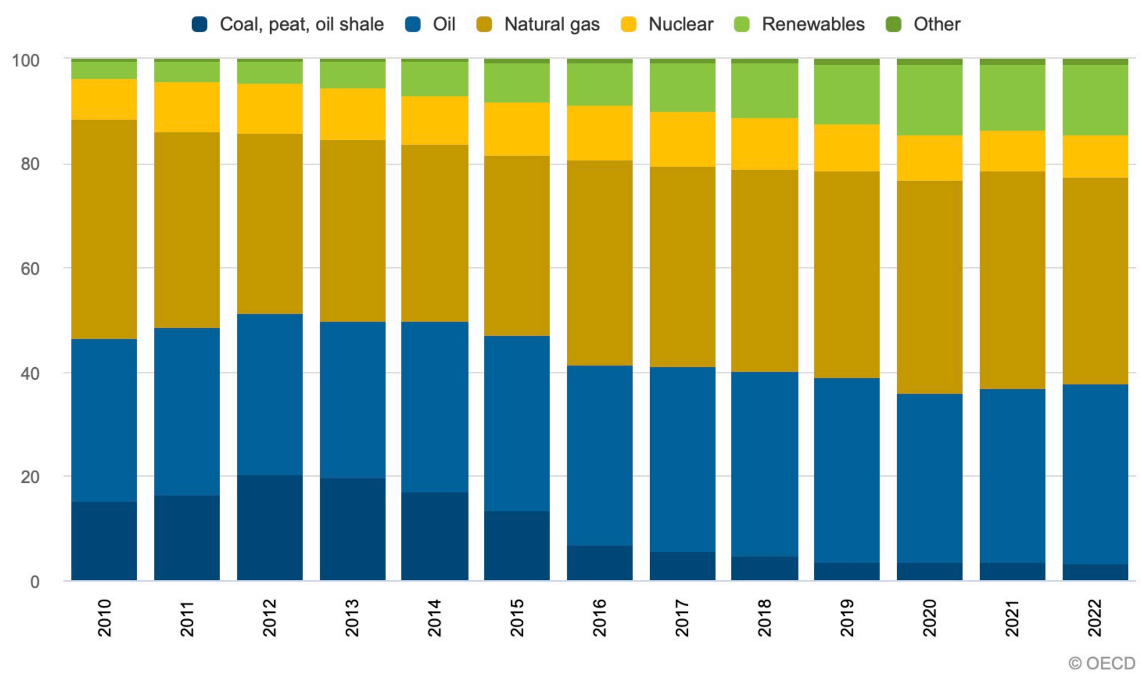
Besides carbon pricing, the UK has simultaneously deployed renewable-energy support mechanisms, including Contracts for Difference, together with other regulatory and fiscal instruments designed to accelerate low-carbon investment. These measures have contributed to the expansion of renewable electricity, particularly offshore wind, while the government has continued to regulate and tax domestic hydrocarbon production. Following the substantial increase in oil and gas prices after Russia's invasion of Ukraine, the Energy Profits Levy was introduced in 2022 and subsequently increased, bringing the headline tax rate applying to upstream oil and gas activities to 78% from November 2024 (UK Government, 2024). The coexistence of carbon pricing, renewable-energy support and taxation of hydrocarbon profits demonstrates that the national policy environment cannot be characterised adequately through a single indicator such as the carbon price. Instead, the incentives facing incumbent oil and gas companies emerge from the interaction of multiple policy instruments with partially reinforcing and partially contradictory effects.

This institutional configuration is particularly relevant when examining BP and Shell because the transmission of national policy pressure is conditioned by the geographical and organisational structure of the firms. Both companies are headquartered in the United Kingdom but operate highly internationalised and vertically integrated business models, with substantial upstream, refining, trading, chemicals, mobility and low-carbon activities distributed across multiple jurisdictions. Therefore, UK policy constitutes an important component of their external institutional environment but does not represent the sole or necessarily dominant determinant of corporate capital allocation. Their strategic decisions are simultaneously exposed to international commodity prices, shareholder expectations, global regulatory developments, technological opportunities and the relative profitability of hydrocarbon and low-carbon activities. This reduces the explanatory power of headquarters location as a direct indicator of corporate exposure to national climate policy.

The distinction between BP and Shell is nevertheless relevant at the level of asset exposure and portfolio structure. Shell's geographically diversified operations and international revenue base provide substantial scope for capital allocation across jurisdictions, thereby potentially reducing the direct influence of UK-specific policy instruments on aggregate corporate investment decisions (Shell, 2020; Shell, 2021; 2022). The company's capital-allocation decisions therefore need to be interpreted within a global portfolio framework rather than as a direct response to the domestic UK regulatory environment. BP similarly operates internationally, but its historical exposure to UK Continental Shelf assets creates a more direct channel through which changes in domestic taxation and upstream regulation can affect part of its portfolio. This distinction provides an important firm-level conditioning factor for assessing the relationship between national policy pressure and observable changes in investment and divestment behaviour.

The post-Brexit institutional environment therefore does not provide a linear explanation of BP's or Shell's transition trajectories. Rather, it illustrates the mediating role of national institutions within a multilevel governance structure. EU-level and international climate objectives are translated into domestic instruments through the UK's own regulatory architecture, but the effects of these instruments depend upon the extent to which individual firms and assets are exposed to the domestic policy regime. The empirical expectation is consequently not that a particular UK policy instrument will mechanically produce a corresponding change in corporate behaviour. Instead, the relevant analytical question is whether changes in the national policy environment are observable in corporate narratives, green capital allocation, divestment decisions and emissions trajectories after accounting for the firms' international portfolio structures.

Figure 6. United Kingdom's Energy Mix



Sources: IEA (2022). World Energy Statistics. IEA World Energy Statistics and Balances

Below table consolidates the country-level evidence presented in paragraphs 4.2.1-4.2.5, summarises for each case the national policy mechanism identified, and its observed relationship with the corresponding corporate transformation trajectory, as assessed through the process tracing analysis presented in Chapter 6. The overview facilitates a cross-case comparison of the extent to which national policy conditions are associated with subsequent changes in corporate allocation and portfolio transformation.

The comparative analysis indicates that supportive national policy conditions appear to be conducive to, but not sufficient for a confirmed process tracing sequence. This distinction is particularly relevant for the Austrian case where a comparatively supportive policy environment – including renewable-energy support, carbon pricing, an early coal phase-out and state ownership of OMV – with contradicted outcome at the corporate level. The case therefore demonstrates that the presence of favourable national policy conditions does not automatically translate into corresponding changes in corporate capital allocation. By contrast, the Finnish and Danish cases demonstrate a closer correspondence between national policy support and corporate transformation. However, both cases demonstrate that the continuity and effectiveness of these policy measures over time, particularly under changing economic and political conditions, are critical to sustaining the corporate transition trajectory.

Table 12. Country-level National Policy mechanisms and process-tracing Outcomes

Country	Company	Dominant National Policy Mechanism	Sequence Outcome
United Kingdom	Shell; BP	Post-Brexit UK ETS trading at a persistent discount to the EU ETS (weaker carbon-price signal), combined with the Energy Profits Levy raising the effective tax rate on domestic production to 78% by November 2024 (UK in a Changing Europe, 2023; European Parliament Research Service, 2025)	Interrupted (Shell) / Contradicted (BP) — an ambiguous, comparatively weak national incentive coincides with capital allocation tracking global commodity cycles more closely than UK policy
Austria	OMV	EAG (Renewable Energy Expansion Act, 2021, ~EUR 1bn/year), national carbon pricing from October 2022, full coal phase-out completed 2020, and direct federal ownership stake in OMV (IEA Policy Database, 2021b, 2021c; Austria, Federal Ministry for Climate Action, 2022; ICLG, 2025)	Contradicted — genuinely supportive policy and state ownership do not translate into a corresponding shift in OMV's capital allocation, which remains upstream- and petrochemical-dominant
Poland	Orlen Group	PEP2040 sets a coal exit date of only 2049; independent analysis characterises the plan as structurally unambitious; Poland's dissent on the EU's 2050 target puts part of its Just Transition Fund support at risk (IEA Policy Database, 2021a; European Council on Foreign Relations, 2023; Polish Green Network, 2021)	Interrupted, with contradiction at the capital-allocation link — weak national incentive coincides with continued brownfield-dominant investment

Country	Company	Dominant National Policy Mechanism	Sequence Outcome
Finland	Neste	Distribution Obligation Act mandates a rising renewable-fuel share (toward 30% by 2029–2030), directly supporting demand for Neste's core products, though the mandate was itself reduced by 7.5 percentage points in 2022 and 2023 under fuel-price pressure (Finland, Ministry of Transport and Communications, 2021; Finland, Ministry of Economic Affairs and Employment, 2022)	Confirmed across all links — sustained national demand-side support coincides with a rising green CAPEX ratio and portfolio shift toward renewable fuels
Denmark	Ørsted	Guaranteed price premiums for offshore wind since the mid-2000s, majority state ownership enabling the 2017 upstream divestment, though a 2024 zero-subsidy tender attracted no bids, forcing reintroduction of state support (IRENA/GWEC, 2013; Natural Resource Governance Institute, 2022; Institute for Energy Research, 2024;	Confirmed across all links — the strongest national policy incentive of the five cases, though shown to remain conditional on continued state support rather than fully self-sustaining

Source: the author's collected data from NGOs and Public Affairs' Data Sets

To sum up, the five country cases reveal a differentiated relationship between national policy and corporate green transition outcomes. Denmark and Finland combine strong and sustained support with confirmed process tracing sequence. The cases suggesting that durable policy incentives can facilitate the translation of national climate objectives into corporate capital allocation and portfolio transformation. Poland and the United Kingdom by contrast, exhibit weaker or more ambiguous national policy incentives and interrupted and contradicted sequences. These cases are broadly consistent with the expectation that stronger policy incentives can create more favourable conditions for corporate transformation. However, the Austrian case constitutes a deviant case linked to H1(a), therefore does not support linear relationship between policy stringency and green transformation of the corporation. It suggests that national policy operates as an enabling or constraining condition within a broader causal process. In this regard policy incentives must be transmitted through firm-level strategic decision-making, reflected capital allocation and portfolio restructuring. The Dannish and Finnish causal mechanism provide evidence of this transmission, whereas the Austrian case demonstrate that supportive policy conditions can be insufficient when firm level actors interrupt the causal chain. This finding is examined further in conjunction with the firm-level evidence presented in Chapter 5. The Austrian case has been proven that the effectiveness of national climate policy depends not only on policy strength, but also on the extent to which policy incentives are translated into corporate strategic priorities and capital-allocation decisions.

4.3 The role of nation states in green transition

As demonstrated in the preceding sections, states play a central role in establishing the regulatory, institutional and economic conditions within which corporate green transition takes place. National governments affect the direction and pace of transition by defining regulatory standards, establishing market incentives, supporting technological development, and imposing legally binding requirements on the firms. Within the broader supranational framework of the EU, the interaction between EU-level climate policy and national implementation is therefore essential for shaping corporate responses to the financial and structural changes associated with decarbonisation.

Lamperti et al. (2020) argue that market-based policy instruments alone, including emissions trading systems (ETS), carbon taxation, and public subsidies, for green investment may be insufficient to generate the scale and speed of technological transformation required to achieve environmental policy objectives. Their effectiveness depends, among other factors, on the availability and timely deployment of technological alternatives. Delays in technological innovation, limited implementation capacity, or insufficient investment momentum may therefore constrain the ability of market-based instruments to deliver the intended environmental outcomes.

By contrast, the command-and-control instruments establish explicit regulatory requirements are legally enforceable conditions for corporate behaviour. The main instruments which are the most impactful to affect green transition of the oil and gas companies (Bartalos & Sárvári, 2025) are the European Industrial Standards, renewable energy quotas and technological mandates. These instruments trigger actions by imposing explicit obligations (Lamperti et al., 2020). These instruments influence corporate behaviour by establishing explicit requirements that firms must incorporate into strategic planning, investment decisions, and operational activities. In this respect, they differ from purely incentive-based mechanism because they create a more direct transmission channel from public policy objectives to corporate action (Lamperti et al., 2020). This policy perspective is directly relevant to the present research, as the six case studies demonstrate substantial variation in corporate transition trajectories despite all companies being headquartered in European Union Member States and therefore operating within a common supranational climate-policy framework. The observed differences suggest that EU-level regulation alone does not fully determine corporate outcomes. Rather, the supranational objectives are translated into national policies, enforcement mechanisms, economic incentives, and institutional conditions contributes to shaping firm-level responses.

This variation constitutes a central mechanism underlying Hypothesis H1a, which proposes that companies headquartered in countries characterised by stronger national climate-policy commitments are expected to demonstrate higher green CAPEX ratios and faster progress in emissions reduction. At the firm level, this relationship is further interpreted through the integrated Goal Framing and Compliance Framework developed in this dissertation. From this perspective, firms respond not only to the economic gains and costs associated with transition, but also to normative and compliance pressures. Where national enforcement is relatively weak, carbon prices are low, or regulatory expectations are less stringent, profit-oriented considerations may exert greater influence on corporate investment decisions. Conversely, where national climate policies are stronger, regulatory enforcement is more credible, and reputational exposure is greater, normative and compliance considerations are expected to exert stronger influence on corporate strategic decision-making.

Carbon tax rates[3] show correlation with the advancement in green transformation. The below table contains the rates values per metric ton of CO2 determined in 2025. Denmark has determined the 5th highest tax rate 108 USD in Europe which is in line with the successful transition of Ørsted. While those companies, Orlen Group, Shell, BP which are relatively slower in green transformation headquartered in Poland and in the United Kingdom. Poland. The lowest carbon tax rate with USD 0.1 is represented by Poland among the European countries. All the member states decide individually on the level of carbon taxes, in few countries multiple excise taxes or ETSs are applied (Mengden, 2025).

Below analysis (Table 9) represents variation in carbon tax-rates across countries where the selected cases are headquartered. The data highlights the uneven regulatory landscape shaping green transformation of oil and gas companies in Europe (Bartalos & Sárvári, 2025). In

[3] Carbon tax includes different types of greenhouse gases such as carbon dioxid, methane, nitrous oxide and fluorinated gases. There are lots of country specific measures regarding carbon taxes. For instance, Finland, Norway, and Portugal the national carbon tax base is applied together with the EU ETS resulting in double taxation. There are some countries, Germany and Austria have implemented carbon taxes in 2021 and 2022 which will lead into ETSs by 2026 (Mengden, 2025).

Denmark the carbon pricing is the highest (USD 108/t CO_2) among the selected countries which correlates with the top performer in green transition, Ørsted's achievement in its portfolio shifts (Mengden, 2025). While United Kingdom (USD 22/t CO_2) and Poland (USD 0,1/t CO_2) have lower carbon tax rates (Mengden, 2025) which reflect the sluggish performance of green transition in case of BP, Shell and Orlen Group as well. These differences reflect divergence in national policy ambitions, energy system structure and political-economic constraints and mirrors heterogenous pace of corporate transition observed across the selected cases. Higher carbon prices increase the financial costs of carbon-intensive operations and in principle, incentivize firms to reallocate capital toward low-carbon solutions and renewable energy sources. This observation is consistent with the Nordic countries and companies where supportive institutional environments accelerate corporate decarbonization efforts. However, the evidence suggests that carbon pricing alone is insufficient to drive the green transformation. The profitability considerations and continued economic attractiveness of hydrocarbons in case of major oil and gas companies delay substantial shifts in capital allocation towards green portfolio. The different carbon rates support a broader argument of this dissertation that green transformation is a multi-dimensional and path-dependent process, shaped not only by market-based mechanism such as carbon pricing, but also by corporate capabilities, strategic decision-making and national institutional frameworks.

Table 13. Carbon Tax Rates per Metric Ton of CO_2 as of April 1, 2025

Headquarter countries of the selected companies	Carbon Taxes 2025 in USD/ Metric Ton of CO
Denmark	108
Finland	66
Austria	59
United Kingdom	22
Poland	0.1

Source: https://taxfoundation.org/data/all/eu/carbon-taxes-europe/

The European Industrial Standards are one of the key dimensions in the green transition (Bartalos & Sárvári, 2025) to determine the path and pace of the actions. The Integrated Pollution and Prevention Control (IPPC) is one of the key instruments to control pollution of the industrial plants. The industrial environmental performance is primarily regulated by the

Industrial Emission Directive which comply with strict emission limits and best available techniques (BAT). The importance of the BAT might be seen in its supportive mechanism to translate broad environmental objectives into concrete technical requirements for the industrial installations. The BAT gathers the concentrated actions of the member states and industrial players to exchange about the most suitable techniques to prevent pollution and harm for the environment. The exchange between policymakers and industrial players are happening in the frame of the Sevilla process which is important because the industries and technological appliances are going through constant changes (Schoenberger, 2009). Therefore, the technical specification and clear binding targets which Lamperti (2020) has highlighted in his research, are essential. Especially, in case of oil and gas industry which have complex and integrated structure need to be engaged more with the policy makers to understand limitations and disadvantages to engage in portfolio shifts to reach green operations. Those oil and gas companies which have interconnected energy systems with exploration, refining, petrochemicals and distribution have higher structural dependence on carbon-heavy portfolio and processes. The integrated structure of oil and gas companies put hurdles in front of rapid CO2 reductions due to existing infrastructure with refineries or pipelines locks in emissions for decades (Seto et al., 2016). Even if the assets are outside of the European Union, they are included in the companies Scope 1 and 2 calculations.

Technological mandates imposed by the EU trigger meaningful shifts in fossil fuel-based operations towards green transition. Regulation (EU) 2023/851 amending Regulation (EU) 2019/631 requires the phase out of internal combustion engines by 2030 (EUR-Lex, 2023). According to Lamperti (2020), these kinds of direct mandates accelerate tangible changes. The companies are forced to apply these changes. To sum up, the cross-country variation elaborated in this section - from Poland’s comparatively low carbon taxes to Denmark’s stringent, first-mover renewable energy policy – confirms that national climate-policy commitment cannot be treated as a constant across the six cases, providing the empirical precondition for testing H1a in Chapter 5.

Table 14. National climate-policy context mapped to case-study companies

Country	Case-Study Company	Key National Policy/Market Feature	Relative Carbon Tax Stringency (Table 5)	H1a implication
United Kingdom	Shell; BP	BREXIT determines flexibility in climate commitments	Low (USD 22/t CO_2)	UK's Brexit is a factor which partially explains the reason of slow green transformation of the oil majors
Austria	OMV	EU ETS exposure combined with continued reliance on upstream and petrochemical assets; approx. 32% state ownership	Moderate (USD 59/t CO_2)	State ownership predicted to strengthen national policy transmission; tested against the observed contradiction at the capital-allocation link
Poland	Orlen Group	Comparatively low carbon tax and continued national reliance on coal and fossil fuels; approx. 50% state ownership	Low (USD 0.1/t CO_2)	Weak national incentive expected to interrupt transmission from EU pressure to corporate strategy, consistent with H1a
Finland	Neste	Strong national climate policy alignment; approx. 50% state ownership; established renewable-fuels industrial base	High (USD 66/t CO_2)	Strong national incentive expected to support full transmission through to capital allocation and emissions outcomes, consistent with H1a
Denmark	Ørsted	Among the most stringent national climate policy regimes in the EU; approx. 51% state ownership; first-mover renewable energy industrial policy	High (USD 108/t CO_2)	Strongest expected transmission of the six cases, consistent with H1a

Source: the country-company mapping and policy features are the author's own synthesis of information presented elsewhere in this dissertation

The central argument of this chapter is that EU climate policy does not influence oil and gas companies as a single, uniform stimulus. Rather its effects are transmitted through a multi-layered governance process, whereby a supranational policy architecture is reshaped by different national structure, including variations in policy transposition. This two-tier supranational architecture constitutes that corporate responses to climate transition pressure emerge from the interaction between EU-level regulatory framework and nationally embedded political-economic conditions. The next section turns from this policy-level context to the firm-level evidence by assessing capital allocation (investment, divestment), portfolio change and corporate narrative through which the remaining causal pathway (L3-»L4-»L5) is examined.

5. EMPIRICAL ASSESSMENT OF CORPORATIONS’ GREEN TRANSFORMATION DYNAMICS

The entire scope of the research scheme is to observe the divestments, green capital expenditure and narratives in case of the selected companies. In the first sub-section the divestment trends of the six selected cases are going to be assessed. Followed by the green capital expenditures (CAPEX) analysis versus the total available investment budget. Thirdly, this chapter is going to focus on the narratives versus the actions of the companies, whether the investments, divestments are in line with the strategic communications of the companies. Lastly, the results of the interviews are going to be gauged in parallel to highlight the main motives of the O&G companies in the green transformation process (Bartalos, 2023).

Building on the conceptualization of Industrial Carbon Management, which is part of the European Green Deal, this section includes analysis which moves beyond descriptive approach of green transformation of oil and gas companies. The transformation of the oil and gas industries cannot be explained (Bartalos & Sárvári, 2025) only by regulatory factors; it emerges from different interacting factors which lead in multiple variations of the pace of building green portfolio among the carbon-heavy industrial players.

5.1 Oil and Gas Companies’ Divestment Trends Correlation with Green Strategies

This chapter examines the divestment activities of the selected cases and its relationship to their broader green transformation trajectories, drawing on data collected from annual and sustainability reports between 2017 and 2024. The buyers and the location of each divested assets were also recorded to establish whether divested operations continue to emit GHG after the transaction. Divestments and portfolio restructuring are widely treated as key indicators of progress in the green transformation of oil and gas companies (Bartalos, 2023). Absolute divestment value risk producing a misleading picture of relative effort; therefore, analysis expresses divestment as a share of total sales revenue. A recurring concern in the literature on corporate decarbonisation is that divested assets, once transferred to a new owner, do not necessarily cease to emit: the seller’s reported emissions and portfolio composition may improve while global emissions remain largely unchanged (Ansar et al., 2013; Trinks et al., 2018). Where the divested assets continue to operate under new ownership, the transaction is more accurately understood as a reallocation of reported emissions than as a net reduction, thus the green transformation of oil and gas industry is jeopardized globally. From climate point of view the divestment trends do not lead to the desired results, as on the global scale GHG emission is not reduced (Bartalos & Sárvári, 2025; Nielsen et al. 2021).

Orlen Group, headquartered in Poland, continues to concentrate its operations in traditional fossil-fuel activities with refining, petrochemicals, and retail remain dominant (Bartalos & Sárvári, 2025). Orlen's portfolio structure indicates less diversification toward low-carbon business segments compared to its Nordic counterpart, consistent with Poland's continued dependence on coal for approximately 80% of electricity generation. The green transformation is conditioned by national energy structures. The Polish Economic Institute (PEI) estimates a net-zero transition date for Poland of between 2056 and 2067 (Bartalos & Sárvári, 2025; Patricolo, 2020). Overall, a key catalyst of divestments was triggered by the Lotos acquisition when conditional approval was initiated by the European Commission. In response to the Commission's competition and environmental regulations Orlen undertook divestments aimed at ensuring compliance while maintaining its competitive position on the European market (European Commission, 2020). These trends highlight that Orlen's portfolio transformation has been driven primarily by supranational competition and environmental regulation rather than by voluntary strategic reorientation.

The clearest illustration of this reallocation dynamic is Ørsted's 2017 sale of its upstream oil and gas business to INEOS for USD 1.3 billion, a facility producing approximately 100 000 barrels of oil equivalent on daily basis in the North Sea (Ørsted, 2017). While the transaction allowed Ørsted to report a substantially decarbonized portfolio, the divested asset continued to operate under INEOS's ownership. This illustrates why an industry-wide net-zero trajectory cannot be inferred from any single company's divestment record (Bartalos & Sárvári, 2025; Nielsen et al. 2021). Neste represents a partial exception of this pattern. Despite its position among the frontrunner cases in green transformation, the company has pursued divestment activities comparatively rarely, relying on the write-off of carbon intensive machinery and equipment (Bartalos & Sárvári, 2025; Neste Press Release, 2021). Since write-off discontinues, rather than transfers the underlying operation, this approach avoids the emissions-reallocation problem identified above: meaningful progress toward global decarbonisation requires that carbon-intensive assets cease operating, regardless of whether this occurs inside or outside of the EU.

Below tables assess the major divestments of each company between 2017 and 2024 (Table 15) along with the buyers indicating the industry and country. The concern has emerged related to the green transition path, because Neste's base oil business was agreed to sell to Chevron Corporation in the United States (Neste Press Release, 2021). The information about the value of the divestments were not disclosed at any platform, however, in the less regulated environment in the USA these operations will continue to emit GHG into our atmosphere (Bartalos & Sárvári, 2025).

Table 15. Majority of Divestments of Oil and Gas Companies between 2017-2024

		Shell	**BP**	**OMV**	**PKN Orlen**	**Ørsted**	**Neste**
Major Divestments	2017	Sadaf joint venture in Saudi Arabia Vivo Energy in Africa LPG Business in Macau Shell Canadian Oil Sands	50% stake in SECCO, petrochemical company	Petrol Ofisi fuel distribution	n/a	Upstream oil and gas business	n/a
	2018	Assets in Iraq - West Qurna Field Malaysia North Sabah Enhanced Oil Recovery 45% stake in Irish Corrib Gas project 17% stake in Oman fields	San Juan Basin natural gas and oil field	Tunisia Upstream GmBH	n/a	50% of the 1 218 MW offshore wind farm Hornsea1	n/a
	2019	50% in Shell Saudi Arabia	North Slope Oil production in Alaska non-BHP US Lower 48 legacy gas assets	69% interest in the Maari field	n/a	Liquified natural gas (LNG)	75 Fuel Stations and a terminal in St. Petersburg
	2020	Martinez Refinery in California	BP's Petrochemical Business	Gas Connect Austria logistics Subsidiary	n/a	25% of the Ocean Wind Offshore Wind Farm	n/a
	2021	Permian business in Delaware basin Puget Sound Refinery in the USA	Oman Block 61 Refined products and logistics assets in the US	Borealis' Nitrogen business units	n/a	50% divestment of the 900 MW German offshore wind farm	n/a

		Shell	BP	OMV	PKN Orlen	Ørsted	Neste
	2022	Malaysia's Baram Delta	Stake in Russian oil giant Rosneft	285 Filling Stations in Germany	30% stake in Lotos; 417 filling stations at Lotos	50% of Hornsea 2 Offshore Wind Farm	n/a
	2023	n/a	Upstream business in Algeria (transaction closed 28 Feb 2023)	50% stake in SapuraOMV Upstream Sdn. Bhd. (Malaysia) and 100% of OMV New Zealand	n/a	n/a	n/a
	2024	Nigerian subsidiary, Shell Petroleum Development Company (SPDC)	n/a	50% stake in SapuraOMV Upstream Sdn. Bhd. (Malaysia)	Gas Storage Poland (GSP), divested per EU merger conditions	50% stake in a portfolio of four US onshore wind farms (957 MW)	n/a
Buyers of the Sold Assets	2017	SABIC (Saudi Arabia) Vitol (Africa) DCC LPG (USA) Canadian Natural Resource (Canada)	Gaoqiao Petrochemical Co Ltd (China)	VIP Turkey Enerji AS (Turkey)	n/a	Ineos petrochemical company (London, UK)	n/a
	2018	Itochu Corporation (Japan) Hibiscus Petroleum (Malaysia) Canada Pension Plan Investment Board - CPPIB (Canada) Indian Oil Corporations (India)	IKAV, Renewable company (Germany)	Panoro Energy AS independent oil and gas company (UK)	n/a	Global Infrastructure Partners - GIP (New York City)	n/a
	2019	Saudi Arabian Oil Company (Saudi Arabia)	Hilcorp (Alaska, USA)	Jadestone Energy Upstream company (Asia Pacific)	n/a	Natural Resource Company, Glencore (Switzerland)	PJSC Tatneft in oil and gas company (Russia)
	2020	PBF Holding petroleum refiner and supplier (USA)	INEOS, petrochemical company (UK)	Verbund AG, utility company (Austria)	n/a	Public Service Enterprise Group - PSEG (New Jersey USA)	n/a

		Shell	BP	OMV	PKN Orlen	Ørsted	Neste
	2021	Crude oil producer ConocoPhilips (Alaska) Holly Frontier Corporation refinery (Texas USA)	PTT Exploration and Production public company (Thailand)	Agrofert Group (Czech Republic)	n/a	Glenmont Partners Fund (London, UK)	n/a
	2022	Petroleum Sarawak Exploration and Production (Malaysia)	Write-offs (Write-offs)	British EG Group (UK)	Saudi Aramco; MOL Plc. (Saudi Arabia, Hungary)	ACA Investment Managers (France)	n/a
	2023	n/a	Eni S.p.A. (Italy)	n/a (sales process initiated; not concluded in 2023)	n/a	n/a	n/a
	2024	Renaissance Africa Energy Company (Nigerian-led consortium)	n/a	TotalEnergies (France)	Gaz-System S.A. (Poland, state-owned transmission system operator)	Stonepeak (USA, infrastructure investment firm)	n/a

n/a = not applicable, (Non-EU-member states are highlighted by peach colour)

Source: own edition based on the annual reports of Shell, BP, OMV, PKN Orlen, Ørsted and Neste between 2017-2024 (Bartalos & Sárvári, 2025)

The results indicate that approximately 75% of the divested assets across the six selected cases continued to operate outside the EU under non-EU ownership (Table 15, peach-shaded cells). This geographic reallocation removes the divested assets from the direct reach of EU regulatory instruments, limiting the global mitigation impact of European decarbonisation efforts even as the transaction improves the divesting company's own Scope 1, 2 and 3 emissions as reported under the CSRD[4]. The distinction between asset transfer and asset discontinuation is analytically central to this section: transfers relocate emissions, whereas closure and write-offs remove the emission globally. Neste illustrates the latter pattern most clearly, recording write-offs of carbon-intensive assets exceeding USD 3 billion in each year between 2020 and 2022

[4] Scope 1 emissions refer to direct emission derived from the companies' production which occur from the sources owned by the company. Scope 2 is linked to the energy-related indirect emissions which is purchased by the company. These dimensions contribute to evaluation of the operations' carbon intensity outside and inside of the EU (World Resource Institute & World Business Council for Sustainable Development, 2015).

(Neste, 2020; Neste, 2021; Neste 2022; Bartalos & Sárvári, 2025), consistent with a strategic preference for decommissioning rather than transferring carbon-intensive assets. Other major transactions in the sample — Shell's sale of the Puget Sound Refinery, BP's divestment of North Slope oil production in Alaska, and OMV's sale of its Borealis Nitrogen Business Unit — involved carbon-intensive assets whose continued operation under new ownership sits uneasily alongside each company's decarbonisation narrative (Bartalos & Sárvári, 2025). Nor were all divestments in the sample motivated by sustainability considerations: BP's 2022 exit from its stake in Rosneft followed Russia's invasion of Ukraine rather than a climate-driven strategic decision (BP, 2022; BP, 2023). Therefore, the distinction between corporate sustainability narratives and actual decarbonisation outcomes are particularly important.

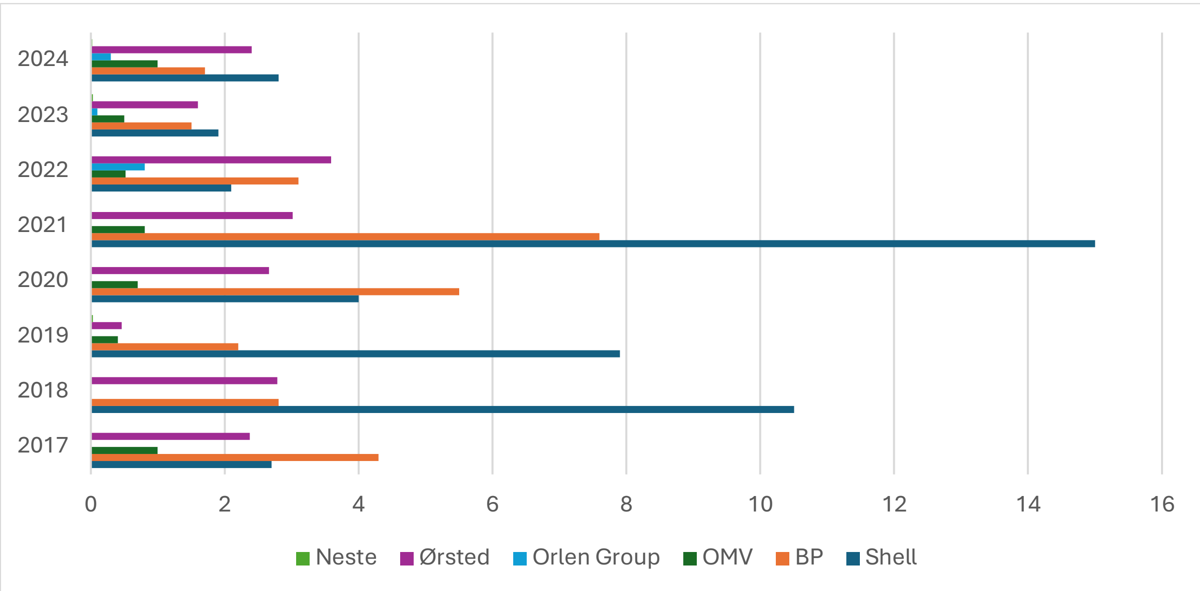
Notable observation is that fossil-assets divestments improve corporate transition indicators more than they reduce real-world emissions, because divested assets often continue operating under new ownership. Based on the CSRD reporting requirements these divested assets contribute to improve corporations' emission results in relation to the Scope 1 and 2 calculations. Thus, divestment may improve the seller's reported emissions profile without necessarily generating an equivalent reduction in global emissions.

Shell was the most active in the divestment activities by absolute value, with a peak in 2021 attributable to anticipated EU regulatory pressure to decrease Scope 1, 2 and 3 emissions and to favourable market conditions for green-oriented asset sales. The sale of Permian assets to ConocoPhillips reflected a state shift in strategic focus toward the energy transition where the Upstream business plays a central role, reinforced by then-CFO Jessica Uhl's announcement that future growth would centre on electricity-based operations including the expansion of Shell's electric-vehicle charging network from more than 60,000 to 500,000 charge points by 2025 (Bartalos & Sárvári, 2025; Shell, 2021; Zori et al. 2022). Despite of the ambitious targets, Shell has built approximately 75,000 charging points (Reuters, 2025). The shortfall consistent with the structural constraints associated with rapid EV infrastructure expansion, including capital intensity, regulatory barriers and demand uncertainty (LaMonaca & Ryan, 2022). Shell simultaneously continued to divest refining capacity — including the Deer Park facility in Texas and the PCK Schwedt refinery in Germany — while sustaining investment in upstream oil, gas and LNG expansion (Bartalos & Sárvári, 2025; Shell, 2022), the company alongside continued the investment in carbon-heavy assets, particularly in upstream oil and gas projects and liquified natural gas expansion (Shell, 2022, 2023, 2024). Taken together, this evidence suggests that Shell's portfolio restructuring during the period is characterised as selective optimisation than as a transformative reorientation of the business.

BP is taking the second position in the absolute value of the divestment value. While much of its divestment activity is framed around its long-term carbon-neutrality strategy, the magnitude of these transactions remains modest relative to total revenue (Bartalos & Sárvári, 2025). The largest single transaction in BP's divestment record - the USD 25.5 billion write-off of its stake in Rosneft in 2022 - was a response to the Russian invasion of Ukraine rather than a climate-motivated decision (Bartalos & Sárvári, 2025; British Petroleum, 2022).

Ørsted is the frontrunner out of all the selected cases which has already gone through the green transition from a traditional fossil fuel-based company to a renewable green one. In 2017 it divested its upstream oil and gas business. One of the key reasons similarly to Neste to become frontrunner in green transition is the active involvement of pro-environmental governments to incentivize the implementation of green strategies to shift portfolios from carbon heavy ones to carbon neutral (Bartalos & Sárvári, 2025). Despite of the fact that Ørsted has transformed majority of its operations to sustainable ones, its carbon heavy portfolios were acquired by other companies. In our example INEOS took over of Ørsted's upstream oil and gas business (Ørsted, 2017), the climate impact has remained unsolved (Bartalos & Sárvári, 2025).

Figure 7. Evolution of the Divested Values between 2017 – 2024 (in USD billion) (Bartalos & Sárvári, 2025)



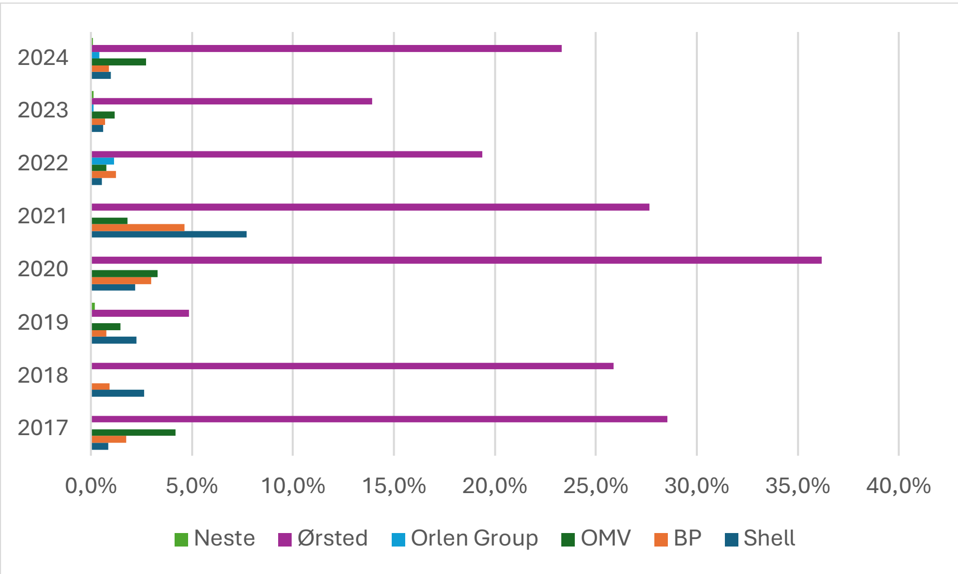
Source: own edition based on the annual reports of Shell, BP, OMV, Orlen Group, Ørsted and Neste between 2017-2022, (Bartalos & Sárvári, 2025)

Absolute divestment values alone place BP and Shell furthest ahead of the sample (Figure 7); this ranking changes substantially, however, once divestment values are expressed as a share of total sales revenue (Bartalos & Sárvári, 2025):

% share of divestments = Divestments / Total Sales Revenue (1)

Measured as a share of revenue, Ørsted divested most intensively among the six cases, with annual rates typically between 20% and 40%, concentrated in its legacy LNG and upstream operations (Ørsted, 2017). Shell's and BP's divestment shares remain comparatively low by contrast: Shell reached 8% in 2021, a year plausibly associated with anticipated regulatory pressure but otherwise divested at rates of 1–2% of revenue across the remaining years (Bartalos & Sárvári, 2025).

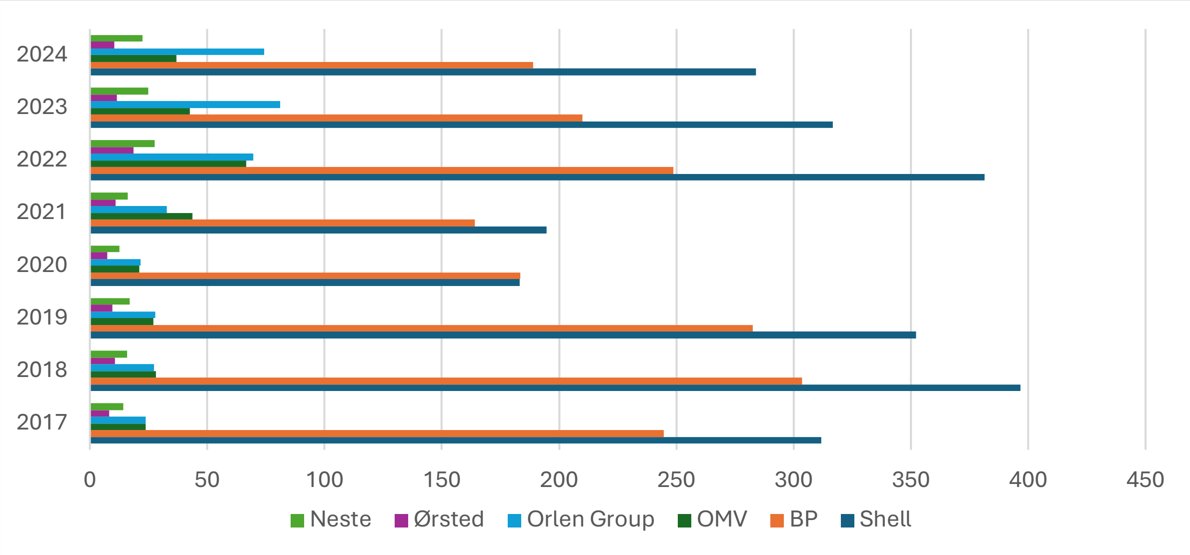
Figure 8. Portion of Divestments of the Total Sales Revenue in % (in USD billion)



Source: own calculation based on the annual reports of Shell, BP, OMV, Orlen Group, Ørsted and Neste between 2017-2024 (Bartalos & Sárvári, 2025)

Total sales revenue indicates that Shell and BP possess the largest absolute capacity to divest from their portfolio (Figure 8), underscoring the necessity of the percentage-based comparison. The results represent that Ørsted's divestment share reaches up to 40% of revenue, the highest in the case study pool while Shell and BP's shares remain in the 1-8% range. Neste occupies a distinctive position with a divestment share close to zero, consistent with its reliance an asset write-offs and conversion to renewable production (Neste, 2023; Bartalos & Sárvári, 2025).

Figure 9. Total Sales Revenue 2017 – 2024 in USD billion (Bartalos & Sárvári, 2025)



Source: based on the annual reports of Shell, BP, OMV, Orlen Group, Ørsted and Neste between 2017-2024, (Bartalos & Sárvári, 2025)

Divestment activity across the sample was also shaped by shocks unrelated to climate policy. The COVID-19 pandemic (2020-2021) and the energy-security disruption following Russia's invasion of Ukraine (2022). Both materially affected divestment volumes relative to revenue. A notable example is BP's exit from its Russian assets when the divestment decision was driven by geopolitical tensions rather than sustainability considerations (Bartalos & Sárvári, 2025; BP, 2022). Therefore, divestment volume alone is not reliable proxy for climate commitment.

To assess which divestment activities can plausibly be considered components of a genuine green transformation, this dissertation classifies individual transactions according to the type and strategic position of the divested assets, distinguishing between downstream, upstream, consumer and retail activities. This taxonomy builds on established approaches to the classification of corporate environmental performance and sustainability-related disclosures, following established approaches to classifying environmental performance in corporate disclosure (Hummel & Jobst, 2024). The classification results provide a basis for examining not only the nature of the divested assets but also changes in the strategic narratives associated with these transactions over time.

The analysis indicates a notable shift in the stated rationale for divestment. Between 2017 and 2019 divestments were predominantly presented in corporate communications as instruments of portfolio optimisation, capital allocation and balance-sheet management. By contrast, from 2020 onwards following the launch of the European Green Deal and subsequently, the strengthening of sustainability reporting requirements through the Corporate Sustainability Reporting Directive (CSRD) and its European Sustainability Reporting Standards (ESRS), comparable categories of transactions were launched to be framed as components of corporate green transformation. Importantly, this shift in narrative framing is not consistently accompanied by a corresponding change in the characteristics of the divested assets. In several cases, assets such as oil and natural gas fields remained structurally comparable to those divested in earlier periods, when the transactions had been primarily justified in terms of portfolio optimisation rather than decarbonisation (Bartalos & Sárvári, 2025; Hummel – Jobst, 2022). In parallel with the stricter regulatory environment the narratives about the divestments have contained green transformation.

The below categorization of the divestment activities (Table 16) supports a distinction between divestment as portfolio optimisation and as a component of substantive green transformation. While fossil-fuel divestments may reduce a company's direct ownership of oil ana d gas assets and improve certain corporate transaction indicators, they cannot automatically be interpreted as evidence of decarbonisation. Where divested assets remain operational under new ownership. The transaction may represent a reallocation of fossil-fuel exposure rather than an absolute reduction in carbon-heavy activity. The findings therefore reinforce the central argument of these observable corporate actions should be analysed separately, and that the environmental significance of divestments is assessed in conjunctions with subsequent capital allocation, asset ownership and broader portfolio transformation (Bartalos & Sárvári, 2025). All in all, a fossil-fuel divestment does not mean automatically green transformation. The key question is whether it represents substantive portfolio decarbonisation or merely a change in ownership and corporate narrative.

Table 16. Taxonomy, Categorization of the Divestments (Bartalos & Sárvári, 2025)

Divestment Types in the Fossil Fuel Value Chain (Taxonomy)	Part of the Value Chain	Asset Divestments	Oil and Gas Companies	Part of Green Transition (Yes / No)
Assets of oil and natural gas fields	Upstream	West Qurna Field in Iraq	Shell (2018)	No; Optimization
		North Sabah in Malaysia	Shell (2018)	No; Optimization
		Oman fields	Shell (2018)	No; Optimization
		Corrib Gas Field in Ireland	Shell (2018)	No; Optimization
		San Juan Basin	BP (2018)	No; Optimization
		North Slope Oil	BP (2019)	No; Optimization
		Non-BHP US Lower 48 legacy	BP (2019)	No; Optimization
		Maari field in New Zealand	OMV (2019)	Yes
		Permian Basin	Shell (2021)	Yes
		Oman Block 61	BP (2021)	Yes
		Baram Delta in Malaysia	Shell (2022)	Yes
Upstream Business	Upstream	Upstream oil and gas business	Ørsted (2017)	Yes
		Tunisia Upstream GmBH	OMV (2018)	No; Optimization
LPG Business	Downstream	LPG Business in Macau	Shell (2017)	No; Optimization
Refinery	Downstream	Martinez	Shell (2020)	Yes
		Puget Sound	Shell (2021)	Yes
Petrochemical Business	Downstream	Sadaf joint venture in Saudi Arabia	Shell (2017)	No; Optimization
		Shell Saudi Arabia	Shell (2019)	No; Optimization
		Petrochemical Business	BP (2020)	Yes
Refined Products and Logistics Assets	Downstream	Gas Connect Austria	OMV (2020)	No; Optimization
		US Refined Products and Logistics Assets	BP (2021)	No; Optimization
Filling station, Retail Business	Consumer, Retail	Vivo Energy in Africa	Shell (2017)	Yes
		75 Fuel stations, Terminal in St. Petersburg	Neste (2019)	Yes
		285 Filling stations in Germany	OMV (2022)	Yes
		417 Filling stations	PKN Orlen (2022)	Yes
Base Oil Business	Downstream	Base Oil Business	Neste (2021)	Yes
Stake in oil and gas company	Downstream, Upstream	Pan American Energy	BP (2017)	No; Optimization

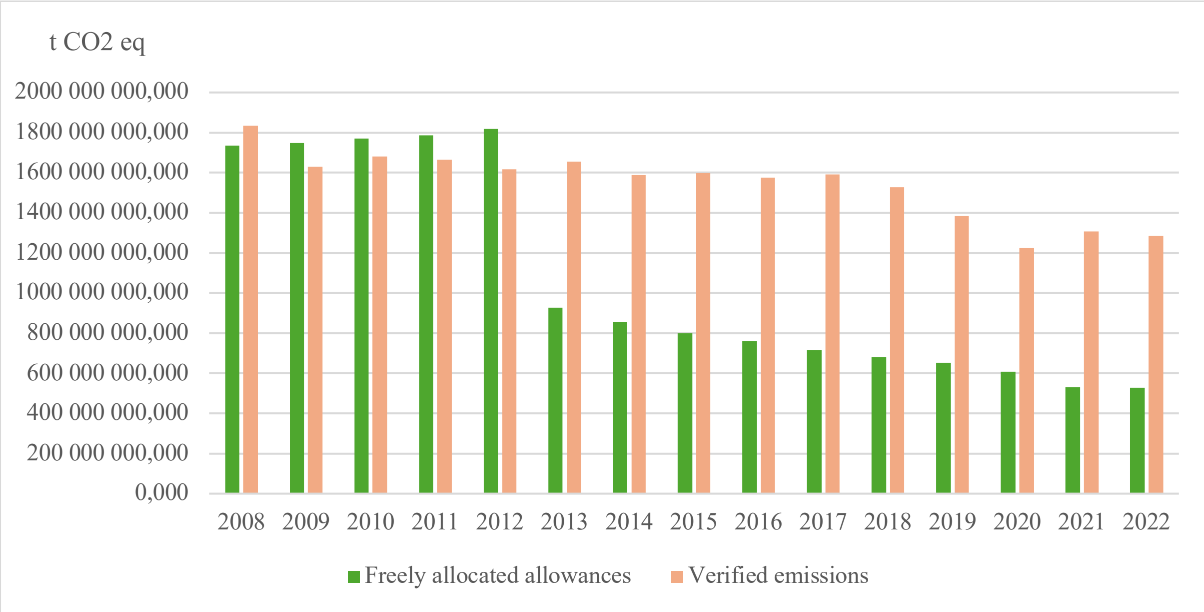
Source: based on the annual reports of Shell, BP, OMV, PKN Orlen, Ørsted and Neste between 2017-2022, (Bartalos & Sárvári, 2025)

As the frontrunner case, Ørsted evinces the energy transition along with the divestment movements cannot be successfully achieved without a concerted actions of supranational institutions, national governments, and civil society. The transition is requiring that all the actors work simultaneously together (Bartalos & Sárvári, 2025). Compared to the investor-owned firms, those enterprises where state has a significant ownership structure operate within a hybrid objective where financial results are balanced with decarbonization and energy security goals (Mazzucato, 2013). The main causal mechanism focuses on the ability of the state as a majority shareholder, to have a direct influence on the corporate strategy. Ørsted's case demonstrates that the transition pace might be faster if the state is involved actively (Bartalos & Sárvári, 2025). In case of the Dannish company, the state has more than 50% of ownership structure enabling corporate goals with national climate targets facilitating a rapid divestment from fossil fuel assets and large scale of capital allocation towards offshore wind developments.

The tightening of the EU climate policy, particularly the progressive reduction of freely allocated allowances in the EU ETS, has reinforced the strategic shift of firms toward low-carbon business models, drawing a plausible parallel with the EU's phase-out of coal-based power stations (Bartalos & Sárvári. 2025; Böhringer & Rosendahl, 2022). The European Environmental Agency (EEA) data show freely allocated allowances from 1,817 million tCO_2e to 927 million tCO_2e by 2023 (Bartalos & Sárvári, 2025). A cross-country comparison of the GHG emissions between 2017 and 2020 (Figure 9) demonstrates that those companies headquartered in countries with the sharpest emission decrease: Denmark (-12%), Finland (-20%) are more advanced in transition. Absolute emissions levels reflect each country's economic structure: the Nordic countries report substantially lower total emissions than the UK or Poland (Denmark: 59 million tonnes; Finland: 33 million tonnes; UK: 410 million tonnes; Poland: 288 million tonnes in 2022.

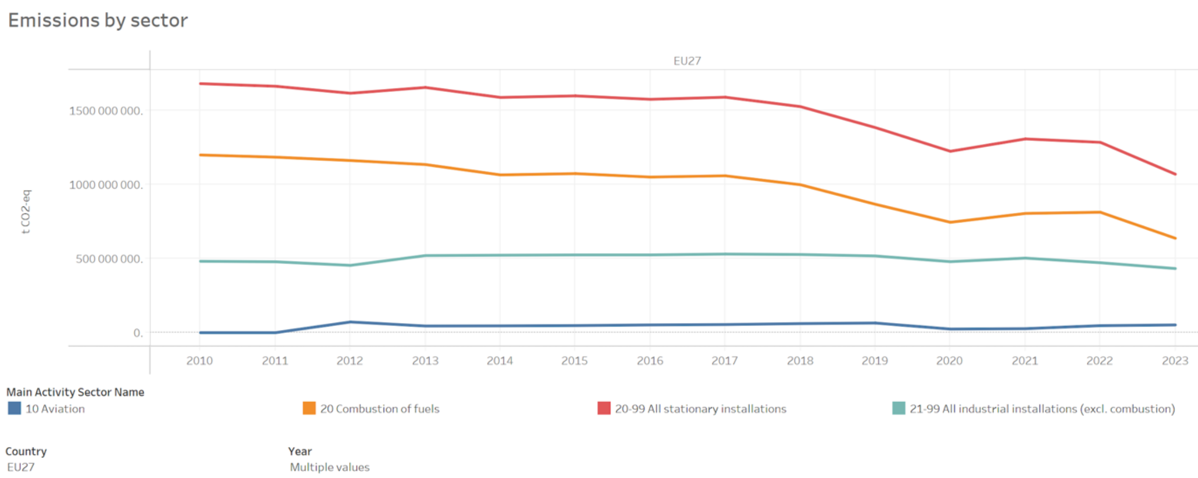
European Environment Agency data on allowances and verified emissions linked to the regulated sectors of power generation, energy-intensive industry and aviation between 2008 and 2022 (European Environment Agency, 2025). The widening gap between freely allocated allowances and verified emissions since the mid-2010s (Figure 10) has contributed to the strategic shift from international oil companies toward integrated energy companies: declining free allocation raises the cost of traditional refining output, creating price incentive to reallocate capital toward renewables, biofuels and hydrogen which foster the green transition from the international oil companies to the integrated energy companies.

Figure 10. Freely Allocated Allowances and Verified Emissions (t CO2 eq)



Source: European Environment Agency's EU Emissions Trading System ETS data viewer, (Bartalos & Sárvári, 202

Figure 11. Emissions by sector (t CO2 eq)



Source: European Environment Agency's EU Emissions Trading System ETS data viewer

Below Table 17 summarises the *GHG Emission Trends across EU member states* between 2017 and 2022, revealing considerable heterogeneity in the pace of national decarbonisation. While emissions declined across the EU, the magnitude of this decline varied substantially:

Finland recorded a 20% reduction linked to sustained pro-climate policy, whereas structural constraints in Poland's energy sector limited progress. Finland, Denmark, Estonia and the UK, which combine early investment in renewable energy with supportive policy frameworks and lower structural dependence on carbon-intensive energy, show the sharpest declines, while fossil-fuel-intensive systems such as Poland's show comparatively modest reductions despite operating under the same supranational regulatory framework. This divergence extends to the firm level: the UK-headquartered majors Shell and BP do not track their home country's relatively favourable national emissions trends as closely as might be expected, a divergence attributable to the continued dominance of upstream operations in their portfolios, where the structural difficulty of decarbonising extraction activity produces the discursive misalignment between strategic narrative and capital allocation examined throughout this dissertation.

Table 17. GHG Emissions by countries (million t CO2, CH4 methane, N2O)

EU Countries **GHG Emission Trends**	**2017** million tones	**2022**	**Delta of 2022 vs. 2017**
Austria	47,6	43,7	-8%
Belgium	71,6	65,2	-9%
Bulgaria	46,6	43,8	-6%
Croatia	13,7	11,6	-15%
Cyprus	5,8	5,4	-7%
Czechia	84,6	76,9	-9%
Denmark	67,4	59,3	-12%
Estonia	19,1	11,6	-39%
Finland	42,2	33,6	-20%
France	264,0	235,2	-11%
Germany	656,4	542,4	-17%
Greece	73,8	57,6	-22%
Hungary	39,5	35,0	-11%
Ireland	41,7	38,1	-9%
Italy	261,1	247,2	-5%
Latvia	7,2	6,1	-15%
Lithuania	13,0	13,6	5%
Luxembourg	7,5	7,0	-7%
Malta	1,5	1,5	0%
Netherlands	151,0	120,3	-20%
Poland	300,2	288,1	-4%
Portugal	49,6	35,8	-28%

EU Countries GHG Emission Trends	2017	2022	Delta of 2022 vs. 2017
	million tones		
Romania	65,5	54,5	-17%
Slovakia	30,2	25,0	-17%
Slovenia	10,6	9,5	-10%
Spain	216,0	181,4	-16%
Sweden	37,4	32,8	-12%
United Kingdom	480,0	410,0	-15%

Source: Eurostat Data Browser, (Bartalos & Sárvári, 2025)

Overall, the EU member states show a downward trend in GHG emissions between 2017 and 2022, but the magnitude of this decline is uneven, ranging from moderate to substantial reductions. Comparatively limited reduction observed in Poland, despite its exposure to the same supranational climate-policy framework as Denmark or Finland, illustrates that the effectiveness of EU-level regulation is conditioned by national energy-mix structure – the central argument developed further in Chapter 4. The divestment actions by the oil and gas companies constitute a legitimate component of corporate green transformation by reducing exposure to carbon-intensive assets and reallocating financial resources towards lower-carbon activities. However, the divested assets remain operational and continue to generate substantial emissions under new ownership, the transaction may represent a redistribution of emissions rather than their elimination. This distinction is particularly significant for oil and gas companies because substantial proportion of their overall climate impact is embedded in Scope 3 emissions associated with the downstream use of sold fossil-fuel products.

Finally, not all divestments identified in the six cases can be interpreted primarily as decarbonisation measure. Portfolio restructuring was also influenced by considerations of operational efficiency, profitability, strategic repositioning and geopolitical risk. This is particularly evident in BP’s withdrawal from its take in the Russian oil company Rosneft following Russia’s invasion of Ukraine (BP 2022; BP, 2023). The findings indicate that divestment should not be treated as a homogeneous indicator of corporate decarbonisation. Rather, its environmental significance depends on the underlying rational for the transaction, the carbon intensity of the divested asset, whether the asset remains operational under new ownership structure and the extent to which associated Scope 1, 2 and 3 emissions are reduced rather than merely reallocated.

5.2 Assessment of Green Capital Expenditures of the Six Selected Cases

This section analyses the proportion of the capital expenditures (CAPEX) allocated to green and low-carbon activities by the selected companies. The data collection involved a systematic review of publicly available information, drawing primarily on corporate annual reports, sustainability reports, investor disclosures and official announcements published on company websites. The objective was to identify and where possible, quantify investments associated with renewable energy and other low-carbon activities to assess the extent to which companies were reallocating capital away from their traditional fossil-fuel-based business models.

The pace of corporate green transition is measured by the proportion of green and low-carbon capital expenditure relative to total capital expenditure. This indicator provides an observable measure of the extent to which companies are reallocating financial resources towards activities that may contribute to the transformation of the business portfolio. As presented in Table 9, the analysis indicates a gradual increase in the allocation of capital towards green and low-carbon activities across the selected companies between 2017 and 2023. However, the absolute and relative scale of these investments remained limited in several of the selected oil and gas majors and medium-sized companies. The year-by-year comparison further indicates a more pronounced increase in the state and observable commitment to green investment from 2020 onwards, particularly among the companies with comparatively high greenhouse gas emissions. This development coincides with the intensification of European climate policy and the increasing importance of sustainability considerations in corporate strategy, reporting and capital allocation. Nevertheless, the scale of the investments remains marginal, primarily represent incremental portfolio diversification. Some level of company-specific disclosure limitations appears when data collection was conducted. Despite of the fact Shell had begun investing in renewable energy and solar-based projects (Table 18), the amount allocated to certain renewable investments was not publicly disclosed in sufficient detail for 2018 and 2019. The absence of identifiable expenditure in the dataset should not necessarily be interpreted as evidence of an absence of investment. Rather, it reflects the limitations of publicly available and comparable corporate disclosures. The distinction is important when interpreting cross-company and longitudinal differences in green CAPEX.

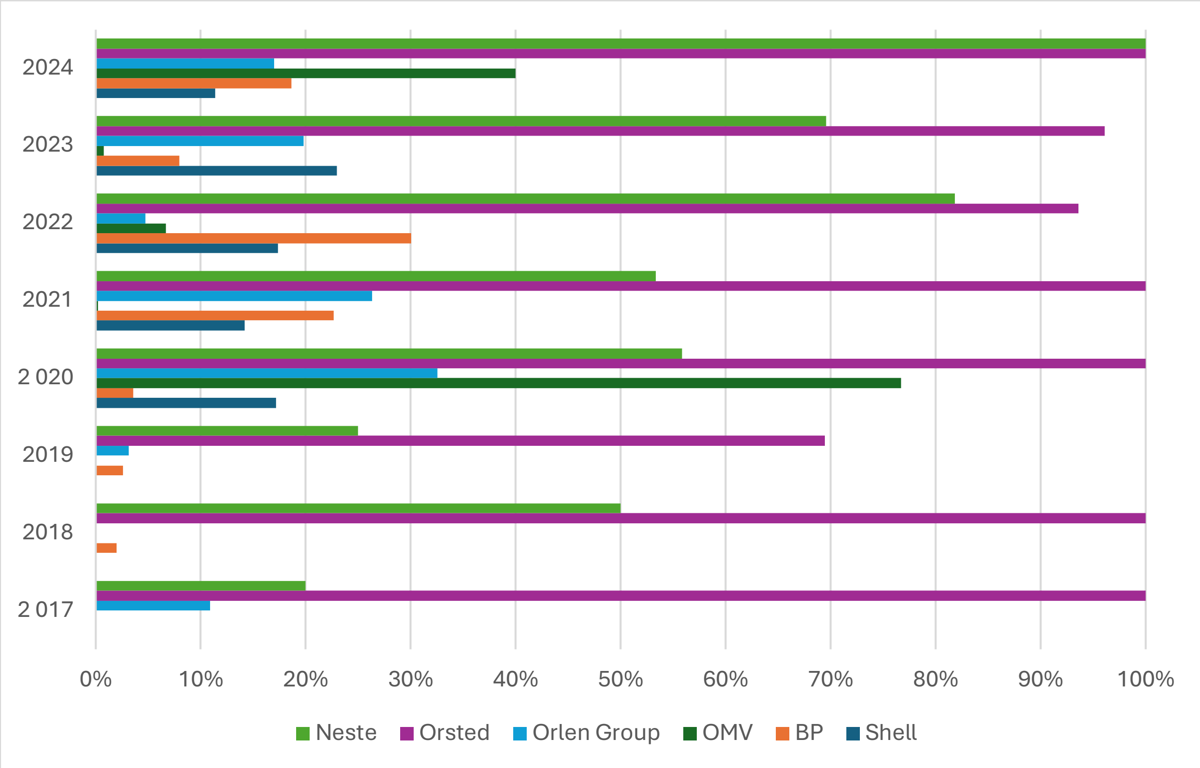
Overall, the CAPEX analysis suggests that the selected companies progressively increased their allocation of capital towards green and low-carbon activities, particularly after 2020. However, the magnitude of this shift varies considerably across companies and remains, in several cases, relatively modest compared with continued investment in conventional hydrocarbon activities. The findings provide and important basis for evaluating the extent to which the increasing corporate green narratives has been accompanied by a corresponding reallocation of capital. This comparison between what companies communicate and where they allocate capital constitutes a central empirical component of the dissertation's assessment of the alignment between corporate sustainability narratives and substantive green transformation.

Table 18. Green Capital Expenditure of Oil and Gas Companies in USD billion

Green Capital Expenditures in USD billion								
Oil and Gas Companies	2017	2018	2019	2020	2021	2022	2023	2024
Shell	n/a	0,6	n/a	4,3	2,7	4,3	5,6	2,4
BP	n/a	0,5	0,5	0,5	2,9	4,9	1,3	3
OMV	0,0	0,0	0,0	4,7	0,0	0,3	0,0	1,7
Orlen Group	0,1	n/a	0,0	0,7	0,7	0,2	1,6	1,5
Ørsted	2,5	3,4	2,3	3,8	5,5	4,9	5,2	6,9
Neste	0,1	0,2	0,2	0,7	0,9	1,9	1,7	1,5

Source: own edition based on the annual reports of Shell, BP, OMV, Orlen Group, Orsted and Neste between 2017 – 2024, (Bartalos & Sárvári, 2025)

Figure 12. Proportion of Green & Low-Carbon Investments of Total CAPEX



Source: own edition based on the annual reports of Shell, BP, OMV, Orlen Group, Ørsted and Neste 2017 – 2024

Table 19. Net Income of the Selected Cases in USD billion

Net Income / Profit in USD billion	2017	2018	2019	2020	2021	2022	2023	2024
Shell	12,9	23,3	15,8	-21,7	20,1	42,3	19,6	16,5
BP	3,4	9,6	4,2	-20,7	8,4	-2,5	10,3	0,4
OMV	0,9	2	2,4	1,6	3,3	5,4	2,1	1,8
Orlen Group	1,8	1,4	1,1	0,9	2,8	7,5	6,5	2
Ørsted	2,7	2,6	1,0	2,3	1,5	2,2	2,1	-0,9
Neste	0,9	1,1	2,4	0,9	2,1	3,3	2	-0,1

Source: own edition based on the annual reports of Shell, BP, OMV, Orlen Group, Ørsted and Neste 2017 – 2024

The frontrunner cases – Ørsted and Neste - in green transition, demonstrating a comparatively strong alignment between their corporate sustainability narratives and observed capital allocation. significant result by the portion of their green investments of the total capital expenditure. The proportion of green investments in total capital expenditure for these two companies ranges from approximately 20% to close to 100% between 2017 and 2024. This relatively high allocation of capital towards renewable and low-carbon activities is broadly consistent with the strategic narratives communicated by the companies over time. Their investment patterns provide comparatively strong evidence of alignment between stated transition ambitions and observable corporate action.

Different pattern can be identified in the cases of OMV, Orlen Group, Shell and BP. For these companies, the relationship between corporate communication and realised investment outcomes is considerably more complex. While their corporate narratives continuously emphasise portfolio transformation, diversification and transition towards lower-carbon business models, the data do not demonstrate a consistent or linear increase in the proportion of green capital expenditure over the period examined. Rather, green CAPEX fluctuates substantially across individual years. The divergence raises an important empirical question for the analysis. What factors account for fluctuation in green investment and which factors exert the influence on corporate capital-allocation decisions?

Besides structural business characteristics, pro-environmental nations states involvement another explanatory factor are the economic environment, and profitability. The year 2020 represents a particularly important observation in this respect as the COVID-19 pandemic generated substantial uncertainty, weakened energy demand, and adversely affected the financial performance and investment capacity of fossil-fuel-dependent companies. The clean energy companies have demonstrated stronger resilience during the pandemic than firms more heavily dependent on conventional fossil-fuel operations (Wan et al., 2021). The company level evidence examined in this dissertation provides some support for this observation. Among the six cases, Ørsted and Neste – the two companies exhibiting the most advanced green transition paths – recorded comparatively strong financial performance during the period examined (Table 19). By contrast, Shell and BP recorded among the lowest net income. Although the companies' financial performance does not establish a direct causal relationship between green investment and financial performance, it indicates that the structure of a company's portfolio may influence both its resilience to external shocks and its capacity to maintain investment in transition-related activities.

The OMV case further illustrates the importance of distinguishing between different types of transition-related investment. In 2020, OMV's acquisition of a majority stake in Borealis significantly strengthened its position in the high-value chemicals sector and was presented as contributing to a more circular business model (OMV, 2020). Petrochemicals cannot be considered equivalent to renewable-energy investment. While chemicals and circular economy activities may contribute to resource efficiency, material circularity and potentially lower-carbon production. Their environmental implications differ substantially from those of investments in renewable energy. Accordingly, this dissertation classifies such activities as low-carbon or transitional investments rather than fully green investments. Do we consider the chemicals as fully green portfolio shift? These investments might be addressed as low-carbon projects. The distinction is particularly important because the economic attractiveness and environmental contribution of different transition pathways are not necessarily aligned. Investment in petrochemicals, circular-economy activities or other lower-carbon businesses may offer companies comparatively attractive financial returns while simultaneously reducing the carbon intensity of selected activities. Renewable-energy investments, by contrast, have a more direct relationship with the substitution of fossil-fuel-based energy sources and therefore constitute a stronger indicator of structural portfolio transformation. The distinction between green, low-carbon, and transitional investment is essential for evaluating the substantive nature of corporate green transformation.

Similar pattern can be observed in the case of Orlen Group. In 2020, the company allocated substantial activities in Poland and Czech Republic which were incorporated into its corporate sustainability and transformation narrative. This investment can be interpreted as contributing to a lower-carbon or more diversified business model, but they should not automatically be classified as green investment in the same sense as renewable-energy projects. At the same time, Orlen Group also expanded its renewable-energy portfolio through the acquisition of offshore wind assets in the Baltic Sea with an investment approximately USD 0.6 billion. Unlike the petrochemical investments, offshore wind represents a direct renewable-energy investment and therefore provides stronger evidence of a substantive shift in the company's energy portfolio. The coexistence of these investment categories illustrates the hybrid nature of the transition strategies adopted by several of the companies examined.

Table 20. Portion of the green or low-carbon investments of the total capital expenditure of Oil and Gas Companies

% Portion of Green Investments of Total Capital Expenditures in USD billion								
Oil and Gas Companies	2017	2018	2019	2020	2021	2022	2023	2024
Shell	n/a	n/a	n/a	17%	14%	17%	23%	11%
BP	n/a	2%	3%	4%	23%	32%	8%	10%
OMV	0%	0%	0%	77%	0%	7%	1%	23%
Orlen Group	11%	n/a	3%	33%	26%	5%	20%	26%
Neste	20%	50%	25%	56%	53%	82%	70%	100%
Ørsted	100%	100%	69%	100%	100%	94%	96%	100%

Source: own edition based on the annual reports of Shell, BP, OMV, PKN Orlen, Ørsted and Neste 2017 – 2024

Below analysis collects the main green, low-carbon and brown-field investments of oil and gas companies. The green investments are evolving throughout the seven-years period where the renewables like solar and wind power, green hydrogen, EV charging points and natural gas are the mainstream topics. The discourse and the narratives comparison represent a cautious approach in green transformation between 2017 and 2019. Only in case of Neste and Ørsted were articulated clear indication towards sustainable development like 'strong results support Ørsted's green transformation' by Orsted, and 'leaving healthier planet for our children' via Neste. However, from 2020 the scale of the green investments in line with the narratives demonstrate a higher commitment towards the transformation. While Orlen Group was openly stating 'Fuel the Future' between 2017 and 2019 to neglect green transition, while from the year 2020 its narratives contain sustainability, energy transition and transformation which are reflected in the proportion of the green investments.

From the other perspective, OMV is keen on green and clean discourses through the whole period of 2017 – 2023 while the green investment is among the lowest in the circle of the oil and gas companies in the case study pool. The tendency is that renewables play significant role in the green transition, most popular are solar and wind as these are the most economically viable options and from environmental point of view the cleanest option (Pickl, 2019). The commitment of some of the companies emerge when the major communications include the renewables in their strategic discourses. Neste captured the most explicit way the strategy is linked to *"Change runs on renewable"*. The renewables have a major impact on the business model when they are encouraged to move away from fossil fuel to more energy companies. Therefore, narrative from the *"fuel the future"* has been switched to *"powering the future sustainably"* since 2020 by Orlen Group (Orlen Group, 2020). However, it is important to assess whether the oil majors and medium, smaller entities are making sizeable investments to become energy powers (Pickl, 2019). Shell is more likely to call itself as an energy transition company instead of oil and gas company. On the other hand, BP was more cautious regarding the main communication about renewables. Despite of the fact having some minor investments, its narratives do not contain renewables.

Highlighting Few Investments linked to green, low-carbon and brown-field CAPEX:

Shell

- 2017 – North Coast Marine Area offshore block in Trinidad and Tobago
- 2017 – NewMotion electric vehicle charging provider
- 2018 – Acquisition of 44% in Silicon Ranch Corp. operator of solar energy assets
- 2018 – Upstream business in New Zealand (USD 0.6bn)
- 2018 – 20% in 2 offshore oil fields in the United Arab Emirates from ADNOC (USD 1.5bn)
- 2019 – Majority USD 10 bn in Upstream, new cracker facility in Pennsylvania
- 2019 – Shell acquires 49% stake in Cleantech Solar (USA)
- 2020 – Varennes in Québec, Canada first waste to low-carbon fuels plant, producing renewable chemicals from non-recyclable waste
- 2021 – Sprng Energy, a solar and wind platform from India (2.3 GW renewable generation capacity and 7.5 GW to the pipeline) integration of solar and energy storage company in the USA
- 2022 – Acquisition of German company SBRS GmbH to provide electric charging stations for vans, buses and trucks
- 2023 – Electric-vehicle charging, biofuels, renewable power, hydrogen, CCS
- 2024 – Holland Hydrogen (200 MW renewable hydrogen electrolyser in Rotterdam) under construction
- 2024 – Manatee gas field in Trinidad Tobago

BP

- 2017 – Acquired interests in Mauritania, Senegal and in Zohr gas field in Egypt
- 2018 – Environmental remediation after oil spills (USD 3 bn)
- 2018 – Acquisition of BHP Billiton Petroleum onshore US oil and gas assets
- 2018 – 25-years extension of ACG production-sharing agreement in Azerbaijan
- 2019 – Environmental remediation after oil spills (USD 2 bn)
- 2020 – US offshore wind acquisition via strategic partnership with Equinor, Gas exploration well in the Shafag-Asiman field in Azerbaijan
- 2020 – Herschel hydrocarbon project in Gulf of Mexico
- 2021 – ScotWind offshore wind lease option at the east coast of Scotland (2.9 GW), Irish Sea offshore wind (3 GW), Mento Gas Development in Trinidad and Tobago
- 2022 – EV charging points with a Partnership of Marks&Spencer to install fast charge points in 70 stores, 900 charge points
- 2022 – Green Hydrogen project in Mauritania, Egypt
- 2022 – ARCHAEA ENERGY - largest renewable natural gas producer in the USA
- 2023 – Electric-vehicle charge points, biogas supply, expansion of renewables and hydrogen project pipelines
- 2024 – Expansion of Lightsource BP solar pipeline
- 2024 – BP Pulse fast EV Chargers

OMV

- 2017 – Upstream acquired 25% of Yuzhno Russkoye field amounted of USD 1,8bn
- 2018 – Upstream strategic partnership with Sapura Energy Berhad
- 2018 – 15% in ADNOC refinery
- 2018 – Shell's Upstream business in New Zealand
- 2019 – Sapura Energy acquisition USD 0.5bn for 49% in Malaysia ADNOC refining business at Downstream oil and gas
- 2020 – Acquisition of higher value petrochemicals products at Borealis DS for USD 4.6 bn and investments in the European refineries (recycling plastic waste)
- 2021 – Upstream CAPEX related to investments in New Zealand, Norway and Malaysia
- 2022 – Climate change mitigation like electricity generation form wind power and using solar photovoltaic technology

- 2023 – Joint venture with Wien Energie to produce geothermal energy
- 2023 – Production of organic basic chemicals
- 2024 – Expanding Photovoltaic power parks and circular polymer capacity with Borealis

Orlen Group

- 2017 – Power generation
- 2018 – Preparation for the offshore wind farms
- 2019 – Pollution control, environmental protection management and reducing wastewater
- 2020 – Offshore wind farms in the Baltic Sea ENERGA power generation for USD 0.6 bn Construction of Plock
- 2020 – Polypropylene glycol unit in refining Petrochemicals expansion of fertilizer production capacities
- 2021 – Deployment of 263 EV charging stations Power generation
- 2022 – Low-carbon and petrochemical production
- 2023 – Manufacture of organic basic chemicals
- 2024 – Baltic Power Offshore Wind Farm (1.2GW)
- 2024 – Expansion of HVO/Biofuel units at Plock Refinery
- 2024 – Deployment of gas-fired power units CCGT and SMR small nuclear project development

Neste

- 2017 – Bio propane unit investment in Rotterdam
- 2018 – Oil products investment into the wastewater treatment and Singapore expansion USD 0.2bn
- 2019 – Renewable Products related to Singapore refinery expansion
- 2020 – Continuing the investment in Renewable Products related to Singapore refinery expansion
- 2021 – Singapore expansion project and Porvoo on green transition
- 2022 – Expansion of Neste's Singapore refinery increased renewable products capacity by over 1million tons/annum Renewable refinery in Rotterdam to produce sustainable aviation fuel; Biogas and biofuels

- 2023 – Renewables production capacity expansion
- 2024 – Construction of Hornsea 3 (2.9GW), 3 offshore wind farms
- 2024 – Expansion of onshore wind, solar and battery energy storage systems (BESS)

Ørsted

- 2017 – Investing in Wind power
- 2018 – USD 2.2bn for offshore wind farms
- 2018 – Acquisition of onshore wind company, Lincoln Clean Energy
- 2019 – Offshore windmill developments USD 2.2bn
- 2020 – Offshore wind farms USD 2.9bn in Netherlands, Taiwan, UK and in the USA Onshore wind farms USD 0.9bn in the USA
- 2021 – Ost wind in Germany with 1.5 GW capacity
- 2021 – Acquired Flagship the largest e-methanol project
- 2022 – Construction of wind and solar assets
- 2023 – Wind and solar farms Storage facilities for electricity
- 2023 – Cogeneration of heat and power from bioenergy
- 2024 – USD 2.7bn expansion of Rotterdam Renewable Refinery
- 2024 – Porvoo refinery transformation project

Source: own edition based on the annual reports of Shell, BP, OMV, PKN Orlen, Orsted and Neste 2017 – 2024

Table 21. Main Narratives of the selected cases linked to the portion of green CAPEX

Portion of green investments and main narratives of the companies									
Oil and Gas companies		**2 017**	**2018**	**2019**	**2 020**	**2021**	**2022**	**2023**	**2024**
Shell	**Green CAPEX**	**n/a**	**n/a**	**n/a**	**17%**	**14%**	**17%**	**23%**	**11%**
	Narratives	Powering Progress Together, Divestments for Efficiency	Natural gas key in energy transition	Electrification, largest electricity power company	Net-zero emissions, respecting nature	Generating shareholder values, powering lives	Need for balanced transition	Deliver more value for our shareholders and society with less emissions	More value, less emissions
BP	**Green CAPEX**	**n/a**	**2%**	**3%**	**4%**	**23%**	**32%**	**8%**	**10%**
	Narratives	Strong delivery and growth, lower carbon products and renewable gas	Growing the business and advancing energy transition, advanced mobility, bio and	Performing while transforming	Get to net zero, care for our planet, put sustainability at the heart of BP, from IOC to **Integrated Energy Company**	Reimagining energy for people and planet, embedding sustainability into the way we do business	Exceeded 20% of the 2025 CO2 reduction targets, CCUS, blue hydrogen and renewable, power	From IOC to integrated energy company, global position in Hydrogen and renewables	Getting to net zero, growing shareholder value
OMV	**Green CAPEX**	**0%**	**0%**	**0%**	**77%**	**0%**	**7%**	**1%**	**23%**
	Narratives	Energy for better life, climate change is a challenge. Solution to lower carbon emissions	Stepping on the gas towards energy future, grow production, profitability and reserves	Extend the value chain towards petrochemical processing to recycling, energy for better life	Maximize our economic, environmental and social sustainability	Become innovative company to provide circular resources to people	Oil and gas industry the one of the key levers for energy transition	Ability to harness the sustainability as the driver of innovation and growth	Creating a world: sustainable energy, mobility and lifestyle are a reality
PKN Orlen	**Green CAPEX**	**11%**	**n/a**	**3%**	**33%**	**26%**	**5%**	**20%**	**26%**
	Narratives	Fuel the Future, Strong Downstream, Petrochemical position	RED II directive triggered biofuel program	Fuel the future	Powering the future sustainably, renewable solar PV and wind power, declaration of net zero emission by 2050, USD 6 billion for renewables by 2030	Leader of energy transition in the CEE region by renewables and gas-fired energy sources, USD 1 billion for R&D for green transformation	Provider of low- and emission-free energy sources	Investment plans for renewables USD 15 bn, Stop coal heating by 2035, renewable energy is key to growth, stricter regulations: Fit for 55, REDIII, REPowerEU,	Delivering low- and zero-carbon energy at afforable prices
Neste	**Green CAPEX**	**20%**	**50%**	**25%**	**56%**	**53%**	**82%**	**70%**	**100%**
	Narratives	Leaving a **healthier planet** for our children by creating responsible choices every day. Building the future - Passion for renewal, Neste is committed to combat climate change & drive circular economy	**Passion for renewables**, create healthier planet for children	Faster, bolder and together, to reduce GHG emission by 20 mn t annually by 2030, become **global leader in circular solutions and renewables**, largest producer of renewable diesel és jet fuel	Change runs on **renewable**, collaboration and innovation enable our journey towards more **sustainable future**. Targets to reduce CO2 emission by 20 mn t annually by 2030. To reach carbon neutral production by 2035	Targets for Scope 3 emission reduction by 50% by 2040, **Sustainability vision** to take the lead in **transforming our value chain towards carbon neutrality**, Scope 1&2 emission carbon neutral by 2035	Climate commitments are integral part of our corporate strategy and sustainability vision. Transitioning Porvoo into **renewable and circular site**	Change runs on **renewable**, Focus on growth and efficiency, taking charge of the change. Need for urgent global response, the strategy is to deliver outstanding value with renewables and circular solutions	Carbon-neutral and nature positive value chain by 2040
Orsted	**Green CAPEX**	**100%**	**100%**	**69%**	**100%**	**100%**	**94%**	**96%**	**100%**
	Narratives	Strong results supports Orsted's **green transformation**	All-time high results and strategic progress, A greener planet for a better world	**Scope 1,2,3 is net-zero by 2040.** Cannot tell to our grandchildren that we failed to protect our planet because we were too focused on protecting our own well-being. (Henrik Poulsen).	Let's create a world that runs entirely on **green energy**, increased renewable energy capacity, enabling the world's green transformation	**Clean energy transition** is increasingly urgent	**Green energy to power** lasting positive impact	Transparency around climate related advocacy to help clear the path towards **faster deployment of renewable energy**	World that runs on entirely green energy

Source: own edition based on the annual reports of Shell, BP, OMV, Orlen Group, Ørsted and Neste between 2017 – 2024, (Bartalos & Sárvári, 2025)

To sum up, the six cases demonstrate three distinct patterns of capital allocation. Firstly, Ørsted and Neste display relatively strong alignment between their corporate narratives and investment behaviour, with green investments representing a substantial proportion of total CAPEX. Secondly, Shell, BP, OMV, and Orlen Group exhibit more variable and fragmented investment patterns, in which green investments coexist with continued investment in conventional or transitional activities. Thirdly, the latter group demonstrates a greater degree of divergence between the forward-looking nature of corporate transition narratives—often centred on 2030 milestones—and the observed annual allocation of capital. The absence of a consistent upward trajectory in green CAPEX suggests that the articulation of long-term transition ambitions does not necessarily translate into a linear reallocation of financial resources. This finding is central to the dissertation's broader argument concerning the relationship between corporate sustainability narratives and corporate action. The evidence indicates that the presence of an increasingly ambitious green narrative should not be treated as equivalent to the achievement of substantive green transformation. Instead, the credibility of such narratives depends on the extent to which they are accompanied by sustained and material changes in capital allocation, portfolio composition, and ultimately the company's exposure to fossil-fuel activities.

5.3 From Corporate Green Narratives to Transition Outcomes: Assessing the Alignment of Discourse, Capital Allocation and Emissions

The six case sections that follow apply the process-tracing framework specified in Section 3.2. to each company in turn, evaluating the observable implications of causal links L3 (narrative to capital allocation) and L4 (capital allocation to portfolio change) against the CAPEX, divestment and narrative evidence introduced in Sections 5.1–5.2. To keep the analytical thread visible, each case section here presents only the company's overall strategic narrative and a condensed synthesis of its capital-allocation evidence, directly linked to the relevant hypothesis, the underlying business-segment-level detail (Downstream, Upstream, Renewable and Retail operations). The aim of the following empirical analysis, drawing on Sustainability and Annual Reports of oil and gas companies, is to examine the degree of alignment between publicly disclosed narratives and the content of the companies' short-term strategic plans. It is crucial to analyse how the green narratives are translated into actual strategic priorities to understand the coherent approach and dept of the environmental commitment of each selected case.

The analysis captures the sustainability-oriented strategic directions, narratives about operational changes, portfolio restructuring, divestment activities and investment priorities. Following the assessment of these strategic directions, the final stage of the empirical analysis examines the extent to which corporate narratives correspond to observable actions and their environmental implications. To strengthen the assessment, the Scope 3 green emission data are incorporated as a quantitative outcome indicator across the six selected cases. This is particularly important in the oil and gas sector, where a substantial share of companies' climate impact is associated not with their direct operations, but with the downstream use of the fossil-fuel products they sell. Consequently, reductions in Scope 1 and Scope 2 emissions alone may provide an incomplete indication of the extent to which a company's underlying business model has undergone substantive decarbonisation.

Especially, the inclusion of Scope 3 enables the analysis to move beyond assessing whether companies have undertaken green investments or divested fossil-fuel assets to examine whether these actions are associated with a measurable change in their broader emissions footprint. Scope 3, Category 11 – Use of Sold Products[5] data are used to assess whether reported portfolio transformation and investment, divestment activities translate into observable changes in the environmental impact of the companies' overall business model. Scope 3 emissions are treated as a critical outcome indicator of corporate transition because they provide a broader measure of whether changes in investment and portfolio composition are accompanied by a reduction in the emissions associated with the companies' products and value chains.

[5] Scope 3 Category 11 – Use of Sold Products: Under the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, Scope 3 comprises indirect greenhouse-gas emissions occurring throughout a company's value chain that are not included in Scope 1 or Scope 2. Scope 3 is divided into 15 categories, with Category 11 covering the downstream use of products sold by the reporting company. Scope 3 Category 11 includes the greenhouse-gas emissions generated during the use of products sold by a company in the reporting year. The GHG Protocol defines these emissions as the Scope 1 and Scope 2 emissions of the end users of the company's products. The category includes both consumer and business customers. Importantly, the standard requires companies to account for the direct use-phase emissions of sold products and recommends including indirect use-phase emissions where these are expected to be significant. For an oil and gas company, Category 11 is particularly significant because fossil-fuel products are themselves the source of downstream emissions. The GHG Protocol explicitly identifies petroleum products, natural gas, coal, biofuels and crude oil as products falling within the direct use-phase boundary of Category 11. Consequently, when an oil company sells gasoline, diesel, jet fuel, natural gas or other fossil-fuel products, the emissions generated when these products are ultimately combusted by customers are captured within Scope 3 Category 11 (Greenhouse Gas Protocol, 2011).

Table 22. Scope 3 Emissions Category 11: Use of Sold Products

Scope 3 GHG emissions Category 11: Use of Sold Products (million tonnes CO2 equivalent)								
Oil and Gas Companies	2017	2018	2019	2020	2021	2022	2023	2024
Shell	1318	1351	1271	1028	963	909	878	845
BP	395	n/a	360	328	304	307	315	322
OMV	107	100	120	112	103	120	100	97
Orlen Group	n/a	n/a	74	66	69	88	154	139
Neste	42	41	41	39	28	34	48	45
Ørsted	n/a	24	30	22	14	7	4	4

Source: the author's own work bases on Shell, BP, OMV, Orlen Group, Neste and Ørsted annular reports 2017-2024

The evolution of absolute Scope 3 Category 11 emissions (Use of Sold Products) across the six selected cases provides an outcome-oriented dimension to the assessment of corporate green transformation. Whereas the preceding analysis examines corporate narratives, investment allocation, and portfolio restructuring as manifestations of strategic change, Scope 3 Category 11 captures the downstream emissions associated with the use of products sold and therefore provides and additional indication of whether these changes are reflected in the companies' emission footprint. The cross-case evidence reveals considerable variation in the relationship between strategic transition and emission outcomes. Ørsted exhibits the most pronounced and sustained reduction, in line with its fundamental shift away from fossil-fuel activities, while the other cases display more gradual or fluctuating trajectories. The green investments and the communication of transition ambitions do not necessarily translate into a proportional reduction in downstream emissions. Accordingly, Scope 3 Category 11 is used in this dissertation as a complementary outcome indicator, enabling the analysis to distinguish between changes in corporate strategy and capital allocation, and their observable environmental consequences.

5.4 Shell's Sustainable Strategy 2017 – 2024: Discursive Decoupling in a Global IOC

Shell has developed a sustainability strategy around two principal pillars: one component emphasizes the development of new fuels including biofuels and hydrogen, while the other focuses on electrification, incorporating renewable energy sources such as solar and wind, alongside natural gas. In the frame of energy transition the company prioritized electrification and development alternative fuels such as biofuels and hydrogen under its *New Energies* business unit which is responsible for implementation of the sustainable portfolio (Shell Sustainability Report, 2017). Shell’s post-Paris strategic evolution illustrates a persistent discursive action gap driven by the internal prioritization of cash-flow generation over long-term structural decarbonization. Through its *“Powering Progress”* and Energy for a *“Better Future”* narrative, Shell positioned itself as an emerging integrated power and low-carbon solution provider. However, the process tracing reveal narrative-to capital-allocation link reveals an interrupted sequence.

5.4.1 Shell’s Green Transition: Downstream, Upstream and Retail Business

Shell’s strategic narratives between 2017 and 2024 illustrates the breakpoint at Link 3 of the causal chain: the gap between an ambitious green narrative and continued hydrocarbon-dominant capital allocation. Shell's transition strategy combines continued investment in conventional hydrocarbon businesses with a gradual expansion of renewable and lower-carbon activities. Across the study period (2017–2024), the company's corporate narrative increasingly emphasised decarbonisation, circularity, biofuels, hydrogen and renewable power, while capital allocation continued to be dominated by conventional downstream, petrochemical and natural gas investments.

Within its Downstream segment, Shell pursued improvements in the carbon efficiency of existing assets through refinery modernisation, energy-efficiency measures and selected brownfield investments. Key initiatives included the modernisation of the Moerdijk petrochemical complex in the Netherlands and efficiency improvement at the Rhineland refinery in Germany, which were expected to reduce operational greenhouse-gas emissions by approximately 100 000 tonnes annually (Shell, 2020). At the same time, Shell continued to allocate capital to petrochemicals projects, including the Pennsylvania polyethylene facility, which were framed in corporate communication as contributing to lower-carbon production and enhance circularity. Nevertheless, these investments remained embedded within carbon-intensive industrial activities. The case therefore illustrates the analytical distinction between incremental emissions-efficiency improvements and substantive portfolio transformation, as well as the tendency to incorporate transitional or efficiency-oriented investments within broader corporate narratives of green transformation.

The COVID-19 pandemic significantly influenced Shell’s environmental performance in 2020. The reported reduction in greenhouse gas emissions resulted primarily from lower production levels and major asset divestments in Canada and the United States rather than structural decarbonisation of the business portfolio (Shell, 2020). The direct emissions reported by Shell have decreased by 7 million tonnes which was led by divestments in Canada and the USA (Shell, 2021). Consequently, emission reductions during this period should not be interpreted as evidence of successful green transformation.

Shell simultaneously expanded investments in lower-carbon businesses, particularly in biofuels, hydrogen, and electric mobility. Biofuels became a significant component of its transition strategy, supported by investments in Brazil and the Netherlands, and by the development of sustainable aviation fuel (SAF). In 2019, Shell has also acquired the Hazira LNG port and terminal in Gujarat, representing a major investment in India’s energy sector (Shell, 2019). By 2022, the company reported sales of approximately 9.5 billion litres of biofuels, positioning it among the world's largest biofuel producers (Shell, 2022). The expansion of this business was further supported by the development of new biofuel facility in the Netherlands, and the acquisition of EcoOils, which provided a technology for converting waste-derived feedstocks into fuel inputs (Shell, 2022). In parallel, Shell expanded its electric-vehicle charging network from approximately 86,000 charging points in 2021 to more than 139,000 in 2022 and advanced large-scale green hydrogen production through the planned 200 MW electrolyser at the Shell Energy and Chemicals Park Rotterdam (Shell, 2021; Shell, 2022). These investments indicate a measurable diversification of Shell's portfolio towards lower-carbon activities; however, their significance for overall corporate transformation depends on their scale relative to the company's continued fossil-fuel operations and total capital allocation.

Shell progressively broadened its transition portfolio to include biofuels, hydrogen, electric mobility, renewable electricity and carbon capture and storage (CCS). In biofuels, the company expanded the production of fuels derived from agricultural and other waste streams and launched sustainable aviation fuel (SAF) initiatives. Its participation in the Clean Skies for Tomorrow Coalition further supported the development of SAF as a pathway towards decarbonising aviation (Shell, 2019). Similarly, the acquisition of New Motion and the agreement with IONITY expanded Shell’s electric-vehicle charging infrastructure in Europe, while investments in hydrogen refuelling and renewable energy indicated an attempt to diversify its traditional retail portfolio (Shell, 2017).

The company's transition activities also expanded geographically and technologically after 2020. Shell invested in offshore wind, solar energy, renewable natural gas and other low-carbon businesses, including the acquisitions of Sprng Energy in India and Nature Energy in Denmark. In 2022, approximately USD 4.3 billion of capital expenditure was allocated to biofuels, hydrogen, electric-vehicle charging, wind and solar, alongside additional investment in low-carbon and non-energy businesses (Shell, 2022). These developments provide evidence of substantive movement beyond conventional fossil-fuel activities. Nevertheless, relative to Shell's overall capital allocation and its continued investments in oil, natural gas, LNG and petrochemicals, the scale of these investments remained limited. Consequently, the empirical evidence indicates only partial alignment between Shell's increasingly ambitious transition narrative and the pace of portfolio transformation.

Within Upstream, CCS constituted a central component of Shell's decarbonisation strategy. Rather than replacing fossil-fuel production, CCS enables the company to reduce the carbon intensity of continuing hydrocarbon operations. The Quest facility in Canada captured more than one million tonnes of CO_2 annually from 2017, while Shell also developed CCS capabilities in Norway and Australia (Shell, 2017; 2021). The Gorgon and Quest facilities together accounted for approximately 11.5 million tonnes of captured CO_2 by 2021 (Shell, 2021). These projects demonstrate technological progress in emissions mitigation but simultaneously reinforce Shell's ability to prolong large-scale hydrocarbon production.

Shell reported a 30% reduction in operational emissions relative to 2016 by the end of 2022 and subsequently strengthened its target for absolute emissions reduction. However, these improvements were partly attributable to refinery closures and divestments, including the Convent, Puget Sound, Martinez and Fredericia refineries (Shell, 2021). The reductions were also partly offset by the recommissioning of the Prelude FLNG facility in Australia and increased flaring in Nigeria. Thus, reductions in Scope 1 and 2 emissions should not be interpreted independently from changes in the asset portfolio and production structure.

The Scope 3 dimension provides an even stronger indication of the limits of Shell's transition. While operational emissions declined, a substantial share of the company's climate impact remained associated with the use of sold products. Improvements in Scope 1 and 2 emissions did not necessarily correspond to an equivalent reduction in the emissions generated throughout the product life cycle. This finding reinforces H3: divestments and operational improvements can enhance corporate emissions indicators without necessarily reducing the emissions generated by the underlying assets and products.

Shell also began institutionalising climate objectives within its governance framework. From 2017, 20% of sustainability-related executive incentives were linked to safety and environmental performance, with sustainability criteria subsequently incorporated into longer-term remuneration structures (Shell, 2017; Shell, 2019). The introduction of ESG-linked remuneration indicates an organisational attempt to integrate environmental objectives into managerial decision-making. However, evidence suggests that the effectiveness of such mechanisms depends on the weighting, measurability and design of the underlying targets (Flammer et al., 2019). Given the relatively modest weighting of environmental indicators compared with financial performance, these incentives represented only a partial internalisation of Shell's climate ambitions.

Overall, Shell's trajectory demonstrates partial rather than substantive alignment between corporate sustainability narratives and capital allocation. The company progressively institutionalised climate objectives expanded low-carbon investments and developed technological solutions such as CCS. Nevertheless, these developments occurred alongside continued investment in LNG, oil, petrochemicals and other conventional activities. Moreover, reductions in reported emissions were partly driven by divestments and changes in the asset portfolio, while Scope 3 emissions remained closely linked to the continued sale of fossil-based products. Shell therefore represents a case in which the green narrative evolved faster than the underlying reallocation of capital, supporting H2 and H3 and illustrating the persistent gap between corporate decarbonisation commitments and substantive portfolio transformation.

5.4.2 Shell's Renewable Business Line

The Renewables and Energy Solutions segment gained increasing strategic importance after 2019 through acquisitions and investments in wind and solar energy across Europe, Australia, India and the United States. By the end of 2022, Shell's share of renewable power generation capacity had increased to 2.2 GW in operation, with a further 4.2 GW under construction or committed for sale, representing a combined 6.4 GW of operational and near-term development capacity (Shell, 2022). Shell's wind portfolio remained comparatively limited in terms of operational capacity. At the end of 2022, Shell's equity share of installed onshore and offshore wind capacity was 307 MW, with an additional 789 MW under construction (Shell, 2022). By comparison, the EU-27 installed approximately 16 GW of new wind capacity during 2022 alone, while total wind capacity across Europe reached approximately 255 GW (WindEurope, 2023). Thus, Shell's 307 MW of operational wind capacity represented only around 1.9% of the wind capacity added in the EU during 2022, illustrating the relatively limited scale of Shell's operational wind portfolio in the context of the rapidly expanding European market (Shell, 2022; WindEurope, 2023).

The contrast is even more pronounced in solar energy. The EU installed a record 41.4 GW of new solar photovoltaic capacity in 2022, increasing its cumulative solar fleet to 208.9 GW (SolarPower Europe, 2022). Shell's renewable portfolio nevertheless expanded through acquisitions, including the USD 1.6 billion acquisition of Sprng Energy, a solar and wind platform in India, which added approximately 2.3 GW to Shell's renewable generation portfolio and a further 7.5 GW to its future project pipeline (Shell, 2022).

These figures suggest that Shell had begun to establish a meaningful renewable-energy portfolio, particularly through acquisitions and project development. However, the comparison with the European market indicates that operational renewable generation remained a relatively small component of the broader energy system. Importantly, Shell's 4.2 GW of development capacity and 45 GW project pipeline should not be treated as equivalent to operational capacity, as a substantial proportion remained at the development stage. While Shell's renewable strategy demonstrated increasing strategic commitment and a significant expansion of its project pipeline, the actual operational asset base remained modest relative to the scale and rate of renewable deployment in the European market. This distinction provides further evidence for the dissertation's argument that Shell's transition narrative and strategic positioning evolved faster than the substantive reallocation of its operating asset portfolio.

Research and development (R&D) expenditure provides an additional indicator of the extent to which a company is substantively committed to the green transition. In 2022, approximately 41% of Shell's R&D expenditure was directed towards technologies contributing to decarbonisation, indicating an increasing emphasis on technological innovation. Given the capital-intensive nature of low-carbon activities, the development and deployment of new technologies, knowledge and infrastructure require substantial investment. Of Shell's approximately USD 25 billion capital expenditure in 2022, around one-third was allocated to low-carbon and non-energy portfolios. Approximately USD 4.3 billion was invested specifically in biofuels, hydrogen, electric-vehicle charging, wind and solar energy, while additional capital was directed towards non-energy businesses, including lubricants, chemicals and convenience retail. These allocations indicate a measurable shift towards diversification; however, their relative scale within Shell's overall investment portfolio remains important when assessing the extent of substantive transition.

Shell across the empirical chapters, capital allocations are categorized into Low-Carbon and Transitional Investmentscovering LNG, biofuels, and EV infrastructure; and Brown-Field Investments focused on upstream oil and gas cash engines and conventional refining. This framework traces Shell's value-driven incumbent model, prioritizing high-margin hydrocarbon and LNG cash flows while maintaining measured exposure to select commercial low-carbon opportunities.

Table 23. Shell's Main Investment Activities between 2017 - 2024

Classification of Shell's Main Investments			
Main Investment	Analytical Classification	Relevance	Category
Conventional Refining & Petrochemicals	Traditional downstream processing investment	Large-scale refining assets, diversification of the asset portfolio	Brown - Field
Upstream Oil & Gas	Conventional hydrocarbon investment	High-return upstream oil & gas exploration, extraction projects to drive corporate cash flow	Brown - Field
Biofuels & Nature-Based Solutions)	Low-carbon fuel & offset investment	Sustainable biofuels, certified carbon offset initiatives in existing operations	Low - Carbon
Low-Carbon Power & EV Charging	Renewable & retail energy investment	Selectively scales retail power supply, hydrogen retail sites, and global EV charging networks	Low - Carbon
Liquefied Natural Gas (LNG) InfrastructureRetail Optimization	Transitional gas investment	Expands global LNG supply chains, export terminals as a transitional lower-carbon bridge fuel displacing coal	Brown - Field

Source: author's own work based on Shell's Annual Reports

Overall, Shell's sustainability strategy between 2017 – 2024 has gradually launched strategic projects to support green transition. The green transformation process is pursued based on the following pillars:

(i) Efficiency improvements
(ii) Asset divestments
(iii) Investments in low-carbon technologies, collaboration with start-ups
(iv) Substantial shifts towards electricity mainly powered by the solar panels

5.5 BP's Sustainable Strategy 2017 – 2024: Performing while Transforming

The following chapter will examine BP's strategic shift from an international oil company to an integrated energy company between 2017 and 2024. While sustainability appeared early on the 2010s, the BP's discourse has progressively indicated and implied green transition in the strategic announcements from 2017, embedding the 'dual challenge' to deliver more energy while emitting less carbon dioxide within its strategic narratives (BP, 2017). From 2018 onwards, this transition was articulated through the principles of 'reduce, improve and create', supported by investments in biofuels, renewables, hydrogen, advanced mobility, carbon management, power and storage (BP, 2018; 2020). BP initially committed approximately USD 500 million annually to low-carbon energy and subsequently increased its stated ambition to invest USD 3 - 4 billion annually by 2025 and approximately USD 5 billion annually by 2030 in low-carbon businesses (BP, 2020). BP has stated 5 main pillars of its energy transition:

(i) biofuel and low-carbon products
(ii) advanced mobility
(iii) carbon management
(iv) digital transformation
(v) power and storage.

To fulfil BP's green strategy the company has invested into small high-tech companies to accelerated tools necessary for green transformation.

BP's sustainability narrative between 2017 and 2024 demonstrated a strong and increasingly explicit commitment to climate action. The 2019 ambition to *'reimagine energy for people and our planet'* reflected the company's stated intention to contribute to the net-zero transition while integrating environmental considerations into its corporate strategy (BP Annual Report, 2019). This narrative was accompanied by commitments to reduce the carbon intensity of its portfolio and expand gas and non-oil businesses. However, BP's strategic actions reveal a persistent tension between its transition narrative and continued fossil-fuel expansion. In 2019, the company gained access to approximately 58,000 km² of new exploration acreage across nine countries, while additional fossil-fuel production projects were initiated in 2020 (BP Annual Report, 2019; 2020; Li et al., 2022). These developments indicate that the expansion of low-carbon activities occurred alongside, rather than through the systematic replacement of, the company's hydrocarbon portfolio. In 2023, the new leadership on top with the CEO, Murray Auchincloss announced less ambitious green strategy compared to the previous years which brought more in line the strategy and the actions taken by the company. Thus, the investments into green transformation have been slow downed by USD 1 billion less was allocated into the sustainable projects (BP, 2023).

5.5.1 BP's Upstream, Downstream and Retail Business, Retail and mobility

Progress in net zero production remains limited by 15% reduction, underscoring the structural challenges associated with decarbonizing upstream activities. The methane intensity has been lowered to 0.05% indicating optimization of the environmental performance of hydrocarbons extraction (BP, 2019). The segment has focused on optimizing environmental performance by lowering methane intensity by 0,05% as of 2022. This was achieved by installing air-assisted flaring systems to enhance combustion and reduce emissions (BP, 2022). Strategic contradiction has risen in the narratives and strategic goals, as upstream operation has appeared as resilient hydrocarbons continue to provide the main revenue stream to fund low-carbon projects and investments. Despite of the green narratives and commitment to climate protection BP has increased its acreage in new exploration sites and few mores in each year between 2019 and 2024 in Gulf of Mexico, North Sea in the UK, Caspian Sea in Azerbaijan and US shale which will cover future green investments. Most of the capital expenditure[6] has gone towards brown-field projects which means around USD 70-80 billion were spent on exploring oil and gas fields (BP, 2019; BP, 2020; BP, 2021; BP, 2022; BP, 2023; BP, 2024). Consequently, the upstream segment remained structurally dependent on hydrocarbons, with decarbonisation largely pursued through operational efficiency and technological mitigation.

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[6] Total expenditure amounts are taken from the Annual Reports which include the following components: expenditure on property, plant and equipment, intangible and other assets; acquisitions, net of cash acquired; investments in joint ventures; investments in associates (BP, 2019).

In downstream activities, BP pursued portfolio diversification through biofuels, lower-carbon products and carbon-management technologies. Bioenergy became particularly important through BP's activities in Brazil, including its joint venture with Copersucar, which expanded the company's production of sugarcane-based biofuels. BP also invested in Fulcrum BioEnergy in the United States to develop waste-to-fuel production and pursued carbon-capture technologies for industrial applications (BP, 2018; BP, 2019; BP, 2020). BP's narrative in relation to the energy transition is centred on 'reduce, improve, create framework'. To this end, it aims to supply energy with an overall lower emission intensity and discursively supports tools that reduce emissions, most prominently carbon pricing. On the latter, BP's Head of Group Environmental Policy, Paul Jefferiss, remarked that the most efficient regulations to fulfil Paris Agreement is the carbon pricing, which he frames as a tool with which the carbon-relevant efficiency of companies can be improved at a cost that would share the burden between consumers and producers. This distributes the burden from the oil and gas company to consumers as well, while it introduces a reliance on a complex market framework to mediate carbon trade and thereby determine the decisions made by company executives. The company has included carbon pricing in its plans accordingly, which reflects an adherence to an emerging internalization of pollution but also the inclusion of these risks in the activities of company. As entities incorporate these costs into their productions which are passed through to consumers via higher prices (Sager, 2023; Li et al., 2020; Andersson, 2019).

These activities demonstrate substantive expansion beyond conventional petroleum products and have the potential to reduce the Scope 3 intensity of BP's product portfolio. Nevertheless, they primarily diversified rather than replaced BP's fossil-fuel portfolio. The continued sale of oil and gas therefore remained a major source of value-chain emissions. Moreover, biofuels involve environmental trade-offs, particularly concerning land use and feedstock sustainability, which received comparatively limited attention within BP's transition narrative.

Retail and mobility represented another important area of diversification. BP expanded its electric-vehicle charging network from approximately 13,000 charging points in 2019 to 22,000 by 2021, while subsequently establishing an ambition to reach 70,000 charging points by 2030 (BP, 2019; BP, 2020; BP, 2021). In 2023, BP announced a further USD 1 billion investment in Spain and Portugal to develop approximately 5,000 fast-charging points under its bp pulse platform (BP, 2023). These investments demonstrate a more direct connection between BP's transition strategy and changing consumer energy demand and could contribute to reducing the Scope 3 intensity of transportation over the longer term. Climate objectives were also increasingly institutionalised through governance mechanisms and executive incentives. BP established board-level oversight of sustainability issues and linked executive remuneration to sustainability performance (BP, 2020; BP, 2021). Such mechanisms indicate an organisational attempt to embed climate objectives within managerial decision-making. However, the subsequent reduction in low-carbon investment suggests that formal governance commitments did not fully insulate the transition strategy from changing financial priorities and shareholder expectations.

The retail segment compared to the downstream and upstream has anchored direct impact on consumer where the transition acceleration is as essential as at the customers' side. The service-oriented decarbonization is in line with the electrification of the energy system and technology driven energy transition (Sovacool, 2020). The number of vehicles charging points has substantially increased from 13,000 to 22,000 compared to 2019, marking a significant result in low-carbon mobility infrastructure. The investment into the transition reached USD 4.9 billion which was approximately double of the previous year's amount marking higher commitments to build green portfolio.

5.5.2 BP's Renewables and New Energies

BP's repositioning towards an *"integrated energy company"* became particularly explicit under CEO Bernard Looney from 2020 onwards. The *"reimagining energy for people and our planet"* strategy framed the energy transition as a reconciliation of profitability with environmental and social objectives, moving beyond BP's traditional identity as an international oil company (BP, 2020). The strategy identified bioenergy, electric-vehicle charging, convenience, renewables and hydrogen as key growth areas and was supported by strengthened sustainability governance, including board-level oversight and sustainability-linked executive incentives. However, the concept of an integrated energy company was not entirely new, as BP had previously articulated similar ambitions. The 2020 strategy therefore represented an intensification and formalisation of an existing strategic direction rather than a complete strategic departure.

The development of BP's new-energy portfolio also illustrates the importance of collaboration and technological partnerships, supporting H1c. BP increasingly relied on partnerships and joint ventures to accelerate renewable deployment, including its offshore wind activities with Equinor, solar development through Lightsource BP, and hydrogen projects such as H2Teesside. The company also engaged with external stakeholders, including the City of Houston and Microsoft, to support energy-system transformation and digitalisation (BP, 2020). These collaborations indicate that technological and organisational capabilities outside the traditional oil and gas business contributed to BP's transition trajectory.

Capital allocation provides a more critical test of the extent to which this strategic narrative translated into substantive action. BP increased low-carbon investment from approximately USD 500 million in 2019 to USD 750 million in 2020 and subsequently reported approximately USD 2.9 billion in 2021 and USD 4.9 billion in 2022 (BP, 2019; BP, 2020; BP, 2022). The company simultaneously established an ambition to invest USD 3 - 4 billion annually in low-carbon businesses by 2025, increasing to approximately USD 5 billion annually by 2030, and to develop 50 GW of renewable capacity by 2030, including 20 GW by 2025 (BP, 2020). These commitments provide evidence of a substantial strategic shift in the direction of capital allocation and therefore partially support H1a and H1c, insofar as the expansion was facilitated by the wider regulatory and technological environment and by external partnerships.

However, the subsequent investment trajectory reveals an important interruption between strategic commitment and implementation. Low-carbon investment declined from approximately USD 4.9 billion in 2022 to USD 1.3 billion in 2023 and USD 1.6 billion in 2024 (BP, 2022; BP, 2023; BP, 2024). This reversal coincided with the change in leadership and a renewed emphasis on profitability and energy security. The volatility of investment therefore suggests that BP's transition was not a linear reallocation of capital but a process subject to changing corporate priorities and external pressures. In terms of the dissertation's process-tracing framework, the sequence from corporate narrative to capital allocation (L3→L4) can therefore be classified as interrupted.
The development of renewable capacity similarly demonstrates both progress and limitation. BP targeted approximately 9.1 GW of wind capacity through onshore and offshore projects and pursued solar expansion through Lightsource BP (BP, 2020). Its offshore wind portfolio included projects developed in partnership with Equinor, while H2Teesside represented an early strategic commitment to hydrogen. Nevertheless, BP's renewable portfolio remained modest relative to the scale of the European market. Europe had approximately 255 GW of

installed wind capacity in 2022, illustrating the substantially larger scale of the broader renewable-energy system (WindEurope, 2023). BP therefore established a significant renewable development platform, but its renewable assets remained small relative to its established hydrocarbon portfolio.

The drop in the green investment figures is highly correlated with the CEO change; Looney's successor Auchincloss had more direct approach towards company's profitability (BP, 2021; BP, 2022; BP, 2023; BP, 2024). The high volatility in the investments indicates that corporate sustainability commitments are also affected by financial constraints and shareholder expectations (Bolton & Kacperczyk, 2021). Some projects to highlight among the renewable investments: wind energy capacity to reach 9.1 GW from both onshore and offshore projects, solar energy with a joint project of Lightsource BP (BP, 2020). The project H2Teesside support the hydrogen business and contribute to the UK's government's target of generating 5 GW of energy by 2030.

Table 24. BP's Main Investment Activities between 2017 - 2024

Classification of BP's Main Investments			
Main Investment	Analytical Classification	Relevance	Category
Low-Carbon Power & EV Charging Infrastructure	Renewable and mobility energy investment	Expands renewable power generation and global electric vehicle charging networks to capture future transport electrification revenue.	Low-Carbon
Hydrogen and Bioenergy	Low-carbon fuel and gas investment	Invests in scalable low-carbon hydrogen production and sustainable bioenergy value chains for hard-to-abate sectors.	Low-Carbon
Carbon Capture, Utilisation, and Storage (CCUS)	Emissions mitigation investment	Retrofits industrial and upstream assets to abate operational greenhouse gas emissions.	Low-Carbon
Resilient Upstream Oil and Gas Production	Conventional hydrocarbon investment	Re-allocates capital back into high-margin oil and gas extraction assets to optimize short-to-medium-term cash generation.	Brown - Field
Downstream Refining and Retail Optimization	Traditional petroleum and marketing investment	Maintains legacy refining and retail service station networks while integrating EV charging hubs.	Brown - Field

Source: author's own work based on BP's Annual Reports

Overall, BP demonstrates a partial and subsequently interrupted alignment between its sustainability narrative and corporate action. The company made substantive progress in expanding bioenergy, renewables, hydrogen, electric mobility and carbon-management activities and achieved significant reductions in operational Scope 1 and 2 emissions. However, these improvements should not be interpreted as equivalent to a proportional reduction in the company's overall climate impact. BP therefore provides strong evidence for the dissertation's H2, as the company's ambitious sustainability narrative was only partially reflected in capital allocation, and for H3, as operational emissions improvements and portfolio changes did not necessarily translate into equivalent reductions in the emissions associated with BP's sold products. The BP case illustrates a central distinction of the dissertation: corporate decarbonisation performance cannot be assessed solely through Scope 1 and 2 reductions when the company's core business remains dependent on fossil-fuel products generating substantial Scope 3 emissions. The geopolitical situation after unprecedented consequences of Russia-Ukraine war triggered the arising concept of energy trilemma - security, affordability and lower carbon – which is strongly interlinked with the green energy transformation (Khan et al., 2022).

The Scope 3 dimension further qualifies the extent of BP's transition. In 2021, BP explicitly incorporated Scope 3 into its transition framework, distinguishing between net-zero operations, net-zero production and net-zero sales (BP, 2021). This represents an important development because it recognises that operational decarbonisation alone cannot address the emissions associated with the use of sold oil and gas. The expansion of renewables, bioenergy, hydrogen and electric mobility could potentially reduce the carbon intensity of BP's future product portfolio. However, the continued scale of hydrocarbon production and sales limited the extent to which these investments translated into structural Scope 3 reductions. Thus, BP's progress in renewable capacity and operational emissions should not be interpreted as equivalent to a proportional transformation of its overall emissions profile.

From the perspective of H2, the BP case provides evidence of a persistent but changing narrative–action gap. During the Looney period, the corporate narrative became increasingly ambitious and was accompanied by a substantial increase in low-carbon investment. Nevertheless, the subsequent decline in investment demonstrates that the narrative was not fully embedded in a stable long-term capital-allocation mechanism. The divergence between announced ambitions and realised investment is particularly visible when comparing BP's target of USD 3–5 billion annual low-carbon investment with the substantially lower expenditure reported in 2023 and 2024 (BP, 2020; BP, 2023; BP, 2024).

5.6 OMV’s Sustainable Strategy 2017-2024

Between 2017 and 2024, OMV pursued a gradual transformation of its traditional oil and gas business towards an integrated energy, fuels and chemicals model centred increasingly on natural gas, petrochemicals, circular economy solutions, biofuels and hydrogen. Unlike Shell and BP, whose transition strategies increasingly incorporated large-scale renewable electricity generation, OMV placed greater emphasis on reducing the carbon intensity of its existing industrial infrastructure and redirecting hydrocarbons towards higher-value chemical products. This strategic orientation is important for assessing whether corporate transition necessarily implies the substitution of fossil-fuel activities with renewable energy, or whether it can instead occur through portfolio diversification and technological adaptation within existing industrial structures. The comparison therefore captures variations of corporate transition within the European oil and gas sector: Shell and BP represent increasingly renewable-oriented diversification strategies, whereas OMV represents a more industrial and circularity-oriented pathway based on petrochemicals, natural gas, alternative fuels and resource efficiency. The companies nevertheless converge around selected technological solutions, particularly hydrogen, biofuels and CCUS, allowing the analysis to distinguish between common industry responses to climate pressure and company-specific transition strategies (Pickl, 2019; IEA, 2021).

OMV's strategic narrative evolved from operational efficiency and carbon-intensity reduction towards a broader circular-economy model. Early initiatives included co-processing of biogenic feedstocks, improved refinery efficiency and the development of ReOil technology for converting post-consumer plastic waste into refinery feedstock (OMV, 2017; OMV, 2018; OMV, 2019). The company subsequently strengthened its petrochemical position through the acquisition of Borealis and increasingly framed the transition around the principle of “*produce more and burn less”* (OMV, 2019). This strategy sought to reduce the combustion of hydrocarbons while increasing their use in petrochemical applications. Consequently, OMV's approach represents decarbonisation and diversification of the existing portfolio rather than rapid substitution of hydrocarbons.

OMV’s sustainability strategy during the 2017–2024 period reflects a hybrid transition pathway that combined decarbonisation of existing hydrocarbon operations with the expansion of circular-economy, petrochemical, biofuel, hydrogen and alternative-mobility activities. Rather than pursuing a rapid substitution of its incumbent oil and gas business with renewable electricity generation, OMV increasingly sought to leverage its vertically integrated business model, technological capabilities and existing industrial infrastructure to develop lower-carbon products and processes. This strategic configuration is particularly relevant to the dissertation's hypotheses concerning the relationship between corporate structure, technological partnerships, sustainability narratives and capital allocation. In particular, the OMV case provides evidence for assessing H1b, concerning the influence of hydrocarbon dependence and vertical integration; H1c, concerning technological and strategic partnerships; and H2, concerning potential discrepancies between sustainability narratives and actual decarbonisation investments.

5.6.1 OMV's Downstream transformation and circular economy

Downstream activities constituted a central component of OMV's transition strategy because they provided opportunities to integrate lower-carbon technologies into existing refining and petrochemical infrastructure. Rather than abandoning its established industrial assets, OMV increasingly sought to modify their feedstock composition and technological applications. Co-processing technologies enabled the integration of biogenic feedstocks, including rapeseed oil and used cooking oil, into conventional refining processes, while the ReOil technology enabled post-consumer plastics to be converted into synthetic crude and subsequently processed within existing refinery infrastructure (OMV, 2018; OMV, 2021). OMV presented these technologies as mechanisms for reducing the environmental footprint of conventional production while simultaneously creating new circular feedstock streams.

The development of ReOil is particularly significant within OMV's transition strategy. The technology converts post-consumer plastic waste into synthetic crude that can subsequently be processed into refinery products. The ReOil facility at Schwechat was designed with an initial lower processing capacity. In 2019, OMV reported that approximately 100 tonnes of post-consumer plastics had been converted into synthetic crude. The company subsequently positioned chemical recycling as an important element of its circular-economy strategy and reported the potential for lower CO_2 emissions and energy consumption relative to conventional fossil-based feedstocks (OMV, 2020; OMV, 2021).

The acquisition and integration of Borealis further strengthened this strategic orientation. The integration of OMV's refining operations with Borealis' petrochemical activities created an interconnected value chain in which refinery outputs such as ethylene and propylene could be further processed into polyethylene and polypropylene. This integration provided OMV with an opportunity to shift part of its downstream portfolio towards higher-value petrochemical products and circular materials while continuing to utilise existing hydrocarbon feedstocks and industrial infrastructure. The strategic importance of Borealis therefore extends beyond conventional diversification: it represents an attempt to reconfigure the economic use of hydrocarbon-derived feedstocks within an integrated industrial value chain.

This aspect is important for the interpretation of OMV's green transition. The expansion of circular plastics and petrochemicals does not represent a straightforward substitution of fossil energy with renewable energy. Instead, it constitutes a form of industrial transformation within the hydrocarbon value chain. Consequently, investments in ReOil, chemical recycling and petrochemical integration should be distinguished from renewable-energy investments when assessing OMV's green CAPEX. They can nevertheless contribute to lower-carbon production and resource circularity and therefore constitute an important component of OMV's broader low-carbon transition strategy. By 2023–2024, its strategic ambition had expanded towards mechanical, chemical and bio-based recycling, with an objective of developing approximately two million tonnes of circular or sustainable feedstock capacity annually by 2030 (OMV, 2023; OMV, 2024). This represented a significant evolution in OMV's strategic narrative from conventional refinery decarbonisation towards a broader concept of circular industrial production.

At the same time, the composition of these investments illustrates the complexity of defining 'green investment' within an integrated oil and gas company. A considerable proportion of OMV's transition-related expenditure was directed towards chemicals, recycling and feedstock transformation rather than renewable electricity generation. The company therefore pursued a transition model based on technological substitution and value-chain reconfiguration, rather than primarily on the replacement of hydrocarbons by renewable power.

OMV also expanded its use of biogenic feedstocks. The blending of biofuels using materials such as rapeseed oil and used cooking oil was aligned with the requirements of the EU Renewable Energy Directive (2009/28/EC). These activities subsequently developed into broader biofuel and sustainable aviation fuel initiatives. The integration of bio-based feedstocks into existing refinery infrastructure allowed OMV to use its established technological and logistical capabilities while gradually increasing the share of lower-carbon products in its portfolio.

Hydrogen constituted another important component of OMV's transitional strategy. Its UpHy project and subsequent investments in electrolysis at the Schwechat refinery sought to establish hydrogen production and logistics capabilities, while partnerships with industrial and transport companies supported the development of hydrogen mobility (OMV, 2020; OMV, 2021; OMV, 2022). Although hydrogen was presented within OMV's sustainability narrative as a key component of decarbonisation, hydrogen is also an important industrial input for refining and petrochemical production. Consequently, the expansion of hydrogen capacity cannot automatically be interpreted as evidence of a shift away from hydrocarbons. Rather, its contribution to the transition depends on the source of the hydrogen, its application and whether it substitutes fossil-based hydrogen or enables genuinely new low-carbon activities.

In downstream business in line with energy efficiency and green transformation, the operations have increasingly focused on reducing carbon intensity, advancing biofuels integration and developing chemical recycling technologies. The strategic decisions are made around the following business areas: decarbonization and co-processing, circular economy and petrochemical integration, sustainable chemicals and carbon management which is necessary for the high-volume plastic production. Hydrogen is another component of the strategy which is further extended. Schwechat refinery producing 50,000 tonnes of hydrogen per year. *"Stepping on the gas toward our energy future"* and *"the energy for a better life"* positioned OMV to balance itself in the era of affordable energy, supply security and climate protection. However, which is not mentioned in the narratives specifically that behind climate reasons there is a feedstock purpose, high amount of hydrogen is necessary for producing petrochemicals. Strategic goal was announced to decrease the carbon intensity of the operation by 19% and reduce product portfolio's carbon intensity by 4% by 2025. In the long-term gas is projected to overtake oil production and oil will supply more petrochemical production.

5.6.2 OMV's Upstream Activities and Hydrocarbon Optimization

In contrast to the downstream and circular-economy initiatives, OMV's upstream strategy remained strongly embedded in conventional hydrocarbon production. OMV's upstream strategy during the 2017–2024 period illustrates a hybrid transition pathway, in which conventional hydrocarbon exploration and production remained central to the business model while technological innovation and carbon-management solutions were increasingly incorporated into the company's decarbonisation strategy. Rather than pursuing a fundamental withdrawal from hydrocarbon activities, OMV sought to reduce the carbon intensity of its existing upstream operations and simultaneously develop technological capabilities that could support its longer-term transition. This strategic configuration is particularly relevant to H1b, which proposes that companies with lower dependence on vertically integrated hydrocarbon operations are more likely to achieve stronger alignment between their green narratives and actual capital allocation.

OMV increasingly integrated technological innovation into its upstream decarbonisation approach through the establishment of its New Energies Solutions Department, which was responsible for developing and implementing lower-carbon solutions, including carbon capture, utilisation and storage (CCUS) and green hydrogen. These activities indicate an attempt to address emissions associated with the existing hydrocarbon portfolio without fundamentally abandoning upstream production. OMV also sought to modify the composition and carbon intensity of its hydrocarbon portfolio by increasing the gas-to-oil ratio in production. Natural gas was positioned as a relatively lower-carbon energy source compared with oil and therefore as a transitional component of the company's broader energy strategy (IEA, 2021). From a transition perspective, however, this approach represents carbon-intensity optimisation within the existing hydrocarbon business rather than a structural shift away from fossil-fuel dependence.

OMV also sought to modify the composition of its upstream portfolio by increasing the gas-to-oil ratio. Natural gas was positioned as a relatively lower-carbon hydrocarbon compared with oil and therefore as a transitional energy source (IEA, 2021). However, from the perspective of this dissertation, such portfolio optimisation should be distinguished from green investment. Increasing the relative contribution of natural gas may reduce carbon intensity per unit of energy compared with oil, but it does not constitute a structural transition away from fossil fuels. Natural gas became an increasingly important component of OMV's strategy, presented as a lower-carbon alternative within the energy transition. The company increased its gas exposure while gradually repositioning its upstream portfolio, including the divestment of the Maari field in New Zealand (OMV, 2020). Although such portfolio optimisation contributed to improvements in reported emissions intensity, it did not necessarily eliminate the associated global emissions, as divested assets may continue operating under alternative ownership. This provides relevant evidence for H3, which proposes that fossil-asset divestments can improve corporate transition indicators without necessarily producing equivalent reductions in real-world emissions.

Similarly, OMV's planned use of Enhanced Oil Recovery (EOR) technologies to increase recovery factors in Central and Eastern Europe illustrates the tension between operational efficiency and structural decarbonisation. The company aimed to increase recovery rates by approximately 5 - 15% by 2025 (OMV, 2020). Although technological improvements can reduce emissions intensity per unit of production, they may simultaneously increase the productive efficiency and economic longevity of hydrocarbon assets. Such measures should therefore be classified as operational decarbonisation or hydrocarbon optimisation rather than green investment.

The same distinction applies to CCUS. OMV planned substantial carbon-management capacity, including an ambition of approximately 5 million tonnes of CO_2 capture or storage capacity. CCUS can play an important role in reducing emissions from hard-to-abate industrial activities. However, within an oil and gas company, CCUS can also facilitate the continued operation of carbon-intensive assets. Thus, its strategic contribution should be assessed in conjunction with changes in hydrocarbon production, capital allocation and portfolio composition rather than considered independently as evidence of transition.

The upstream evidence therefore provides support for interpreting OMV as a hybrid rather than transformative transition case. The company developed technologies capable of reducing the carbon intensity of its operations while maintaining a substantial dependence on conventional hydrocarbons. This finding is directly relevant to H1b, which proposes that greater dependence on vertically integrated hydrocarbon operations constrains the alignment between green narratives and capital allocation. OMV's vertically integrated structure enabled technological synergies between upstream, refining and chemicals activities, but it also created incentives to preserve the economic value of the incumbent hydrocarbon portfolio.

5.6.3 OMV's Mobility Transformation

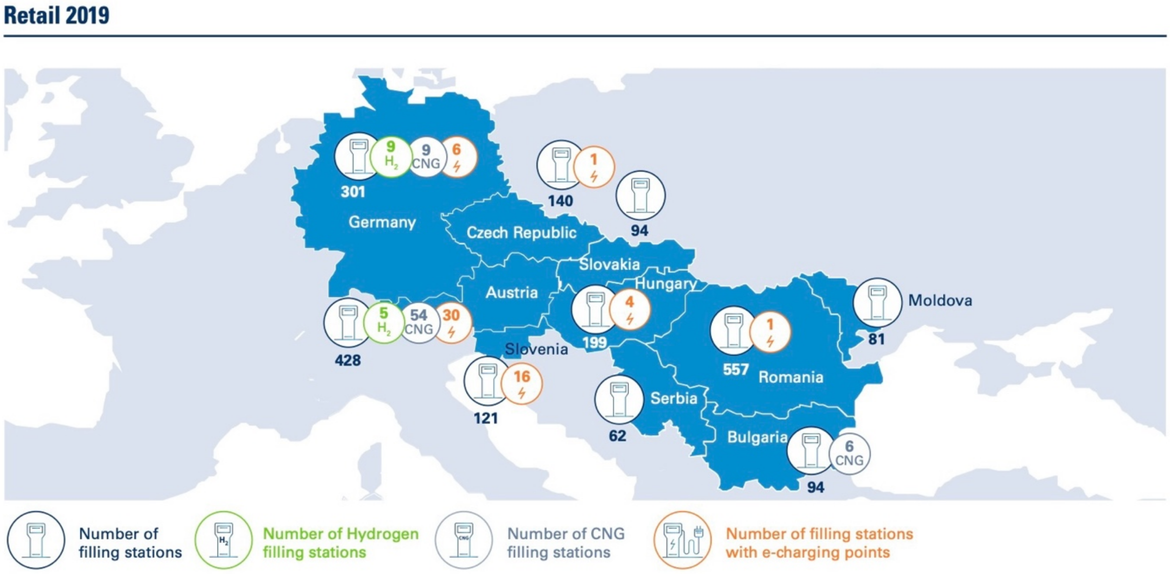
The future of mobility is continuously shaped by the urge to decrease CO_2 emissions within the transportation sector. In response to the transition, the company has been expanding its mobility and retail portfolio by offering lower-carbon transportation alternatives. These include the deployment and development of electric vehicle (EV) charging infrastructure, as well as the provision of compressed natural gas (CNG), liquefied natural gas (LNG) and hydrogen as the various types of alternative fuels. The company has invested approximately EUR 1 million into these green solutions. As part of building greener mobility, the company had installed 201 e-charging points across 58 OMV filling stations located in Austria, Germany, Hungary, Romania and Slovenia in 2019. To achieve further expansion, the OMV has collaborated successfully with SMATRICS, Austria's leading e-mobility infrastructure provider with more than 435 e-charging points. Additionally, OMV has co-opted with IONITY, car manufacturers in the construction of a 350 kW ultra-fast charging stations across Europe (OMV, 2019).

OMV's retail and mobility activities provide a further dimension of its transition strategy. The company increasingly sought to respond to decarbonisation pressures in the transport sector through electric-vehicle charging infrastructure and alternative fuels, including compressed natural gas (CNG), liquefied natural gas (LNG) and hydrogen. In 2019, OMV reported 201 electric-vehicle charging points across 58 filling stations in Austria, Germany, Hungary, Romania and Slovenia. The company also expanded cooperation with SMATRICS and IONITY, supporting the development of higher-capacity and ultra-fast charging infrastructure (OMV, 2019).

These partnerships are analytically important because they provide empirical evidence for H1c, which proposes that technological and strategic partnerships can accelerate corporate transition. OMV's cooperation with universities, technology providers, automotive manufacturers and mobility infrastructure companies enabled the company to access technological capabilities that were not necessarily available within its traditional oil and gas operations. Partnerships therefore functioned as an external mechanism for capability development and reduced some of the technological barriers associated with diversification.
Nevertheless, the retail transition also remained incremental. The expansion of EV charging and alternative fuels occurred alongside the continued operation of conventional filling stations and fossil-fuel retail activities. Therefore, the retail segment illustrates the broader OMV

pattern: new low-carbon activities were added to, rather than immediately substituted for, the incumbent hydrocarbon business.

Figure 13. Number and type of OMV's retail stations



Source: OMV's Sustainability Report 2019

In 2023, Alfred Stern emphasized that the European Green Deal underscores the absence of single technological and business solutions to the green transition, instead of requiring coordinated contributions from multiple sectors. Reflecting this perspective, OMV has adopted gradually a strategic focus on interconnectedness and interdependency. OMV has entered a partnership with Interzero to establish one of the Europe's largest waste-sorting facilities, thereby strengthening its role in circular economy practices. In parallel, Scope 1 and 2 emissions were actively reduced by deployment of renewable energy generated by solar parks for ongoing operations in Austria and Romania, producing 20 GWh of renewable energy. Collectively, these measures enabled the company to achieve a 25% reduction in absolute emissions and 20% decrease in carbon intensity[7] of operations compared with the 2019

[7] The key components in decreasing the carbon intensity of the energy supply are the absolute GHG emission reduction and increase of zero-carbon product energy sales. Besides in decrease of fossil fuel and natural gas sales, also the zero-carbon product energy sales will be intensified such as biobased fuels, green gas sales and increased usage of renewable electricity capacity including geothermal heat. Increase in recycling polyolefins and sustainable feedstock by delivery approximately 2 million t of circular feedstock annually. Another milestone to achieve zero routine flaring and venting to be in line with the World Bank's zero routine flaring initiative, and neutralization by CCS will be necessary of 5 million tonnes capacity per year. By 2028 out of EUR 13 billion, approximately EUR 8.3 billion will be allocated to recycled and sustainable feedstock and

baseline. In the recent years OMV has become a leading provider in circular polyolefin solutions in chemicals and materials with total sales of 5.7 million tonnes in 2023. 10.5% of taxonomy-aligned CAPEX were reported, major contributors manufacturing of organic basic chemicals which stands for the Borealis' propane dehydrogenation unit 2 (PDH2) in Kallo (OMV, 2023). OMV has articulated a commitment to significantly increase the share of low-carbon solutions. To further strengthen its transition strategy, OMV plans to allocate approximately 40% of its average annual organic CAPEX – equivalent to USD 4 billion per year – for investments to low-carbon solutions, resulting in a cumulative investment value of USD 15 billion between the period 2022-2030 (OMV, 2023).

OMV also pursued incremental operational decarbonisation through energy-efficiency measures, reduced flaring and venting, co-processing and increased use of renewable electricity. For example, investments in refinery efficiency generated measurable reductions in energy consumption and CO_2 emissions (OMV, 2017; OMV, 2019). However, the magnitude of several individual projects remained small relative to OMV's overall emissions footprint. This distinction is important because incremental efficiency improvements should not be interpreted as equivalent to structural decarbonisation.

The Scope 3 dimension further qualifies OMV's progress. Although operational efficiency and portfolio optimisation contributed to reductions in Scope 1 and 2 emissions, the company's continued reliance on natural gas, refining and petrochemical products maintained substantial emissions associated with the use and processing of its products. The reported stability of Scope 3 emissions during parts of the period therefore demonstrates the distinction between operational decarbonisation and broader product-portfolio decarbonisation. From the perspective of the dissertation's causal framework, reductions in operational emissions do not automatically establish the final link between portfolio transformation and global emissions reduction (L4 -› L5).

Within OMV's transition path the natural gas is playing central role along with biomethane, hydrogen and synthetic methane. In 2020 OMV allocated USD 2.7 million to investments in future mobility assets, including the liquified natural gas (LNG) application for transformation.

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zero-carbon products. Specific target is announced to decrease 1 million tonnes CO_2 in 2020-2025 from the operated assets (OMV, 2023).

Among these, LNG is regarded as a particularly promising area with projections indicating that number of LNG-related assets are expected to rise substantially, reaching 280 000 units by 2030 (OMV, 2020). In parallel, OMV has also preference to upscale Hydrogen usage via UpHy project which involves the construction of electrolysis plant generating up to 10 MW energy at the Schwechat Refinery. The distinctive feature in this hydrogen project is the establishment of complete whole value chain including hydrogen trailer loading and logistics which could supply the first commercial hydrogen bus line in Europe (OMV, 2020). The initiatives prove that OMV's green transformation scheme is relying more on hydrogen.

OMV also involved in the project which supposed to produce syngas blended into sustainable aviation fuel. In 2022 the collaboration with Austrian Airlines was essential step to produce 1500 tonnes of sustainable aviation fuel containing up to 33% of renewable components resulting in lifecycle greenhouse gas emission of approximately 20-25% compared to the conventional fossil-based components. OMV is going to invest EUR 30 million in producing Glycerin2Propanol, a second-generation biofuel which is in line with the REDII (Renewable Energy Directive). Long-term objective of this initiative is that the Schwechat plan will produce 125 million litres of propanol per year and reduce CO_2 emissions by around 180 kilotonnes (OMV, 2022). Glycerin2Propanol pilot plant at Schwechat will produce second-generation biofuels from 2023 was part of EUR 13 billion investment in low-carbon projects until 2030.

Within the framework of the green transition, the OMV Group is advancing a transformative shift in its operational model – moving away from the traditional *"take-make-waste"* toward a *"reduce-reuse-recycle"* circular economy model. This strategic reorientation is intended to enhance resource efficiency and contribute to broader efforts aimed at environmental protection and sustainability. The aim is to produce 2 million tonnes of mechanical, chemical and biobased recycling capacity by 2030 while the fossil fuel is going to be reduced, and polymers' fossil-based components are going to be substituted by the recycled waste-based feedstock. Borealis has acquired multiple recycled plastic component producers, Rialti S.p.A., leading producer of recycled polypropylene, Integra Plastics AD, an advanced mechanical recycling player in Bulgaria to serve the above listed strategic purpose (OMV, 2023). The circular resources are in the centre of the green transition path including bio-feedstocks including waste and residue streams, as well as cultivated algae, plastic waste and green hydrogen (OMV, 2024).

All in all, between the evolution of OMV's green between the period of 2017 and 2024 transition indicates that the company rather having gradual and adaptive transformation rather than a rapid, structural shift away from the fossil fuel-based operations. Primarily the company combines incremental efficiency projects in the operations, portfolio diversification via petrochemicals and circular economy business solutions and hydrogen projects. While these projects are contributing to decrease carbon intensity of the operations, the continued reliance on natural gas and petrochemical production proves that the transition prioritise portfolio diversification and emission reduction within existing industrial structures rather than a complete transformational model of the core business structure.

5.6.4 OMV's Renewable Business

OMV's renewable projects rather represent complementary business developments to the existing hydrocarbon programs. Despite of certain renewable investments, OMV remains modest about larger scale deployments of green projects. Its large photovoltaic plant project which is going to be built in Austria generating 14 200 MWh power annually (equal to power 5 500 households a year) (OMV, 2023) which is insignificant compared to Shell's renewable capacities of 2-3 GW or Ørsted's 16-18 GW renewable energy generations (see in the Table 22.). In addition to solar energy, OMV has taken several steps to strengthen its position in renewables therefore the following achievements were accomplished by 2023:

(i) in collaboration with Wien Energie, OMV has launched to develop deep geothermal plants with an output of 200 MW. OMV acquired 6.5% stake in Canadian Eavor Technologies for EUR 34mn, a leading closed-loop geothermal energy solution.

(ii) OMV in retail segment is investing EUR 400 million in constructing superior EV charging services for drivers and businesses to offer at least 2000 e-charging points in Central and Eastern Europe (OMV, 2023).

The expansion of green hydrogen represents another key component of the OMV's decarbonization strategy. In green hydrogen production there was a joint announcement with Kommunalkredit Austria to build the largest electrolysis plant at the Schwechat refinery with the total investment of USD 29 million. Furthermore, the OMV initiates in several industrial collaboration which is aiming at decarbonization of heavy-duty transportation within the UpHy project. OMV wants to accelerate hydrogen-based transportation system. The H2Accelerate initiative was created jointly with Total, Shell, Daimler Truck AG and IVECO and the Volvo Group to create a new industry of hydrogen-fuelled trucks and serve the purpose to expand hydrogen. An ambitious strategy has been announced regarding SAF with a target of producing at least 700 kilo tonnes yearly. Within Borealis, the substitution of fossil-based resources with alternative feedstocks is expected to occur at an increasing scale. In alignment with the transition, the OMV Group has articulated the strategic objective of establishing itself as a leading actor in the circular economy, thereby reinforcing its commitment to sustainable resource management and long-term competitiveness (OMV, 2023).

Since 2024 the sustainability reporting based on the European Sustainability Reporting Standards (ESRS) has been extended and filled more details on climate, environmental, social and governance topics. Although the framework enhances transparency and standard reporting structures with other oil peers, it has also increased the administrative burden for other oil and gas companies as well. The administrative part has increased where the details about tangible sustainability results and operational progress are evaded (OMV, 2024).

Table 25. Classification of OMV activity between 2017 - 2024

Classification of OMV's Main Investments			
Main Investment	Analytical Classification	Relevance	Category
Enhanced Oil Recovery	Hydrocarbon investment	Optimises existing fossil fuel assets	Brown
Increasing gas to oil ratio (natural gas, LNG)	Low-hydrocarbon investment	Reduces intensity of fossil fuel assets	Low carbon
CCUS	Mitigation investment	Decarbonizes incumbent assets	Low carbon
Green Hydrogen	Part of Renewable Energy	Structural transition	Green
Biofuel	Low-hydrocarbon investment	Transition within existing infrastructure	Low carbon
ReOil	Circular Economy	Reconfigures petrochemical value chain	Low carbon

Source: Author's own work collected from the OMV's Annual Reports

These developments indicate that OMV's transition narrative was supported by observable strategic and investment activity. However, the nature of these investments is significant: the company predominantly sought to transform the use of hydrocarbons rather than eliminate hydrocarbon dependence. Petrochemical production, natural gas and refinery infrastructure remained central to the business model. The evidence suggests partial rather than complete alignment between OMV's sustainability narrative and structural portfolio transformation. Nevertheless, these investments remained embedded within OMV's existing refining and petrochemical infrastructure. Hydrogen, for example, also serves as an important input into conventional refining and petrochemical production. Therefore, the presence of hydrogen investment alone does not demonstrate a shift away from fossil fuels; its transition impact depends on how the technology is produced and how it changes the underlying product portfolio.

This trajectory provides relevant evidence for H1b, which proposes that companies with greater dependence on vertically integrated hydrocarbon operations exhibit weaker alignment between green narratives and capital allocation. OMV's continued reliance on refining, natural gas and petrochemicals constrained the extent to which its transition could involve a fundamental restructuring of the underlying business model. At the same time, the integration of Borealis and the expansion of circular-economy activities demonstrate that OMV was actively reallocating parts of its portfolio towards non-fuel applications rather than simply maintaining the conventional oil business.

Thus, OMV represents an adaptive transition rather than a transformational one. Its strategy demonstrates that oil and gas companies may respond to climate pressures by modifying the technological and economic use of hydrocarbons - through gas, petrochemicals, recycling, biofuels and hydrogen - without fundamentally abandoning the fossil-fuel-based industrial structure. This finding is particularly relevant to the dissertation's central research question concerning whether corporate green narratives are accompanied by substantive changes in investment and portfolio allocation.

5.7 Orlen Group’s Green Strategy 2017 - 2024

The evolution of Orlen Group’s sustainability strategy between 2017 and 2024 demonstrates a gradual transition from a predominantly fossil-fuel-based business model towards a more diversified energy portfolio incorporating renewable electricity, low-carbon fuels, hydrogen, circular-economy solutions and carbon-management technologies. In 2017, Orlen Group’s strategic positioning, reflected in the corporate motto *‘ORLEN. We fuel the future’*, remained primarily centred on conventional energy activities, with sustainability considerations. Over the subsequent years, environmental, social and governance (ESG) considerations became increasingly embedded in corporate strategy, governance structure, investment decisions, and external reporting. However, this transition did not constitute a comprehensive withdrawal from conventional hydrocarbons. Rather, Orlen Group pursued a hybrid transition pathway, combining investment in new low-carbon activities with continued reliance on oil, natural gas, refining, petrochemicals and fossil-based mobility. The coexistence of these strategic directions is particularly relevant to the dissertation's assessment of the relationship between corporate sustainability narratives and actual capital allocation. The case also provides an opportunity to examine the influence of national energy-system characteristics and corporate structure on the pace and direction of transition. While Orlen Group increasingly articulated ambitious decarbonisation objectives and expanded its portfolio of low-carbon technologies, conventional hydrocarbon activities continued to play a significant role in ensuring energy security, profitability, and regional market position. The company's transition demonstrates a process where the portfolio is diversified, and carbon-intensity is gradually reduced within an integrated energy company.

Following 2020, Orlen Group increasingly positioned its transition strategy around portfolio diversification, combining divestments and efficiency improvements in carbon-intensive activities with investments in renewable energy, low-carbon fuels, hydrogen, petrochemicals and circular-economy solutions. Its 2030 strategy aimed to strengthen Orlen Group's position as a regional energy-transition leader by expanding renewable capacity, increasing biofuel and hydrogen production, developing recycling and biomaterial businesses, and decarbonising refining and petrochemical operations. The strategy initially envisaged 1.7 GW of offshore and 0.8 GW of onshore wind and solar capacity, alongside 3,500 retail stations and 1000 EV charging points by 2030, while targeting reductions in emissions from refining and petrochemicals (Orlen Group, 2021). By 2024, these ambitions were significantly scaled up with planned renewable capacity reaching 9 GW, while approximately 40% of planned CAPEX for 2025 – 2035 was expected to support low- and zero-carbon activities (Orlen Group, 2023; Orlen Group, 2024). Thus, Orlen Group's transition reflects a hybrid strategy, in which the expansion of low-carbon activities occurs alongside the continued importance of natural gas, refining, petrochemicals and other conventional energy businesses.

5.7.1 Orlen Group Downstream Segment: Circular Economy, Biofuels and Hydrogen

The downstream segment remained at the core of Orlen Group's business throughout the 2017 - 2024 period. The transition strategy therefore focused substantially on refining, petrochemicals, biofuels, hydrogen, circular-economy solutions and energy efficiency. In 2018, Orlen Group updated its strategy for the 2019 - 2022 period, placing significant emphasis on expanding petrochemical production and improving the competitiveness of its integrated refining and petrochemical operations. Following the acquisition of the remaining shares of Unipetrol a.s., Orlen Group strengthened its regional refining and petrochemical integration. The strategic framework envisaged an approximately 15% year-on-year increase in petrochemical production capacity (Orlen Group, 2018).

At this stage, the strategic narrative remained predominantly efficiency- and profitability-oriented. The company anticipated that crude oil would continue to play an important role in meeting energy demand in Central and Eastern Europe beyond 2030. Capital allocation was strongly influenced by investment returns and payback periods, demonstrating the continuing importance of economic considerations in corporate investment decisions. From 2019 onwards, however, the downstream strategy began to incorporate a broader range of transition-related technologies. Green hydrogen produced through electrolysis, waste-heat utilisation and energy-efficiency improvements became increasingly prominent. The acquisition of additional electricity-generation assets, including renewable generation capacity, further expanded Orlen Group's portfolio beyond conventional refining (Orlen Group, 2019)

The 2020 strategy represented a significant turning point. Renewable energy and electrification were identified as one of the principal pillars of transformation, while advanced petrochemicals represented another. Orlen Group announced an ambition to reduce CO_2 emissions from refining and petrochemical operations by approximately 20% and emissions intensity in the power business by approximately 33%. The company also planned to increase biofuel production towards approximately two million tonnes by 2030 (Orlen Group, 2020).

Within petrochemicals, Orlen increasingly emphasised specialty products, recycling and biomaterials. The strategic intention was therefore not simply to reduce the importance of the downstream business but to transform its composition towards higher-value and potentially lower-carbon products. This development is important for the interpretation of Orlen Group's transition. Petrochemical expansion and circular-economy activities can reduce exposure to declining conventional fuel demand while preserving the economic value of the company's integrated hydrocarbon infrastructure. Consequently, these activities represent a form of portfolio adaptation rather than an unequivocal exit from fossil-based value creation.

From 2020 onwards, Orlen Group increasingly incorporated circular-economy solutions, biofuels and hydrogen into its downstream transition strategy. The principal strategic priorities included:

- expansion of offshore and onshore wind and solar capacity;
- increasing biofuel production;
- accelerating mechanical and chemical recycling;
- developing biomaterials;
- increasing the use of renewable and low-carbon hydrogen; and
- improving energy efficiency and electrification across industrial operations.

The integration of biofuels into the refining portfolio represented an important transition mechanism because it enabled Orlen Group to utilise existing refining and distribution infrastructure while progressively increasing the share of alternative feedstocks. Hydrogen was similarly positioned as an important technology for decarbonising refining and other industrial activities. However, hydrogen requires careful interpretation within Orlen's transition strategy. Its environmental contribution depends on the production technology and electricity source, while hydrogen is also an important industrial input for refining and petrochemical production. Consequently, an increase in hydrogen consumption or production does not automatically constitute evidence of a structural shift away from hydrocarbons.

The same analytical distinction applies to recycling and biomaterials. These activities represent genuine diversification into circular-economy solutions, but their strategic significance lies partly in their ability to preserve and enhance the company's position within the broader chemicals and materials value chain. This illustrates an important feature of Orlen Group's transition: low-carbon technologies were frequently integrated with existing industrial capabilities rather than developed as completely independent alternatives to the hydrocarbon business.

Within the downstream segment, Orlen Group's decarbonisation strategy increasingly focused on expanding the share of renewable products and developing recycled petrochemical products, thereby supporting a gradual transition towards a more circular business model. Hydrogen constituted an additional strategic lever, with the company planning to deploy both low-carbon and renewable hydrogen in refining and fertiliser production, targeting annual production capacities of approximately 210,000 tonnes for refining operations and 110,000 tonnes for the fertiliser business. Orlen Group's decarbonisation objectives for 2030 and 2035 were articulated across three dimensions: absolute reductions in Scope 1 and 2 emissions of 13% by 2030 and 25% by 2035; reductions in Scope 1 emissions intensity per MWh of 40% by 2030 and 55% by 2035; and a reduction in net carbon intensity (Scope 1, 2 and 3, Category 11) of 10% by 2030 and 15% by 2035, relative to the 2019 baseline. At the same time, the investment pattern reveals the coexistence of decarbonisation and continued hydrocarbon dependence. In 2024, Orlen expanded its renewable-fuels portfolio through the development of an HVO unit at Płock and bioethanol production facilities, while simultaneously investing in hydrocracking capacity within its conventional refining operations. This combination suggests that the downstream transition was not based on the rapid substitution of fossil-fuel activities, but rather on progressive diversification and carbon-intensity reduction within an established hydrocarbon-intensive business model, with conventional refining remaining strategically important for regional energy security.

5.7.2 Orlen Group's Upstream, Retail and Mobility Segment

Despite the expansion of renewable and low-carbon activities, Orlen continued to expand its conventional oil and gas operations during the period under investigation. Natural gas became particularly important within the Group's upstream strategy. The acquisition and subsequent integration of PGNiG Upstream Norway significantly increased Orlen Group's natural-gas production and strengthened the Group's upstream position. Additional natural-gas reserves were also identified in Poland, including approximately 500 million cubic metres associated with the Jastrzębiec field.

The upstream decarbonisation strategy focused primarily on four areas:

(i) reduction of methane emissions;
(ii) elimination of routine flaring;
(iii) development of carbon capture, utilisation and storage (CCUS); and
(iv) improvements in operational energy efficiency.

Orlen Group planned to phase out coal-fired power generation by 2035 and replace part of this capacity with renewable energy and natural gas. At the same time, the company established objectives concerning zero routine flaring and net-zero methane emissions and planned CCUS capacity of approximately four million tonnes of CO_2 annually (Orlen Group, 2023). These measures represent meaningful forms of operational decarbonisation, but they should not be equated with fossil-fuel phase-out. Methane reduction, flaring elimination and energy efficiency can reduce emissions associated with hydrocarbon production while leaving the underlying production model intact. The upstream strategy therefore provides particularly strong evidence for the hybrid nature of Orlen Group's transition. The company pursued lower-carbon production while simultaneously expanding its natural-gas portfolio. This finding supports the interpretation of H1b: the continued integration of upstream hydrocarbon production with downstream refining, petrochemicals and retail created both opportunities for transition and structural constraints on the speed of transformation.

In parallel, Orlen Group's retail strategy demonstrates a similar combination of conventional business expansion and low-carbon diversification. While the company continued to expand its service-station network, increasingly incorporating electric-vehicle charging and alternative fuels into its mobility strategy. In 2020, Orlen Group announced an ambition to expand its retail network to more than 3,500 service stations and to develop more than 1,000 fast-charging points for electric vehicles (Orlen Group, 2020). The integration of LOTOS and PGNiG, together with the earlier integration of Energa, subsequently expanded the Group's retail and energy portfolio and required adjustments to emissions baselines and transition targets.

The development of electric mobility was particularly important given the EU's longer-term objective of reducing the use of internal-combustion vehicles. However, EV penetration remained comparatively limited in Central and Eastern Europe during 2017 and 2024, while conventional fuels continued to dominate road transport. Orlen Group pursued a broader portfolio of alternative mobility solutions, including hydrogen and synthetic fuels. These technologies were considered particularly relevant to heavy-duty transport, where direct electrification presents greater infrastructural and technological challenges (Orlen Group, 2020; Orlen Group, 2021; Orlen Group, 2022). The retail segment therefore provides further evidence of an incremental rather than substitutive transition: low-carbon mobility infrastructure was introduced and expanded while the conventional fuel-retail network remained economically significant.

By 2023, following the integration of LOTOS, Orlen Group's retail network had expanded to approximately 3,400 service stations across Poland, Hungary, Slovakia, Austria and Germany (Orlen Group, 2023). In Orlen Group's case, the expansion of the corporate boundary through acquisitions substantially affected reported emissions, while the continued sale and downstream use of fossil-based products maintained a high Scope 3 footprint. The case therefore illustrates why corporate emissions indicators should be analysed together with portfolio composition, acquisitions and divestments, product sales and capital allocation, rather than interpreted in isolation. Consequently, these acquisitions drove a substantial surge in reported Scope 3 emissions which rose by 66 million tonnes CO_2e from 2022 to 2023, provides clear evidence that structural decarbonization was not prioritized in the firm’s strategic capital allocation.

In parallel with the acquisition, Orlen Group continued to expand its fast-charging infrastructure and broader portfolio of alternative mobility solutions. These business decisions are identified as simultaneous retail expansion and mobility decarbonisation. Rather than replacing the conventional fuel-retail model, Orlen Group sought to transform the functionality of its existing network by integrating EV charging infrastructure, hydrogen and other alternative fuels. This approach represents a form of incremental portfolio diversification, whereby low-carbon activities are layered onto an established hydrocarbon-based distribution structure. From analytical perspective, the case demonstrates the importance of accounting for changes in organisational boundaries when interpreting Scope 3 emissions. following a major acquisition cannot be interpreted independently from changes in the corporate boundary: the LOTOS integration simultaneously expanded Orlen Group's downstream fossil-fuel sales and increased the emissions attributable to the Group's value chain, thereby illustrating the importance of distinguishing organisational growth effects from genuine deterioration in decarbonisation performance. The increase in Scope 3 emissions following the LOTOS acquisition should not be interpreted solely as evidence of deteriorating decarbonisation performance, as the integration substantially expanded Orlen Group’s consolidated downstream operations, fossil-fuel sales, and the emissions attributable to its value chain. The case therefore highlights the need to distinguish between emission increases resulting from organisational expansion and changes in corporate boundaries and those reflecting an underlying deterioration in the carbon intensity of the business model. This distinction is particularly relevant to assessing whether reported changes in emissions represent substantive progress in decarbonisation or are partly an artefact of corporate restructuring and portfolio expansion.

5.7.3 Orlen Group's Renewable Business

Orlen Group has been continuously exploring licensing opportunities in offshore wind farms. The plan is to build 1,200 MW offshore wind farm aligned with Poland's national strategies for Polish power industry. In addition to that biorefineries are gaining momentum at the strategy update. In 2020 it was announced that wind and solar energy supply should increase by 2.5 GW by 2030 (Orlen Group, 2020). The renewable strategy subsequently expanded. In 2023, Orlen Group had increased its strategic ambition towards 9 GW of renewable capacity compared with approximately 1.5 GW of installed capacity at that point. The company also pursued additional offshore-wind licences with five additional projects representing approximately 5.2 GW of potential capacity (Orlen Group, 2023). Nevertheless, the expansion of renewables occurred alongside continued investment in natural gas, refining and petrochemicals. Therefore, renewable energy became one component of a broader energy portfolio.

Demonstrating the hybrid nature of capital allocation, the firm reduced its projected green capital expenditure to USD 88 billion in 2023, reserving roughly 35% of total capital for conventional operations to safeguard cash flows (Orlen Group, 2023). The primary green investment streams targeted operational decarbonization through carbon capture, utilization and storage (CCUS), industrial energy efficiency projects, the conversion of coal-fired capacity to natural gas and expanded gas infrastructure. The company planned approximately 4 GW of gas-fired capacity by 2030. Concurrently, the remaining sustainable capital was directed toward advanced petrochemicals, specialty materials, electromobility, and renewable energy assets including onshore wind, solar PV, biogas and biomethane (Orlen Group, 2023). This case reflects the importance of national context in explaining corporate transition pathways. Based on Poland's historically high dependence on coal and fossil fuels, combined with energy-security concerns, Orlen Group pursuing a green transition by renewables including natural gas expansion.

Across the empirical chapters Orlen Group's main investment activities are categorized into Green Investments for utility-scale renewables and green hydrogen, low-carbon and transitional investments covering biomethane, circular initiatives, and gas-fired CCGT substitution and legacy brown-field investments dedicated to fossil refining and energy security infrastructure. Despite the presence of multiple green and low-carbon project categories alongside traditional operations, capital expenditure proportions heavily favor legacy brown-field investments, illustrating the continued financial dominance of fossil-fuel and energy security activities. This framework captures Orlen's state-influenced multi-utility transition model balancing EU decarbonization targets with national security imperatives.

Table 26. Orlen Group's Main Investment Activities between 2017 - 2024

Classification of Orlen Group's Main Investments			
Main Investment	Analytical Classification	Relevance	Category
Legacy Fossil Refining & Upstream Hydrocarbons	Conventional hydrocarbon investment	Maintains traditional oil and gas refining, extraction, and supply chain operations to ensure national energy supply security.	Brown - field
Gas-Fired CCGT Power Plants & Energy Security	Transitional fossil-to-gas investment	Replaces coal-fired power generation with lower-emission natural gas combined-cycle gas turbine (CCGT) units to secure regional grid stability.	Brown - field
Green Hydrogen Infrastructure	Clean energy and power-to-X investment	Develops hydrogen production capacity via water electrolysis for zero-emission transport and industrial feedstock.	Green (transitional)
Agricultural Biogas and Biomethane	Circular and renewable fuel investment	Produces green gas from agricultural and organic waste, substituting natural gas and enhancing circular resource use.	Low - carbon
Offshore and Onshore Wind & Solar Expansion	Renewable power generation investment	Scales utility-scale wind (e.g., Baltic Power project) and photovoltaic capacity to diversify the energy mix and lower emissions.	Green

Source: author's own work based on Orlen Group's Annual Reports

5.8 Neste' Strategic Direction 2017-2024

Neste represents a distinctive case within the European oil and gas sector, as its transition strategy during 2017 - 2024 was characterised by an early and substantial reorientation of capital, technological capabilities and corporate strategy towards renewable and circular-economy solutions. The company's strategic narrative, encapsulated in the statement *"leaving a healthier planet for our children by creating responsible choices every day"*, reflects an explicit attempt to position environmental sustainability at the centre of its corporate identity and long-term business model. Unlike several integrated European oil majors, Neste did not merely incorporate sustainability objectives into an established upstream–downstream hydrocarbon portfolio; rather, it progressively transformed the composition of its business activities towards renewable fuels, sustainable aviation fuel (SAF), renewable feedstocks and circular chemical solutions (Neste, 2017; Neste, 2018).

This distinction is important for the analysis undertaken in this dissertation. Neste constitutes a particularly relevant case for examining the relationship between corporate sustainability narratives and actual capital allocation, as the company's strategic communication was accompanied by observable changes in its investment priorities and business portfolio. The transformation was supported by investments in renewable production capacity, technological development, strategic partnerships and the gradual withdrawal from selected conventional activities. Consequently, Neste provides a contrasting case to companies whose sustainability narratives expanded more rapidly than their underlying capital allocation towards low-carbon activities.

The company's transition became increasingly visible from 2017 onwards, when Neste accelerated the commercialisation of renewable diesel produced from waste and residue-based feedstocks. Its *“Neste MY Renewable Diesel”* product was positioned as a lower-emission alternative to conventional fossil diesel, with lifecycle greenhouse-gas reductions of up to 90%, depending on feedstock and methodology (Neste, 2017a). In 2017, Neste reported approximately 8.3 million tonnes of greenhouse gas (GHG) emissions avoided using its renewable products, providing an early indication that the company’s transition strategy extended beyond reducing its own operational emissions to addressing emissions associated with the downstream use of its products (Neste, 2017). This feature distinguishes Neste from the conventional decarbonisation approach of many integrated oil and gas companies. Rather than primarily seeking to reduce the carbon intensity of existing fossil-fuel operations, Neste increasingly sought to change the composition of the products through which it generated value. Renewable diesel, SAF and renewable polymers gradually became strategic growth businesses, while conventional oil products became relatively less central to the company's long-term strategic positioning.

5.8.1 Neste’s Portfolio Transformation and Renewable Business Segments

The most significant element of Neste's strategic transformation was the expansion of its renewable products business. The company increasingly concentrated its growth strategy on three interconnected areas: renewable road transportation, renewable aviation, and renewable polymers and chemicals. This strategic configuration represented a shift from an oil-refining business model towards a broader renewable and circular-economy platform.

Empirical evidence confirms that Neste's structural transformation was already operationalized in 2017 – 2018, as demonstrated by the scaling of renewable diesel output, expanded regional and global market integration, and sustained capital reallocation toward renewable refining infrastructure. The expansion of the Singapore production facility was particularly significant, as it increased Neste's global renewable production capacity and strengthened its position in international markets. The company's strategic objective was not limited to the substitution of fossil fuels in road transportation; rather, renewable feedstocks were increasingly directed towards sectors such as aviation and chemicals where decarbonisation alternatives remained more limited.

The economic performance of the renewable business further reinforced this strategic shift. In 2018, renewable products generated substantially higher operating profit than the company's conventional oil products, with operating profit of USD 962 million compared with USD 182 million from oil products. At the same time, capital expenditure in the renewable business increased from USD 131 million in 2017 to USD 170 million in 2018, while capital expenditure in the oil-products segment declined from USD 328 million to USD 210 million (Neste, 2018). This development is particularly significant for the empirical framework of this dissertation because it demonstrates that Neste's sustainability narrative was accompanied by a measurable reallocation of capital and profit-generation capacity.

The strategic importance of renewable products increased further following the 2019 strategy update, under the strategic direction *"Faster, bolder and together."* Neste identified renewable road transportation, renewable aviation, and renewable polymers and chemicals as distinct strategic growth areas. Its ambition to enable an annual reduction of approximately 20 million tonnes of GHG emissions by 2030 reflected a shift from operational decarbonisation towards a solution-provider model, in which the company sought to reduce emissions throughout its customers' value chains (Neste, 2019).

The development of sustainable aviation fuel was particularly important in this regard. Through cooperation with airlines and airport operators, including Lufthansa, KLM and American

Airlines, Neste expanded the commercial deployment of renewable aviation fuels. The company also developed its "*Green Hub"* concept to facilitate cooperation between airlines, airports, authorities and other stakeholders. These initiatives demonstrate the importance of cross-sectoral collaboration in creating markets for emerging low-carbon technologies. Clear evidence supporting H1c, which proposes that companies with deeper technological and strategic partnerships in renewable energy and low-carbon technologies are more likely to achieve faster transition. Neste's transition was not based exclusively on internal technological capabilities. Instead, the company developed a broad collaborative ecosystem involving airlines, airports, chemical companies, technology providers, municipalities, governments and research institutions. Such partnerships reduced technological and market barriers and enabled Neste to scale renewable solutions beyond its own operations.

5.8.2 Neste's Circular Economy and Renewable Chemicals

The second major component of Neste's portfolio transformation involved the integration of circular-economy principles into its downstream, refining and chemical activities. The company increasingly sought to substitute fossil feedstocks with waste, residues and recycled materials. Chemical recycling of plastic waste subsequently became an important component of this strategy, complementing renewable fuels with circular solutions for the chemical and materials industries.

Neste's collaborations with companies such as IKEA, LyondellBasell, Borealis, Ravago and Remondis illustrate green strategic direction to share sustainable solutions in producing renewable plastics and polymers based on renewable raw materials. These partnerships sought to develop renewable and recycled polymers and chemicals, thereby extending the company's transition beyond the transport-fuel sector. The objective was not simply to produce a lower-carbon substitute for fossil fuels, but to develop an alternative feedstock platform capable of serving multiple industrial value chains. The integration of the renewable raw materials into the production of plastics and polymers, supporting the transition towards sustainable material systems. These green initiatives had tangible effects as 24% of total revenue was derived from sustainable operations and products (Neste, 2017b; Neste, 2018; Neste, 2022).

The *"Passion for Renewal"* statement in Neste's 2018 Sustainability report demonstrates the company's commitment to green transformation and to take responsibility to combat climate change. The investment plan in Singapore to expand renewable production capacity, place Neste to a global leading position in renewables. Neste owns a climate role with constant improvements its suppliers and its customers' carbon footprint. The only reason why the annual GHG emission reduction was lower compared to the previous year is that there were several maintenances in the Singapore and Rotterdam sites. Neste's renewable fuel segment is an important factor in combating climate change as its usage might result in 90% smaller reduction in GHG emissions. In the year of 2018 Neste has proved that it is possible to generated operating profit in a higher volume compared to the conventional oil products. In 2018 renewable products generated significantly higher operating profit USD 962 million compared to traditional oil products, USD 182 million. Neste has launched My Renewable Diesel in Sweden and Latvia under the quote *"Five minutes to fossil free"*. Neste expanding its collaboration with Alaskan Airlines to fly more sustainably. Neste continues further exploring to turn plastic waste into high-quality raw materials for fuels. In January 2018 Neste was ranked the world's second most sustainable company on the Global 100 list. The regulatory framework has shaped Neste's downstream and retail strategy. The company did not stop to combat climate change within the EU borders; they engaged with authorities in Southeast Asia to explain the requirements of sustainable palm oil production. The REDII directive mandates substantial GHG emission reductions by 35% until 2030. The biofuel production has been supported not only by the supranational organizations, but the Finnish national government, especially in case of Neste voted for gradual increase to use biofuels in road transportation to 30% by 2029 (Neste, 2018).

Table 27. Neste's profit generation with renewable products (Figures in USD millions)

Neste	**Renewable Products**			**Oil Products**		
MUSD	**2017**	**2018**	**2018 vs. 2017**	**2017**	**2018**	**2018 vs. 2017**
Revenue	3 470	3 468	-2	9 084	10 812	1 728
Operating profit	509	962	453	696	182	-514
Capital expenditure	131	170	40	328	210	-119

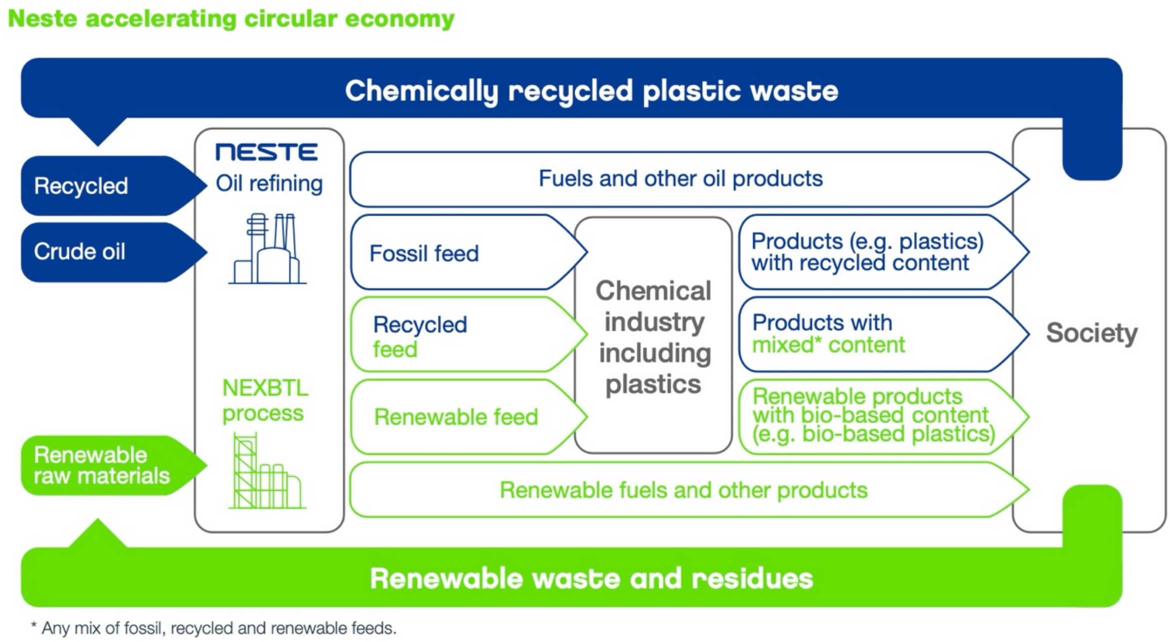
Own Source: Neste's Sustainability Report 2018

Neste's downstream strategy is closely integrated with circular economy principles. The company substitutes crude oil waste and residue-based feedstocks including liquified plastic waste. This business model is in line with the European Commission's circular economy agenda, which emphasizes improved plastic utilization and recycling. Plastic is treated as ubiquitous material for the society and the business (EUR-Lex, 2018). However, the challenge remaining, the plastic has not been fully utilized yet, and its potential is not captured correctly. Around 26 million tonnes of plastic are generated on the European market annually and in 2018 only 30% of that material is collected for recycling. On the other hand, the landfilling and incineration rates of the plastics remain high, between 31-39%. Recycling of plastics has benefit for the environment; there is calculation method which proved that recycling 1 million tonnes of plastics equals to 1 million cars off the road. In addition to that, there is an incremental need to deal with plastics recycling as globally 5 to 13 million tonnes of plastics end up in the oceans. In the EU the amount of the plastic enters the water relatively smaller 150 000 – 500 000 tonnes. However, the concentration of the plastic waste in the Mediterranean Sea at a density is comparable to the areas of highest plastic accumulation in the oceans. Therefore, Europe has a vision to turn plastic waste into economic opportunity (EUR-Lex, 2018). Neste has pledged to process 1 million tonnes of plastic material yearly from 2030 onwards (Neste, 2018).

Neste's success in green transformation is embedded in the collaboration with local governments and their efforts to contribute to achieve net-zero economy. Neste has updated its partnership with City of Helsinki to carry on Finland's effort to combat climate change. The business model is that the city buses and Helsinki City Construction Services Stara's trucks and machineries adapting and using Neste's renewable diesel as part of their commitment to sustainability. Other cities in Finland started to follow the capital's mission, and upgrading their public transportation, bus fleets which run on renewable diesel. Under the Green Hub program Neste put lots of efforts to make aviation industry greener. Neste's Renewable Jet Fuel is supporting Norway's mandating from 2020 0.5% biofuel in aviation. (Neste, 2020).

As the world's largest producer of renewable diesel, Neste increased the share of raw materials to 83% from 76% in its production. Neste has conducted various supplier screening which also helped the company to own extensive raw material portfolio. To ensure raw material security, Neste has acquired majority of ownership in Demeter, an animal fat trader company. Neste also actively participating in the EU-funded Bioplat project to increase emphasis on unutilized and contaminated lands together with Food and Agricultural Organization (FAO). As Neste aims at processing 1 million tons of waste plastic starting from 2030 the whole refining model needs to be restructured to scale up conversion of chemically recycled plastic waste into high-quality raw material for fuels, chemicals and new plastics production (Neste, 2018). For this high amount recycling materials need to be placed in the well-structured model in the circular economy for which Neste has built various model, but the below table demonstrate the best one for the circular economy which is capable scaling up recycling processes (Graph 15.). The development of chemical recycling technologies and associated partnerships therefore represents an example of portfolio diversification through technological innovation, rather than merely incremental efficiency improvements within the existing refinery system.

Figure 14. Neste's model of circular economy



Source: Neste Annual Report 2018

Neste's case is particularly relevant to H1b, which argues that companies with lower dependence on vertically integrated hydrocarbon operations are more likely to achieve stronger alignment between green narratives and capital allocation. Unlike integrated oil majors with substantial upstream production and large conventional hydrocarbon reserves, Neste's business model contained no comparable upstream oil and gas production portfolio. Its limited exposure to upstream fossil-fuel assets reduced the structural constraints associated with fossil-fuel dependence and created greater flexibility for reallocating capital towards renewable activities. Consequently, Neste's transition is attributable not merely to normative sustainability preferences, but fundamentally to structural firm-level characteristics. The absence of an upstream exploration and extraction portfolio ensuring the structural flexibility necessary to concentrate capital allocation on downstream renewable fuels and circular economy solutions.

Neste's ambition has articulated in its motto *"Faster, bolder and together"* purposefully reflects the strategy update in 2019 to become global leader in circular solutions and renewable business. The renewable business side the expansion of the renewable aviation and polymer business was targeted Germany and Netherlands. Vast investment USD 1.6 million was allocated towards Singapore to produce primarily renewable jet fuel and other renewable products. The expansion boosts the availability of the renewable product capacity to 4.5 million tonnes. Neste's principal climate objectives is to enable an annual reduction of 20 million tonnes GHG emission reduction annually by 2030. To reach this ambitious goal it is important to scale up faster renewables' expansion in aviation and polymer business, recycling and ensuring global waste and residue feedstock. The innovative approach at Neste is to mix scalable feedstocks for renewable aviation fuels containing algae and municipal waste, the output is called lignocellulosic fuels, chemicals and materials. The innovative approach resulted in bolder platforms renewable hydrogen and Power-to-X utilizing renewable electricity to convert CO2 to fuels and chemicals. By 2019 Neste becoming the world's largest not only the renewable diesel producer, but also renewable jet (Neste, 2019).
In line with the 2019 strategy update Neste divided the Renewable Products business into three areas:

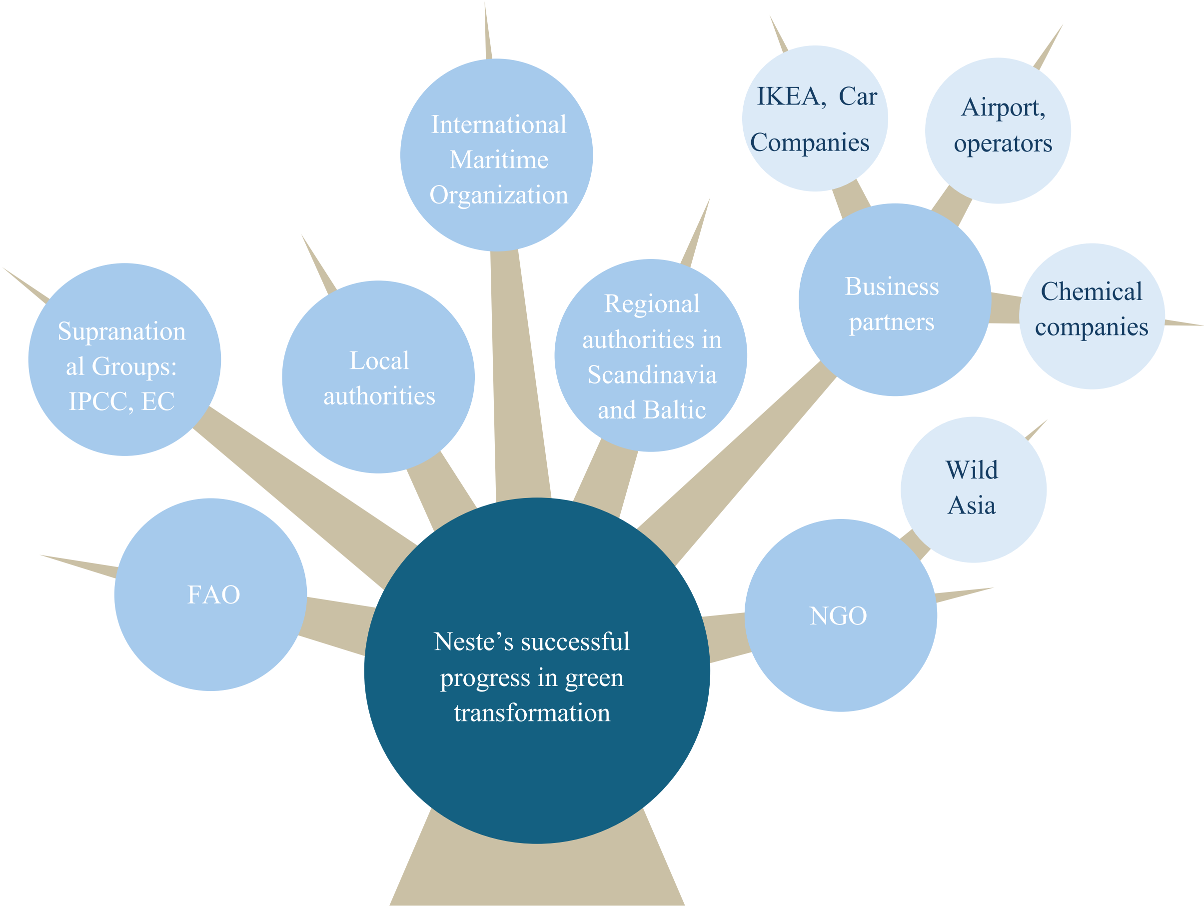
(i) Renewable Road Transportation
(ii) Renewable Aviation
(iii) Renewable Polymers and Chemicals, and Renewables Platform

As part of its broader circular economy strategy, Neste has entered strategic collaboration with recycling companies Ravago and Remondis to advance the deployment of chemical recycling capacity. This partnership represents a significant milestone in the company's transition toward a more sustainable material system, as it supports Neste's objective of processing more than one million tonnes of plastic waste annually. In 2019 Neste also has launched a IMO2020 compliant marine fuel which targeting to reduce Sulphur dioxide emissions. In the aviation industry there were some advancements achieved as well; Neste's renewable jet fuel capacity has been ramped up to 100 000 tonnes annually. This is a result of the active collaboration with American Airlines and KLM (Neste, 2019).

Neste's strategic agility and ambitious decarbonization milestones were directly stimulated by proactive domestic governance frameworks (Neste, 2020; Finnish Government, 2019). In addition to the Finnish government's legally binding mandate to achieve climate neutrality by

2035 (Ministry of the Environment Finland, 2022), the Chemical Industry Federation of Finland established an ambitious sectoral neutrality objective for 2045 (Kemianteollisuus, 2020), thereby generating a cohesive institutional ecosystem that accelerated corporate portfolio realignment. The impactful EC's legislation, the Renewable Energy Directive (REDII), adopted in 2018, mandates an increase in the share of renewable energy sources to at least 35% by 2030 (Neste, 2020). Neste's green transition has been shaped by a dual-layer governance framework involving both supranational and national authorities. At the supranational level, the EU has introduced the European Green Deal in 2019 with progressive climate targets and circular economy agenda. Simultaneously, the Finnish government has passed the law requiring that biofuels account for 30% of energy use in road transportation by 2030 (Neste, 2019). This alignment of instruments across different level of governance illustrates the principle of multilevel governance, wherein corporate behaviour and strategic direction are influence by both EU-level directives and domestic regulatory framework. Furthermore, the countries in the region have announced ambitious targets in aviation industry for increasing share of renewable fuels in aviation to 30% by 2030 in Norway and required decrease in GHG emission for aviation fuel sold in Sweden (Neste, 2019). These actions are creating market for Neste to boost renewable segment in the aviation industry. This is a great example how governments can trigger the green transformation of the companies.

Figure 15. Neste's Successful Progress in Green Transformation – Its Collaborative Platform



Source: Author's own work based on research data

Neste's downstream operation is characterized by widespread collaboration across industries to accelerate green transformation. *"Change runs on renewable"*, Neste continued building a portfolio in 2021 which brings healthier life for the future generation and preserve the planet for the future generation. In 2022 Neste has launched strategic partnership with different companies like Coca Cola, Bosch and Rolls-Royce Power Systems to accelerate the usage of renewable diesel as a lower-emission solutions for their fleets of diesel engine (Neste, 2022). In addition, joint ventures such as the collaboration with Marathon Petroleum in Martinez, California scaling-up renewable diesel production capacity over 1 million tonnes annually. The USD 1.9 billion investment will add 1 million tonnes per annum to Neste's global renewable production capacity. Further expansion of renewable refineries in Rotterdam with USD 2.2 billion capital allocation will reinforce sustainable aviation fuel production. The capacity will grow to 2.7 million tonnes of renewables products out of which 1.2 million tonnes will be SAF. For ensuring continuous supplies for circular production, Neste has acquired animal fat and by-products trading company, Walco Foods (Neste, 2022).

The competence in green transformation is mirrored in the IPCEI (Important Project of Common European Interest) grant offered by the EC, Neste was the first Finnish company to receive this funding to its renewable hydrogen project at Porvoo refinery. Neste has reached USD 32 million funding. In addition to that, the company has received USD 157 million by the EU Innovation find to boost chemical recycling of waste plastic. Neste has acquired Alterra Energy's thermochemical liquefaction technology. There was a study developed how to transform Porvoo refinery into fully renewable and circular solutions site. Neste's success and cornerstone of its strategy to preserve planet for the children are very successful due to the constant collaboration and innovation. The first renewable diesel pipeline transportation was launched in France which another proof that Neste's ambition is skyrocketing to combat climate change. To support the decarbonization process in marine industry, Neste has introduce Neste Marine 0.1 co-processed marine fuel in Scandinavia with partnership of Nordic Marine Oil. The company has ambitious targets to reduce Scope1&2 by 50% by 2030 and become carbon neutral by 2035. In Scope 3 still the 50% reduction by 2040 remain among the targets. Neste is an example for other oil and gas companies how to transfer the whole value chain into carbon neutral. Another aspect, Neste aims for 100% renewable electricity by 2023 (Neste, 2022).

5.8.3 Neste's Retail Segment

Neste's retail segment has undergone restructuring to align with its green transformation strategy. As a result, Neste has divested its Russian fuel-retail business to PJSC Tatneft to enable to shift its strategic priorities towards renewable and circular solutions (Neste, 2021). The business decision proves the company's commitment to reallocating capital toward sustainable business areas. This divestment is particularly relevant to H3, which proposes that fossil-asset divestments can improve corporate transition indicators without necessarily eliminating the underlying real-world emissions associated with the divested assets. The divestment therefore needs to be distinguished analytically from a direct emissions reduction. Once conventional retail assets are transferred to another owner, the associated fossil-fuel consumption may continue. Accordingly, the divestment contributes to Neste's portfolio transformation and reduces its direct exposure to conventional retail activities, but it does not necessarily eliminate the emissions generated by those activities at the global level. This distinction supports the dissertation's conceptual separation between corporate decarbonisation and system-level emissions reduction.

Retail expansion of renewable diesel has expanded throughout Europe and the United States. Belgium has launched renewable diesel in 2021, while in Southern California two renewable diesel fuelling stations were opened. Partnership with local actors accelerated, such an example is the contract with a local Finnish restaurant chain, Hesburger, enable the collection of used cooking oil as a feedstock. These steps demonstrate the integration of circular economy principles in the retail operations (Neste, 2021).

To operationalize the financial and strategic tracking for Neste across the empirical chapters, capital allocations are categorized into low-carbon Investments, which encompass scaling renewable diesel, sustainable aviation fuel (SAF), circular chemical recycling, and the phased multi-billion-dollars transformation of the Porvoo refinery away from crude oil, Supply Chain Integration expenditures for proprietary waste and residue sourcing. The legacy brown-field operations are systematically being phased out and retrofitted. This framework tracks Neste's unique pathway as a focused green transformer aiming for a completely crude-free refining model.

Table 28. Neste's Main Investment Activities between 2017 - 2024

Classification of Neste's Main Investments			
Main Investment	Analytical Classification	Relevance	Category
Renewable Diesel	Low-carbon fuel investment	Renewable diesel using waste and residue raw materials to decarbonize heavy transport	Low - carbon
Sustainable Aviation Fuel (SAF)	Low-carbon aviation fuel investment	Decarbonizes the aviation sector by replacing fossil jet fuel with certified renewable alternatives	Low - carbon
Circular Plastic Solutions & Chemicals	Circular Economy	Reconfigures petrochemical and polymer value chains by processing hard-to-recycle plastic waste into high-quality feedstock	Low - carbon
Renewable Material Sourcing & Pretreatment	Supply chain integration	Secures proprietary global waste and residue supply chains (e.g., animal fat, used cooking oil) to feed renewable refineries.	Low - carbon
Porvoo Refinery Transformation to Circular Hub	Refining investment	Reconfigures and retrofits legacy crude oil processing units into a zero-crude renewable and circular refining hub targeted for the mid-2030s.	Low - carbon

Source: Author's own work based on Neste's Annual Reports between 2017 - 2024

The company aims at enabling GHG emission reductions of 20 million tonnes annually by 2030, while targeting 50% reduction in Scope 1 and 2 emissions by 2050 and reaching carbon neutrality (Neste, 2022) by 2035 which is far beyond the EU's targets. However, the recent performance indicates certain challenges in reaching interim targets. Despite of the fact, that significant improvements were achieved in green transformation, the 14 million tonnes GHG reduction targets were not realized in 2023. To reach the target 3 million tonnes were missing which raises concerns and questions whether the 2030 targets are achievable in case of Neste, although it acts compared to the peers as a frontrunner in the sustainability (See Table18 in Appendix).

5.9 Ørsted's Sustainable Strategy 2017 – 2024

Ørsted represents a distinctive case of corporate green transformation within the European energy sector. Since 2008 the company has undergone a fundamental restructuring from a fossil-fuel-based integrated energy business towards a renewable business model. This transformation was not limited to changes in corporate sustainability narratives; rather, it was accompanied by portfolio divestment, capital reallocation, technological investment and measurable reductions in greenhouse-gas emissions. In this respect, the company provides a deviant case to the integrated oil and gas companies examined in this dissertation where corporate sustainability narratives directly correspond to observable capital allocation trajectories.

As part of green transition, the company has changed its name from DONG Energy to Ørsted in 2017 which represent the shift from a coal, oil and gas business to the green energy (Ørsted Summary, 2017). The change represented more than a rebranding exercise: it accompanied the company's decision to move away from coal, oil and natural gas, and to establish renewable energy as the core of its business model. The company's strategic narrative, expressed through the ambition of creating a *"world that runs entirely on green energy" (*Ørsted, 2017), was therefore supported by a substantive restructuring of its asset portfolio. The company divested its upstream oil and gas activities, expanded its offshore and onshore renewable portfolio and initiated the phase-out of coal-fired generation. The company's transformation represents a case in which strategic narrative and capital allocation became mutually reinforcing rather than contradictory.

Ørsted's case is particularly relevant to H2 which proposes that corporate sustainability narratives are systematically misaligned with actual decarbonisation because green investment remains marginal. The Dannish company provides an important qualification to this proposition. Unlike the integrated oil and gas majors, where renewable investment was frequently added to an otherwise hydrocarbon-intensive portfolio, Ørsted progressively reduced exposure to its carbon-intensive legacy businesses while simultaneously increasing investment in renewable generation. The company's transition therefore involved both sides of the portfolio equation, divestment from carbon-intensive assets and expansion of low-carbon assets. This provides an important analytical basis for distinguishing between incremental diversification and structural transformation.

The transformation was also reflected in the company's financial and operational performance. EBITDA increased by 18% in 2017, supported by progress in offshore wind development and geographical expansion into Asia and the United States (Ørsted, 2017). The company established an ambition to reach 12 GW of installed wind capacity and subsequently increased its renewable-energy targets. By 2018, installed renewable capacity had reached approximately 5.6 GW, while a further 3.4 GW was under construction. These developments indicate that renewable energy was not positioned merely as a supplementary sustainability activity but increasingly constituted the principal source of future corporate growth.
The case is therefore particularly relevant to H1b, which proposes that companies with lower dependence on vertically integrated hydrocarbon operations are more likely to achieve stronger alignment between sustainability narratives and capital allocation. Ørsted's transition path suggests that the absence of a continuing upstream oil and gas business substantially reduced the structural constraints associated with hydrocarbon dependence. Once oil and gas activities were divested, management was able to redirect financial and organisational resources towards offshore wind, onshore renewables, solar, energy storage and related technologies. The case suggests that corporate structural positioning may be an important explanatory factor in determining the credibility and implementation of green-transition strategies.

The company has articulated a solid goal to exceed 30 GW renewable capacity by 2030, sufficient to power 50 million people (Ørsted, 2018). The central element of Ørsted's strategy is the 'Green leadership' program which has three important pillars:

(i) reporting and applying practices by Taskforce on Climate-related Financial Disclosures (TCFD)
(ii) incentive programs include green energy share and carbon emission reduction
(iii) participation in rising awareness of climate change especially among the young generation together with the Worldwide Fund for Nature (WWF)

5.9.1 Renewable Energy Expansion as the Core of Portfolio Transformation

The principal mechanism through which Ørsted implemented its transition was the rapid expansion of offshore and onshore renewable generation. The company's strategy progressively increased its renewable-capacity ambitions, with a target exceeding 30 GW by 2030 and a particular focus on offshore wind (Ørsted, 2018). Offshore wind became the central pillar of the new business model, with major developments in the United Kingdom, Germany, the Netherlands, Taiwan and the United States. The acquisition of Deepwater Wind further strengthened Ørsted's position in the US offshore-wind market, while projects such as Hornsea 1, Borssele 1 and 2 and subsequent US developments demonstrated the geographical expansion of the company's renewable portfolio. By 2020, renewable capacity had increased to approximately 11.3 GW. The scale and continuity of these investments are significant from the perspective of this research because they demonstrate that the company's green narrative was accompanied by sustained capital deployment into renewable assets over several years.

Ørsted's commitment to combat climate change is reflected in its 2025 strategic objectives which include:

(i) carbon neutrality for Scope 1 and 2, this ambition projected to be achieved 20 years earlier compared to other fossil fuel-based companies
(ii) 15 GW offshore and 5 GW onshore renewable capacity
(iii) energy supply for approximately 35 million households
(iv) 40% reductions in Scope 3, an overarching objective is to reach carbon neutrality by 2040.

At the 2019's UN Climate Action Summit in New York City, Ørsted's CEO, Henrik Poulsen addressed a speech and urged all the companies to take decisive actions as the 73% of global emissions are originating from energy use. Therefore, the fossil fuel needs to be changed to renewable energy (Ørsted, 2019). Ørsted claims that the world has solution to transfer to green energy, especially that the cost of the newly built energy has become cheaper than the fossil-based sources. The decarbonization path can be achieved on the following levers: phasing out fossil fuels, increasing green electrification and energy efficiency, scaling up green power generation (Ørsted, 2019). While for other companies the natural gas is part of green transformation as the low-carbon solution. Ørsted does not consider natural gas a long-term transition solution and aims to eliminate it entirely. The company is setting ambitious goals to become entirely carbon neutral by 2040 across Scope 1, 2 and 3 emissions. The cross-industrial collaboration will be needed to achieve carbon neutrality (Ørsted, 2019).

Renewable energy capacity is globalized by Ørsted via winning commissions over Hornsea 1 in the UK, constructing Borssele 1 and 2 in Netherlands, and building large-scale offshore projects on the US coast reaching 3 GW. Besides offshore and onshore wind solutions, solar farms are built in Permian Energy Centre, in Texas. Ørsted greatly follows the Secretary-General of the UN, Antonio Guterres statement from 2019 Climate Action Summit:

> *"There is a cost to everything. But the biggest cost is doing nothing."*

In 2021 the *'green energy for the planet and its people'* become the centre of the company's vision. The CEO, Mads Nipper's statement of *"Building green energy holds unprecedented opportunities for positive change – for creating growth in economies, revitalizing local communities, and making a net-positive contribution to biodiversity"* (Ørsted, 2021) proves the commitment towards green transformation. The goal is not only to make profit but also tackle environmental and social challenges. Therefore, Ørsted represent itself as a catalyst of the green transformation which can be the leading example for all the companies. In 2021 the preservation of biodiversity and planet become the centre of Ørsted's sustainability commitment. The company continues the partnership with the WWF Denmark which is unique collaboration in the energy industry with such NGOs. They are together preserving cod stock in the North Sea where the windmills are installed (Ørsted, 2021).

Ørsted's transition is also distinguished by its explicit focus on Scope 3 emissions. The company progressively incorporated supply-chain and customer-related emissions into its climate strategy, recognising that renewable-energy generation alone does not eliminate the carbon footprint associated with infrastructure, materials and downstream activities. By 2023, Ørsted reported a 49% reduction in Scope 3 emissions, with the reduction partly associated with declining natural-gas sales following the restructuring of the business portfolio (Ørsted, 2023). This development is particularly relevant to the dissertation because it demonstrates the importance of interpreting emissions performance in conjunction with changes in product mix and business-model composition. The reduction in Scope 3 was connected to the strategic withdrawal from natural-gas-related activities and the corresponding restructuring of the company's downstream portfolio. This provides further evidence that changes in emissions were linked to strategic portfolio decisions, rather than being generated solely through incremental efficiency improvements.

At the same time, Ørsted's approach highlights the importance of supply-chain emissions within renewable-energy development. Wind turbines require substantial quantities of steel and other carbon-intensive materials, meaning that the expansion of renewable capacity does not automatically eliminate upstream environmental impacts. Ørsted therefore engaged with suppliers and industry initiatives to promote lower-carbon materials and technologies, including initiatives aimed at substantially reducing emissions associated with steel production. Consequently, the Ørsted case demonstrates that green transformation cannot be evaluated solely through the growth of renewable capacity. A comprehensive assessment must also consider the carbon intensity of the associated value chain.

In 2024, Ørsted completed the decommissioning of its final coal-fired combined heat and power (CHP) facility, achieving a 54% direct reduction in Scope 1 and 2 emissions from thermal and power generation and marking the complete operational phase-out of coal (Ørsted, 2024). Concurrently, the firm allocated $6.7 billion in capital expenditure toward offshore wind assets - including the Greater Changhua 2b and 4 projects in Taiwan, as well as utility-scale installations in the United States and Germany - alongside continued expansion in onshore wind and solar PV, ensuring 100% taxonomy alignment under the EU Climate Delegated Act (Ørsted, 2024). While peer energy incumbents in the sample routinely revised or diluted their decarbonization trajectories, Ørsted sustained its transition momentum, enacting only minor calibration to its interim Scope 1 and 2 reduction targets (adjusted from 98% to 93% by 2025, and from 99% to 96% by 2030 relative to baseline levels) while targeting a 77% reduction in full-value-chain (Scopes 1, 2, 3) greenhouse gas intensity by 2030 and maintaining an absolute net-zero mandate for 2040 (Ørsted, 2024). Beyond direct asset transformation and targeted nature-based offset partnerships in developing economies, Ørsted represents the most proactive case among the six examined firms in operationalizing upstream and downstream supply-chain engagement to mitigate Scope 3 liabilities.

Table 29. Ørsted's GHG Reduction Targets by 2032 and 2040

(1) climate action to reduce:

Ørsted GHG Reduction Targets	**2025**	**2032**	**2 040**
Scope 1&2	96% reduction in net intensity	n/a	net-zero
Scope 3	n/a	50% absolute reduction	

Source: own work based on Ørsted Sustainability Report 2022 https://cdn.Ørsted.com/-/media/2022-annual-report/Ørsted-sustainability-report-2022.pdf?rev=eda5465ba5784866b6cea99e58088f94

(2) green energy that revives nature:

Ørsted	**2025**	**2030**
Green Energy	40% reduction in freshwater withdrawal intensity	Zero wind turbine blend waste

Source: own work based on Ørsted Sustainability Report 2022

https://cdn.Ørsted.com/-/media/2022-annual-report/Ørsted-sustainability-report-2022.pdf?rev=eda5465ba5784866b6cea99e58088f94

5.9.2 Thermal Power Phase-out, Biomass Energy Conversion and Circular Value Chain Integration

A primary pillar of Ørsted's portfolio transformation was the systematic phase-out and physical decommissioning of its carbon-intensive thermal generation assets, rather than their commercial disposal. Following the 2017 divestment of its upstream oil and gas business, the company targeted the complete elimination of coal-fired power generation, replacing coal with certified sustainable biomass across its combined heat and power (CHP) portfolio (Ørsted, 2018). Crucially, the closure of coal-fired units at facilities such as the Studstrup and Esbjerg lower stations represented permanent asset retirements (Ørsted, 2021). This decommissioning strategy provides a direct empirical counterpoint to H3. Whereas conventional hydrocarbon incumbents in the sample frequently divested emitting assets to third-party operators—thereby shifting Scope 1 and 2 liabilities off corporate balance sheets while leaving real-world atmospheric emissions unmitigated—Ørsted's physical plant closures achieved genuine net emission reductions at the systemic level.

Ørsted's conversion of five centralized power stations to biomass was supported by cohesive multi-level governance mechanisms (L1 → L2). Supranational targets under the EU Renewable Energy Directive (RED) established the legal framework for renewable heat and power remuneration, while the domestic Danish Industry Agreement ensured rigorous certification and traceability for sustainably sourced woody biomass residues (Ørsted, 2018; Ørsted, 2022). In parallel, Ørsted operationalized circular-economy models through regional cross-sectoral partnerships (H1c):

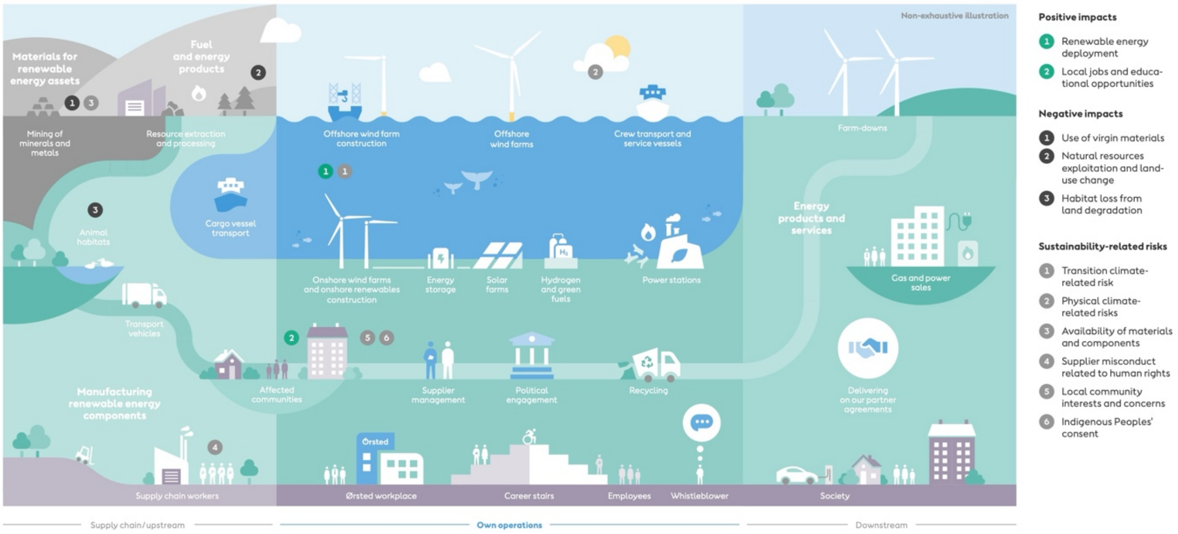
(i) Kalundborg Bioenergi (Denmark): A collaborative industrial symbiosis model with Novo Nordisk and Novozymes converting industrial organic by-products into biogas to supply district heating for approximately 5,000 households (Ørsted, 2018)

(ii) Northwich Waste-to-Energy (UK): Deployment of enzyme-based waste-treatment technologies processing household municipal waste to generate more than 5 MW of baseload electricity (Ørsted, 2018).

As wind and solar capacities scale globally, end-of-life (EOL) component management has emerged as a major operational and environmental imperative. Projections by the International Renewable Energy Agency (IRENA) indicate that cumulative photovoltaic module waste alone will reach 78 million metric tonnes globally by 2050 (Ørsted, 2022). To pre-empt downstream resource strain, Ørsted committed to recycling 100% of decommissioned solar modules and wind turbine blades, aligning its operational standards with the EU Waste Framework Directive (Ørsted, 2022). Denmark's biomass legislation ensuring that biomass is sourced from sustainable managed reforestation system and majority of the wood pellets and chips are coming from residues and low-grade wood (Ørsted, 2022). In this regard, Ørsted represent a successful actor to collaborate with forestry sector including policy makers and civil society to ensure all the aspects of sustainable usage is considered. The company is continuously proving how important is the collaboration with the industries, the national governments and NGOs to successfully engage with the transformation towards green operations.

The below overview (Graph 16) represents a tension which is not solved yet either on policy level or company levels. This fundamental issue is rooted in the concept that it is not enough to produce clean energy, there is a huge task and burden to create fully sustainable system. The emerging issues from the renewable productions are coming from the natural resources' exploitations and land-use. Animal habitants' losses are observable due to land degradation. Furthermore, the one of the key issues at the front of the value chain whether the availability of the materials and components for the renewable assets are also scarce resources. Therefore, the resource extractions involving ecosystem to manufacture renewable components are representing some level of risk (Ørsted, 2023). Ørsted's green transformation is characterized by a restructuring across all business segments, including renewable energy expansion, fossil fuel phase-out, supply chain decarbonization and circular economy integration. Its strategic approach towards climate change, successful ESG governance and global partnerships position the company as a benchmark for green transformation within energy sector.

Figure 16. Overview of the Value Chain showing Sustainability-related impacts



Source: Ørsted, 2023 https://cdn.Ørsted.com/-/media/annual-report-2023/Ørsted-ar-2023.pdf?rev=526307f68e2047b3a1df8dd2cdf719ec

Overall, Ørsted represents the strongest case in the sample for alignment between corporate sustainability narratives and observable actions. Its transformation between 2017 and 2024 was characterised by the simultaneous occurrence of four processes: (1) divestment and phase-out of fossil-fuel activities, (2) large-scale investment in renewable energy, (3) measurable reductions in operational and value-chain emissions, and (4) institutionalisation of sustainability within corporate governance and incentives. Ørsted's green transformation involved a simultaneous reduction of fossil dependence and expansion of renewable capacity, which substantially reduced the structural tension between sustainability narratives and capital allocation. This makes Ørsted the critical benchmark against which the more hybrid transition pathways of Shell, BP, OMV and ORLEN - and the renewable-specialist pathway of Neste - can be evaluated.

To conclude, Ørsted's capital allocations are categorized into green investments, which encompass utility-scale offshore and onshore wind, solar PV, green hydrogen infrastructure, and the complete phase-out of thermal coal combined with biomass conversion. This framework tracks Ørsted's unique green transition model as a former fossil-based utility that fully restructured into a 100% renewable energy major.

Table 30. Ørsted's Main Investment Activities between 2017 - 2024

Classification of Ørsted's Main Investments			
Main Investment	Analytical Classification	Relevance	Category
Offshore and Onshore Wind Expansion	Renewable power generation investment	Displace fossil-fuel power generation and build a zero-emission primary energy base	Green
Solar PV & Green Hydrogen Infrastructure	Renewable energy	Expands diversified zero-carbon energy generation and green hydrogen production for hard-to-abate sectors	Green
Thermal Power Phase-Out & Biomass Conversion	Structural phase-out and conversion investment	Eliminates coal-fired generation and converts remaining thermal plants to sustainable biomass to achieve absolute decarbonization.	Green (transitional)
Circular Value Chain Integration	Circular economy and resource management	Integrates sustainable waste handling and circular resource streams across the wind and green energy asset life cycle.	Green

Source: author's own work based on Ørsted's Annual Reports

5.10 Qualitative Assessment of Interview Results

This section synthesizes the empirical findings derived from semi-structured expert interviews based on a ten-item questionnaire protocol (Appendix, Table 24). The respondent pool comprised senior representatives from both competitive and non-competitive sectors - including corporate decision-makers from Shell, BP, OMV, Orlen Group and Neste - alongside policy advisors, European Union officials, and non-governmental climate experts. A pervasive scepticism emerged regarding the technical and economic feasibility of achieving net-zero emissions by 2050. Multiple respondents characterized existing targets as overly optimistic in the context of contemporary geopolitical instability. Conversely, several experts maintained that viable decarbonization pathways remain attainable, contingent upon policy certainty, accelerated technological maturation, and structural shifts in consumer demand.

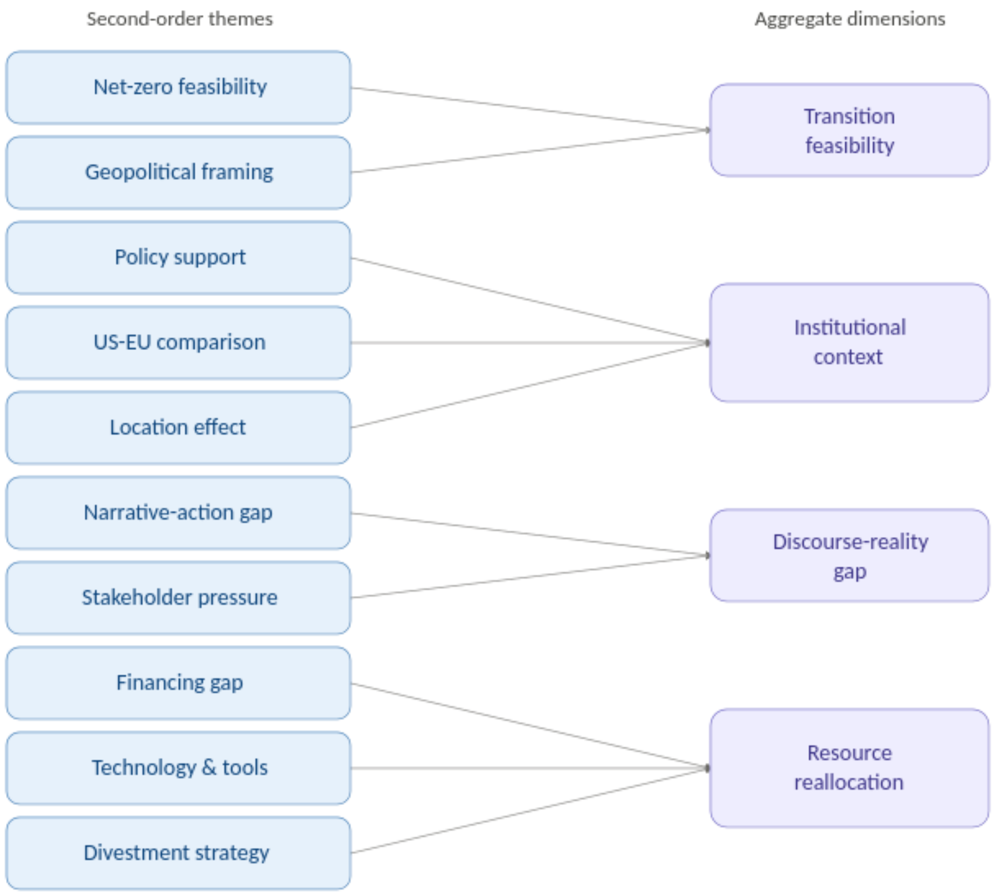
Furthermore, the interview data illuminated systemic barriers to harmonizing regional transition strategies across Europe. While standardized regulatory mechanisms - notably the EU Emissions Trading System (EU ETS) and the Corporate Sustainability Reporting Directive (CSRD) - foster institutional convergence among Member States, many interviewees identified a persistent vertical misalignment between supranational mandates and domestic policy execution. Above all, interviewees underscored capital constraints, underdeveloped infrastructure, and technology readiness gaps as primary transition bottlenecks. The scale of public funding, green bond issuance, and EU financial facilities was broadly deemed insufficient to mobilize the capital required for full-scale industrial transformation.

The interview transcripts were analysed using the inductive, three-order coding procedure developed by Gioia, Corley, and Hamilton (2013) for establishing qualitative rigor in inductive organizational research. First-order concepts were generated close to respondents' own language, then abstracted into second-order, researcher-centric themes, and the second-order themes were further consolidated into four aggregate theoretical dimensions (Figure 27). Each of the one hundred twenty respondent-question units (twelve respondents multiplied with ten questions) was coded for the presence of one or more of the ten second-order themes; the full coding matrix and theme-frequency tables are reported in the appendix. Consistent with the trustworthiness criteria proposed by Lincoln and Guba (1985), coding was performed by a single researcher, and this is noted as a limitation of the analysis; a second-coder review with a reported inter-rater agreement statistic is recommended prior to final submission. Given the small, purposive expert sample (n = 12), the resulting themes are interpreted as indicative analytic patterns rather than statistically generalizable findings, consistent with the methodological guidance on elite interviewing (Harvey, 2011).

Interviewees further identified substantial coordination challenges in aligning transition strategies across European jurisdictions. The EU Emissions Trading System (EU ETS) and the Corporate Sustainability Reporting Directive (CSRD) were repeatedly cited as the principal instruments imposing a degree of uniformity on reporting and compliance behaviour across member states, corroborating evidence that ETS-based carbon pricing exerts a measurable, if geographically uneven, influence on regulated firms' investment behaviour (Ellerman et al., 2016; Martin et al., 2016). Nonetheless, many respondents expressed concern about a persistent misalignment between supranational climate ambitions and their national-level implementation, a friction that recent policy research attributes to member-state resistance to further market-based interventionism during a period of heightened energy-cost and competitiveness pressure (Määttä et al., 2025). Respondents converged on financing as the most binding constraint on the pace of transition, alongside underdeveloped infrastructure and immature technology at commercial scale. Public funding instruments, green bond issuance, and existing EU-level financial mechanisms were widely regarded as insufficient relative to the scale of capital required, a concern consistent with evidence that carbon-related financial risk continues to be inconsistently priced by investors and that fossil-fuel divestment alone does not resolve the capital-allocation gap it is intended to address (Bolton & Kacperczyk, 2021; Braungardt et al., 2019).

Taken together, the interview evidence indicates that the green transition among the selected cases is uneven, resource-constrained, and predominantly policy-driven rather than intrinsically strategic. While CSRD-based disclosure requirements and the EU ETS play a demonstrable role in shaping corporate climate behaviour, respondents' accounts point to a persistent and substantial gap between the strategic narratives companies articulate and the capital-allocation and emissions outcomes they deliver. This pattern is consistent with recent empirical evidence of a systematic mismatch between the clean-energy discourse, investment commitments, and actual capital expenditure of major international oil companies (Li, Trencher, & Asuka, 2022), and aligns with the broader greenwashing literature, which conceptualises such discourse-action gaps as a strategic response to external legitimacy pressures rather than a genuine reorientation of core business activity (Lyon & Montgomery, 2015). The qualitative findings thus lend empirical support to this thesis's central proposition that corporate green narratives and measurable decarbonisation outcomes remain only loosely coupled across the cases examined.

Figure 17. Gioia-style data structure of the inductive interview coding, showing second-order themes consolidated into four aggregate theoretical dimensions



Source: author's own coding of primary interview data

Overall, the interview results demonstrate that the green transition among the selected cases are uneven, constrained and policy driven. While the CSRD driven regulations and ETS play important role in shaping corporations' behaviour to shape their approach towards climate protection and sustainability, there is substantial gap between the strategic narratives, goals of the companies versus their actions.

5.11 Factors Triggering Green Transformation – Empirical Findings

The pace and depth of green transformation vary considerably across the selected European oil and gas companies (Bartalos & Sárvári, 2025). Building on the sector-wide ambition to achieve a net-zero economy, the empirical findings identify a set of interrelated enabling factors that differentiate more advanced transition trajectories from more incremental ones. The below figure summarises the most salient of these dimensions, drawing on the comparatively advanced transition performance of the two smaller companies in the case-study pool, Neste and Ørsted. Resulting set of interrelated enablers of successful green transformation is visualized. Among the external factors, regulatory conditions at both the EU and national level emerge as particularly consequential: pro-environmental state involvement correlates positively with the pace of corporate green transformation, an effect that appears most pronounced where governments retain direct ownership stakes. Among the internal, firm-level factors, organisational structure plays a comparably important role, as smaller and less vertically integrated firms - particularly those with a downstream or retail orientation - demonstrate greater strategic adaptability in shifting toward sustainable business models, a pattern consistent with the proposition that lower dependence on vertically integrated hydrocarbon operations facilitates closer alignment between narrative and capital allocation.

Moreover, the empirical analysis indicates that, at the firm level, substantial capital allocation toward research and development (R&D) is critical in facilitating the technological innovation required to scale low-carbon solutions, corroborating earlier evidence that R&D investment provides the technological pathway through which portfolios are shifted toward sustainable solutions (Gonzalez et al., 2023). Companies able to leverage first-mover advantages are correspondingly positioned to capture emerging opportunities in renewable and low-carbon energy markets, as illustrated by Neste's global leadership position in renewable diesel and Ørsted's in offshore wind energy — a pattern consistent with the broader observation that technological advancement and first-mover positioning are key enablers of successful green transformation (Bartalos & Sárvári, 2025; cf. Hansen, 2022, on Denmark's comparable first-mover trajectory in offshore wind). Finally, the analysis underscores the importance of collaborative innovation systems: partnerships with start-ups, cross-industry actors — such as Neste's collaboration with IKEA on renewable plastics — and non-governmental organisations appear to enhance knowledge transfer, innovation capacity, and implementation efficiency, reinforcing the view that stakeholder collaboration constitutes an essential complement to firm-internal R&D capacity in accelerating the green transition (Hoxha et al., 2023).

Figure 18. The most impactful factors in successful green transformation based on Neste and Ørsted's cases

Source: Authors own work based on research data

6. DISCUSSION ON THE RESEARCH RESULTS AND INTERPRETING DIVERGENT PATHWAYS IN THE TRANSFORMATION OF EUROPEAN OIL AND GAS COMPANIES

This chapter is going to discuss the comparative analysis of corporate narratives, investment behaviour, divestments actions across the six selected cases. All six companies have publicly announced green strategies and narratives; however, the pace at which these commitments have been translated into portfolio shifts and measurable green targets varies substantially. By comparing strategic announcements against green, brownfield, and divestment activity over the 2017 - 2024 period - a timeframe sufficient to trace the evolution of the green transformation - a substantial gap emerges between capital allocation and stated narrative in four of the six cases, with only Neste and Ørsted approaching close alignment between rhetoric and action. In almost all cases except Ørsted and, to a lesser extent, Neste, companies continued to allocate more capital to brownfield investments than to green and low-carbon projects. This pattern reveals a persistent gap between green discourse and green investment, reflecting the dual challenge facing incumbent oil and gas companies: sustaining a profitable hydrocarbon business while advancing along a decarbonisation pathway shaped by policy pressure. This chapter is structured as follows: Section 6.1 examines the narrative-action gap and the divestment and investment patterns identified across the case-study pool. Section 6.2 presents the systematic hypothesis evaluation. Section 6.3 returns explicitly to the central and sub-research questions and reflects on how and why the empirical findings emerged as they did. Section 6.4 examines how the dissertation's theoretical framework strengthens the interpretation of these findings, before Section 6.5 articulates the dissertation's theoretical contribution. Section 6.6 closes the chapter with a practical reflection on the limitations encountered during the empirical phase of the research.

The result of the empirical part reveals consistent gap between sustainability narratives and actual capital allocations, investments and divestment actions. The oil majors such as BP and Shell actively communicate their commitment to reach net-zero and become champions of green transition; however, majority of their investments are concentrated on the fossil fuel-based investments. This finding can be interpreted through Jameson's (1982) conceptualisation of narratives as socially symbolic acts that reflect and mediate broader ideological and structural tensions. From this perspective, corporate sustainability narratives may perform a function that extends beyond the communication of operational intentions. Narratives such as *"net-zero economy by 2050"* or *"energy transition for better future"* do not necessarily articulate operational or structural changes, but instead the main goal is to maintain balance between regulatory, economic and social pressures and expectations.

The empirical findings of the dissertation applied Jameson's (1982) perspective by connecting the analysis of corporate narratives directly to observable quantitative indicators of corporate behaviour. By systematically comparing narrative commitments with green capital expenditure, low-carbon and brownfield investment, fossil-asset divestments, and emissions trajectories across the six selected cases, the research moves beyond the interpretation of discourse as an independent object of analysis. Instead, it evaluates the extent to which corporate narratives are translated into measurable changes in resource allocation and portfolio structure. This approach demonstrates that the credibility of transition narratives cannot be assessed solely through their rhetorical ambition; it must also be evaluated against the direction, scale, and persistence of actual corporate investment and divestment decisions.

The results are consistent with the concerns raised by Lyon and Montgomery (2015), who highlight the limitations of corporate sustainability claims when they are not accompanied by substantive changes in organisational and industry structures. In the context of the oil and gas sector, the evidence presented in this dissertation suggests that corporate-level adjustments remain constrained where the underlying business model continues to depend substantially on hydrocarbon extraction, processing, and consumption. Accordingly, the empirical results indicate that meaningful energy transition requires more than the expansion of sustainability discourse or the incorporation of transition-related activities into existing portfolios. It requires a deeper structural reconfiguration of the assets, capabilities, and capital-allocation priorities that underpin the incumbent oil and gas business model.

Based on the interview results, most of the respondents agreed that the targeted 55% reduction in GHG emission by 2030 and the achievement of net-zero emissions by 2050 are unlikely to be attainable under current technological, economic, regulatory and structural conditions. However, the answers of not being able to reach net-zero economy was differently articulated. OMV representatives stated that only on operational level will be possible to reach net-zero in Scope 1 and 2. Majority of the interviewees constituted that the green transition is triggered by the supranational and national regulators. Criticism has been raised against the EU to set climate targets very ambitious. The business case is missing and the technological background. According to OMV, the technology required for the 2030 targets are available, however, beyond that for 2035, 2040 the technological solutions are missing. One example is the carbon capture storage (CCS) where new technologies are missing for the implementation. OMV has highlighted that there are unrealistic targets set by the EU with the pace which cannot be fulfilled by most of the players. Then how do the small companies like Neste and Orsted are able to achieve green transformation much faster compared to the oil majors and medium sized companies? Leaner organizational structure and a fewer portfolio outside of the EU ease the effort to change fossil fuel-based operations into green one.

6.1 Critical Examination of Green Transition Narratives, Strategic Investment and Divestment Patterns

The empirical investigation conducted across the timeframe of 2017–2024 offers a granular, comparative, and multi-layered perspective on the structural transformation of European oil and gas companies. By examining the alignment between strategic corporate narratives, capital allocation, divestment behaviours, and emissions trajectories, this dissertation addresses the central research question and its supporting sub-questions, moving beyond descriptive accounts of corporate greening to uncover the systemic mechanisms driving or constraining transition outcomes. The findings demonstrate that the correspondence between corporate climate-transition narratives and measurable changes in capital allocation, divestment behaviour, and emissions trajectories is highly uneven, fragmented, and structurally conditioned. Rather than a uniform or linear sector-wide shift, the empirical evidence reveals a stark divergence within the European energy sector, which can be categorized into three distinct operational pathways.

6.1.1 Extent to which European green narratives correspond to measurable corporate actions

The frontrunner cases – Neste and Ørsted - there is a high-level, consistent correspondence between public narratives and capital allocation. Ørsted successfully executed a complete structural pivot, divesting its upstream oil and gas business in 2017 and devoting near 100% of its capital expenditure (CAPEX) to renewables. Neste similarly aligned its ‘*Change runs on* *renewable'* narrative with material actions, scaling renewable products profit-generation capacity to surpass its traditional oil business by 2018 and devoting up to 77% of its total CAPEX to green investments by 2024. Both firms achieved absolute, verified reductions in Scope 1, 2, and Scope 3 emissions.

OMV and Orlen Group exhibit a lagged transition pathway including diversified portfolio shift towards petrochemicals. Despite of the fact that OMV integrated sustainability into their narratives from 2017 onwards, and Orlen Group from 2020, their capital allocation remained dominated by hydrocarbon-oriented operations, particularly petrochemicals, natural gas, refining assets and retail expansion. OMV shifted focus toward circular polymer solutions and chemicals via its Borealis acquisition, while Orlen pursued a multi-utility model. However, their core business remains heavily tied to conventional hydrocarbons, leading to stagnant Scope 3 trajectories and a gap between discourse and physical substitution of fossil fuels.

The IOCs giants, Shell and BP exhibit a persistent gap between highly ambitious net-zero narratives and material capital allocation. While both majors achieved notable reductions in Scope 1 and 2 emissions, primarily via asset divestments and refinery closures. Their green capital allocation peaked briefly (23% for Shell in 2023; 30% for BP in 2022) before demonstrating substantial strategic pullbacks in 2024. BP's green and low-carbon CAPEX fell to 19% in 2024, and Shell's dropped to 11%, as both firms re-prioritized high-margin *'resilient hydrocarbons'* to appease shareholder pressure, illustrating a clear structural decoupling between narrative and long-term capital allocation.

6.1.2 Divestment and Investment Patterns between 2017 – 2024 period

The relationship between green narratives and corporate divestment, investment actions is characterized by a strategic, legitimizing loose coupling in most cases The global integrated oil companies (IOCs), particularly Shell and BP, as well as the mid-sized integrated firms OMV and Orlen Group, sustainability narratives increasingly functioned as instruments for securing corporate legitimacy in response to intensifying regulatory, societal, investor, and market pressures operating across multiple governance levels. This dynamic is particularly visible in the changing framing of asset divestments over the 2017–2024 period. During the earlier phase of the study period (2017–2019), divestments - such as Shell's disposal of oil-sands assets or BP's sale of petrochemical assets - were predominantly communicated in terms of portfolio optimization, financial efficiency, and balance-sheet management. From approximately 2020 onwards, however, following the emergence of the European Green Deal and the increasing institutionalization of sustainability reporting requirements based on CSRD, comparable transactions were increasingly incorporated into corporate narratives as components of broader portfolio transformation and decarbonization strategies.

The divergence between action and narratives is in line with Jameson's (1982) critical theoretical interpretation of the symbolic attempts to ease contradiction between climate protection, sustainability and continued fossil fuel dependency. The selected cases officially disclosed strategies with net-zero ambitions by 2050, and green energy provider while transforming for sustainable future. The capital expenditures on green projects between 2017-2024 demonstrate results which have higher brownfield projects compared to green ones in case of the oil majors and the middle-sized companies too. Overall, the interview findings support the above interpretation. The representatives of oil and gas companies generally highlighted that the fossil fuel investments represent higher predictable returns while the renewable green projects show higher risks, capital intensity and lower returns. The companies tend to communicate ambitious goals based on regulatory, social and shareholders pressures which are completely in line with the global climate objectives.

The empirical evidence nevertheless indicates that fossil-fuel divestment cannot be equated automatically with substantive decarbonization. Across the six cases, a substantial proportion of divested carbon-intensive assets were transferred to non-EU or other external owners, including companies such as INEOS, ConocoPhillips, Chevron, and Tatneft. The ownership and reporting boundaries changed, while the underlying productive capacity and associated greenhouse-gas emissions frequently remained in operation. Divestments therefore generated an important distinction between corporate-level decarbonization and system-level emissions reduction. While the disposal of carbon-intensive assets may improve a company's reported emissions profile by removing the assets from its organizational boundary, it does not necessarily result in a corresponding reduction in global emissions. This finding is particularly relevant to the interpretation of corporate emissions performance under increasingly stringent sustainability reporting frameworks, where changes in organizational boundaries may influence reported indicators independently of changes in the physical emissions generated by the assets themselves.

The relationship between sustainability narratives and investment behaviour is similarly non-linear and heterogeneous across the cases. Although corporate narratives became progressively more ambitious over the study period, the allocation of capital to genuinely renewable and low-carbon activities remained comparatively limited and, in several cases, volatile. Furthermore, companies frequently employed broad and internally defined categories of *"low-carbon"*, *"transition"*, or *"sustainable*" investment, under which investments in natural gas infrastructure, petrochemical assets, energy-efficiency measures, and carbon-management technologies were presented as components of the low-carbon transition portfolio. This broad categorization creates an analytical distinction between narrative commitment and the technological and portfolio characteristics of actual capital allocation, particularly where transition investments coexist with continued or expanding investment in fossil-based activities with relatively smaller carbon footprint.

The comparison nevertheless identifies two notable exceptions. Neste and Ørsted demonstrate a substantially tighter alignment between strategic sustainability narratives and capital allocation, as their stated transition objectives were accompanied by sustained investment in renewable and low-carbon business models and, critically, by significant restructuring or reduction of exposure to conventional fossil-fuel activities. Their cases therefore provide stronger evidence of substantive strategic transformation rather than primarily symbolic or legitimizing adaptation. By contrast, the trajectories of Shell, BP, OMV, and ORLEN demonstrate varying degrees of narrative–action decoupling, in which increasingly ambitious sustainability commitments coexisted with continued investment in, and dependence upon, conventional hydrocarbon activities. The cross-case evidence suggests that the credibility of corporate green transformation is determined not by the ambition of sustainability narratives alone, but by the extent to which these narratives are translated into consistent capital reallocation, fossil-asset restructuring, and measurable reductions in value-chain emissions.

Table 31. Overview of the Proportion of low-carbon, green and brownfield (including non-energy products) investments[8]

		Total CAPEX in USD billion	Low-carbon, Green Investments in USD billion	Low-carbon, Green Investments	Brownfield investments	Proportion of green investments	Proportion of brownfield investment
2017	Shell	32	0	Low	High	0%	99%
	BP	18	0	Low	High	1%	93%
	OMV	4	0	Low	High	0%	99%
	Orlen Group	2	0	Low	High	0%	99%
	Neste	1	0	Moderate	High	17%	83%
	Ørsted	2	2	High	Low	65%	0%
2018	Shell	25	0	Low	High	1%	99%
	BP	25	1	Low	High	2%	98%
	OMV	4	0	Low	High	5%	95%
	Orlen Group	1	0	Low	High	0%	100%
	Neste	1	0.4	Moderate	High	40%	60%
	Ørsted	10	10	High	Low	100%	0%
2019	Shell	24	0	Low	High	0%	99%
	BP	19	0	Low	High	0%	99%
	OMV	6	1	Low	High	9%	81%
	Orlen Group	2	0	Low	High	0%	93%
	Neste	1	0.3	Moderate	High	33%	67%
	Ørsted	4	4	High	Low	100%	0%
2020	Shell	18	3	Moderate	High	17%	79%
	BP	14	1	Low	Low	7%	0%
	OMV	7	2	Moderate	Low	29%	4%
	Orlen Group	3	0	Low	High	0%	100%

[8]To ensure cross-case comparability and empirical consistency, all financial indicators—including total capital expenditure (CAPEX), green/low-carbon capital allocations, divestment values, and corporate net income—are reported in US Dollars (USD). This methodological choice reflects the structural reality of the global energy industry, where hydrocarbon commodities and global energy assets are traded in USD, and major European incumbents (notably Shell and BP) maintain the USD as their primary presentation and functional currency. For non-USD reporting entities whose financial disclosures are denominated in Euros (OMV, Neste), Polish Złoty (Orlen Group), or Danish Kroner (Ørsted), figures were converted into USD using annual average European Central Bank (ECB) exchange rates for each respective financial year (2017–2024).

		Total CAPEX in USD billion	Low-carbon, Green Investments in USD billion	Low-carbon, Green Investments	Brownfield investments	Proportion of green investments	Proportion of brownfield investment
	Neste	1	0	Low	High	0%	100%
	Ørsted	4	4	High	Low	100%	0%
2021	Shell	19	3	Moderate	High	15%	85%
	BP	13	3	Moderate	High	23%	67%
	OMV	3	0	Low	High	0%	100%
	Orlen Group	2	1	Moderate	Moderate	50%	50%
	Neste	2	1	Moderate	Moderate	50%	50%
	Ørsted	6	6	High	None	100%	0%
2022	Shell	25	4	Moderate	High	16%	84%
	BP	16	5	Moderate	High	31%	69%
	OMV	4.5	0.3	Low	High	6%	94%
	Orlen Group	9	0.2	Low	High	2%	98%
	Neste	2	2	High	None	100%	0%
	Ørsted	5	5	High	None	100%	0%
2023	Shell	23	7	Moderate	High	30%	70%
	BP	16	1	Low	High	6%	94%
	OMV	4	0	Low	High	0%	100%
	Orlen Group	8	2	Moderate	Moderate	25%	75%
	Neste	3	2	High	Low	67%	33%
	Ørsted	5	5	High	None	100%	0%
2024	Shell	22	1.8	Low	High	8%	92%
	BP	16	1.6	Low	High	10%	90%
	OMV	4.4	0.8	Medium	High	18%	82%
	Orlen Group	8.5	1.6	Medium	High	19%	81%
	Neste	2.2	1.7	High	Low	77%	23%
	Ørsted	6.7	6.7	High	None	100%	0%

Source: Author's Contribution based on the collected data

The aggregated analysis of green investment proportions relative to total CAPEX provides a critical empirical basis for assessing the extent to which corporate narratives align with actual capital allocation. To facilitate the comparability of the figures, capital allocations are grouped into three main categories: green, low-carbon and brown-field investments.

6.1.3 Factors explain variation in the alignment between transition narratives and capital-allocation patterns

EU-level regulatory instruments constitute an important external determinant of the alignment between corporate transition narratives and capital-allocation decisions. Instruments such as the EU Emissions Trading System (EU ETS), carbon pricing, and carbon taxation increase the economic cost of carbon-intensive operations and thereby create incentives for firms to reallocate capital towards lower-carbon activities. At the same time, the Corporate Sustainability Reporting Directive (CSRD) and the EU Taxonomy seek to standardize sustainability-related disclosures, reduce information asymmetries, and increase the transparency and comparability of corporate transition strategies and investment decisions.

Strong, supportive national policy frameworks—such as Denmark's Energy Agreement 2012–2020 and wind subsidy schemes and Finland's Distribution Obligation Act, created guaranteed domestic demand and stable regulatory conditions. Furthermore, pro-environmental state ownership (50% for Ørsted; 50% for Neste) acted as a major accelerator. It shielded these companies from short-term equity-market volatility and permitted a long-term capital allocation strategy. Conversely, weak national policy environments for instance Poland's coal-heavy PEP2040 correlated with lagging, interrupted corporate pathways.

Firm-Level Structural Factors, the internal constraints such as hydrocarbon structural dependence and vertical integration emerge as the most powerful firm-level constraints. Firms with massive upstream extraction portfolios and long-term carbon lock-in (Shell, BP, OMV, Orlen) face severe structural and profitability constraints. Upstream hydrocarbon operations continue to offer far higher and more predictable returns compared to capital-intensive renewable utility projects, making complete capital reallocation economically irrational within standard market logic. In contrast, leaner organizational structures with no upstream extraction liabilities (Ørsted's post-2017 lean structure and Neste's downstream-only structure) possessed the structural agility to redeploy capital completely into renewable segments.

Shell represents an IOC which is represented by dispersed ownership and global operations. Its transformation is shaped dominantly by market logic within its external systems, while internally its financial motivation led to further nurturing hydrocarbon-based value chain. The collected data represent that while sustainability intensified post-2017 period high capital allocation was directed towards brown-field investments. A relative peak was observed in 2023 with 30% green investments of the total capital expenditure, the company did not sustain the trend, it started to decline again in 2024. Furthermore, the company faces structural barriers to have leading position in decarbonization in the oil and gas segment from its segments point of view. Upstream remains crucial source of profitability, thus maintaining company's continued reliance on hydrocarbons (Shell, 2023).

6.2 Systematic Hypothesis Evaluation

The empirical results generated between 2017 and 2024 allow for a testing and refinement of the five hypotheses proposed in the research design. Below table aims to assess the hypothesis and their results based on the extensive empirical work on the relation between national policy and companies transition pace, physical structure of firms' assets, the relevance of the technological partnerships in renewable and low-carbon sectors, narratives relations to green capital investments and divestments trajectories.

Table 32. Overview of the Hypothesis Evaluation

Hypothesis Evaluation	H1a: stronger national climate-policy -» higher green CAPEX ratios, faster emissions reduction	H1b: Lower dependence on vertically integrated hydrocarbon operations -» stronger alignment green narratives & capital allocation	H1c: deeper technological partnerships in renewable/low-carbon sectors exhibit faster transition in portfolio structure	H2: Corporate sustainability narratives are systematically misaligned with actual decarbonisation.	H3: Fossil-asset divestments improve corporate transition indicators more than reduce real emission
Shell	Partially supported	Supported	Partially supported	Supported	Supported
BP	Partially supported	Supported	Partially supported	Supported	Supported
OMV	Rejected (deviant case)	Supported	Partially supported	Supported	Supported
Orlen Group	Partially supported	Supported	Rejected	Supported	Supported
Neste	Supported	Supported	Supported	Rejected	Supported
Ørsted	Supported	Supported	Supported	Rejected	Supported

Source: author's own work

The comparative analysis demonstrates a clear correlation between the pro-environmental national policy and corporate transition performance in most cases. Denmark's national carbon tax of USD 108/t and offered offshore wind premiums and Finland's national carbon tax of USD 66/t and Biofuels Distribution Obligation Act represent the strongest national policy commitments and directly correspond to Ørsted's and Neste's top-tier green CAPEX ratios and absolute emissions reductions. Conversely, Poland's carbon tax of USD 0.1/t, PEP2040 coal reliance and the UK's post-Brexit UK ETS trading at a discount, low carbon tax of USD 22/t match the lagging, interrupted pathways of Orlen, BP, and Shell.

However, the hypothesis must be refined to account for Austria and OMV as a deviant case. Austria possesses a genuinely supportive national policy environment—including the Renewable Energy Expansion Act (EAG), a USD 59/t carbon tax, and an early coal phase-out in 2020. Yet, OMV's capital allocation remained heavily brownfield-oriented, and its green CAPEX remained close to zero in several years (excepting the Borealis chemicals acquisition in 2020).

Table 33. National Carbon Tax relation to the Corporations' Green Capex Share

Case Study	National Carbon Tax (USD/t, 2025)	Average Green CAPEX share (2017 – 2024)	Hypothesis Results
Shell	USD 22	12% (volatile)	Rejected
BP	USD 22	17% (volatile)	Rejected
OMV	USD 59	16% (mostly 0-7%, exception Borealis acquisition in 2020)	Rejected (Deviant case)
Orlen Group	USD 0.1	15%	Supported
Neste	USD 66	57%	Supported
Ørsted	USD 108	95%	Supported

Source: author's own work based on the previous chapters

The empirical evidence confirms that the physical structure of a firm's legacy assets is a decisive determinant of its transition capacity. The structural 'lock-in' effect associated with upstream oil and gas extraction creates massive inertia. Ørsted and Neste exemplify the 'low dependence' model. Ørsted divested its entire upstream oil and gas business in 2017, eliminating the internal corporate conflict between hydrocarbon and renewable capital pools. This permitted a direct, uncompromised capital-allocation strategy focused entirely on offshore wind. Neste, having no legacy upstream extraction business resulted in high organizational flexibility, allowing its management board to systematically reallocate downstream CAPEX from conventional oil refining to renewable diesel and sustainable aviation fuel refineries.

Conversely, the vertically integrated majors - Shell, BP, OMV, Orlen Group - remained constrained by their asset bases. These firms are structurally dependent on high-margin upstream operations to generate the cash flows required to pay dividends and fund capital programs. Consequently, even when their strategic narratives committed to net-zero, they continued to invest billions in upstream exploration and brownfield maintenance, leading to severe narrative-action misalignment.

The empirical findings validate the role of collaborative networks and joint ventures in overcoming technological barriers and accelerating portfolio shifts:

(i) Neste utilized an extensive collaborative ecosystem to secure raw material supply with Walco Foods and Demeter to scale technical innovations like chemical plastic recycling companies Remondis, Ravago, and establish market demand with aviation and corporate partners via American Airlines, Lufthansa, IKEA

(ii) Ørsted leveraged industrial symbioses with Kalundborg Bioenergi and research collaborations to scale offshore wind turbine logistics globally

(iii) BP accelerated its wind and solar portfolios almost exclusively through partnerships, most notably its Lightsource BP solar joint venture and its offshore wind partnership with Equinor

(iv) OMV expanded its geothermal and green hydrogen segments via joint ventures with Wien Energie and Kommunalkredit

(v) Shell proves that partnership can also be utilized to prolong conventional operations rather than execute structural transactions; for instance, Shell and BP leveraged CCUS-related and hydrogen-oriented partnerships (such as the H2Accelerate coalition) to reduce the operational intensity of legacy refineries and enable continued upstream gas extraction, demonstrating that "low-carbon partnerships" can serve as an accommodating mechanism for continued fossil-fuel activities

For Shell, BP, OMV, and Orlen, the forward-looking strategic narratives - such as *“Powering Progress”*, *“Performing while Transforming”*, *“Energy for a Better Life”*, and *“Fuelling the Future Sustainably”* - did not correspond to a linear or material shift in capital allocation.
The structural misalignment is empirically exposed by the abrupt target revisions and strategic pullbacks of 2023 - 2024:

(i) BP formally watered down its 2030 oil and gas production cut target from the initial 40% reduction down to a much more modest level, boosting fossil-fuel investment while scaling back green funding by USD 1 billion under Murray Auchincloss. In 2019, capital expenditure allocated to offshore fields and oil extraction reached USD 15 billions, while investments in green and low-carbon initiatives remained limited, at around USD 1 billion (BP, 2019). Although corporate narratives - such as *"energy with purpose", "want to help the world to reach net-zero and improve people's live"* (BP, 2019; BP, 2022) indicate the conscious approach towards climate. The empirical evidence suggests that these discursive commitments are not consistently verified by corresponding investment patterns.

(ii) Shell revised its net carbon intensity reduction target from 20% to 15–20%, dropping its retail EV charging and renewable power targets, and reallocating capital back to high-margin upstream gas and LNG. Shell's *"Energy for better future"* demonstrates a dual approach by claiming a substantial presence in the green transformation path. However, *"delivering results"* refers to the active maintenance of the hydrocarbon business, gas fields to maintain profit to support green transformation (Shell, 2019). The green narrative focuses on the hydrogen in downstream business, and EV-charging in retail, and offshore wind and solar which also reflected in the investment actions in the 2019 (Shell, 2019). Though the dominance in the capital investments were realized in the brownfield projects which almost has reached USD 20 billion.

(iii) OMV similarly to oil majors maintained conventional brownfield investments. *"Energy for better life",* OMV represents a hybrid model with partial government ownership of approximately 32% shaping its strategic orientation (OMV, 2025). Empirically, OMV exhibits late and limited engagement in green investments. Its hydrogen project and extension of petrochemical business by completing acquisition of Borealis in 2020 proves strategic diversification towards low-carbon portfolio (OMV, 2020). However, the overall capital expenditure allocation remains brownfield-oriented between 2017 and 2024. The OMV's case demonstrates a constrained transition pathway where the state involvement in the ownership structure does not guarantee accelerated green transition. Instead, OMV's transformation is shaped by structural path dependency, its vertically integrated business model and continued reliance on upstream operations and carbon-intensive assets. These factors collectively limit the effectiveness of diversification strategies in achieving green transformation. In contrast to the previously assessed oil majors, OMV is more modest with the narratives and strategic announcements about green transformation. Corporate strategic communications continue to emphasize petrochemicals and natural gas as core strategic pillars while framing diversification and portfolio adaptation as part of green transformation processes.

(iv) Orlen Group similarly maintained conventional brownfield investments as most of their CAPEX, prioritizing short-term economic returns and energy security Orlen Group has articulated an ambition to evolve into multi-utility provider while positioning itself as a leading actor in green transformation. Orlen Group stands among the very few companies which aim is to expand hydrogen fuel stations. Furthermore, the innovation constitutes a central pillar of the company's transition path by nurturing opportunities in wind farms and EV fast-charging networks. Despite of these sustainable initiatives, based on the allocation CAPEX figures, a continued prioritization of conventional hydrocarbons is observed. A substantial share of investment, approximately 92% in 2022. Substantial investment amounts USD 1.4 billion were allocated to the Metathesis units in Plock and petrochemical development. As Orlen Group's strategic narratives emphasizes diversification and low-carbon innovation, its capital allocation dominantly applied at carbon intensive assets and petrochemical activities (Orlen Group, 2022; Orlen Group, 2023), reflecting a path-dependent gradual green transformation.

(v) "*Faster, bolder and together*" vision reflects that between 2018 and 2021, Neste exhibited moderate level of green investments with approximately 30 - 40% of total CAPEX directed toward low-carbon and renewable investments. Following 2021, the share of green CAPEX reached higher proportions ranging from 67% to 100%. The relatively elevated level of green investments as early as 2018 indicates that Neste has already begun to move beyond a purely fossil-based investment logic earlier than most of its European oil and gas peers (Neste, 2018; Neste, 2019; Neste, 2020; Neste, 2021). The green and low-carbon investments are predominantly concentrated in renewable fuels and circular solutions with a strategic emphasis on the expansion of renewable diesel production, thereby reinforcing the company's position as a frontrunner in green transformation. Neste demonstrates effective alignment between internal capabilities of technological innovation in renewable fuels and external factors such as supportive policy environment and expectations of the Finnish society to pursue more sustainable operation. Unlike IOCs, Neste's complete portfolio restructuring and taking the first-mover advantage at renewable diesel, reflects a substitutive transformation where low-carbon and renewable activities increasingly replace fossil-fuel based operations.

(vi) Ørsted's approach to green transition is characterized the most with the strategic announcement of *"Let's create a world that runs entirely on green energy".* Among all the cases, Ørsted represents the most advanced case in green transformation, shifting its former NOC structure into a completely renewable entity. As highlighted by Abraham-Dukuma (2021), Ørsted is a showcase for the structural transformation, rather than an incremental adaptation. Empirical data constitute a consistently high share of green investments, near 100% in most of the years with no significant brownfield investment after the transition phase. Despite of being a small company, Ørsted's green CAPEX has exceeded in absolute value of the IOC's, reaching in some years USD 10 billion to build onshore and offshore wind farms (Ørsted, 2019). Ørsted has a complete alignment of internal factors such as technological innovation, financing and company's structure without upstream operations with external factors of both international, national and subnational regulatory frameworks, substantial state support and market positioning of taking first-mover advantage to become global leader in offshore wind energy production. Ørsted has divested its entire upstream oil and gas business to INEOS in 2017 which was key element of its transformation from a fossil fuel-based company to a green energy company (Ørsted, 2017).

Despite of the fact that the green narrative and corporate action misalignment hypothesis must be rejected for Ørsted and Neste, these two firms represent the success stories in green transformation. One of the key factors the first-mover advantage in emerging green solutions. Ørsted has positioned itself to become a global leader in offshore wind solutions, while Neste has pioneered the production of renewable diesel. Another dimension which contributed to successful transition of these companies are the collaboration with different industry actors, governments, municipalities and entities. The cooperation between various actors is resulting in successful decarbonization process. Especially in case of strategic partnership with renewable energy providers where oil and gas companies are capable to integrate the wind, solar and hydroelectric power solutions into their operations (Latilo et al., 2024, Zhang et al., 2021, Meyer et al., 2024). Finally, the pro-environmental presence of the national policy, and simple business structure without upstream operations supported the pace of the companies' green transformation.

6.3 Answering the Research Questions

This section returns explicitly to the central research question and its two supporting sub-questions considering the empirical findings presented above, before reflecting on how and why the research process produced these findings. The central research question asked to what extent European oil and gas companies' post-Paris climate-transition narratives correspond to measurable changes in capital allocation, divestment behaviour, and emissions trajectories between 2017 and 2024. The empirical evidence indicates that this correspondence is highly uneven and structurally conditioned rather than uniform across the sector. Neste and Ørsted exhibit a tight coupling between narrative and material action in the case study pool, evidenced by green CAPEX shares reaching in average 57% and 95% respectively and by structural divestment of legacy hydrocarbon assets. The remaining four cases - Shell, BP, OMV, and Orlen Group - display a continuous gap between ambitious net-zero rhetoric and continued brownfield-dominated capital allocation. The central research question is therefore answered as follows: European oil and gas companies' green-transition narratives correspond to measurable action only where firms are structurally free from upstream hydrocarbon dependence and operate within a supportive national policy environment; for the remaining, vertically integrated majority of the sector, narrative and material transformation remain substantially decoupled.

Sub-question 1 asked how companies' green narratives relate to their divestment and investment actions. The empirical evidence supports a characterisation of this relationship as a strategic, legitimising loose coupling for four of the six cases. Rather than functioning as a direct steering mechanism for capital allocation, narratives operate as symbolic instruments for securing continued social and regulatory legitimacy, particularly visible in the reframing of divestments after 2020 from portfolio-optimisation language toward decarbonisation language, without a corresponding change in the underlying divestment logic. For Neste and Ørsted, by contrast, the relationship is one of substantive coupling: narrative commitments were accompanied by sustained capital reallocation and measurable portfolio restructuring. Sub-question 1 is therefore answered by identifying two distinct narrative-action regimes operating within the same regulatory space — a loose, legitimising coupling for the vertically integrated majority, and a tight, substantive coupling for the two structurally lean frontrunners.

Sub-question 2 asked which firm-level, national-level, and EU-level factors explain variation in this alignment. Three factors emerge as the most explanatory across the comparative analysis. First, at the national level, carbon-pricing stringency and the presence of pro-environmental state ownership correspond closely with the observed transition pace, as evidenced by the strong positive association between national carbon-tax rates and average green CAPEX share. Denmark's and Finland's supportive frameworks corresponding to Ørsted's and Neste's leading positions. Second, at the firm level, the structural characteristic of vertical integration and upstream hydrocarbon dependence constitutes the most powerful constraint, since firms with substantial upstream portfolios face profitability incentives that consistently outweigh normative transition commitments. Third, the presence and depth of technological partnerships with renewable-sector actors and start-ups differentiates firms that successfully scaled low-carbon technologies in case of Neste and Ørsted from firms that primarily used partnerships to extend the operational life of conventional assets such as Shell's and BP's CCUS- and hydrogen-oriented coalitions. Sub-question 2 is therefore answered by identifying national carbon-policy stringency, firm-level structural dependence on upstream hydrocarbons, and the strategic orientation of technological partnerships as the three principal explanatory factors for the observed variation.

The interpretive significance of these findings is inseparable from the methodological choices underpinning the research design of this dissertation. The decision to combine quantitative divestment and investment tracing with qualitative narrative analysis within a comparative, process-tracing case-study design (see Section 3.1) was made specifically because a purely quantitative approach to capital-expenditure data would have been unable to capture the symbolic function of corporate discourse. A purely quantitative analysis of capital expenditure would have been insufficient to capture the strategic and symbolic functions of corporate sustainability discourse, including the ways in which firms construct, communicate and legitimise their transition ambitions. A predominantly narrative or discourse-analytical approach would have been unable to establish whether these publicly articulated commitments were translated into observable changes in capital allocation and asset portfolios. If the analysis relied exclusively on corporate narratives, the increasing convergence of the six companies around the language of net-zero, decarbonisation and energy transition could have suggested a substantially greater degree of strategic convergence than is evident from their underlying investment behaviour. The integration of financial and portfolio-level evidence instead reveals considerable variation in the extent and direction of actual capital reallocation. The research design therefore enables the dissertation to distinguish between discursive commitment and material implementation, demonstrating that the intensification of corporate transition narratives does not necessarily correspond to a proportional transformation of corporate investment and divestment behaviour. This methodological integration constitutes a central basis for the empirical validity of the dissertation's assessment of the relationship between corporate sustainability narratives and actual green transformation.

Similarly, the finding regarding the divestment-decoupling paradox (H3) emerged directly from the decision to trace the corporate identity of asset buyers rather than treating divestment volumes as a self-evidently positive transition indicator. This research approach - extending the analysis beyond the disposing company's own reporting boundary to the acquiring entity - was informed by the theoretical expectation, derived from compliance theory, that firms operating under binding disclosure obligations (CSRD, EU Taxonomy) have a structural incentive to improve their reported metrics through boundary changes rather than through actual operational abatement.

The primary interviews with corporate representatives, EU institutional actors, and independent experts (see Section 3.2), was similarly instrumental in generating the three-pathway typology - frontrunners, lagging medium-sized incumbents, and IOC majors - that structures this chapter. The six cases were deliberately selected to represent structurally distinct positions within the sector - dispersed-ownership IOCs, partially state-owned medium-sized incumbents, and lean frontrunners without upstream exposure - the resulting variation in outcomes could be attributed to the structural and institutional factors identified in Sub-question 2.

6.4 Theoretical Contribution of the Dissertation

This dissertation's primary theoretical contribution lies in the construction and empirical validation of a three-tier, hierarchically structured analytical framework — spanning macro-institutional, meso-behavioural, and micro-discursive levels — that is capable of explaining not merely whether European oil and gas companies transition, but why the pace and credibility of that transition diverges so substantially across structurally similar firms operating within the same supranational regulatory space. Existing scholarship on corporate green transition has applied Multi-Level Governance, Goal-Framing, Compliance theories or Narrative approach largely in isolation, examining either the institutional drivers of climate-policy diffusion, the behavioural logic of corporate compliance, or the discursive construction of corporate sustainability claims, but rarely integrating all three within a single, empirically tested causal architecture (Hooghe & Marks, 2002; Etienne, 2011; Jameson, 1982). By explicitly nesting these three theoretical traditions - treating Multilevel Governance as the macro-institutional filter, the fused Goal-Framing and Compliance logic as the meso-level decision rule, and narrative theory as the discursive bridge connecting institutional pressure to observable capital allocation - this dissertation offers a reusable analytical template for future research seeking to explain heterogeneous corporate responses to a common regulatory mandate.

A second theoretical contribution is the empirical identification and conceptualisation of the 'divestment-decoupling paradox': the finding that fossil-asset divestment, while capable of improving a company's own reported emissions indicators under CSRD-based accounting, does not necessarily reduce global greenhouse-gas emissions where divested assets are transferred to buyers, within the new entities' operations either inside or outside the EU regulatory perimeter. This finding extends compliance theory beyond its conventional focus on the compliance decision of a single regulated entity, demonstrating that compliance-driven portfolio restructuring can generate a structural externality - an emissions-relocation effect - that is invisible within the entity-level reporting boundaries upon which current EU sustainability-disclosure architecture is built. This contributes a novel, system-level critique to the compliance-theory literature, which has generally treated regulatory compliance as coterminous with the underlying policy objective it is designed to serve.

Third, by extending Jameson's (1982) narrative theory - originally developed for literary and cultural analysis - into the domain of corporate sustainability disclosure, and by systematically linking narrative content to quantitative capital-allocation outcomes across a six-case, eight-year dataset, this dissertation offers a methodological contribution to the emerging literature on corporate discursive legitimacy (Lyon & Montgomery, 2015). Where prior applications of narrative theory to corporate sustainability discourse have remained largely qualitative and descriptive, this dissertation demonstrates how narrative analysis can be operationalised as one component of a mixed-methods research design capable of producing falsifiable, hypothesis-testable claims about the discourse-action relationship.

Table 34. Synthesis of Theoretical Frameworks Against Empirical Results

Theoretical level	Theoretical Framework	Core Prediction	Empirical Finding (2017 – 2024)	Theoretical Contribution
Macro - Institutional	Multilevel Governance (MLG)	Supranational EU directives cascade down through national to drive corporate operational alignment	Differentiated outcomes: confirmed in Denmark & Finnland, contradicted results in UK, Austria & Poland.	Advances classical limitation MLG, extends the explanatory reach to corporate balance sheets, asset structures (upstream hydrocarbon asset)
Meso - Behavioural	Fused Compliance & Goal Framing	Entities select between normative and gain frames based on the carbon taxes, regulatory compliance and reputational risks.	Asset structure, upstream portfolio overwrites compliance pressure, gain frame dominates when capital investments are decided	Reconciles behavioural theory with path dependency, compliance costs alter operational efficiency
Micro - Discursive	Narrative Theory	Sustainability narratives function as symbolic acts to maintain organizational legitimacy	Discursive shift to net-zero while green CAPEX remains marginal below 10% or 20%; Scope 3 emissions remain unaddressed	Operationalizes narrative theory into corporate capital allocation, establishing transition discourse as an instrument
Systematic	n/a	Portfolio restructuring and asset divestments facilitate corporate decarbonization	75% of divested assets from the case pool continue operating under non-EU ownership	Divestment Decoupling Paradox: portfolio transfers improve corporate reporting metrics without real-world emission abatement

Source: author's own work based on the research data

Supranational climate governance does not exert a direct or homogeneous influence on corporate transformation; rather, its effects are mediated by domestic policy instruments, ownership structures, and firm-specific organisational and asset configurations. The findings therefore conceptualise corporate decarbonisation as the outcome of a multilevel transmission and filtering process, in which supranational climate objectives are translated through national institutional arrangements before being interpreted and operationalised at the firm level. In this process, the stringency and design of domestic climate-policy instruments, the presence of state equity ownership, and the structural legacy of carbon-intensive assets constitute important transmission mechanisms that condition the extent to which supranational pressures are reflected in corporate strategies and capital-allocation decisions.

The theoretical contribution of the dissertation consequently lies in integrating MLG at the macro-institutional level, the combined Goal Framing and Compliance framework at the meso-organisational level, and the Narrative Approach at the micro-discursive level**.** Within this hierarchical architecture, MLG establishes the external regulatory and institutional conditions, Goal Framing and Compliance Theory explain how competing profitability, sustainability, and compliance considerations shape corporate decision-making and the Narrative Approach examines how these tensions are articulated, legitimised, and potentially translated into observable corporate action. As a result, the framework provides an integrated explanation of how external climate-policy pressures are filtered through national institutions and organisational structures and ultimately manifested in corporate narratives, investment and divestment decisions, portfolio transformation, and environmental outcomes.

6.5 Limitations of the Research: A Practical Reflection

Beyond the data-related and methodological limitations discussed in Chapter 3, several practical constraints emerged during the fieldwork phase of this research that merit explicit reflection, since they bear directly on how the empirical findings presented in this chapter should be interpreted. A practical limitation relates to the time-bound nature of the fieldwork itself. Interviews were conducted within a defined window during 2025-2026, a period marked by considerable geopolitical and regulatory flux, including the European Commission's Omnibus simplification package and continuing uncertainty around EU climate-policy ambition. Several interviewees explicitly noted that their institution's position was still evolving at the time of the interview, meaning that some qualitative accounts capture a snapshot of a moving policy and strategic environment rather than a settled corporate position; had the interviews been conducted a year earlier or later, certain characterisations - particularly regarding EU-level regulatory confidence - might plausibly have differed.

The scope of the research, the six cases, twelve primary interviews, and an eight-year observation window, limited the granularity with which any single company's internal decision-making processes could be reconstructed. A more resource-intensive research design, involving a larger number of interviews per company, on-site access to internal strategy documents, or a longer observation period extending beyond 2024, would likely have permitted a more fine-grained reconstruction of the internal deliberations behind specific capital-allocation decision. Notwithstanding these practical constraints, the triangulation of interview evidence with audited financial data and documentary analysis provides a reasonably robust basis for the comparative conclusions drawn above, even where the depth of insight into any single company's internal reasoning remains uneven across the case-study pool.

7. CONCLUSION

The European Union's 2030 and 2050 climate objectives establish an ambitious decarbonisation trajectory for European economies and for carbon-intensive sectors such as oil and gas. The achievement of a 55% reduction in greenhouse gas (GHG) emissions by 2030 and climate neutrality by 2050 requires not only changes in corporate narratives and long-term strategic commitments, but also a substantial reorientation of corporate investment, asset portfolios and business models. Against this background, this dissertation examined the extent to which the European climate-policy framework has translated into observable changes in the strategies, investment patterns and divestment decisions of European-headquartered oil and gas companies between 2017 and 2024. The central analytical concern was the extent to which publicly communicated transition ambitions correspond with actual corporate capital allocation, portfolio restructuring and emission trajectories. The comparative findings demonstrate that the green transformation of the selected companies has been uneven, heterogeneous and structurally conditioned. Although all six companies incorporated decarbonisation and sustainability objectives into their corporate strategies following the Paris Agreement, the extent to which these commitments translated into actual green investment and portfolio transformation differed substantially across the cases. The analysis identifies a persistent divergence between the increasing prominence of corporate sustainability narratives and the comparatively limited reallocation of capital towards green and low-carbon activities.

The dissertation contributes to the literature on corporate green transformation by developing an integrated analytical framework that connects multilevel governance, corporate normative behaviour, compliance logic and narrative analysis with observable investment and divestment decisions. Existing research has provided important insights into the influence of climate regulation, stakeholder pressure, corporate sustainability communication and strategic responses to the energy transition (Christophers, 2024; Jameson, 1982; Goldthau & Sovacool, 2012). However, these dimensions have frequently been examined separately. This dissertation addresses this fragmentation by analysing the relationship between what companies communicate, the institutional pressures under which they operate, and how these pressures are reflected in actual capital allocation and portfolio decisions.

The principal analytical contribution therefore lies in shifting the assessment of corporate transition from a predominantly discourse-oriented perspective towards an action-oriented assessment of strategic and financial behaviour. Rather than treating the existence of climate commitments as an indicator of transition progress, the research evaluates the extent to which these commitments are reflected in investment allocation, divestment activity and changes in the composition of corporate portfolios. In this respect, the dissertation addresses a persistent gap in the literature concerning the relationship between corporate green narratives and corporate action. The empirical framework developed in the research enables this relationship to be assessed comparatively across firms characterised by different ownership structures, portfolio compositions, organisational capabilities and national institutional environments (Bartalos & Sárvári, 2025).

A further methodological contribution concerns the categorisation of corporate investments into green, low-carbon and brownfield investments. This distinction provides a more differentiated measure of corporate transition than aggregate capital expenditure figures. The categorisation is particularly important because companies frequently present investments in activities with different degrees of contribution to decarbonisation under broader transition-related categories. By distinguishing investments according to their technological and environmental characteristics, the analysis provides a more precise basis for evaluating whether corporate capital allocation is consistent with stated transition objectives. The application of this framework also highlights the methodological difficulties associated with comparing companies in the absence of fully standardised reporting practices and definitions.

The empirical analysis demonstrates that there is no uniform trajectory of green transformation among European oil and gas companies. Instead, the transition pathways of the six cases are shaped by the interaction of firm-level characteristics, ownership structures, national institutional environments, technological capabilities, portfolio composition, market conditions and shareholder expectations. The distinction between privately and state-influenced energy companies, provides a useful analytical starting point. However, the findings demonstrate that ownership alone cannot explain differences in transition performance. The evidence instead points towards a more complex configuration of factors. State ownership can facilitate long-term strategic investment when government objectives are strongly aligned with climate policy, as illustrated by the cases of Ørsted and Neste. Conversely, substantial state ownership may also reinforce the strategic importance of maintaining conventional energy activities when national energy security, affordability or industrial competitiveness remain dominant policy objectives, as illustrated particularly by the cases of OMV and Orlen Group. The comparative findings identify three broad patterns.

First, Shell and BP, as large privately owned international oil companies, demonstrate a high degree of sustainability communication and have established ambitious transition narratives. Nevertheless, the analysis indicates that their investment patterns remained only partially aligned with these narratives during 2017–2024. Their transition pathways were constrained by the scale of their existing hydrocarbon portfolios, shareholder expectations concerning financial returns, commodity-market conditions and the strategic importance of maintaining competitiveness in global energy markets. Their cases therefore illustrate the tension between corporate climate commitments and the financial and asset-based structural constraints associated with transforming large, globally integrated hydrocarbon businesses.

Second, OMV and Orlen Group demonstrate comparatively slower and more incremental transition pathways. Their cases highlight the importance of national institutional and energy-system conditions. Both companies remain closely connected to their respective national energy systems, while conventional hydrocarbon activities continue to perform an important role in their business models. In case of Orlen Group, the high structural dependence of the Polish energy system on fossil fuels represents a particularly important contextual constraint. While at OMV, the continued relevance of upstream activities and the company's integrated hydrocarbon portfolio similarly limits the speed at which capital can be redirected towards alternative activities. These findings suggest that corporate transition cannot be evaluated independently from the national energy systems in which companies are embedded.

Third, Ørsted and Neste represent the most advanced transition pathways within the selected sample. Their cases exhibit the strongest alignment between corporate narratives and actual capital allocation. This comparatively high level of alignment is associated with several mutually reinforcing characteristics: substantial state involvement, strong technological capabilities, strategic partnerships, early positioning in emerging low-carbon markets and comparatively limited dependence on conventional upstream hydrocarbon activities. Ørsted's transformation towards renewable energy and Neste's development of renewable fuels demonstrate the importance of establishing a viable technological and commercial pathway through which corporate capabilities can be redirected towards lower-carbon activities.

These findings indicate that the pace of corporate transformation is influenced not simply by the ambition of stated climate targets, but by the compatibility between the existing corporate business model and the technological, financial and institutional conditions required for transition.

The comparative analysis further demonstrates that corporate green transformation should be understood as a dynamic interaction between internal organisational and financial constraints and external institutional, political and market pressures. At the internal level, capital allocation priorities, profitability expectations, portfolio structure, organisational capabilities and risk appetite substantially influence the speed and direction of transition. Companies with large and deeply embedded upstream and downstream hydrocarbon operations face greater transformation costs and organisational complexity than companies with more specialised or comparatively lean portfolios. The existing asset structure whereby the profitability, scale and strategic importance of established hydrocarbon operations constrain the speed of capital reallocation. Profitability is particularly important aspect, because renewable and low-carbon activities may require substantial upfront investment and may involve higher technological, regulatory and market uncertainty than established hydrocarbon businesses. Consequently, even where management recognises the strategic necessity of decarbonisation, capital allocation may remain oriented towards conventional activities that generate comparatively predictable financial returns. This helps explain why the existence of ambitious transition strategies does not necessarily result in proportional increases in green CAPEX.

At the external level, EU climate regulation, national policy frameworks, carbon-pricing and tax mechanisms, geopolitical conditions, market dynamics and stakeholder expectations shape the strategic environment in which companies operate. Importantly, the findings demonstrate that the effect of European-level policy is mediated by national institutional conditions. The common European climate-policy framework does not generate identical corporate responses because its effects interact with differences in national energy systems, fiscal incentives, ownership structures, political priorities and resource endowments. The cases therefore support a multilevel understanding of corporate transition which should not be conceptualised as a linear process where increasingly ambitious regulation automatically produces ambitious corporate action. Rather, corporate responses emerge from the interaction of regulatory requirements with commercial incentives, organisational capabilities and political-economic constraints.

The organisational structure and corporate scale influence the capacity of firms to respond to transition pressures. Comparatively leaner companies with greater organisational flexibility can redirect strategic resources more rapidly than highly complex, vertically integrated energy majors. However, the evidence does not support a simple assumption that smaller companies are inherently more sustainable. Rather, organisational flexibility becomes particularly consequential when combined with an appropriate technological trajectory, supportive institutional environment and lower structural dependence on hydrocarbon activities. Ørsted and Neste illustrate the importance of strategic positioning and first-mover capabilities. Their transition trajectories were not simply responses to external regulatory pressure; they reflected deliberate strategic choices to develop and scale technologies and markets that subsequently became central to their business models. The comparison also demonstrates that state ownership has an ambivalent effect. State involvement may provide access to capital, political support and longer investment horizons, thereby facilitating transformational investment. At the same time, state ownership can reinforce conventional energy strategies where governments prioritise energy security, affordability or national industrial competitiveness. Thus, the relationship between state ownership and corporate green transformation is conditional.

This research highlights an important distinction between corporate emissions accounting and global emissions reduction. When carbon-intensive assets are divested, the emissions associated with these assets may no longer be attributed to the selling company in subsequent corporate reporting. Consequently, divestment can improve a company's reported emissions profile without necessarily resulting in global reduction impact. As demonstrated by the analysis, a substantial proportion of the identified divestments were transferred to buyers outside the European Union. This creates a displacement effect: emissions may be removed from the reporting boundary of the European company while the underlying production and consumption activities continue under different ownership (Bartalos & Sárvári, 2025). This finding introduces an important qualification to the interpretation of divestment as a decarbonisation mechanism. At the corporate level, divestment can contribute to portfolio restructuring, reduce exposure to carbon-intensive assets and release capital for alternative investments. At the global level, however, the climate benefit depends on whether the divested assets are subsequently retired, technologically transformed or continue to operate under new ownership. Where production continues, the environmental impact is displaced rather than eliminated. This creates a potential tension between corporate-level decarbonisation and system-level decarbonisation.

By integrating corporate narratives, investment allocation and divestment behaviour, this dissertation provides empirical evidence that the green transformation of European oil and gas companies is partial, heterogeneous and strongly conditioned by the interaction of institutional and firm-specific factors. The evidence demonstrates that the intensification of sustainability narratives since the Paris Agreement has not been matched by an equivalent transformation of corporate capital allocation across most of the selected cases. The most advanced transition pathways occur where several conditions converge: a supportive institutional environment, favourable national climate-policy frameworks, technological capabilities, strategic positioning in emerging low-carbon markets, comparatively limited dependence on upstream hydrocarbon operations and ownership structures capable of supporting longer-term investment horizons. Conversely, transition is slower where companies remain structurally dependent on hydrocarbon activities, face strong profitability and shareholder constraints, operate within fossil-fuel-dependent national energy systems, or face geopolitical and market conditions that reinforce the strategic importance of conventional energy.

The research provides support for the central proposition that corporate green transformation cannot be explained by regulatory pressure or corporate commitment alone. The effectiveness of climate policy depends on how external pressures interact with the internal characteristics of firms. The same European climate-policy framework can therefore generate substantially different corporate outcomes because companies nurture different capabilities, portfolios, ownership structures and strategic incentives. The dissertation's principal empirical contribution is thus the identification of the mechanisms through which these factors shape the relationship between corporate transition narratives and observable corporate action. By systematically comparing investment, divestment, Scope 3 data and narrative patterns across six European-headquartered energy companies, the research demonstrates that the credibility of corporate transition strategies is most meaningfully assessed through the extent to which stated commitments are reflected in actual changes in capital allocation and asset portfolios.

To conclude, the results indicate that the European oil and gas sector has entered a process of strategic transformation, but it remains incomplete and uneven. The existence of ambitious European climate objectives has generated significant changes in corporate discourse, governance structures and strategic positioning; however, these changes have not yet produced a sufficiently consistent reallocation of capital away from carbon-intensive activities across most of the cases examined. The continued prioritisation of brownfield investment is particularly significant. Although companies frequently justify such investment as necessary to maintain financial performance, energy security or to generate resources for future transition investments, its persistence raises questions regarding the pace and credibility of decarbonisation. Where the dominant share of corporate capital remains associated with existing carbon-intensive business models, the distance between transition narratives and transition implementation remains substantial.

At the same time, the cases of Ørsted and Neste demonstrate that more fundamental transformation is possible when regulatory conditions, ownership structures, technological capabilities, strategic vision and portfolio characteristics are mutually reinforcing. Their trajectories suggest that corporate transition becomes more feasible when low-carbon activities are not treated merely as complementary additions to an existing hydrocarbon portfolio but become central components of the firm's long-term business model. The findings therefore lead to a broader conclusion: the central challenge of the European energy transition is not the articulation of climate ambition, but the conversion into sustained and measurable changes in corporate capital allocation and asset structures. The gap between what companies communicate and what they invest in remains a critical indicator of the credibility of corporate decarbonisation strategies. Moreover, divestment alone cannot be interpreted as equivalent to global emissions reduction where carbon-intensive assets continue operating under new ownership.

The evidence from the six cases ultimately suggests that achieving the European 2030 and 2050 climate objectives will require a transition from narrative commitment towards structural transformation. Such transformation depends not only on stronger regulatory pressure, but on the alignment of corporate incentives, investment conditions, technological capabilities, ownership structures and national energy policies. The green transition of European oil and gas companies should therefore be understood not as a uniform response to a common regulatory environment, but as a contested and path-dependent process in which institutional pressures interact with deeply embedded corporate and national energy-system structures. The extent to which this interaction ultimately produces genuine decarbonisation, rather than primarily a reconfiguration of corporate portfolios and emissions accounting boundaries, remains a decisive question for the effectiveness of Europe's transition towards climate neutrality.

Future research could fruitfully build upon this comparative framework by extending the analysis beyond Europe to major global economies such as the United States and China. Examining how energy incumbents in these jurisdictions navigate different regulatory and fiscal environments - such as the transformative incentives introduced by the U.S. Inflation Reduction Act (IRA) or China's distinct state-backed decarbonisation models - would provide valuable comparative insights into how diverse global institutional architectures shape the alignment between corporate transition narratives and real-world capital allocation.

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9. APPENDICES

Table 35. Daily Oil Production (barrels of equivalent / day)

Daily Production of Oil and Gas in Average (Barrel of Equivalent / Day)								
Oil and Gas Companies	2017	2018	2019	2020	2021	2022	2023	2024
Shell	3 700 000	3 260 000	3 700 000	2 800 000	2 800 000	2 830 000	3 740 000	1 860 000
BP	3 600 000	2 200 000	3 800 000	3 200 000	2 600 00	2 200 000	2 300 000	2 358 000
OMV	348 000	427 000	500 000	463 000	486 000	392 000	364 000	340 000
Orlen Group	15 000	18 000	18 000	18 000	16 700	191 000	184 000	258 000
Neste	No Upstream Operations							
Ørsted								

Source: Author's own work based on Shell, BP, OMV, Orlen Group, Neste, Ørsted annual reports 2017 - 2024

Table 36. Number of Retail Fuel Stations

Service Station								
Number of Retail Fuel Stations	2017	2018	2019	2020	2021	2022	2023	2024
Shell	44 000	44 000	44 000	44 000	44 030	46 000	47 000	46 500
BP	18 300	18 700	19 000	20 300	20 500	20 650	21 100	21 200
OMV	2 047	2 100	2 100	1 700	1 800	1 800	1 666	1 702
Orlen Group	2 783	2 800	2 836	1 811	1 820	1 980	3 153	3 400
Neste	1 076	1 000	991	1000	947	942	940	929
Ørsted	No Upstream Operations							

Source: Author's own work based on Shell, BP, OMV, Orlen Group, Neste, Ørsted annual reports 2017 - 2024

Table 37. GHG emissions in the lenses of Scope 1

Scope 1 GHG absolute emission (million tonnes CO2 eq.)								
	2017	2018	2019	2020	2021	2022	2023	2024
Shell	73	71	70	63	60	51	50	50
BP	49	46	49	42	33	30	31	32.8
OMV	11	11	11	11	14	12	10	9.8
Orlen Group	n/a	n/a	28,5	20	25,6	28	25	23.3
Neste	2.3	2.2	2.4	2.1	2.1	2.1	2.3	2.2
Ørsted	4	3.6	1.8	1.8	2.1	2.5	1.6	0.7

Source: Author's own work based on Shell, BP, OMV, Orlen Group, Neste, Ørsted annual reports 2017 – 2024

Table 38. GHG emissions in the lenses of Scope 2

Scope 2 GHG absolute emission (million tonnes CO2 eq.)								
	2017	2018	2019	2020	2021	2022	2023	2024
Shell	12	11	10	8	8	7	7	50
BP	6	5	5	4	2	1	1	32.8
OMV	0.3	0.4	0.4	0.3	1.1	0.9	1.1	9.8
Orlen Group	n/a	n/a	2	2	1	1.8	1.9	1.7
Neste	0.8	0.8	0.9	0.7	0.5	0.4	0.5	0.4
Ørsted	0.2	0.1	0.1	0.1	0.1	0.04	0	0

Source: Author's own work based on Shell, BP, OMV, Orlen Group, Neste, Ørsted annual reports 2017 - 2024

Table 39. Net-zero Aim in 2023 and 2024

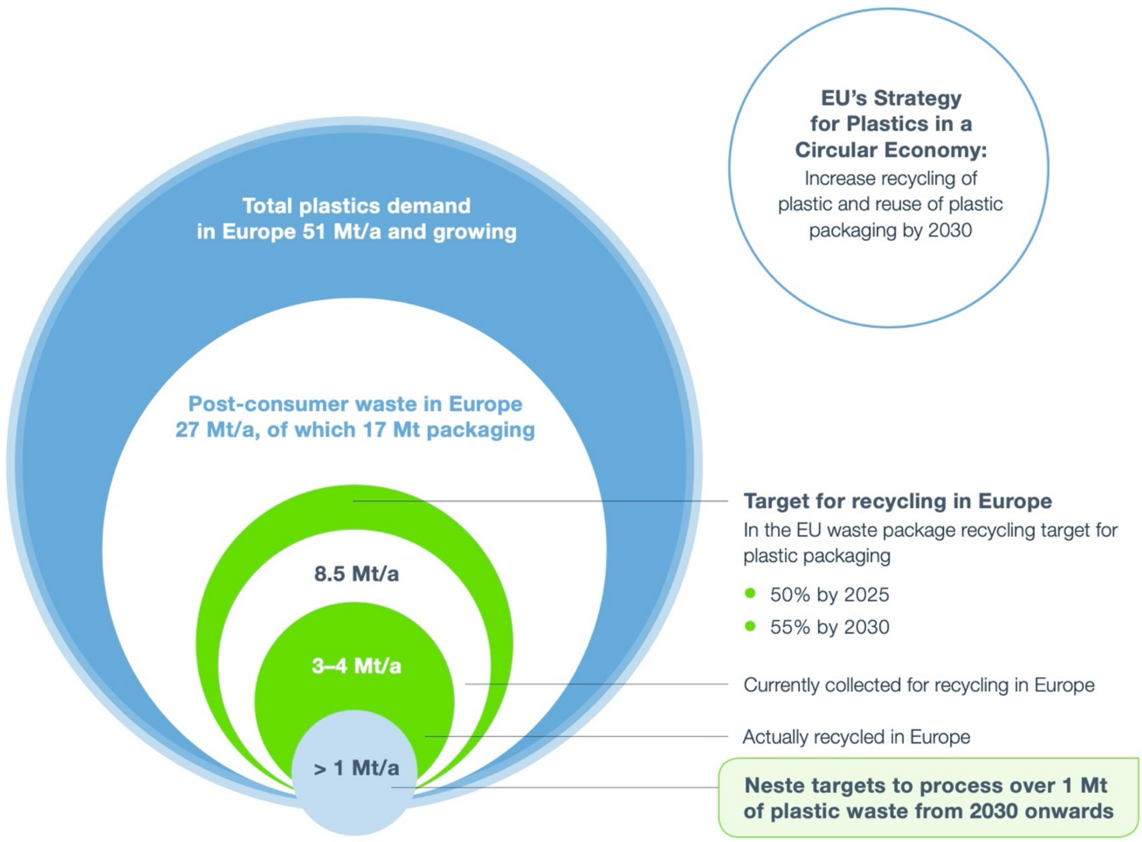
Aims	Measure/ coverage	2019	2020 performance	2021 performance	2022 performance	2023 performance	2025 targets	2030 aims	Aims for 2050 or sooner
Aim 1 Net zero operations★	Scope 1+2	Baseline 54.5[a] $MtCO_2e$	16%[b]	35%[b]	41%[b]	41%[b]	20%[b]	50%[b]	Net zero★
Aim 2 Net zero production★	Scope 3	Baseline 361 $MtCO_2$	9%[b]	16%[b]	15%[b]	13%[b]	10-15%[b]	20-30%[b]	Net zero★
Aim 3 Net zero sales★	Average lifecycle carbon intensity[c]	Baseline 79[d] gCO_2e/MJ	2%[d,e]	1%[d,e]	2%[d,e]	3%[d,e]	5%[e]	15-20%[e]	Net zero★
Aim 4 Reducing methane	Methane intensity★	0.14%[f]	0.12%[f]	0.07%[f]	0.05%[f]	0.05%[f]	0.20%[g]	50%[h] reduction	
Aim 5 More $ into transition	Transition growth investment★	$634m	$995m	$2.4bn	$4.9bn	$3.8bn	$6-8bn	$7-9bn	

Aims	Measure/ coverage	2019	2020 performance	2021 performance	2022 performance	2023 performance	2024 performance	2025 targets	2030 aims	Aims for 2050 or sooner
Net zero operations★	Scope 1+2	Baseline 54.5 $MtCO_2e$	16%[a]	35%[a]	41%[a]	41%[a]	38%[a]	20%[a]	45-50%[a]	Net zero★
Net zero production★	Scope 3	Baseline 361 $MtCO_2$	9%[a]	16%[a]	15%[a]	13%[a]	11%[a]		—	
Net zero sales★	Average lifecycle carbon intensity[b]	Baseline 84[c] gCO_2e/MJ	4%[c,d]	4%[c,d]	4%[c,d]	5%[c,d]	6%[c,d]	5%[d]	8-10%[d]	Net zero
Reducing methane	Methane intensity★	0.14%	0.12%	0.07%	0.05%	0.05%	0.07%[e]	0.20%	Now embedded in net zero operations	
More $ into transition	Transition growth investment★	$634m	$995m	$2.4bn	$4.9bn	$3.8bn	$3.7bn		—	

Source: BP's Sustainability Report 2024

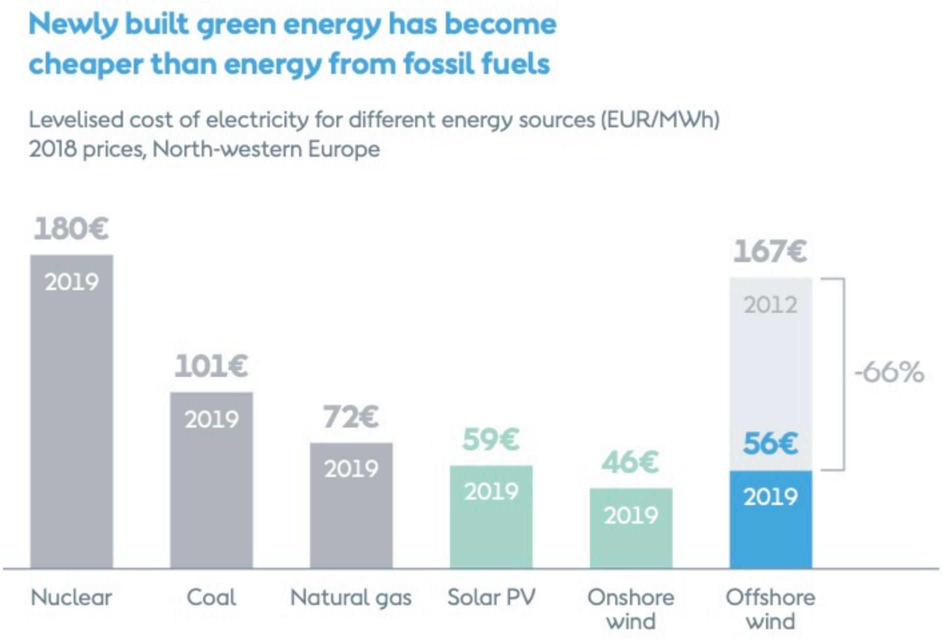
https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/sustainability/group-reports/bp-sustainability-report-2024.pdf

Figure 19. Chemical Recycling



Sources: Neste's Sustainability Report, 2019

Figure 20. Levelized cost of electricity for different energy sources (EUR/MWh) in 2019



Source: Ørsted Sustainability Report 2019

https://cdn.Ørsted.com/-/media/www/docs/corp/uk/sustainability/sustainability-report-2019-online-version.pdf?rev=195d38061c914089beb13e158befbd30&hash=4B55360E0B3932E10BCCE33BC77C121E

Figure 21. Future brownfield investment opportunities in oil and gas potentially by 2025 stated in the Annual Report 2017

Source: BP Annual Report 2017

https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/investors/bp-fourth-quarter-2017-results-presentation-slides-and-script.pdf

Table 40. Summary of the Green strategies and Targets 2030 and 2050 for Shell, BP, OMV, Orlen Group, Ørsted and Neste

Below summary represents the six cases' high-level strategic directions in line with green transformations linked to the target years of 2030 and 2050. Recently, in 2024 majority of the European oil and gas companies have updated their strategic directions triggered by financial results and geopolitical, energy security-related concerns. From the research point of view the quantitative tracking of emissions, investments and divestments, and strategic targets are crucial when these kinds of target revisions occurring. The 2024 actions are real indicator that there is a general pull-back in green targets among the European oil and gas companies. Even the frontrunner cases, Ørsted and Neste have constituted some scaled-back options and targets for the future.

Green Strategy	Green transition 2017 - 2024 by business segments	2030 Targets	Revised Targets in 2024	2050 Targets
Shell	Renewable Power: Wind/Solar investments	60% reduction in Scope 1&2 compared to 2016	50% reduction in Scope 1&2 compared to 2016	Net-zero emission energy business
	Renewable/Advanced fuels: e-fuels, biofuels			
	Hydrogen			
	Biogas, Natural gas production	45% reduction of Net carbon intensity of energy products	15-20% reduction of Net carbon intensity of sold products	
	EV charging stations			
	CCUS	Customers' oil and gas product emissions (Scope3) by 15-20% versus 2021	Customers' oil product emissions (Scope3) by 15-20% versus 2021	
BP	Renewable Power: Wind/Solar investments	50% reduction in Scope 1&2 versus 2019 baseline	45-50% reduction in Scope 1&2 versus 2019 baseline	Net-zero for Scope 1 & 2
	Sustainable fuels: biofuels	Oil & Gas Production cuts:by 40% by 2030	Boost oil & gas production to 2.3-2.5 million barrels/day	
	Hydrogen	Investments in green projects annually USD 7-8 billion	Raise investments in fossil fuels to USD 10 billion annually (20% increase) while only USD 1.5 - 2 billion remained for green projects	
	EV charging stations	Net Carbon Intensity of products 15-20%	Net Carbon Intensity of products 8-10%	
	CCUS			
OMV	Renewable Power: Wind/Solar investments	Reduce Scope 1&2 emission by 2030		Net-zero operations
	Sustainable fuels: biofuels			
	Biogas	Increase the share of low-and zero-carbon business in CAPEX to 40-50% by 2030	Increase the share of low-and zero-carbon business in CAPEX to 30% by 2030	
	Circular economy: chemical feedstock			
	Hydrogen			
	EV charging stations			
Orlen Group	Renewable Power: Wind/Solar investments	Scope 1&2 absolute value 25% reduction versus 2019 baseline	Not applicable	Net-zero operations
	Biofuel and Sustainable Aviation Fuel	Carbon intensity of energy segment by 40% decrease versus 2019 baseline		

Green Strategy	Green transition 2017 - 2024 by business segments	2030 Targets	Revised Targets in 2024	2050 Targets
	E-mobility, charging stations	Net Carbon intensity 15% reduction in total		
	Petrochemicals with circular feedstock	USD 33 billion to green investments		
		Coal phase-out by 2035		
Orsted	Renewable Power: off- and onshore wind	Renewable energy capacity 50 GW	Renewable energy capacity 35-38 GW	Net-zero carbon footprint in the whole value chain and product life-cycle
	Bioenergy: CHP moving away from fossil fuel	USD 40 billion investment plan in green projects	25% reduction in Investment plan, USD 32 billion	
	Green Hydrogen			
	Coal is eliminated			
Neste	My renewable Diesel, Sustainable Aviation fuel	Customer emission reduction by 20 million tonnes of CO2e annually	Delayed Rotterdam project to scaling-up renewable fuel production to 2027	Net-zero ambition by 2040 in full value-chain
	Circular mechanical and chemical feedstock	Scope 1&2 production carbon neutrality by 2035		
	Renewable polymers and chemicals	Sold product carbon intensity reduction by 50% by 2040		
	No net loss in biodiversity from ongoing activities	Carbon neutral value chain by 2040		

Source: Authors own work based on research data

Table 41. List of questions for semi-structured interviews

	Questions
1	Will your company be able to reach net-zero economy by 2050? How do you track the achievements for 2030 targets?
2	How do the size and geographic location of your company influence the pace of energy transition?
3	How do you manage and coordinate the green transition within the EU and at the operations outside of Europe?
4	How does your company articulate green transformation and what type of green narratives do they choose?
5	What are your company's motives behind the green transition?
6	How do you evaluate your company's achievements in green transition until now? What would you need to do differently compared to the recent practice to meet climate targets?
7	How do EU policies effect oil and gas companies' investment decisions? Domestic vs abroad?
8	What tools will you rely on to meet your climate ambitions?
9	How will be your company's green transition financed?
10	What does your company divest and invest in line with green transition? What are the motives behind divestment and green investments? What does your company need to invest and divest more for green transition?

Table 42. Data Structure based on Gioia Approach from first-order concept to second-order themes

Aggregate Dimension	Second-Order Theme	First-Order Concepts (informant-centric)
Contested Feasibility of the 2050 Net-Zero Transition	2050 Net-Zero Feasibility [NZERO]	• 2030/2050 targets viewed as contingent on market and geopolitical conditions • Inconsistent Scope 1/2/3 target-setting and ambition across majors and institutions
	Energy-Security Framing , Geopolitics[ENSEC]	• Energy-security concerns increasingly prioritized over climate ambition • Geopolitical tension (post-2022 energy crisis) cited as slowing or reshaping transition pace
Institutional and Geographic Conditioning of Transition Pace	Policy/Regulatory Support as Enabler [POLCY]	• CSRD/ETS/Taxonomy cited as driving coordinated corporate reporting and action • EU directives and Commission instruments (CSRD, RED III, CBAM) set phase-out and investment expectations
	EU Policy Effectiveness [EU]	• EU regulatory approach characterized as more harmonized but procedurally complex • Highly Ambitious Targets
	Geographic / Location Effect [LOC]	• Headquarters location and national institutional context shape transition pace • Company scale and geographic diversification affect strategic flexibility
Discursive-Material Decoupling Between Narrative and Action	Narrative-Action Gap [NARR]	• Communicated ambition perceived to exceed verifiable capital deployment • Narrative shift from ambition-led to security/competitiveness-led messaging over time
	Stakeholder Pressure as Extrinsic Motive [STAK]	• Regulatory, investor, and societal pressure identified as the primary transition driver • Profit-generation motive persists alongside stated sustainability commitments
Resource Mobilization and Portfolio Reconfiguration	Financing / Investment Gap [FIN]	• Public subsidies and EU funds (RRF, Innovation Fund, InvestEU) seen as necessary but insufficient at scale • Green/hybrid bonds, cash-flow reinvestment, and joint ventures cited as the emerging financing mix
	Technology & Tools Reliance [TECH]	• Hydrogen, CCS/CCUS, and renewables named as the core technology portfolio • Feedstock diversification and next-generation e-fuels raised as complementary tools
	Divestment / Portfolio Restructuring [DIV]	• Portfolio reallocation toward renewables/circular solutions, retaining core assets where possible • Divestment framed as capital-discipline tool rather than an end in itself

Source: Author's own work based on Gioia (2013)

Table 43. Theme Frequency by Questions (n= 12 respondents per question; count with theme coded present)

Question	NZERO	ENSEC	POLCY	EU	LOC	NARR	STAK	FIN	TECH	DIV	Total
Q1	10	3	4	0	1	0	0	1	0	0	**19**
Q2	0	1	1	1	0	0	1	0	0	9	**13**
Q3	0	1	9	3	0	0	1	0	1	1	**16**
Q4	0	1	1	0	0	10	1	0	0	0	**13**
Q5	0	2	10	0	0	0	10	0	0	0	**22**
Q6	9	0	0	0	1	4	2	0	0	0	**16**
Q7	0	1	9	2	3	0	1	0	0	0	**16**
Q8	0	0	2	0	0	0	0	12	0	0	**14**
Q9	0	0	0	0	12	0	0	0	1	0	**13**
Q10	0	1	4	0	1	1	1	1	9	0	**18**
Total (all questions)	**19**	**10**	**40**	**6**	**18**	**15**	**17**	**14**	**11**	**10**	**160**

Source: Author's own work based on Gioia (2013)

Table 44. Theme Frequency by Respondent (n = 12; count of question-units in which theme was coded present)

Respondent	NZERO	ENSEC	POLCY	EU	LOC	NARR	STAK	FIN	TECH	DIV	Total
BCG	2	0	3	2	2	1	1	1	1	0	13
Shell (Interviewee 1)	1	1	2	0	1	1	3	1	1	1	12
Shell (Interviewee 2)	1	0	2	2	2	0	2	1	1	1	12
BP	2	0	3	0	1	1	3	1	2	1	14
OMV-Petrom	2	0	4	0	1	1	1	2	1	1	13
Orlen Group	2	2	3	0	1	2	1	1	1	2	15
Neste	2	0	3	1	2	1	0	1	1	1	12
Fair Carbon	2	1	0	0	1	2	1	2	0	0	9
Climate Ambassador (Hungary)	1	0	6	1	2	0	1	1	0	1	13
Reuters Correspondent	1	2	4	0	2	3	1	1	1	1	16
DG ENER (European Commission)	2	3	6	0	2	1	0	1	1	0	16
Climate Experts (DG Clima)	1	1	4	0	1	2	3	1	1	1	15
Total (all respondents)	19	10	40	6	18	15	17	14	11	10	160

Source: Author's own work based on Gioia (2013)