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**The Net Zero trend: a critical analysis in the
goals and strategies published by businesses**

by

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Preface

We are currently in a major evolution for sustainable development. Nations, governments, and businesses are increasingly looking for new ways to improve their sustainable impact and minimize environmental damage. To support and showcase these efforts, more and more companies are focusing on the sustainability trend Net Zero, also known as climate neutrality. Through this thesis, I hope to provide new insights in the ways large, influential energy companies incorporate this specific trend in their goals and strategies.

In this thesis, I have combined my passion for sustainability and innovation with my knowledge on marketing and communication. The various ways that people communicate about sustainability provides a glimpse into their attitudes towards sustainable development. By merging these two worlds, this research becomes a true reflection of my interests and expertise.

I would like to thank my supervisor Christina Bidmon for her great guidance. Her subtle but clear approach led to continuous inspiration, idea generation and support with academic writing, while also leaving room for my own ideas and interpretations. I also wish to thank my second reader, Julian Kirchherr, for his valuable insights at the start of the research and his time for reading my thesis.

Lastly, I would like to thank my parents, Martijn, and Darryl, for their constant encouragement over the past years. Their enthusiasm has been a constant source of motivation for me.

Isabel van Vliet
Utrecht, June 14th 2024

Abstract

This thesis aims to better understand the use of the sustainability trend Net Zero within energy companies, worldwide. The rise in the use of sustainability trends has significantly accelerated following the Paris Agreement and new global regulations, highlighting the need to comprehend how these trends are applied in practice. Therefore, this explorative research takes six companies, with headquarters located in different continents, as a case study. The aim of this research is to connect this theoretical term Net Zero with practical implications in the companies' goals and strategies. The study employs desktop research, examining the sustainability reports of BP, Shell, TotalEnergies, Chevron, ExxonMobil and PetroChina, followed by validation through interviews with six independent experts within the sustainable business. The findings reveal that, while all six companies mention the term Net Zero, there is variability in the extent and manner of its usage. Whereas some have embedded the term deeply within their core strategies, others only provide brief mentions. Although Net Zero is a common term across the sustainability reports of all six energy companies, the goals and strategies related to this trend vary significantly – showcasing a difference in the frequency and integration into the strategic framework of these companies.

Keywords

Net Zero, (Linguistic) Sustainability Trend, Buzzword, Sustainability Report, Goals and strategies, Energy Sector.

List of abbreviations

AR	Annual Report
CCO	Communicate Constitution of Organizations
CCU	Carbon Capture and Utilization
CCUS	Carbon Capture, Utilization and Storage
CCS	Carbon Capture and Storage
CO ₂	Carbon Dioxide
CCR	Corporate Citizenship Report
CR	Climate Report
CSR	Corporate Social Responsibility
COP	Conference of the Parties
ESG	Environment, Social, Governance
LNG	Liquified Natural Gas
SR	Sustainability Report
R&D	Research and Development

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01

Introduction

1. Introduction

In a period dominated by escalating global concerns about climate change, the demand for sustainable business practices has increased. Planetary boundaries, that “define a safe operating space for humans”, are continuously overridden (Rockström et al., 2009, p.1). Governments, worldwide, have recognized the urge and need of a response towards the accelerating climate change (*Environment and Green Economy – EU Action | European Union*, n.d.). New policies and regulations have been set in place, demanding businesses to incorporate new sustainability practices in their goals, strategies, and ways of working (Baldassarre et al., 2020). To show and clarify their sustainability progress, businesses make use of various sustainability terms. Whenever these terms increase in popularity in a short period of time, they are referred to as a trend (“Trend”, 2023). The influence of these trends makes businesses feel a normative and competitive pressure, urging them to stay on top of the latest developments (Nassos, 2020). Consequently, leading to a surge in the integration of sustainability trends in goals and strategies (Howarth, 2023). One of these sustainability trends is Net Zero, currently used by multiple nations, governments, and businesses all over the world (Deutch, 2020; Polman and Winstom, 2022). Net Zero, also referred to as climate neutrality, refers to eliminating all CO₂ emissions by either eliminating or compensating emissions (ibid).

Net Zero took off after 2018, driven by pressure from the United Nations, the Paris Agreement and Conference of the Parties (COP) meetings (Battersby, 2024). These external influences pressured companies to integrate sustainability into their operations (ibid). As a result, companies are compelled to prioritize sustainability in their practices to align with international standards and regulations. This includes setting ambitious targets and developing strategies centered around sustainability principles. Companies are increasingly incorporating trends such as Biodiversity, Circular Economy, and goals like Net Zero, Carbon Neutrality and Net Positive in their sustainability frameworks to articulate their objectives and demonstrate their commitment to environmental responsibility (Polman & Winston, 2021). These terms serve as guiding principles for companies to navigate the complexities of sustainability and provide clarity on their sustainability initiatives (Zaman, 2023).

Net Zero “has become a beacon of hope”, guiding companies towards “climate safety” (Battersby, 2024, p.1). However, some scientists argue that a full understanding of Net Zero goals and strategies is missing, leading to confusion and “unwelcome side effects” (ibid). According to the paper from Battersby (2024), all companies have their own interpretations of the trend Net Zero. Additionally, when used too often, sustainability terms may develop into trends, or so-called “buzzwords”, (Nath, 2021; Apetrei, 2021). A buzzword, as defined by Cambridge Dictionary, is “a word or expression from a particular subject area that has become fashionable because it has been used a lot” (“Buzzword”, 2023) and, importantly, “has become very popular for a period of time” (*Buzzword Definition & Meaning | Britannica Dictionary*, 2023). As emphasized by the Conference of the Parties, COP26, “Net Zero is the buzzword of the year 2021” (Stabinsky & Climate Justice and Energy programme, 2021), making it an ideal subject for investigation. The term “buzzword” carries a negative connotation and is often associated with skepticism, cynicism, frustration and even greenwashing - a type of misleading communication, used to portray a more sustainable picture than is supported by actual practices (*Greenwashing*, 2024). While sustainability trends can help companies communicate their sustainable goals and strategies, there is a risk of using buzzwords without a solid commitment to consistent practices and strategies (Battersby, 2024). The major problem lies in the lack of standardization, where businesses are currently using their own definitions and measuring methods, making it more challenging to understand their intentions towards the sustainable

transition. For this reason, research is needed to better understand the link between sustainability practices and the communicated goals and strategies. Without a clear and consistent understanding of the standards; businesses, policymakers, scholars, and consumers are confronted “with the difficult task of navigating through this contradictory maze of concepts” (Apetrei et al., 2021, p.11).

However, could trends, or buzzwords, also yield positive outcomes for sustainability? Standardizing the definitions and metrics of sustainability terms, as advocated by the Euromonitor Sustainability Survey (Zuniga, 2023b), could mitigate the issue, and enhance transparency and accountability in sustainability practices. This means that ensuring the accurate use of specific sustainability trends is essential for their effectiveness. If all businesses were to universally embrace a consistent term with standardized definitions and practices, it could eliminate confusion, skepticism and ultimately combat greenwashing practices (Dumitrescu et al., 2022).

Even though the use of the term Net Zero has risen, there is still limited understanding of the ways this trend is incorporated in corporate goals, strategies, and communication (Battersby, 2024; Polman & Winston, 2021). Existing literature frequently falls short in addressing the link between theoretical terms and practical implementation in businesses. To fill this knowledge gap, it is important to explore how different businesses incorporate Net Zero into their goals and strategies. Consequently, the primary objective of this research is to critically analyze and clarify the connection between Net Zero and the practical implementation by businesses. The research questions are formulated as such:

RQ: How do companies use the sustainability trend Net Zero in their goals and strategies?

Sub-1: How long does it take for businesses to take up the trend Net Zero?

Sub-2: What are the concrete goals and strategies that business link to the trend Net Zero?

Six major energy companies have been selected for this research due to their significant environmental impact and their pivotal role in global sustainability efforts. By focusing on companies within the same sector, this study can provide a specific comparative analysis of sustainability practices within the energy industry.

The initial phase of the research involves an examination of the various sustainability terms used over the past years on the selected companies' websites and in their sustainability reports. This phase is crucial as it tracks the usage of sustainability terms over the past years, highlighting the early adopters of the term Net Zero. Then, using this database, a focused analysis has been conducted on the term Net Zero, assessing the start and frequency of use, as well as the varying definitions. Subsequently, this in-depth research focusses on the goals and strategies connected with the Net Zero trend. The findings were then critically evaluated and compared through expert interviews, providing new insights on the link between the theoretical terms and the practical implementation.

This research reveals an increasing trajectory in the use of the term Net Zero among the six analyzed energy companies. Initially, terms like Low Carbon and Climate Neutrality were common, but a notable shift towards Net Zero has been observed. This shift indicates heightened awareness and interest in the Net Zero trend within the corporate sector. Despite using the same term, the companies provide varied or no definitions, underscoring the need for standardized metrics and definitions to foster a more uniform approach. The evolution of goals and the diversity of strategies reflect the companies' geographical locations, specific

regulations, and internal priorities. All companies reference the Paris Agreement and include cautionary statements, yet their Net Zero ambitions vary: some aim for Net Zero emissions, others strive to become fully Net Zero companies, and a few even aspire to global Net Zero efforts. While adopting Net Zero terminology is positive, the variability in definitions and goals highlights the complexity of achieving a genuine progress. Only through in-depth analysis of these specific companies and their historical emissions, instances of greenwashing could be identified. These findings underscore the importance of standardized definitions and metrics for Net Zero, aiding in harmonizing corporate sustainability efforts and enhancing comparability. This standardization is vital for regulators, investors, and stakeholders who rely on clear and consistent information to assess corporate sustainability performance. Understanding the varying approaches to Net Zero across different companies and regions provides insights into the challenges and opportunities within the energy sector, highlighting the need for tailored strategies that consider regional regulations, market dynamics, and corporate priorities. Eventually, this research serves as an initial study to the different ways Net Zero could be incorporated in businesses' goals and strategies, offering results that future researchers can build upon to further explore the use of sustainability trends and practices.

02

Theory

2. Theory

2.1 The emergence of sustainability linguistic trends

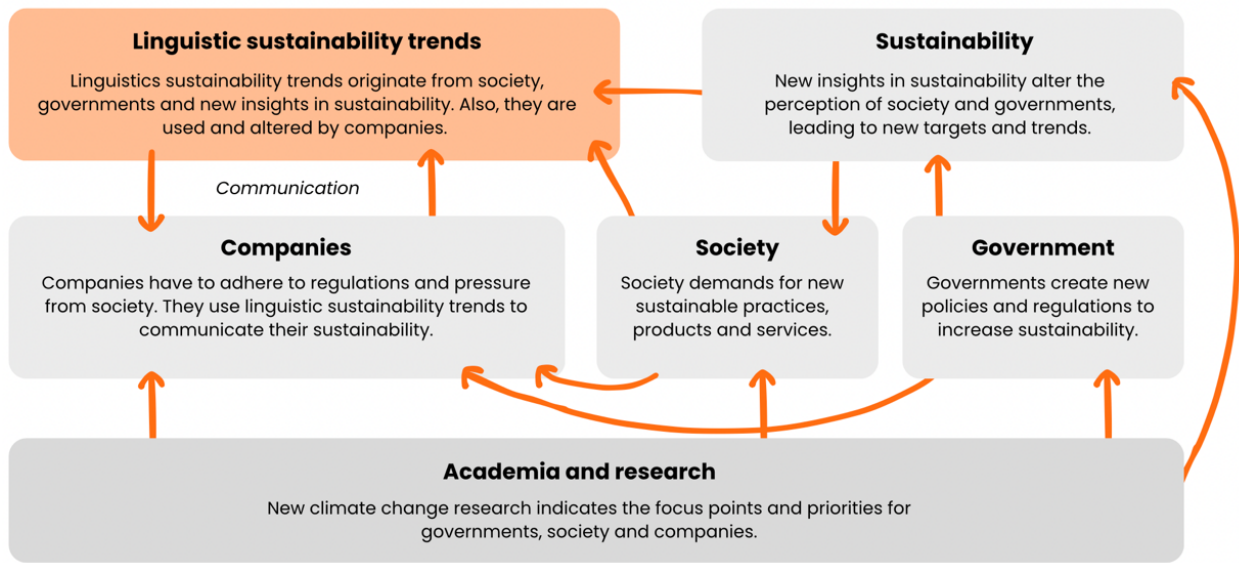
Since the adoption of the Paris Agreement in 2015, there has been a notable increase in the demand for sustainable business practices. This “legally binding international treaty on climate change” was adopted by 196 Parties at the United Nations (UN) Climate Change Conference (COP21) in Paris. It was enforced in 2016, aiming to “increase the global average temperature to well below 2 degrees Celsius” (*The Paris Agreement*, n.d.). According to the website of the United Nations, “more and more countries, regions, cities and companies are establishing carbon neutrality target” (ibid). Notably, in Europe, the significance of the term Net Zero has been underscored by the EU’s directive, aiming to become “the world’s first climate-neutral continent by 2050” (*2050 Long-term Strategy*, n.d.).

A linguistic trend, within the context of this study, refers to the evolving popularity of words and expressions (Ivic, 2013). Trends often follow a trajectory, emerging in response to societal, cultural, or technological shifts, followed by peak popularity (Ortiz-Ospina, 2019). Over time, trends may experience potential decline in popularity, either fading to the background or evolving into new linguistic trends. New linguistic trends emerge due to shifts in cultural norms and changes in social dynamics (Raviv et al., 2020). For example, the increased attention towards diversity and inclusivity has recently given rise to linguistic trends that reflect these values. Examples are pronoun inclusivity and LGBTQ terminology (Jones, 2021).

In recent years, the use of various sustainability linguistic trends has skyrocketed (Alcalde-Calonge et al., 2022; Lee et al., 2021), with mass media playing a pivotal role in gaining more attention (Holt & Barkemeyer, 2012; Barkemeyer, 2017). Examples of these trends are Carbon Footprint, Circular Economy, Greenwashing, Climate Neutrality and Net Zero (Euromonitor International, 2021; Howarth, 2023). Linguistic trends have a tangible impact on communication styles, influencing the academic world, businesses, and public communication (Mautner, 2010).

The use of sustainability trends has far-reaching effects and can, for instance, influence the development of new policies, regulations, and business practices (Hermundsdottir & Aspelund, 2021). Sustainable progress is led by academia (ibid), who research the topics of climate change, followed by governments and society, pushing for more sustainable practices (Nassos, 2020). Next, companies react with incorporating sustainable linguistic trends in their goals and strategies (Geels et al., 2008 & Liddle, 2010). For this reason, businesses are increasingly recognized as important agents for addressing global sustainability challenges (Tulder, 2018). When trends are translated into tangible goals and strategies, they possess the potential to influence industry standards (Trotter, 2022; Rekettye, 2013). Figure 1, on the next page, has been designed to illustrate this connection between sustainability linguistic trends, business communication, goals and strategies, society, policymakers, and academia. The framework showcases the interconnectedness of these topics, whereas some elements in the process are conceptualized as a feedback loop, with each sphere influencing the other.

Figure 1
Framework, linking different actors



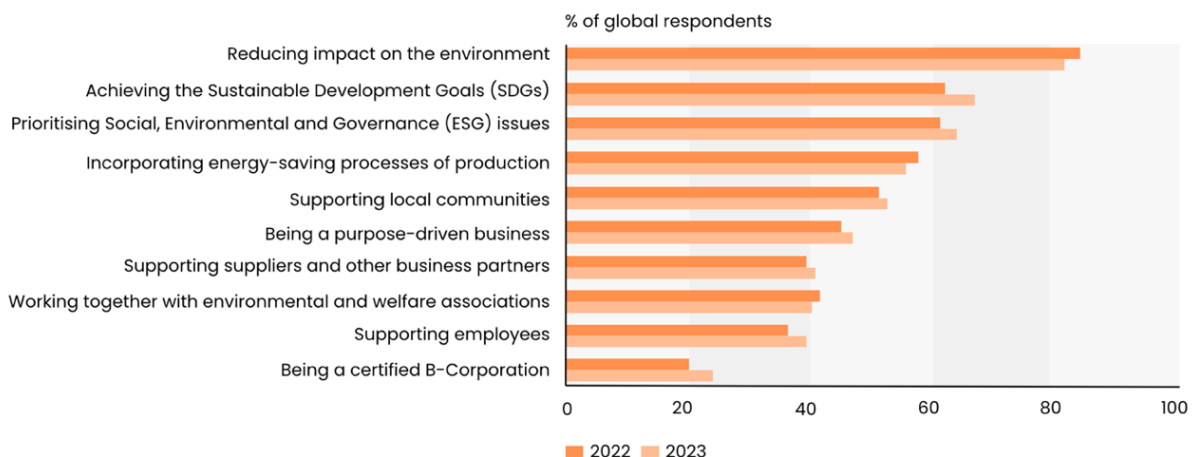
As can be observed from the framework above, sustainability trends are crucial in the communication of businesses. This phenomenon is also highlighted by the Communicative Constitution of Organizations (CCO), which is a theory that explains that organizations are not static but are continuously constructed through communication (Cooren & Martine, 2016). In the context of sustainability, CCO emphasizes how language and communication contribute to the construction and maintenance of sustainable practices within organizations (Genç, 2016). The CCO explains that language, in this case the use of sustainable linguistic trends, is a tool for shaping the organizational identity (Tenzer et al., 2017).

As shown in Graph 1, sustainability is perceived differently for each business, suggesting there is no uniform understanding or approach to sustainability. Each organization may interpret and communicate sustainability in its own unique way (Zuniga, 2023b).

Graph 1
What does Sustainability Mean to you 2022-2023? (Zuniga, 2023b)



Source: Euromonitor International Voice of the Industry: Sustainability Survey
Fielded in January 2022 (n=792) and February 2023 (n=900)

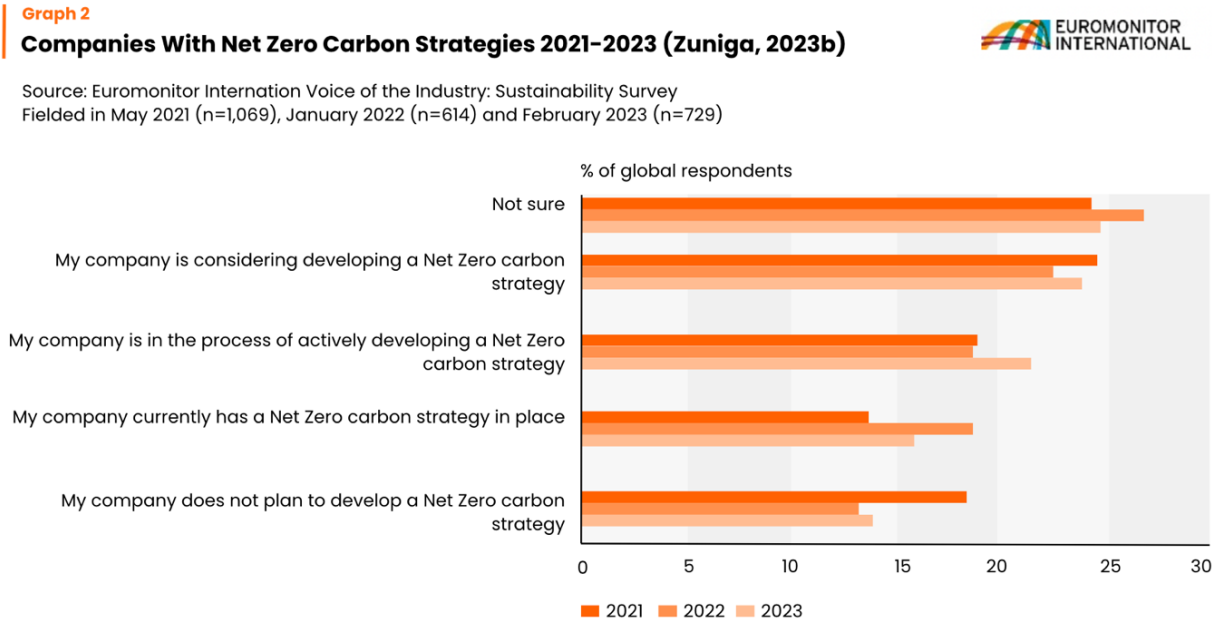


2.2 The origin of the sustainability trend Net Zero

Whereas there are several sustainability trends, this study focusses on Net Zero specifically. Net Zero, interchangeably used with the target Carbon Neutrality, emerged from physical climate science, and was later picked up by social, economic, and political systems (Fankhauser et al., 2022). This sustainability trend focusses on achieving a balance between the number of greenhouse gas emissions and the amount removed from the atmosphere, ultimately resulting in a net neutral impact on the climate (Fankhauser et al., 2022). According to Deutch (2020), Net Zero requires elimination of all CO2 and eventually other GHG emissions, notably CH4 and N2O, from every end-use sector.

This sustainability trend was first used in 2009 (*Net Zero: A Short History*, 2022), when scientists, such as Myles Allen (Allen, 2009), published their first paper highlighting the eventful impacts of global warming due to CO2 emissions. The urgency of these trends originated from the fifth IPCC report, published in 2013, claiming that no more CO2 should be added to the atmosphere if we choose to stop global warming. Another milestone includes the adoption of the Paris Agreement in 2015, which set the goal of limiting global warming to well below 2 degrees Celsius. This agreement prompted a shift in corporate sustainability strategies, with many companies pledging to achieve lower CO2 emissions. The concept of Net Zero has gained prominent attention in recent years as a response to escalating concerns about climate change. According to Zuniga (2023a, p.1), “Net Zero pledges have become mainstream” in sustainability reports and are used “as a way to demonstrate environmental commitment”.

Graph 2 shows the increase in Net Zero strategies over the past 3 years (Zuniga, 2023b). An increase in investments and efforts is expected, since corporations “are aware that this could impact their resilience in the long-term” (Zuniga, 2023b, p.2). According to the Euromonitor Sustainability Survey (2022, p.2), 57% of global professionals explain that their companies are planning to develop “products with carbon-neutral claims”. Observed by the Euromonitor’s Sustainability Opportunity Tracker, a global increase of products carrying “carbon-neutral/reduced carbon” claims increased by 38% during 2020 and 2021 (p.2).



However, the same survey revealed that only 18% of the global respondents indicated they are currently investing or planning to invest in supporting their suppliers to reduce CO2 emissions. These results indicate a gap between the business' expressions of interest in the Net Zero target and the tangible progress yet to be achieved.

Not only do companies focus on Net Zero, but they are also starting to shift towards Net Positive – reflecting a deeper commitment to environmental and social responsibility (Polman & Winston, 2021). Net Positive, interchangeably used with Climate Positive and Carbon Negative, is seen as a successor of the Net Zero target. According to Unilever “topman” Paul Polman, companies had little to no regard to social and environmental consequences, until now; “the days of pretending they don’t exist are over” (Polman & Winston, 2021, p.3). Polman and Winston (2021, p.5), define a Net Positive company as one that “improves well-being for everyone it impacts and at all scales”, as it should improve the conditions for “future generations and the planet itself”. Even though this trend is gaining more attention, it is not yet widespread used or incorporated within communication and sustainability reports (Birkeland, 2020). Although it indicates a shift towards more sustainable practices, this trend will only be discussed briefly within this research.

2.3 Net Zero goals and strategies

2.3.1 Goals

All over the world, nations, companies, and institutions are committed to reach Net Zero emissions (Sovacool et al., 2023). According to the United Nations, this growing group includes more than 140 countries, including the biggest polluters China, the United States, India, and the European Union - covering about 88% of global emissions (United Nations, n.d.). More than 9,000 companies have joined the ‘Race to Zero’, which is the world’s largest coalition of non-state actors taking immediate action to halve global emissions by 2030 (ibid). Numerous governments have expressed their aim to achieve Net Zero emissions by 2050, for example the United States and European Union (Kerry et al., 2021; Battersby, 2024). Contrary, the Chinese President Xi Jinping claimed that China would aim for peak carbon emissions before 2030 and reach Net Zero only by 2060 (“Net Zero Readiness Index: China”, 2021). These varying timelines lead to diverse sustainability goals among nations and companies globally.

While more countries, institutions and companies are announcing Net Zero targets, their “plans are hard to compare, and definitions loose”, whereas “details behind Net Zero labels differ enormously” (Rogelj, 2021, p.1). Whereas some targets focus on CO2 emissions, others cover all greenhouse gases (ibid). According to Rogeli (2021), targets must elaborate the specific emissions included in the goals. Additionally, confusion arises about what emissions belong to which company (ibid). For example, Swedish furniture giant IKEA has a Net Zero target that includes all emissions from its entire supply chain (Inter IKEA Systems B.V., 2024), whereas ACI Europe, with more than 500 European airports, has set a Net Zero goal that only covers their buildings and operations on land and not the emissions from their airplanes (The Alliance for Zero-Emission Aviation, 2024).

2.3.2 Strategies

To reach Net Zero emissions, several strategies could be implemented. Same as for Net Zero goals, strategies that lack clarity “cannot be understood, nor can their impact be evaluated” (Rogeli, 2021, p.1). Net Zero strategies can be subdivided in three categories (Supriya et al., 2023 & Rogeli, 2021): CO2 reductions, carbon removal and engineered solutions.

The first strategy, CO2 reduction, focusses on rapid and major CO2 reductions. Examples are switching to more energy efficient practices or renewable energy such as wind and solar power (DeAngelo et al., 2021). The second strategy is carbon removal, often referred to as offsetting. One way to do this is by planting trees and physically removing CO2 from the atmosphere – a process also known as afforestation (Roberts, 2021). However, a problem with this strategy is the fact that more clarity and specification is needed about the anticipated CO2 removal (Rogeli, 2021). Offsets are often purchased reductions or removals fulfilled by another organization, elsewhere, which could result in uncertain or false claims (ibid). The third strategy focuses on engineered solutions but is still in the research phase. (Osman et al., 2021). This strategy includes solutions such as carbon capturing and storing methods, where it is possible to physically capture CO2 and bury it underground (ibid). Because this is such a new option, the large-scale implications are still speculative (IPCC, 2019).

While reported in their sustainability reports, companies remain cautious about publishing sustainability and Net Zero strategies, often running the risk of vague claims and strategies (Rogeli, 2021).

2.4 Link between greenwashing and Net Zero

While sustainability trends are a valuable tool in communicating sustainable practices, excessive use may result in the risk of greenwashing (De Freitas Netto et al., 2020). Greenwashing is a form of deceptive communication, used to depict a more ecological friendly picture than is substantiated by actual practices (*Greenwashing*, 2024). When greenwashing occurs, the interests of the entire society are harmed (Yang et al., 2020).

Consumer skepticism and confusion increases because of the lack of clearly defined trends. The same accounts for policymakers, who try to navigate through a landscape with self-made goals and unclear definitions, making it difficult to assess the true sustainability of businesses (Rogelj, 2021). Also, start-ups and existing businesses face growing confusion, lacking a clear framework for setting sustainable goals, effective communication, and practical strategies. The different trends, or buzzwords, often divert businesses from real sustainable action (Yang et al., 2020). As indicated by Glavic & Lukman (2007, p.1), the definitions of various sustainability terms are either “sloppy” or only slightly different from one another, creating confusion about the meaning and usage.

An overview of the three most common greenwashing activities, explained by De Freitas (2020), enables a better understanding of the phenomenon of greenwashing. The first activity refers to creating and presenting false claims, for example by using the wrong trends and communications. Secondly, businesses could leave out important information. Given that the concept of sustainability is relatively new for many, there might be a lack of understanding of the latest trends, meaning businesses could accidentally leave out information. Thirdly, when

businesses employ vague terms and ambiguous claims, there is a potential for consumers to misinterpret the sustainability communication.

The effects of greenwashing are noticeable, where it can negatively affect the confidence of shareholders and consumers in so-called 'green' products (Delmas & Burbano, 2011). When businesses make misleading claims about the environmental benefits of their products, it leads to skepticism and distrust, undermining the credibility of genuine sustainability efforts (ibid). Consumers are also affected by the impacts of greenwashing, particularly when information overload occurs. Yang et al. (2020) explains that consumers and employees lose trust in companies because of the increasing complexity advertisements and products. Therefore, it is relevant to research how linguistic sustainability trends are used in corporate communication, to find out if, and which forms of, greenwashing companies engage in (Santos et al., 2023).

In this Theory section, several critical issues have been identified. Firstly, a variety of linguistic terms related to sustainability have been observed, with Net Zero being one of the prominent terms. However, the definitions, goals, and strategies associated with this trend are often inconsistent and lack clarity. These ambiguities can potentially lead to greenwashing practices. Therefore, this study aims to examine various sustainability trends that lead to the adoption of Net Zero. Subsequently, it will analyze the specific definitions, goals, and strategies to enhance the understanding of the practical implementation of the Net Zero concept. Clarifying these aspects is essential to improve the coherence of sustainability efforts and to support more transparent practices within the business community.

03

Methodology

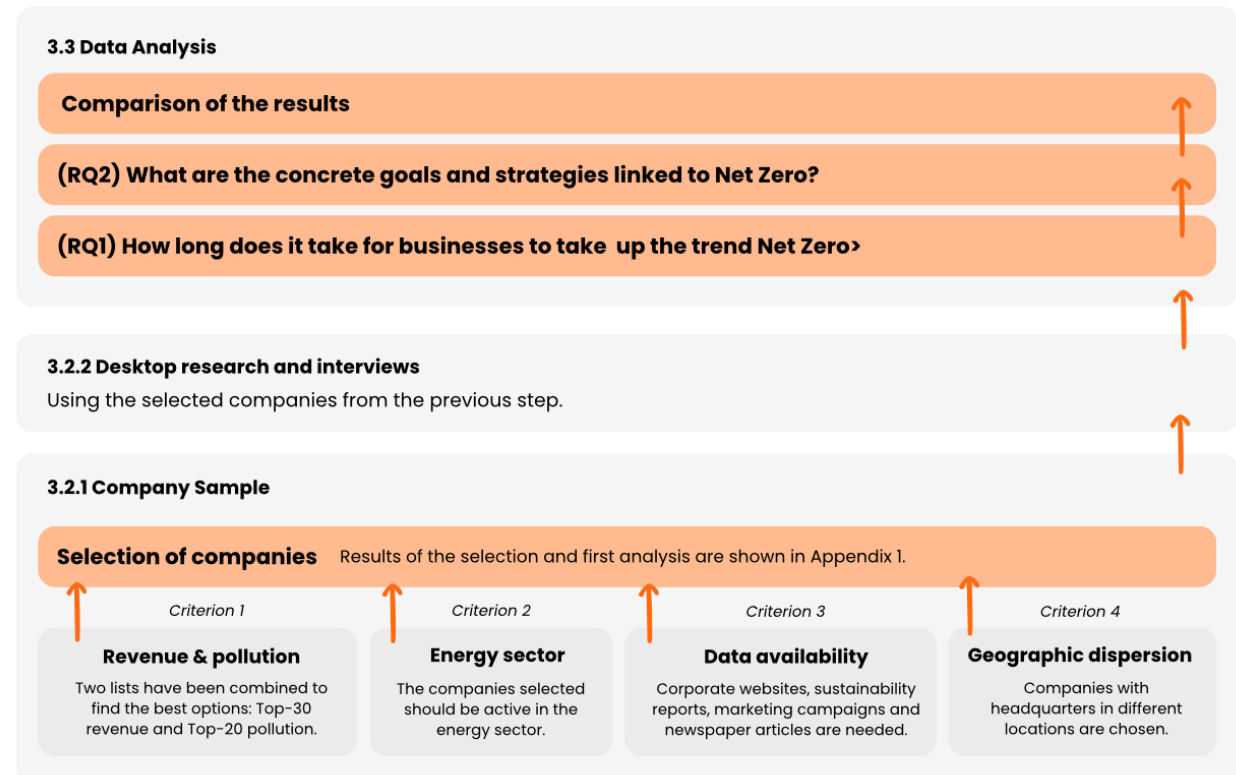
3. Methodology

3.1 Research design

This study aims to deepen the understanding of the ways businesses incorporate the Net Zero sustainability trend into their goals, strategies, and communication. To achieve this, this research employs an exploratory approach through a qualitative, longitudinal comparative case study design (Turner et al., 2021). This qualitative methodology allows for flexibility and comprehensive data collection through desktop research and interviews. While the desktop analysis serves as the initial phase of the study, expert interviews were conducted to supplement and enrich these findings (Siedlecki, 2022). Taking six companies in the energy sector as a case study allows for the exploration of real-world scenarios, providing practical insights that can be applied across different sectors (Crowe et al., 2011). It aims to compare the origin, definitions, goals and strategies faced by these companies in adopting the Net Zero concept.

The following sections provide a comprehensive explanation of the methodologies employed in this research. The first step was to select six energy companies from a longlist of 30 businesses; based on three specific criteria. Following this selection process, these companies were analyzed using desktop research methods. The findings from this analysis were subsequently discussed and validated during expert interviews to ensure accuracy and reliability. An overview of this process is illustrated in the accompanying figure below.

Methodology



3.2 Data Collection

3.2.1 Company sample

In total, six companies have been selected for the case study analysis. The following criteria were used to arrive at this final selection: revenue and pollution, energy sector, data availability, and geographical dispersion. The selected companies operate within the global energy sector and are characterized by high revenue, significant pollution, and adequate data availability. Choosing only six companies was driven by the study's limited timeframe and scope, aimed to ensure robust and meaningful results. The chosen companies include BP, Shell, TotalEnergies, ExxonMobil, Chevron, and PetroChina. The following sections will offer a detailed explanation of each specific criterion used in this selection process.

3.2.1.1 Criterion 1: Revenue and pollution

To develop an initial longlist of potential companies for analysis, the top 30 companies by revenue were selected from the website *companiesmarketcap.com*. This list, accessed on December 7th, 2023, is updated daily and highlights companies with the highest revenue. It is anticipated that societal pressure, regulatory demands, and ongoing innovations will compel these leading companies to prioritize sustainability, particularly in their commitments to Net Zero initiatives (Hlioui & Yousfi, 2022). The initial findings are presented in Appendix 1, indicating which of these 30 companies have published Net Zero targets. Additionally, an analysis was conducted to determine the quantity and nature of the reports issued by these companies. The overview in Appendix 1 details the number and types of reports published, providing a comprehensive view of their sustainability commitments.

To narrow down the number of companies for this research, a list of the 20 most-polluting companies, as identified by Taylor and Watts (2021), was utilized, and is presented in Appendix 2. These companies have a substantial environmental impact, making it likely that they will prioritize sustainability in their business practices (ibid). Consequently, there is an increased likelihood that these companies will have clear communication regarding their Net Zero commitments (ibid).

Eventually, the two lists—one displaying companies with the highest revenues and the other listing the largest polluters—were combined to identify six companies that are both high in revenue and pollution.

3.2.1.2 Criterion 2: Energy sector

Drawing from the long-list, only companies from the energy sector have been selected. This sector-specific approach allows for a thorough examination of industry trends, providing insights into common practices, challenges, and innovations among the selected companies (Khan et al., 2020). This focused selection enhances comparability between companies, thereby strengthening the study's ability to extract meaningful insights and identify patterns within the sector (ibid). The energy sector has been chosen due to its pivotal role in environmental sustainability, notably in achieving Net Zero goals. This industry is a major contributor to emissions, because the energy production and consumption are among the largest sources of greenhouse gas emissions globally (Taylor and Watts, 2021).

3.2.1.3 Criterion 3: Data availability

In addition to identifying companies with both high revenue and significant pollution, data availability was a crucial consideration. For this research, corporate websites, sustainability reports, and newspaper articles were analyzed. The selected reports needed to contain specific information regarding sustainability initiatives, Net Zero commitments, and the strategies employed to achieve these goals. In cases where sustainability reports were not available, annual reports were included to ensure comprehensive data coverage.

The term Net Zero was first introduced in 2009 (*Net Zero: A Short History*, 2022), making it pertinent to select reports from 2008 onwards to investigate the evolution of this trend. Consequently, the data collection spans from 2008 up and until 2023. This longitudinal approach enables the examination of both the emergence and evolution of Net Zero initiatives (Caruana et al., 2015).

3.2.1.4 Criterion 4: Geographical locations

The headquarters of the six companies analyzed for this research are dispersed across different countries and continents, as shown in Figure 2. This deliberate choice was made to develop a comprehensive understanding of Net Zero practices within the global energy sector (Cooper et al., 2021). The rationale behind this geographical diversity is based on the recognition that different regions face distinct energy challenges, market dynamics, and regulatory environments (Bridge & Gailing, 2020). For example, companies operating in regions with abundant renewable resources may adopt different sustainability strategies compared to those in areas more reliant on fossil fuels (ibid).

Figure 2

Visualization depicting the location of headquarters of the energy companies.



Moreover, investigating companies from diverse geographical locations offers a panoramic view of the application of sustainability trends. This method allows for the identification of trends and strategies that might be overlooked if the focus were solely on specific areas like North America or Europe.

However, it is important to acknowledge that this research does not offer a comprehensive, region-specific analysis. Further studies focusing on individual regions are necessary to gain a more nuanced understanding of sustainability practices within different geographical contexts. Consequently, this research serves as an initial overview, providing a foundation for more detailed and regionally focused studies in the future.

3.2.2 Desktop research

To generate a comprehensive overview of how companies incorporate Net Zero into their targets and strategies, this study utilizes desktop research encompassing sustainability reports, corporate websites, and available newspaper articles (Wildemuth, 2017). These sources were collected, analyzed, and compared to understand how the term Net Zero is defined and integrated into the sustainability goals and strategies of various companies. The results for each company were consolidated into a final Excel file, which was then used for comparative analysis to gain a broader perspective on the application of Net Zero.

The sustainability reports have been of major importance in this study. By analyzing reports from their earliest availability up to and including 2023, this study identifies the initial emergence and subsequent shifts in the application of Net Zero. This approach addresses the first sub-research question: “How long does it take for businesses to adopt the Net Zero trend?” Selecting 2008 as the starting point aligns with the initial use of the Net Zero target. Examining multiple reports from the same company over time provides a historical perspective, offering insights into the evolution of linguistic sustainability trends within each company (Haywood & Boihang, 2020). Table 1 presents an overview of the available resources for each selected company.

Table 1
Selection of companies for in-depth analysis

ESG = Environment Social Governance - CSR = Corporate Social Responsibility - CCR = Corporate Citizenship Report
CR = Climate Report SR = Sustainability Report - AR = Annual Report - O= Other

BP	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Shell	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
TotalEnergies	SR	SR	O	CR	CR	CR	CR	CR	O	O	O	O	-	-	-	-
ExxonMobil	-	O	SR	-	SR	SR	SR	CCR	CCR	CCR	CCR	CCR	CCR	CCR	AR	AR
Chevron	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR
PetroChina	-	ESG	ESG	ESG	AR	ESG	SR	SR	SR	SR	AR	AR	-	-	-	-
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008

To address the second sub-research question, “What are the concrete goals and strategies that businesses link to the trend of Net Zero?”, it is crucial to redirect the focus towards the most recent reports where these goals and strategies are explicitly communicated. For this analysis, reports from 2018 up and until 2023 were selected, as these documents are likely to provide the most up-to-date and detailed information on Net Zero commitments. This analysis utilizes the most recent versions of company websites, reports, and newspaper articles to ensure a comprehensive understanding of how Net Zero goals are presented and integrated into business strategies. This approach enables the identification of current trends and practices, offering a detailed view of the concrete actions that companies are taking to achieve their Net Zero objectives.

3.2.3 Interviews

To deepen the understanding of the results from this research, interviews with business professionals were conducted (Wildemuth, 2017). Four interviews were organized due to practical considerations and the scope of the research. These interviews were scheduled after finalizing the initial findings during the desktop analysis to ensure a comprehensive exploration of each participant's insights and perspectives based on the study's results. The primary purpose of these interviews was to discuss the study's findings and understand what motivates companies to adopt sustainability trends (ibid). Additionally, the interviews aimed to illuminate the potential benefits and risks associated with the use of such trends.

Business experts were selected for their extensive knowledge and experience in integrating sustainable practices into business operations (Buchholz et al., 2009). This expertise includes understanding the environmental, social, and economic impacts of business activities and developing strategies to mitigate negative effects while promoting positive outcomes. The selected experts, including sustainability officers and managers, were expected to provide insights into how companies incorporate linguistic sustainability trends into their goals and strategies (ibid). An interview guideline (Appendix 3) was prepared to initiate the discussion, but the primary objective was to facilitate an open conversation to gather as much information as possible.

The interviews serve a twofold purpose. Firstly, they provide an opportunity to validate and contextualize the findings derived from the analysis of sustainability reports. Secondly, the interviews enable a cross-sectoral perspective on sustainability practices. While energy companies play a significant role in addressing environmental challenges, sustainability initiatives extend beyond the energy sector and intersect with diverse industries. The interviews included four sustainable business experts from diverse companies, each offering unique backgrounds and perspectives. The interviewees were a Facilities and Sustainability Advisory Manager from CSU, a cleaning company; a Sustainability Project Manager at Vanderlande, a logistics firm; the Head of Sustainability, CSR, and ESG at Roompot/Landal Greenparks, a holiday park conglomerate; and a Sustainability Advisor from the insurance company Achmea. Selecting experts from diverse companies outside the energy sector provided a broader perspective on sustainability practices and strategies. Since sustainability practices often intersect across industries, lessons learned from different sectors can be applicable and beneficial to the energy sector (Adeoye-Olatunde, 2021).

3.3 Data Analysis

After collecting data from the datasets, the study progressed to the next phase, which involved several analytical steps aimed at addressing the research questions. These steps include a timing analysis to trace the evolution of Net Zero commitments, a detailed examination of goals and strategies reported by the companies, and a mapping and comparative analysis to observe patterns and differences among the selected companies. Each of these approaches has been important in gaining insights and developing a better understanding of how companies in the energy sector are integrating Net Zero principles into their operational frameworks.

3.3.1 Timing analysis

The first research question focuses on when the Net Zero trend was adopted and how long it took for companies to integrate it into their goals and strategies. This was explored by analyzing data from annual and sustainability reports, which were coded and analyzed using the Adobe Acrobat PDF software. This approach allowed for a detailed examination of when and how the term Net Zero was initially introduced and subsequently incorporated by each company. The findings provided a comprehensive timeline, illustrating the predecessors, initiation, and progression of this trend in the reports of the selected companies.

3.3.2 Goals and strategies

The second research question has been addressed in the subsequent phase, focusing on linking the concept of Net Zero to practical goals and strategies within each company's sustainability report. This phase was important in gaining a comprehensive understanding of both the theoretical underpinnings and practical implications associated with Net Zero initiatives. To explore this, the analysis centered on examining the reports with specific questions, such as:

- If reported, how is the term Net Zero utilized within the company's operations?
- If defined, what is the company's interpretation of Net Zero?
- When did the company first adopt Net Zero practices, and how frequently is it mentioned within the reports?
- How prominently does the company emphasize Net Zero in its sustainability reports, and in which sections is it most prominently featured?
- What are the company's sustainability goals, and how are these articulated? Is Net Zero explicitly integrated into these goals?
- What sustainability strategies does the company employ, and how are these strategies communicated?
- Is Net Zero explicitly mentioned in the communication of these strategies? If so, how many distinct strategies does the company present, and how do these contribute to achieving Net Zero?
- Does the company possess specific partnerships or certifications that validate its commitment to Net Zero ambitions?

This investigation is important as it provides insights into the ways companies conceptualize and operationalize Net Zero within their sustainability agendas. Understanding the definitions, timelines, frequency of use, and strategic approaches to Net Zero helps in evaluating the depth of commitment and effectiveness in achieving sustainability targets. Moreover, identifying

partnerships and certifications underscores the company's efforts to validate and substantiate their Net Zero aspirations within the broader industry and regulatory frameworks.

3.3.3 Mapping and comparing

After gathering valuable insights from the previous steps, the study proceeds to map and compare the results. By analyzing six companies within the energy sector, this research aims to discern the sustainability trends they adopt, the timelines of their adoption, and how they operationalize their goals and strategies in alignment with these trends.

The findings were collected into a comparative table, with information from each company. Comparing results made it possible to map the similarities, differences, and challenges among these companies. Also, the insights from the expert interviews were incorporated during this phase. The interviews provided additional depth and context to the analysis, offering perspectives on how companies integrate the Net Zero trend into their sustainability frameworks.

By synthesizing the findings of this study, along with insights from the comparison and expert interviews, comprehensive insights were derived to address the main research question: “How do companies integrate the Net Zero trend into their goals and strategies?”. This sets the stage for the Results section, where the detailed findings and analyses will be presented to provide a thorough exploration of how companies in the energy sector are implementing Net Zero initiatives within their operational frameworks.

04

Results

4. Results

4.1 General results

In this section, the outcomes of the research are showcased, aimed at addressing the pivotal question: “How do companies incorporate the trend Net Zero into their goals and strategies?”. As environmental concerns quickly escalate, and the call for sustainable business practices increases, a pressing need for a better understanding on how companies integrate the sustainability trend Net Zero in their practical goals and strategies. This understanding is essential for guiding effective decision-making, fostering transparency, and driving meaningful action towards achieving global sustainability goals. To unravel this question, a selection of 30 companies has been analyzed in Chapter 3. The results of this initial research are elaborated on in Appendix 1. From this list, six major energy companies have been selected for research. The deliberate limitation to six companies in the energy sector was driven by the need to maintain research quality within the designated timeframe. Taking companies from the same sector reduces the risk of extraneous variables influencing the analysis, ensuring a more focused examination of industry-specific trends and practices. Since the headquarters of the companies are dispersed over the world, this ensures a diverse representation of sustainability reporting practices within the energy sector on a global scale.

The subsequent sections will unfold interesting findings derived from this research. While Section 4.1 offers a broad introduction to the results, Section 4.2 delves into the historical trajectory of sustainability trends – examining both past and current trends, while transitioning the focus towards Net Zero. Before diving into the practical implementation of the goals and strategies, Section 4.3 provides an elaboration on the varied definitions of Net Zero, provided by the analyzed companies. Subsequently, Section 4.4 focuses on the frequency of the term Net Zero within reports. Next, Section 4.5 discusses the integration of Net Zero within sustainability goals, while Section 4.6 conducts a comprehensive analysis of Net Zero strategies. The comprehensive overview of the results is presented in Appendix 4, with the complete interviews detailed in Appendix 5. Insights from these interviews are seamlessly integrated throughout Chapter 4, enhancing the analysis of the findings derived from the sustainability reports.

Overall, the results section delves deeper into the exploration of how energy companies navigate the sustainability trend Net Zero within their goals and strategies. It offers key findings and insights into the practical implementation of the term Net Zero, essential for advancing sustainability practices forward within the industry.

4.1.1 Differences in sustainability reporting

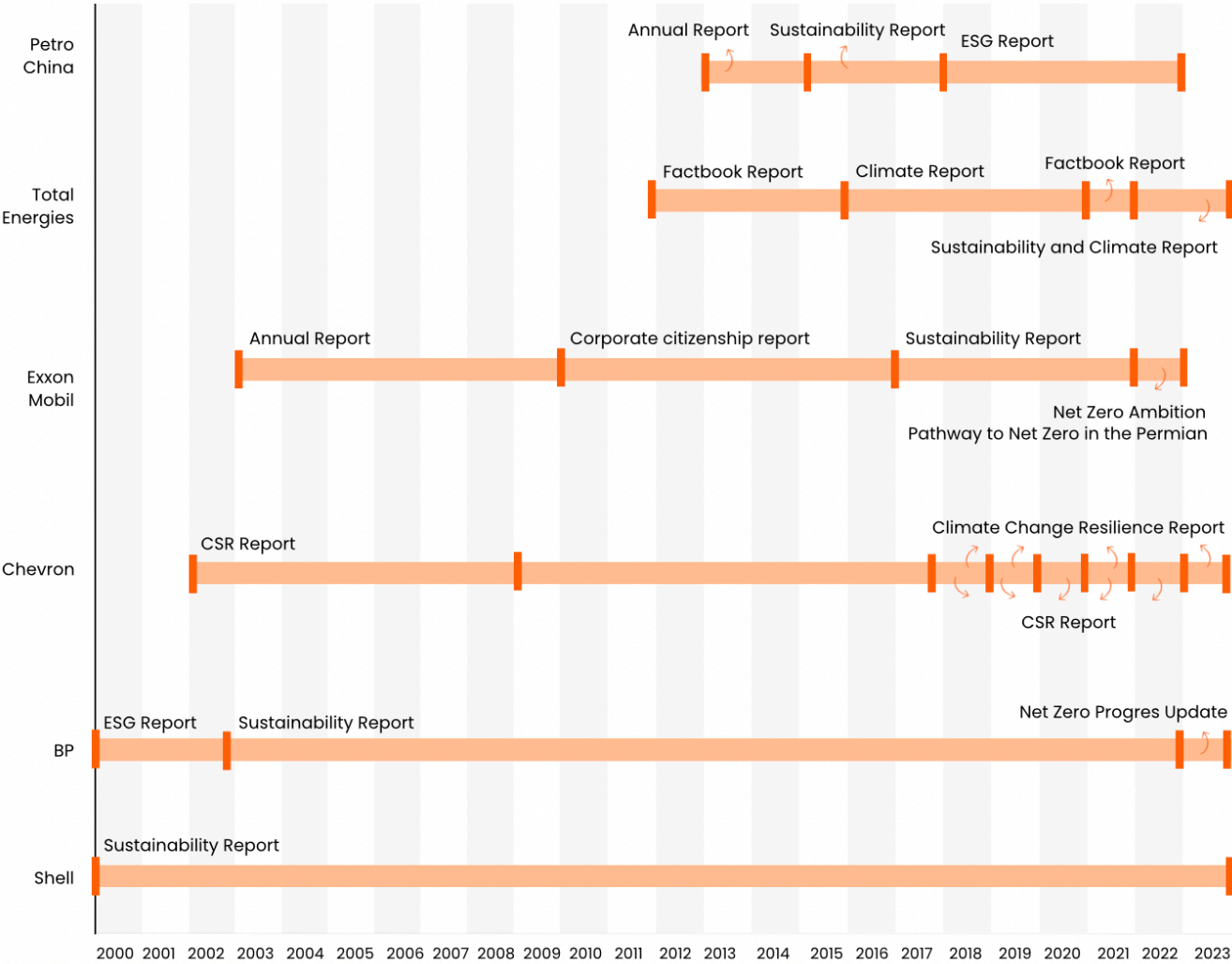
The primary data source for this study includes sustainability reports issued by energy companies. To ensure a significant dataset, the reports dating back to their earliest availability were taken. Figure 3, shown on the next page, provides an overview of the available reports, illustrating the types of reports included in the analysis by showcasing their titles. For clarification, arrows have been put in place to indicate what report has been published in which specific year.

As can be observed in this figure, BP and Shell were the first to publish Environment, Social, and Government (ESG) and Sustainability Reports in 2000, respectively. Chevron joined them two years later, issuing its first Corporate Social Responsibility (CSR) report in

2002. ExxonMobil started releasing Corporate Citizen Reports alongside their Annual Reports in 2010, transitioning to dedicated Sustainability Reports in 2017. Notably, in 2022, ExxonMobil introduced a Net Zero Ambition document of three pages, and an accompanying infographic of one page. TotalEnergies underwent a significant change in 2016, rebranding their Factbooks as Climate Reports and further transitioning to Sustainability and Climate Reports from 2022 onwards. PetroChina entered the sustainability reporting arena in 2017 with ESG reports.

These different starting dates and types of reports mean that the landscape of sustainability reporting within the energy sector is characterized by varied trajectories and approaches among companies. This observation is also validated by the sustainability experts, who explain that these changes occur due increased interest and knowledge in the topic of sustainability. From the pioneering efforts of BP and Shell in the early 2000s to the recent initiatives of ExxonMobil and TotalEnergies, each company's journey reflects its unique evolution and response to environmental changes.

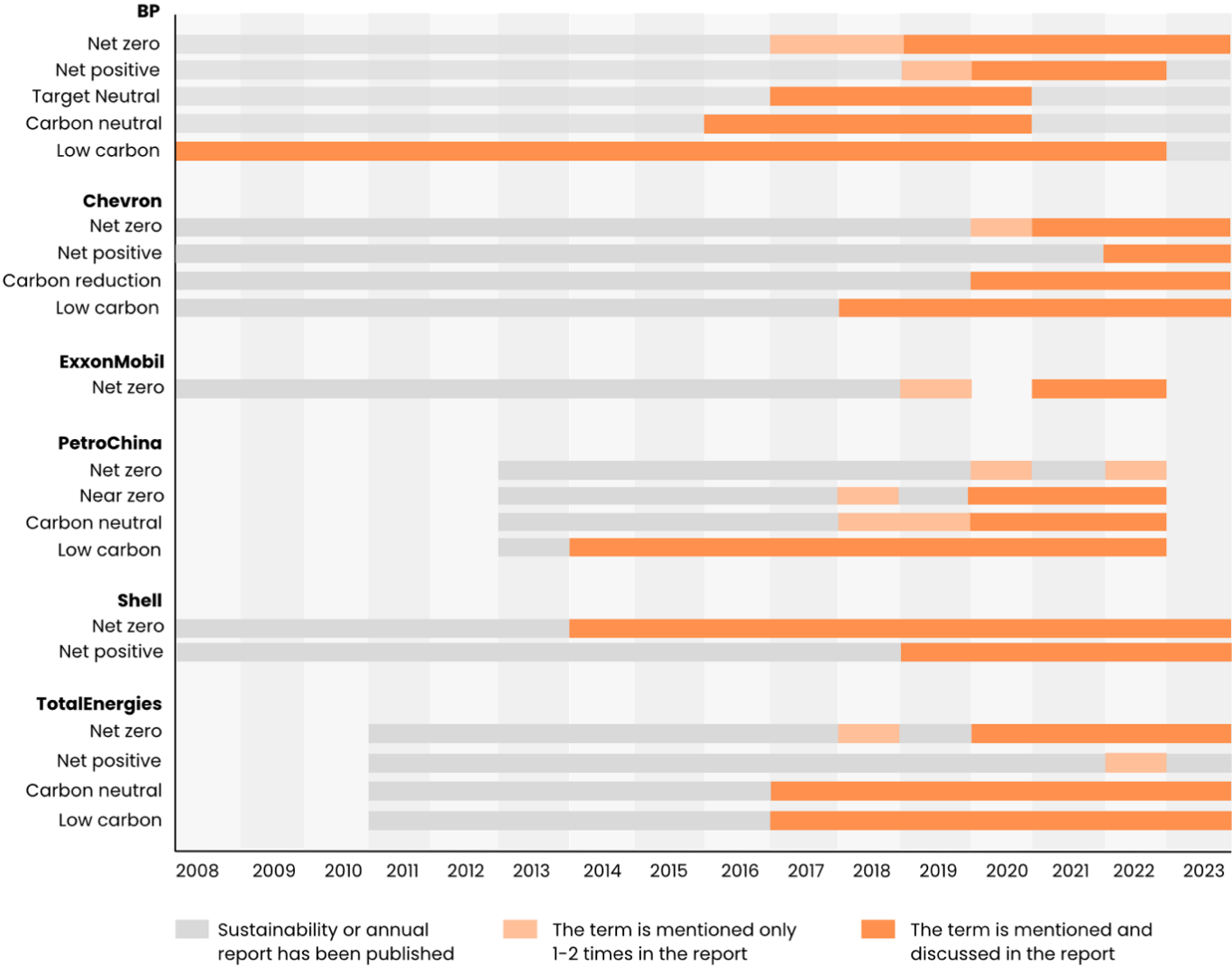
Figure 3
Overview of reports published by the energy companies and taken for research



4.2 Linguistic sustainability trends: variability in terminology

In recent years, the adoption of sustainability trends has increased across the corporate landscapes. However, the results clearly show that varying terminology is used. Although all six companies make use of the term Net Zero, it is observed that all of these have used different terms in the past or even currently prefer different terminology. Figure 4 offers a timeline overview of the different trends employed by the six companies and their evolution over time, ranging from 2018 to 2023. As illustrated in the figure, the grey bars indicate the presence of a sustainability report, while the dark orange bars represent significant mentions of a term within the report. Conversely, the lighter-colored orange bars show where the term has been used only once or twice within the report.

Figure 4
Overview of sustainability trends as used over the years by the analyzed companies



While all companies currently reference the concept of Net Zero, their terminology has evolved over time, demonstrating a shift in their approach to sustainability. As shown in the figure, BP predominantly used the terms Carbon Neutral and Target Neutral from 2016 to 2020 before introducing Net Zero in 2019, followed by Net Positive in 2020. Chevron and TotalEnergies initially used the terms Low Carbon, Carbon Reduction (Chevron) and Carbon Neutral (TotalEnergies), but both shifted to using Net Zero from 2020 onwards. Shell and ExxonMobil deviate from this pattern, as they directly introduced the term Net Zero without any predecessors in 2014 and 2021, respectively. In contrast, PetroChina's terminology evolved from Low Carbon in 2014 to Carbon Neutral and Near Zero in 2020.

Interestingly, while the term Net Zero receives brief mentions in their reports, Near Zero emerges as the dominant terminology. As indicated during the expert interviews, the choice of the term Near Zero from PetroChina may have been deliberate or could stem from a translation issue. Therefore, for the remainder of this report, the term Near Zero used by PetroChina is considered comparable to the term Net Zero employed by the other companies. These variations in trends underscore the diversity in companies' linguistic preferences regarding sustainability. The shift towards Net Zero reflects a broader industry movement towards aligning with carbon neutrality goals.

It is important to emphasize that the following sections primarily center around the term Net Zero, aligning with the main objective of this research. However, it's essential to note that for PetroChina, their use of the term Near Zero is considered comparable to Net Zero, as used by other companies.

4.3 Definitions of the term Net Zero

Despite the widespread adoption of the Net Zero trend among businesses, a difference is observed in the ways companies define this concept. Understanding these varied interpretations is important for gaining insights into the evolving landscape of sustainability practices. The following section delves into an analysis of the definitions provided by different companies for the Net Zero trend. Table 2 offers a comprehensive overview, detailing not only which companies have provided a definition but also how their understanding of Net Zero has evolved over time, displaying both the earliest and latest published definitions.

As can be observed from this table, both BP and Shell have given a definition in their reports, whereas the other four companies do not provide a definition, neither in their reports, nor their website.

Table 2

Definitions of Net Zero*, as explained within the sustainability reports of the companies

*Near Zero for PetroChina

Definition Net Zero / Near Zero		
BP	earliest	“When we talk about helping the world get to net zero we mean achieving a balance between sources of anthropogenic emissions and removal by sinks of greenhouse gases, as set out in Article 4.1 of the Paris Agreement” (Sustainability report 2019, p.18)
	latest	“To help the world get to net zero, means achieving a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases on the basis equity, and in the context of sustainable development and efforts to eradicate poverty’, as set out in Article 4(1) of the Paris Agreement.” (Net Zero Ambition Progress Update 2023, p.35 – glossary)
Shell	earliest	“In a net-zero emissions world, CO2 emissions would be safely absorbed by the earth’s natural infrastructure – such as forests and oceans – with any remaining emissions safely stored underground by carbon capture and storage (CCS)” (Sustainability report 2015, p.11)
	latest	Becoming a net-zero emissions energy business means reducing emissions from our operations and from the fuels and other energy products, such as electricity, that we sell to our customers. It also means capturing and storing any remaining emissions using technology, protecting natural carbon sinks and providing high-quality carbon credits to our customers to compensate for hard-to-abate emissions.” (Sustainability report 2023, p.22)
TotalEnergies	-	
PetroChina	-	
Chevron	-	
ExxonMobil	-	

BP has first defined Net Zero in 2019 and has continued to do so until their most recent report in 2023. Over time, the definition was elaborated and has been moved towards a specific glossary section in their report. From the start, BP has included a reference to Article 4(1) of the Paris Agreement in their definitions. For both definitions, BP starts with “to help the world get to Net Zero” (BP sustainability report 2019 p.18 & 2023, p.35), meaning they focus not only on becoming a Net Zero company themselves, but translating this to the world. Whereas the definition focuses on gaining a “balance between sources of anthropogenic emissions and removal by sinks” in 2019 (p.18), this was elaborated in 2023 (p.35), placing a focus on receiving a “balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty”. This means that the definition has been elaborated over the years, currently including a statement about poverty as well.

Shell has first defined Net Zero in 2015, four years earlier compared to BP. In their first definition, Shell refers to a “Net Zero emission world” (Shell Sustainability report 2015, p.11). In their most recent definition, from their sustainability report 2023, they refer to “becoming a Net Zero emissions energy business” (p.22). In 2015, a Net Zero emission world for Shell meant that “CO₂ emissions would be safely absorbed by the earth’s natural infrastructure”, referring to forests and oceans, while the remaining emissions would be stored safely “underground by carbon capture and storage” (p.11). Their most recent definition is more elaborate and focused on the emissions from Shell as a company, whereas they want to reduce “emissions from our operations and from the fuels and other energy products, such as electricity, that we sell to our customers” (p.11). In this latest definition, they also refer to carbon capture and storage, while also “providing high-quality carbon credits to our customers to compensate for hard-to-abate emissions” (p.11). This change in definition shows how Shell has changed their viewpoint towards Net Zero; moving from a general statement to a more mature and personalized statement.

While the companies TotalEnergies, PetroChina, Chevron and ExxonMobil do mention the term Net Zero, they do not define this term anywhere in their reports or website. The concept Net Zero is relatively new and evolving, meaning it is possible that these companies want to avoid providing a single definition to maintain flexibility or avoid potential disagreements. Another rationale for not providing a definition of this term could be the assumption that there is a widespread understanding and familiarity with this concept.

This observed variability in definitions among companies, and in some cases the absence of published definitions, was further underscored by insights from the expert interviews. According to the interviewees, companies operate at varying stages and prioritize differently, leading to discrepancies in how they define and approach concepts such as Net Zero. This variability is also attributed to differences in knowledge and understanding of the term Net Zero or even the broader topic of sustainability.

4.4 Frequency of the term Net Zero

4.4.1 Net Zero and Near Zero trajectory

In recent years, there has been a global surge in the use of the term Net Zero, reflecting a significant shift in societal attitudes and priorities towards addressing climate change and promoting sustainability. This worldwide increase in usage is graphically illustrated in Graph 3, sourced from Google Trends (accessed on the 13th of May, 2024) and depicts the frequency of mentions of Net Zero and Near Zero globally. The numbers in this graph (ranging from 0-100), indicate the search interest relative to the highest point on the chart for the respective region and period. A value of 100 is the peak popularity for that term. A value of 50 means the term is half as popular and a score of 0 means there is insufficient data available for this term. The upward trajectory depicted in the graph signifies a growing global awareness and recognition of the importance of striving towards Net Zero emissions. It reflects a collective acknowledgment of the urgent need to reduce greenhouse gas emissions and transition towards more sustainable practices across various sectors and industries.

Graph 3

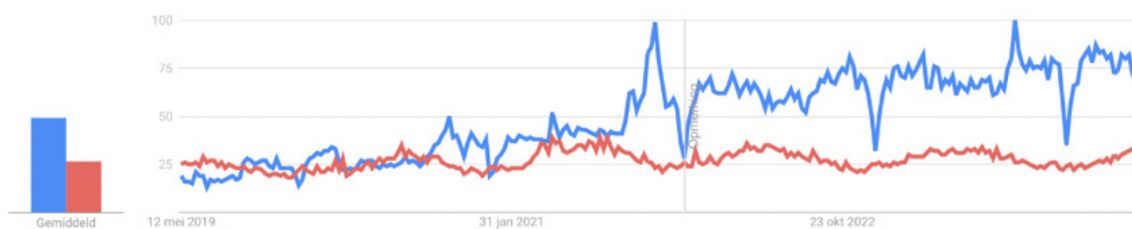
Trend trajectory for Net Zero and Near Zero (Google Trends)

Graph originating from GoogleTrends.com

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Net Zero Near Zero



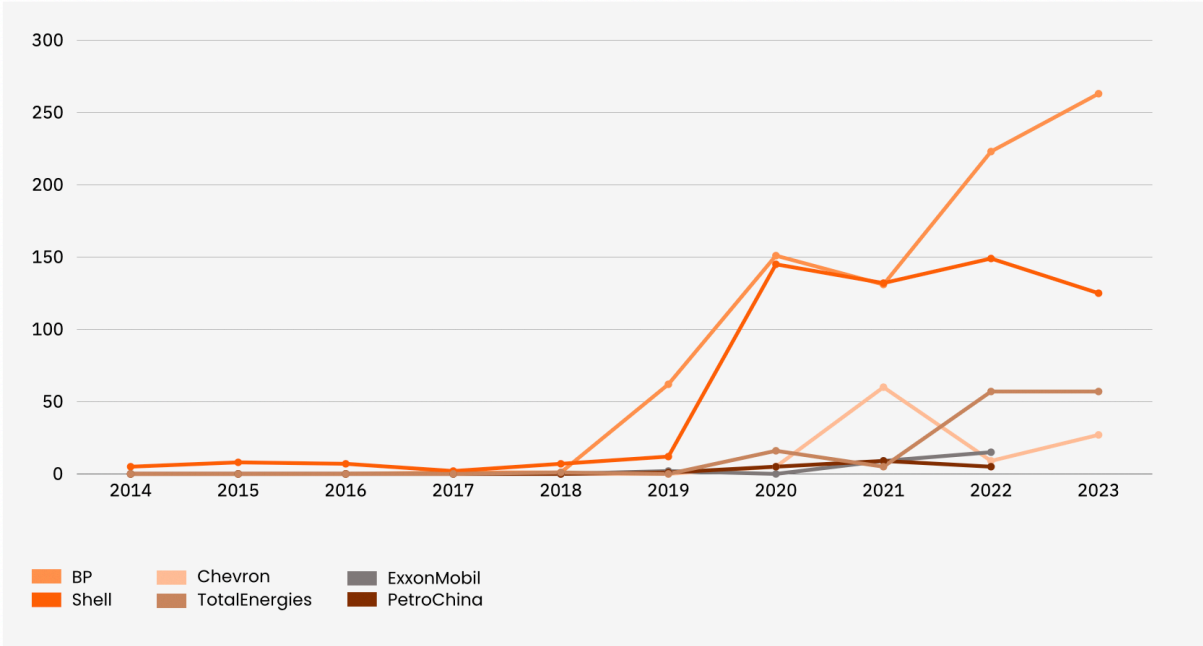
The same upward trajectory in the adoption of Net Zero is evident both in the sustainability reports of the six companies and from the insights gained from expert interviews. Graph 4, on the next page, depicts a progressive increase in the frequency of mentions of the term Net Zero, and in the case of PetroChina, Near Zero, within these reports over time. It is important to clarify that this graph illustrates the specific number of mentions of the term Net Zero, differing somewhat from the organization of the Google Trends data (Graph 3). Nonetheless, Graph 4 underscores a clear upward trajectory in the integration of Net Zero concepts across the analyzed companies. Furthermore, the insights from the expert interviews validate this observation, indicating a notable rise in the utilization of the term Net Zero within corporate sustainability reporting.

It's essential to clarify that Graph 4 represents the total number of occurrences of the term within each company's reports annually. In the case of Chevron, which published various types of sustainability reports including CRS Reports and Climate Change Resilience Reports at the same time, the totals from these reports were added together. Additionally, it is worth noting that ExxonMobil's recent publications consisted of a concise brochure spanning three pages and an accompanying infographic of one page. This indicates that the total number of

instances where the term Net Zero was mentioned varies, based on the number and length of sustainability reports published by each company. Despite this variation, the total number of times Net Zero was used, offers an initial insight into the extent to which each company addresses the concept of Net Zero in their sustainability reporting. This provides an initial impression of the company's engagement with and stance towards the Net Zero initiative.

Graph 4
Frequency of trend Net Zero* in sustainability reports

*Near Zero for PetroChina



The trajectory in Graph 4 indicates that BP and Shell emerge as the frontrunners in the utilization of the term, consistently employing it more frequently than other companies. Additionally, TotalEnergies demonstrates an increasing use of the Net Zero trend, however to a lesser extent compared to BP and Shell. Conversely, Chevron, ExxonMobil, and PetroChina show a comparatively lower frequency of usage of the term, indicating a lag in the adoption of the term Net Zero within their reports.

In addition to examining the total number of occurrences of the term Net Zero in sustainability reports, Table 3 has been included on the next page, to highlight the frequency of the term Net Zero, per page. This provides a more detailed perspective on the occurrence of the term within each report, allowing for a better understanding of the use of the term. This table shows that both BP and Shell are currently using Net Zero most frequently in their reports: 6,7 and 1,3 times per page, respectively. However, the other companies are using the term less frequent, where TotalEnergies uses it 0,5 times per page, Chevron 0,3 times and PetroChina 0,05 times. ExxonMobil is an exception in this list, because of the last 2 ‘reports’, which are a brochure of three pages and an infographic of one page.

The varying frequency of the term Net Zero between the companies, as confirmed by the expert interviews, provides insights into the degree of emphasis and commitment each company places on the Net Zero narrative within their sustainability reporting. Companies with a higher frequency of usage per page can be interpreted as being more proactive and vocal about

their adoption of Net Zero principles. Conversely, companies with a lower frequency may either be in the early stages of integrating Net Zero goals into their reporting or may have different priorities altogether. Overall, the frequency of usage of the term Net Zero serves as a qualitative indicator of a company's sustainability, signaling its alignment with the global trend Net Zero.

Table 3
Frequency of Net Zero* use in sustainability reports, per page

*Near Zero for PetroChina

Frequency of the term Net Zero in the report, per page						
Company	BP	Shell	TotalEnergies	ExxonMobil	Chevron	PetroChina
2023	6,7	1,3	0,5	-	0,3	-
2022	3,4	1,6	0,7	3,8 *	0,1	0,05
2021	2,1	1,4	0,03	0,1	0,4	0,08
2020	1,6	1,4	0,5	-	0,07	0,2
2019	0,7	0,1	0	0,02	0	0
2018	0,01	0,08	0	0	0	0
2017	0,01	0,02	0	0	0	0
2016	0	0,09	0	0	0	0
2015	0	0,01	0	0	0	0
2014	0	0,08	0	0	0	0

4.4.2 Additional trends

As explained in Chapter 4.1, some companies prioritize the use of the term Net Zero, whereas others may opt for alternative terminology such as Carbon Neutral, Net Positive, or Carbon Reduction. To provide a comprehensive understanding, trajectory graphs have been generated for these alternative terms, in the same way that has been done for Net Zero. Graph 5 depicts the Google Trend analysis (accessed on the 13th of May, 2024), while Graph 6 presents the findings from the sustainability reports. Both graphs, shown on the next page, illustrate a similar upward trend in the usage of the terms, with Net Zero consistently maintaining its position as the most frequently used term.

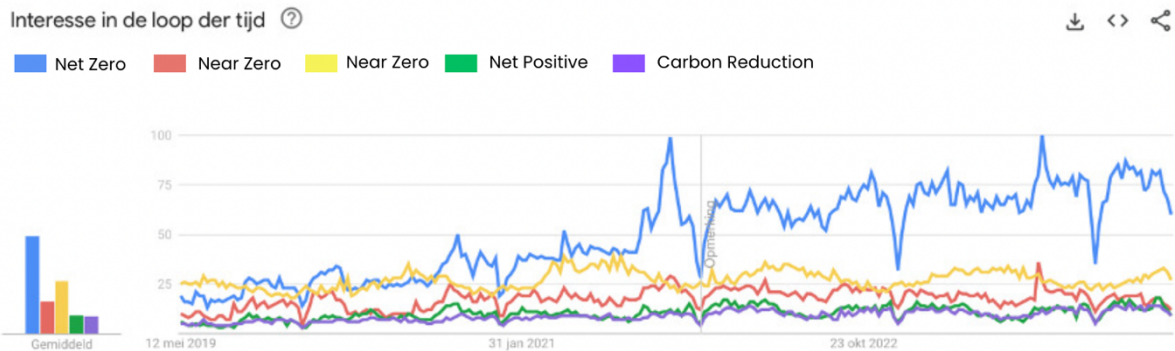
The primary findings indicate that while other sustainability terms are gaining attention, the term Net Zero continues to be the predominant and most frequently utilized term in both public interest (as evidenced by Google Trends) and corporate reporting among the six

companies analyzed within the energy sector. This same trajectory has been observed by the sustainability experts. During the interviews, it was highlighted that companies or specific sectors prioritize distinct sustainability terms based on factors such as geographical location, regulatory requirements, and shareholder interests.

Graph 5

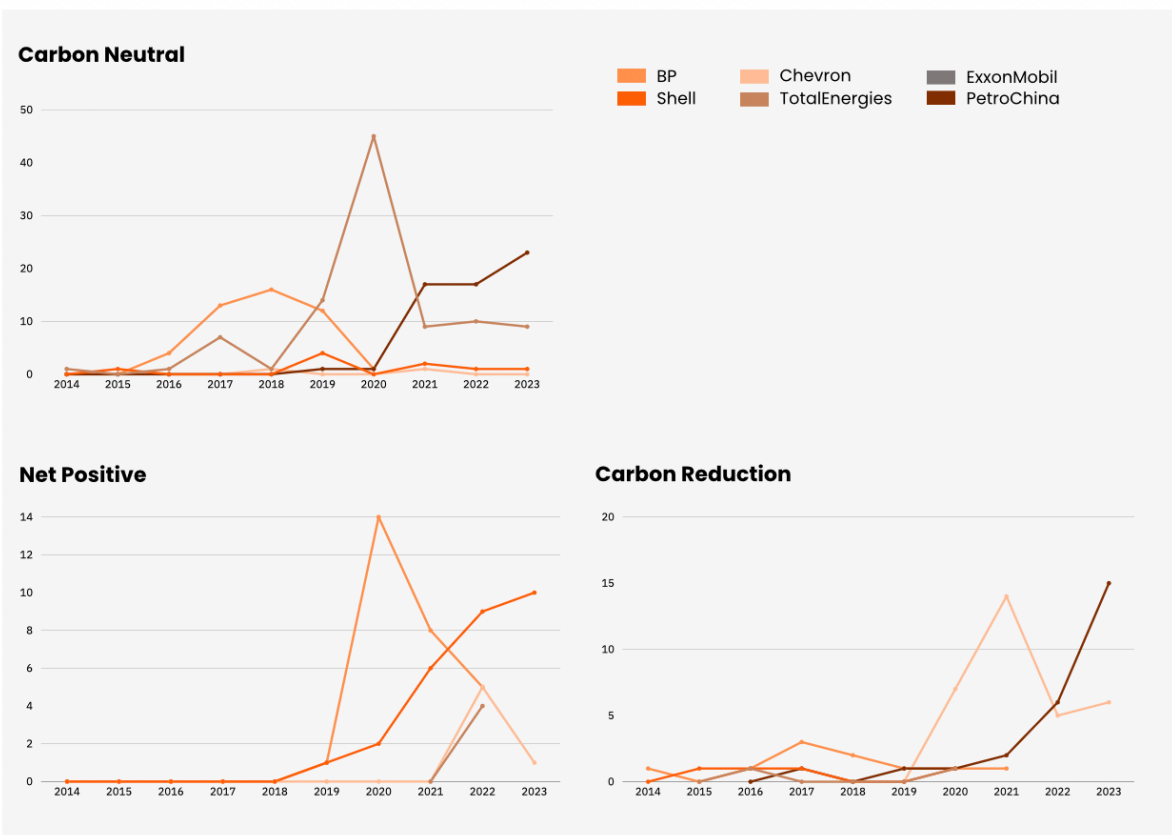
Trend trajectory for additional trends (Google Trends)

Graph originating from GoogleTrends.com



Graph 6

Frequency of additional trends in sustainability reports



4.5 How Net Zero is incorporated in sustainability goals

Examining the Net Zero goals of the selected companies reveals several noteworthy observations. Firstly, each company outlines ambitions to achieve Net Zero emissions by 2050, with PetroChina aiming for Near Zero emissions by the same timeframe. Second, there is a distinction among companies in their goals to achieve Net Zero emissions, transform into fully Net Zero entities, or contribute towards helping the world reach its Net Zero targets. Thirdly, the Paris Agreement serves as a prominent reference point within these goals, underscoring their alignment with international climate accords. Fourth, the evolution of these goals over time highlights dynamic shifts, presenting intriguing variances among companies. Lastly, notable differences emerge in the reference years chosen by each company, reflecting individualized approaches to sustainability targets. These observations underscore the complex landscape of corporate sustainability commitments and the diverse strategies employed to mitigate environmental impacts.

4.5.1 Net Zero in 2050

In aligning with global efforts to combat climate change, all companies analyzed in this study share a common objective: achieving Net Zero emissions by the year 2050. As previously mentioned, PetroChina uses the term Near Zero, making it slightly different compared to the other companies. Additionally, PetroChina aims for Near Zero emissions “by around 2050” (PetroChina ESG Report 2022, p.12). This might also indicate a potential translation issue, but it could also be interpreted as a flexible statement, suggesting that PetroChina is not committed to specifying one particular year.

While each company has published their Net Zero targets with the same deadline, they did not all publish them simultaneously. Figure 5 shows when the targets have been published, including their reference year (further elaborated on in section 4.5.5).

Figure 5
Publication of Net Zero* targets and reference years

*Near Zero for PetroChina

● Reference year

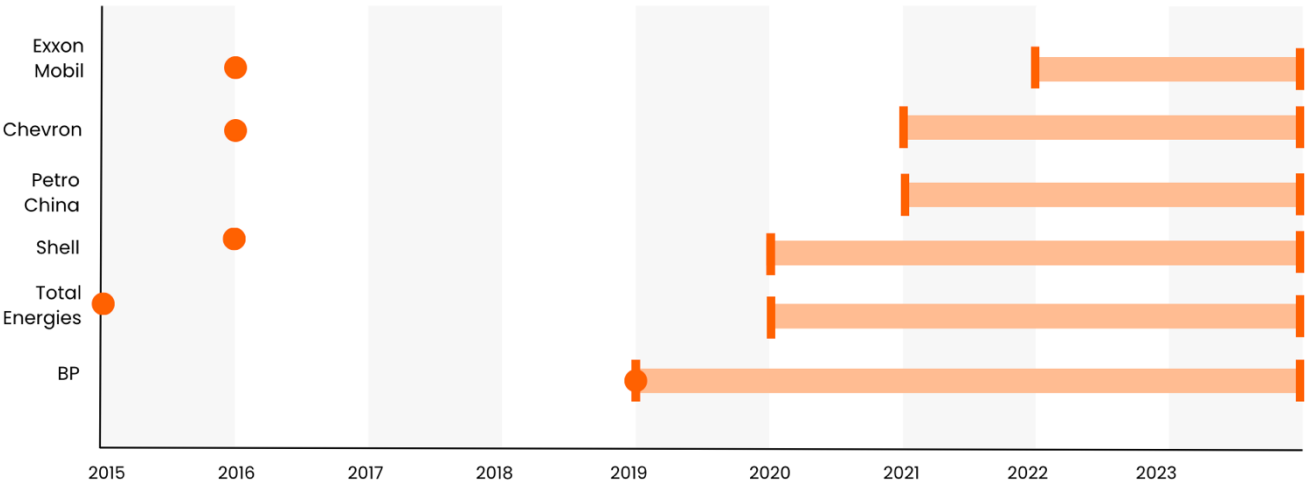


Table 4

Net Zero* goals published in sustainability reports

*Near Zero for PetroChina

Goals Net Zero / Near Zero			Key differences
BP	earliest	"Our new ambition is to become a net zero company by 2050 or sooner and to help the world get to net zero." (Sustainability report 2019, p.18)	No changes
	latest	"We want to be a net zero company by 2050 or sooner, and to help the world get to net zero." (Net Zero Ambition Progress Update 2023, p.35 - glossary)	
Shell	earliest	"We have no immediate plans to move to a net-zero emissions portfolio over our investment horizon of 10-20 years." (Sustainability report 2017, p.2)	Major changes From "no plans" to a full Net Zero target.
	latest	"Our target is to become a net-zero emissions energy business by 2050." (Sustainability report 2023, p.22)	
Total Energies	earliest	"Total's ambition is to get to net-zero emissions by 2050, together with society." (Getting to Net Zero 2020, p.8)	Slight changes From 'Net Zero emissions' to a "Net zero company".
	latest	"A Net Zero Company by 2050, Together With Society" (Sustainability and climate report 2023, p.11)	
Exxon Mobil	earliest	"We also continue to invest in lower-emission technologies, such as carbon capture and advanced biofuels, which are necessary for society to achieve its ambition for net zero emissions by 2050." (Sustainability report 2019, p.4) "ExxonMobil supports the aims of the 2015 Paris Agreement and efforts to achieve net-zero emissions." (Sustainability report 2019, p.10)	Slight changes From recognition of the Paris Agreement, to full Net Zero target.
	latest	"With the support of clear and consistent government policies, ExxonMobil aims to achieve net-zero Scope 1 and 2 greenhouse gas emissions from its operated assets by 2050." (Net Zero Ambition 2022, p.6)	
Chevron	earliest	"We support the Paris Agreement and its goal of "holding the increase in the global average temperature to well below 2° C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5° C above pre-industrial levels," which, per the Intergovernmental Panel on Climate Change (IPPC), implies reaching global net zero in the second half of this century." (Corporate sustainability report 2020, p.12)	Slight changes From recognition of the Paris Agreement, to full Net Zero target.
	latest	"We aspire to reach net zero upstream emissions (Scope 1 and 2) by 2050" (Climate change resilience report 2023, p.39)	
Petro China	earliest	"We aim for achieving carbon emissions peak around 2025 and "near-zero" emissions around 2050, thus contributing to China's efforts to have CO2 emissions peak before 2030 and carbon neutrality before 2060, as well as to the global climate target." (ESG report 2020, p.6)	Slight changes From a large description to a smaller, more to-the-point goal.
	latest	"Our focus is on achieving "near-zero" emissions by around 2050." (ESG report 2022, p.12)	

Table 4 presents the goals as defined in the reports of the analyzed companies. For each company, where available, both the earliest and most recent goals have been included to highlight the evolution of their commitments. The major differences between these goals are depicted in the right-hand column of the table. Combining Table 4 and Figure 5: BP and ExxonMobil emerged as pioneers by announcing their goals to achieve Net Zero emissions by 2050, with both companies unveiling their commitments in 2019. BP is committed to reaching Net Zero operational greenhouse gas emissions by 2050 or sooner, initiating efforts towards this goal from 2019 onwards. Also in 2019, ExxonMobil has set two targets, aiming for Net Zero emissions in the Permian Basin by 2030 and extending this goal to encompass all operational assets by 2050. One year later, PetroChina, Shell and TotalEnergies followed by publishing their Net Zero goals. Whereas both companies have set their timelines to 2050, PetroChina focusses on becoming Near Zero, while Shell and TotalEnergies focus on becoming Net Zero. Chevron was the last company to publish its Net Zero goal. It is committed to achieve Net Zero upstream emissions (scope 1 and 2) by 2050, with efforts commencing from 2021 onwards.

As indicated by the interviewees, not publishing the goals in the same year might depend on the strategic approaches and priorities of the companies. Whereas companies may need time to develop comprehensive goals and strategies to assess the feasibility of their Net Zero goals. Also, the timing of the goal announcements may coincide with strategic planning cycles or key milestones. Additionally, companies may strategically time their goal announcements to differentiate themselves from competitors, while enhancing their reputation as sustainable leaders.

4.5.2 Net Zero company, or Net Zero emissions?

Even though all analyzed companies have aligned their Net Zero targets to the year 2050, major differences are observed in the way the goals are described. The details are illustrated in Table 4, presented on the previous page. BP, Shell and TotalEnergies have communicated that Net Zero is part of their core business, whereas they have the goal to become a “Net Zero Company” (BP Net Zero Ambition Progress Update 2023, p.35 & TotalEnergies Sustainability and Climate Report 2023, p.11), and a “Net-Zero emissions energy business” (Shell Sustainability Report 2023, p.22). ExxonMobil, Chevron, and PetroChina, however, have set their targets to achieve Net Zero emissions without explicitly claiming their company to become Net Zero.

For BP, Shell, and TotalEnergies, positioning themselves as “Net Zero Companies” is indicative of a comprehensive commitment to integrating sustainability into their core business operations. By framing Net Zero as a fundamental aspect of their corporate identity, these companies signal a holistic approach to decarbonization that extends beyond emissions reduction to encompass broader sustainability principles and practices. This strategic positioning may be influenced by factors such as stakeholder expectations, market trends, regulatory environments, and corporate values. The decision to explicitly declare their intention to become “Net Zero Companies” may also be shaped by their geographical location, particularly their presence in Europe. European companies often face more stringent regulatory requirements and heightened societal expectations regarding sustainability, which may incentivize them to adopt more ambitious targets and adopt a broader sustainability agenda.

In contrast, ExxonMobil, Chevron, and PetroChina have opted to focus specifically on achieving Net Zero emissions without explicitly committing to making their entire business Net Zero. This approach may reflect different strategic priorities, and regulatory contexts. These companies may prioritize emission reductions to mitigate climate risks and meet regulatory policies without necessarily integrating sustainability as comprehensively into their corporate identity and business model. Furthermore, the different approaches among these companies may also reflect their respective industry contexts, resource portfolios, and organizational structures. For instance, oil and gas companies like ExxonMobil, Chevron, and PetroChina may face unique challenges and opportunities related to their core business activities, which could influence their strategic approach to sustainability.

4.5.3 Mentioning the Paris Agreement

Despite these variations, a common trend among all companies is their reference to the Paris Agreement in their targets or sustainability reports. This shows that the Agreement has been a significant catalyst to drive the adoption of Net Zero initiatives across the world. Companies are likely to refer to the Paris Agreement in their targets or sustainability reports because the agreement serves as a crucial global framework for addressing climate change. According to the expert interviews, by aligning their goals with the Paris Agreement, companies demonstrate their commitment to international efforts to mitigate climate change. Additionally, referencing the Paris Agreement provides companies with a clear and widely recognized standard for setting emissions reduction targets, enhancing their credibility, and aligning their actions with global climate goals.

4.5.4 Changes over the years

In response to global imperatives for environmental sustainability, energy companies have increasingly embraced Net Zero targets as an important component of their corporate strategies. However, within this landscape, a notable discrepancy is observed. While some firms have maintained consistent Net Zero goals over time, others have undergone revisions to their targets. Understanding the changes and specific targets, offers valuable insights into corporate sustainability practices within the energy sector. Certain industry leaders, such as BP, TotalEnergies, and PetroChina, have demonstrated a consistent commitment to their original Net Zero targets. In contrast, companies like Shell, ExxonMobil, and Chevron have shown a tendency to adjust their approaches to Net Zero targets over time. For this section, Graph 4 can be used as a visualization of the different targets.

BP published its first Net Zero target in 2019, claiming their ambition is to “become a Net Zero company by 2050 or sooner and help the world get to Net Zero” (BP Sustainability Report 2019, p.18). This target has not changed since then. Similarly, TotalEnergies first published its target in 2020: “Total’s ambition is to get to Net Zero emissions by 2050, together with society” (TotalEnergies Getting to Net Zero 2020, p.8), and has not altered since then. Notably, both companies extend their targets beyond internal operations, pledging to contribute to a global Net Zero future, “together with society”. This inclusive approach underscores a profound sense of responsibility and leadership towards climate change mitigation and assisting others in achieving Net Zero emissions. PetroChina has maintained consistency in its commitment to achieving Net Zero emissions, too. Initially outlined in 2020, their target remains unchanged as evident in their 2022 report, aiming to achieve “Near Zero emissions

(by) around 2050” (PetroChina ESG Report 2020, p.6 & ESG Report 2022, p.12). This highlights PetroChina’s enduring dedication to environmental and sustainability objectives.

While BP, TotalEnergies, and PetroChina have maintained consistent Net Zero targets over time, Shell, ExxonMobil, and Chevron show changes in their targets. Among them, Shell stands out for the frequency and nature of the target revisions. In 2014, Shell initially calculated, with their Shell New Lens Scenarios, that “Net Zero annual energy system emissions are achievable by 2100” (Shell Sustainability Report 2014, p.6), which, according to Shell, was supported by the 5th IPCC assessment. The subsequent Sustainability Report from 2016 reaffirmed the feasibility of Net Zero emissions, saying that “Net Zero emissions of GHGs are both technically and economically feasible towards the end of the century” (Shell Sustainability Report 2016, p.4). During the next two years, 2017 and 2018, Shell made clear not to focus on Net Zero targets, claiming to “have no immediate plans to move to a Net Zero emissions portfolio over our investment horizon of 10-20 years” (Shell Sustainability Report 2017, p.2 & Sustainability Report 2018, p.0). A significant change occurred in 2019, when Shell announced its commitment to achieving Net Zero emissions from all its operations, claiming to “support the European Commission’s proposal for the EU to achieve Net Zero emissions by 2050” (Shell Sustainability Report, p. 39). However, they still explain not to have any “immediate plans to move to a Net Zero emissions portfolio over our investment horizon of 10-20 years” (Shell Sustainability Report, p.2). This is changed in 2020, when Shell added a timeline year in their target, wanting to “become a Net Zero energy business by 2050” (Shell Sustainability Report, p.21).

Also, ExxonMobil and Chevron changed their vision on the Net Zero target over the years. ExxonMobil first mentioned the term Net Zero in their Sustainability Report in 2019, claiming to “invest in lower-emission technologies”, which are “necessary for society to achieve its ambition for Net Zero emissions by 2050” (p.4). Even though ExxonMobil explains the urgency of getting to Net Zero by 2050, they did not incorporate this in their own target, whereas they only explained that this is needed for society to get to Net Zero. Only in the year 2022, they claim in their brochure “to achieve Net Zero scope 1 and 2 greenhouse gas emissions from the operation assets by 2050” (ExxonMobil Net Zero Ambition 2022, p.1). In a specific infographic, published in the same year, they give an additional Net Zero target, focusing on a specific region in America, claiming to want to become “Net Zero in the Permian Basin by 2030” (ExxonMobil Pathway to Net Zero in the Permian 2022, p.1). Chevron has undergone a similar progress. In their CSR report in 2022, Chevron explains to “support the Paris Agreement”, which is “important to reach global Net Zero in the second half of this century” (p.12). However, they did not provide a Net Zero target, yet. In the subsequent year, 2021, they change this global commitment a personalized target, aspiring “to reach Net Zero upstream emissions by 2050”. The alterations observed in both ExxonMobil and Chevron's targets suggest a level of hesitancy towards the Net Zero updates and regulations.

The observed changes over the years are also confirmed by experts. As Net Zero becomes increasingly important, companies are acquiring and sharing more knowledge on the subject. This means that as companies prioritize and focus more on achieving Net Zero goals, they are actively learning and gaining insights into how best to address sustainability challenges. This continual learning process results in companies refining and enhancing their goals over time, reflecting a growing understanding and commitment to environmental sustainability practices.

4.5.5 Reference years

An important issue with the Net Zero goals is the reference, or so-called baseline year. While some companies have clearly specified their reference years, others have left out this detail. Figure 5 (page 36) shows when the Net Zero targets have been first published, including the reference years they use. The importance of looking at the reference years, was highlighted during the expert interviews.

As can be observed in Figure 5, BP has set a clear baseline for its emissions reduction targets, using 2019 as its reference year. In contrast, Chevron employs various graphs and tables with different reference years, with 2016 being the most frequently used year among them. ExxonMobil and Shell explicitly adopt a 2016 baseline for its sustainability goals. In contrast, TotalEnergies sets its reference year slightly earlier, opting for a 2015 baseline for the Net Zero initiatives. PetroChina, however, does not report any baseline year whatsoever.

The use of different reference years, all aiming to achieve Net Zero emissions by 2050, introduces variability in approaches and timelines among companies. According to insights from expert interviews, these variations in reference years may reflect differing starting points in emissions reduction efforts, historical emissions levels, or strategic priorities. This suggests that each company has outlined its pathway to Net Zero based on its specific circumstances, potentially influencing the speed and depth of their emission reduction initiatives. As highlighted in the interviews, these significant differences in reference years underscore the intricate and customized nature of corporate transitions toward a Net Zero emissions future.

4.5.6 Cautionary statements

Some companies have issued cautionary statements after outlining their Net Zero targets. Whereas ExxonMobil and PetroChina have not published specific cautionary statements, BP, Shell, TotalEnergies and Chevron have developed separate statement sections within their sustainability reports. BP for example, explains that getting to Net Zero depends on the “multiple climate scenarios and the uncertainties in the energy transition” (BP Net Zero Ambition Progress Update 2023, p.36). They also explain that these “forward-looking statements involve risk and uncertainty” (p.36), because they relate to events that will or may occur in the future and are “outside the control of BP” (p.36). Using these statements, they try to explain that actual results may differ from those expressed in their targets. Similarly, Shell has included a cautionary note about their Net Zero target, explaining that their current targets reflect “the current economic environment” (Shell Sustainability Report 2023, p.94). Compared to BP, Shell makes a more significant cautionary statement, explaining that “if society is not Net Zero in 2050, as of today, there would be significant risk that Shell may not meet this target” (p.94). A similar cautionary statement is made by TotalEnergies, explaining that “these forward-looking statements may prove to be inaccurate in the future and are subject to a number of risk factors” (TotalEnergies Sustainability and Climate Report 2023, p.108). In their cautionary statement, Chevron provides a list of items necessary to reach Net Zero emissions. They explain that accomplishing the aspiration of becoming Net Zero, “depends on the continuing progress of commercially viable technology; government policy; successful negotiations for carbon capture and storage and nature-based projects; availability of cost-effective verifiable offsets in the global market and granting of necessary permits by governing authorities” (Chevron Climate Change Resilience 2023, p.81).

The development of cautionary statements by companies like BP, Shell, TotalEnergies, and Chevron is an important finding. Firstly, these cautionary statements reflect a commitment to transparency and accountability in corporate reporting. By acknowledging the uncertainties and risks associated with their Net Zero targets, companies demonstrate a responsible approach to communicating with stakeholders. This transparency helps to manage expectations and mitigate potential concerns among investors, customers, and other stakeholders regarding the achievability and reliability of their emissions reduction goals. Secondly, the inclusion of cautionary statements underscores the complexity and multifaceted nature of the energy transition and emissions reduction efforts. Achieving Net Zero emissions involves navigating a multitude of challenges, including technological limitations, regulatory uncertainties, and shifts in market dynamics. Moreover, these cautionary statements serve as a form of risk management. By explicitly outlining the potential risks and uncertainties associated with their Net Zero targets, companies signal to investors and other stakeholders that they are aware of the potential pitfalls and are actively managing these risks.

The use of cautionary statements is also elaborated on during the interviews. According to the sustainability experts, effectively communicating these statements could mitigate greenwashing practices. However, the interviewees note that not all companies employ them consistently, underscoring variations in corporate priorities.

4.6 How Net Zero is incorporated in sustainability strategies

Goals represent the desired outcomes or achievements that a business aims to accomplish, while strategies are the specific plans and actions implemented to achieve those goals. This section discusses various strategies employed to achieve Net Zero emissions.

4.6.1 Net Zero in the core business

By examining the incorporation of Net Zero within sustainability strategies of the six energy companies, it becomes evident that while all companies acknowledge its significance, the depth and integration of the Net Zero targets varies substantially. Half of the companies, ExxonMobil, Chevron and PetroChina, approach Net Zero as a goal to achieve, focusing on reduction of emissions alone. In contrast, BP, Shell and TotalEnergies embrace a broader ambition, aiming to transform into Net Zero companies: fundamentally altering their business models. This difference shows the different perspectives towards Net Zero and the integration into strategies and the core business. Additionally, this contrast is evident in the sustainability reports of these companies. BP, Shell, and TotalEnergies dedicate separate reports to Net Zero initiatives, placing significant emphasis on detailing their strategies within sustainability reports. In contrast, ExxonMobil, Chevron, and PetroChina approach these strategies more subtle within their sustainability reports, suggesting different levels of commitment and transparency regarding their Net Zero strategies. The experts also noted these differences, attributing them to factors such as geographical location, regulatory environments, and company-specific priorities.

4.6.1 Net Zero strategies

Even though all analyzed companies have published Net Zero strategies, the extensiveness of these strategies varies significantly. BP outlines their Net Zero strategy within its “Our Strategy” chapter, explaining they want “to become an integrates energy company” (BP Net Zero Ambition Progress Update 2023, p.6). Shell’s Powering Progress Strategy is steered towards achieving a “balanced energy transition”, while “helping to build the clean energy for the future” (Shell Sustainability Report 2023, p.25). Similarly, TotalEnergies emphasized the combined ambition of continuing to “provide the energy the world needs”, while simultaneously “responsibly and sustainably accelerating the transition to low carbon energy solutions” (TotalEnergies Sustainability and Climate Report 2023, p.9). Chevron positions itself with ambitious aspirations, aiming “to be among the most efficient and responsible producers of low carbon energy” (Chevron Climate Change Resilience Report 2023, p.2). In contrast, PetroChina adopts a more modest stance, claiming to integrate “green and low-carbon initiatives” into its broader development strategy (PetroChina ESG Report, 2023, p.38). ExxonMobil diverges by adopting a unique strategy that centers on a single location: the Permian Basin. This distinct approach, centered around this Permian Basin, highlights a strategic divergence from its competitors. While other companies adopt broader, more holistic strategies encompassing their entire operations or global operations, ExxonMobil concentrates its efforts on a specific geographical area. This focused strategy suggests that ExxonMobil perceives the Permian Basin as a crucial focus for achieving its Net Zero objectives. This demonstrates that each company approaches the concept of Net Zero within their sustainability strategies in a unique manner, reflecting their individual priorities, goals, and perspectives on addressing climate change and transitioning to a low-carbon future.

While all analyzed companies include strategies aimed at achieving Net Zero in their sustainability reports, the specific focus of these strategies varies significantly. Some companies prioritize CO₂ and methane reduction measures, while others concentrate on increasing the production of natural gas or plan to invest in carbon sinks. The forthcoming sections delve into each prominent strategy for achieving Net Zero, providing detailed explanations and examples sourced from the companies' sustainability reports. This exploration aims to explain the diverse approaches taken by these companies in pursuit of their Net Zero objectives.

4.6.2 Renewables, bioenergy, liquified natural gas and electricity

In the pursuit of achieving Net Zero emissions, or transforming into a Net Zero business, renewable energy emerges as a central strategy for all analyzed companies. Shell, for instance, explains to “have wind power interests in operation, under construction or under development in several countries” (Shell Sustainability Report 2023, p.23), highlighting that its wind farms in the North Sea “supply almost 3% of electricity demands in the Netherlands” (p.34). Similarly, TotalEnergies directs a substantial portion (58%) of its research and development (R&D) efforts towards new energies, particularly renewable energies, reflecting a strong dedication to innovation and sustainability (TotalEnergies Sustainability and Climate Report 2023, p.37). This emphasis on renewables is echoed by BP, Chevron, ExxonMobil and PetroChina, all of whom prioritize investments in wind and solar power as key components of their Net Zero strategy. As indicated by the expert interviews, the collective industry shift towards renewable energy sources stands as a significant strategy in achieving Net Zero emissions. It underscores the energy sector's recognition of the pivotal role renewable energy plays in propelling us towards a sustainable energy future.

In addition to renewable energy, many of the analyzed companies place a significant emphasis on bioenergy and liquified natural gas (LNG), as components of their Net Zero strategies. BP, for example, is actively expanding its “established bioenergy business” (BP Net Zero Ambition Progress Update 2023, p.20). Similarly, Shell underscores its commitment to growing their “world-leading LNG business”, as they are “able to ship natural gas to where it is needed most” (Shell Sustainability Report 2023, p.66). LNG, according to Shell, serves as a versatile solution that enhances energy security while also facilitating the energy transition by “providing electricity, grid stability, and flexibility” (p.66). Also, TotalEnergies claims to be a “leader in regasification in Europe” in the LNG business (TotalEnergies Sustainability and Climate Report 2023, p.28). While ExxonMobil, Chevron, and PetroChina prioritize bioenergy and LNG, they do not explicitly position themselves as leaders in this industry. This collective focus on bioenergy and LNG underscores the recognition of these sources as crucial strategies in achieving Net Zero emissions and ensuring a sustainable energy future.

Thirdly, energy efficiency and electrification emerge as significant themes within the framework of Net Zero strategies. Shell, for instance, wants to “reduce greenhouse gases, by improving energy efficiency by deploying renewable electricity” (Shell Sustainability Report 2023, p.23). Similarly, BP and TotalEnergies outline their objective to focus on improving the energy efficiency while using electrification. While all analyzed companies prioritize electrification, some extend their strategies to include the importance of electric vehicles (EVs), aimed to facilitate the consumers' transition to a Net Zero world. Shell's Recharge program serves as a notable example of such initiatives. By improving energy efficiency and transitioning to renewable electricity, companies can significantly reduce their carbon footprint and contribute to global efforts to combat climate change. Moreover, the inclusion of EVs in

these strategies underscores the importance of supporting consumers in adopting sustainable transportation options.

Across all analyzed companies, and as indicated by the interviews, it is evident that a common thread runs through their strategies: a focus on renewable energy, bioenergy, LNG and electrification as pivotal pathways towards achieving Net Zero emissions. However, the extent to which each company prioritizes and implements these strategies varies. Despite these differences, the widespread adoption of these strategies explains their important role in the journey towards Net Zero. This consistency suggests that the integration of renewable energy, bioenergy, LNG and electrification into business operations is not just beneficial but likely necessary to achieve Net Zero emissions targets effectively.

4.6.3 Reducing CO₂ and methane

While Net Zero strategies typically center around the reduction of CO₂ emissions, it is important to note that methane emissions play a significant role for all companies analyzed. Despite being a lesser-known greenhouse gas, methane possesses a much higher global warming potential than CO₂ over shorter time frames, making it a critical target for emissions reduction efforts. All analyzed companies recognize this fact and have integrated methane reduction initiatives into their Net Zero strategies. For instance, BP has explicitly included methane reduction as one of its ten Net Zero aims. Similarly, Shell and TotalEnergies acknowledge the detrimental impact of methane emissions and have set reduction targets accordingly. ExxonMobil, Chevron, and PetroChina also prioritize methane emissions reduction, with Chevron emphasizing that “methane emissions have become a key part of being a responsible producer of oil, products and natural gas” (Chevron Climate Change Resilience Report 2023, p.41). The shared emphasis among all analyzed companies on reducing methane emissions underscores the critical importance of this component in achieving Net Zero targets.

4.6.4 (Blue and green) hydrogen

The exploration of hydrogen emerged as a key Net Zero strategy for all analyzed companies. Shell, for example, claims to be investigating the production of “decarbonized hydrogen” for their own facilities and, “in the future, for customers in the industry and mobility” (Shell Sustainability Report 2023, p.38). Similarly, BP is strategically positioning itself to attain a leading global position in the hydrogen market. While several companies refer to ‘hydrogen’ broadly, BP distinguishes between ‘blue’ and ‘green’ hydrogen. According to their glossary, ‘green hydrogen’ is produced by electrolysis of water, using renewable power, while ‘blue hydrogen’ is made from natural gas in combination with carbon captures and stored (BP Net Zero ambition progress update 2023, p.34). The fact that all analyzed companies are actively exploring hydrogen signifies its central role in their Net Zero strategies. By prioritizing hydrogen, these companies are not only seeking to reduce their own carbon footprints but also positioning themselves as leaders in the transition to a low-carbon economy.

4.6.5 Offsetting, nature-based solutions, and forest preservation

Offsetting is a nature-based strategy to achieve Net Zero emissions. As indicated by the interviews, after following the implementation of energy efficiency methods, renewable energy adoption, and hydrogen utilization, many companies pivot towards offsetting projects. Carbon offsetting involves compensating for emissions, by supporting external initiatives, such as nature reserves and tree-planting initiatives. While this is a nature-based strategy to receive Net Zero emissions, not all companies show an equal interest in offsetting their CO₂ emissions. Whereas PetroChina and Shell are actively engaged in offsetting their emissions through various initiatives, TotalEnergies shows a different approach. They emphasize the importance of first reducing the CO₂ emissions, before relying on offsetting methods. However, they believe that in 2050 “forest preservation and restoration can be instrumental in achieving Net Zero emissions worldwide” (TotalEnergies Sustainability and Climate Report 2023, p.58). By prioritizing emission reduction, TotalEnergies might refer to potential limitations or drawbacks related to offsetting strategies. While offsetting projects can provide valuable environmental benefits, they may not always result in direct emissions reductions or address the root causes of emissions. This idea is further reinforced by insights from the interviews. During these discussions, it was explained that some companies may overly rely on offsetting projects due to their inability to achieve Net Zero emissions, directly. However, during the interview with an ESG Manager, it is clarified that offsetting as the main solution is not possible, emphasizing that it merely allows companies to “buy their way out” of the Net Zero strategy. The true path to impactful change lies in prioritizing emission reduction efforts over reliance on offsetting mechanisms. While offsetting projects can play a role in mitigating emissions, it is important to note that not all companies prioritize offsetting strategies in the same manner. While some may heavily invest in offsetting projects, others, like TotalEnergies, may adopt a more cautious approach, prioritizing emission reduction efforts before turning to offsetting as a supplementary measure.

4.6.6 Carbon capture, utilization, and storage.

Carbon Capture, Utilization and Storage (CCU, CCS or CCUS) represents another crucial strategy in the pursuit of Net Zero emissions. It is worth mentioning that all analyzed companies are working on CCUS projects. Shell defines CCU as “a combination of technologies that capture and store carbon dioxide deep underground or under the seabed, preventing its release into the atmosphere” (Shell Sustainability Report, 2023, p.32). TotalEnergies further elaborates this concept, describing CCUS as an industrial and commercial process involving the capture of CO₂ from industrial sites known as “carbon hubs”, followed by transportation via ship or pipeline (TotalEnergies Sustainability and Climate Report, 2023, p.56). As indicated by the broad use of CCUS in Net Zero strategies, it shows to form a crucial pathway for companies to address emissions from sources that are challenging to eliminate completely, such as industrial processes and fossil fuel-based power generation. By capturing and storing carbon dioxide emissions, CCUS allows companies to reduce their overall carbon footprint and move closer to achieving Net Zero emissions targets.

The integration of CCUS projects represents a significant aspect of Net Zero strategies, from all analyzed companies. However, the pace and prioritization of CCUS implementation varies among these companies. Shell, for instance, extensively details its numerous CCUS projects within its sustainability report, showcasing a commitment to this technology. In contrast, TotalEnergies places emphasis on emission avoidance and reduction initiatives, before

looking at the options for CCUS. The interviews underscore the significance of this difference, noting that not all companies need to heavily rely on CCUS projects to get to Net Zero. Instead, it is advocated to prioritize emissions reduction as an impactful Net Zero strategy. This idea is echoed by BP, emphasizing to focus on energy efficiency, before planning major CCUS projects as part of their Net Zero strategy. Also, Shell explains that CCUS is meant “for the remaining emissions”, focusing on nature-based solutions that “protect and enhance natural ecosystems – such as forests, grasslands, wetlands and coastal zones” (Shell Sustainability Report 2023, p.32). While efforts to improve energy efficiency and adopt renewable energy sources are essential, CCUS provides an additional tool in the toolbox for tackling emissions across various sectors of the economy.

Even though all analyzed companies are working and reporting on their CCUS projects, Shell has published the most information about their CCUS initiatives. After providing a long list with the current projects, they provide an explanation of the certificates they use to indicate the validity of the projects. However, this extensive list is followed by the fact that they “also buy carbon credits generated at other nature-based projects”, decreasing their validity (Shell Sustainability Report 2023, p.32). Furthermore, PetroChina and Chevron are “actively exploring new industries with the aim to establish CCUs industry chain, to accelerate the transition towards clean energy supply” (PetroChina ESG report 2023, p.42), while “CCUS play an important role in limiting these emissions from harder-to-abate energy-consuming sectors” (Chevron climate change resilience report 2023, p.19). The shift towards CCUS signifies a commitment to innovation and technological advancement in the fight against climate change. As companies invest in CCUS research, development, and deployment, they contribute to the scaling up of this technology, making it more accessible and cost-effective in the long run.

4.6.7 Memberships and partnerships.

In addition to tangible emission reduction strategies, the analyzed companies often leverage memberships and partnerships as another key strategy in the pursuit of their Net Zero ambition. Across their sustainability reports, all companies briefly outline their latest partnerships, which often involves collaborations with certification, assurance, auditing, and offsetting firms. Moreover, some companies showcase specific memberships to demonstrate and validate a certain level of sustainability and credibility. According to the interviews, this approach for developing partnerships and memberships could be beneficial for several reasons. Firstly, partnerships and memberships enable companies to leverage collective expertise, resources, and networks, facilitating the implementation of more effective and comprehensive sustainability initiatives. Secondly, by aligning with reputable certification institutions and participating in industry-specific memberships, companies demonstrate their commitment to meeting high standards of environmental performance and governance, thereby enhancing their credibility among stakeholders. Overall, partnerships and memberships represent a proactive and strategic approach for companies to advance their Net Zero agendas by using collective action, enhancing accountability, and increasing innovation and collaboration within the broader sustainability ecosystem.

4.6.8 Investments.

The final strategy employed by all analyzed companies is showcasing the financial investments made towards Net Zero initiatives on an annual basis. Across their reports, companies detail the financial resources allocated to various sustainability plans, research projects, and emissions reduction initiatives. According to the interviews, this might be done to demonstrate the company's dedication and seriousness towards addressing environmental challenges and transitioning towards a more sustainable business model. Additionally, it enhances transparency and accountability, developing trust and credibility among stakeholders, including investors, customers, and employees. Overall, transparently about financial investments in Net Zero initiatives does not only show a company's sophistication but also indicates a company's values, priorities, and commitment to driving positive environmental outcomes.

05

Discussion

5. Discussion

The major goal of this exploratory study was to research the various ways six major energy companies worldwide use the trend Net Zero within their goals and strategies – and how this has changed over the years. Analyzing companies within the same sector but situated in various countries has provided an initial glimpse into the differences among firms, locations, and consequently, regulations and policies. This specific study adds to the current literature and theories available on this topic. Therefore, in the following sections, the practical implications of these findings will be explored, highlighting their significance. This is important because understanding the results and their limitations provides a foundation for future research and development.

5.1 Interpretation of results and practical implications

5.1.1 General

5.1.1.1. *The effects of varying stages of commitment and understanding Net Zero*

Through this analysis with data spanning from 2008 through 2023, three significant shifts have emerged regarding: reporting practices, terminology, and the frequency of the term Net Zero. First, while all companies publish sustainability reports, the timelines and titles of these reports vary considerably. Some companies initiated sustainability reporting as early as two decades ago, while others have only recently introduced ESG or Corporate Citizenship Reports. Secondly, the evolution of sustainability terminology is evident, progressing from terms such as Carbon Footprint and Low Carbon towards newer concepts such as Climate Neutrality Net Zero. Third, there has been a notable increase in the frequency and prominence of the term Net Zero across these reports.

These observations underscore varying levels of commitment and understanding of Net Zero among companies, a point elaborated on by experts. While some companies are at the forefront of embracing Net Zero principles, others prioritize different sustainability goals or are in earlier stages of implementation. This diversity in commitment levels has practical implications for stakeholders such as investors, consumers, and policymakers. Understanding these variations helps stakeholders assess which companies are actively addressing sustainability challenges and which may require additional support to align with global sustainability objectives.

Furthermore, as companies increasingly adopt sustainability trends, there is a risk of overuse leading to potential greenwashing concerns (De Freitas Netto et al., 2020). While definitive evidence of greenwashing requires further investigation, it underscores the importance of transparent communication in corporate sustainability efforts. Standardized metrics and clear definitions are essential to maintain credibility and build trust with stakeholders, including consumers, employees, and investors (Rogelj, 2021).

5.1.1.2. The effect of geographical and regulatory differences

Initially focused on trends such as Low Carbon and Carbon Reduction, a notable shift towards embracing Net Zero has become evident among all analyzed companies. This upward trajectory in the adoption of Net Zero principles is substantiated by findings from academic literature, Google Trends analysis, and analyzed sustainability reports. Although it was expected that all six companies of similar sizes and operational scope would use the trend Net Zero in a uniform way – the opposite is observed. European entities like BP, Shell and TotalEnergies demonstrate extensive reporting on their Net Zero objectives and strategies, whereas American counterparts ExxonMobil and Chevron exhibit comparatively limited disclosures on these topics. In contrast, PetroChina emphasizes achieving Near Zero emissions rather than fully embracing Net Zero ambitions.

Experts consulted in the study highlight geographical locations and regulatory environments as primary factors contributing to these divergent approaches. They emphasize that European firms, subject to stricter sustainability regulations, tend to exhibit greater transparency and proactive engagement with Net Zero commitments compared to their American and Chinese counterparts. These findings underscore the pivotal role of regulatory frameworks in influencing corporate sustainability practices, suggesting that more stringent regulations could enhance global transparency and commitment to Net Zero goals. While it is shown that more is reported in the European Union, this study does not provide conclusive evidence on whether companies are also intrinsically motivated beyond their stated sustainability commitments.

5.1.2 Net Zero definitions

The continuous use of the term Net Zero by companies, nations, and institutions worldwide underscores its prominence in sustainability discourse (Sovacool et al., 2023). However, as revealed in this study, not all analyzed companies have defined Net Zero in their operational context. Among those that have, BP and Shell stand out for their comprehensive definitions, illustrating leadership in corporate sustainability (Coyne, 1986). BP and Shell have evolved their definitions over time, whereas BP even differentiates between Net Zero operations, production, and sales. The other analyzed companies did not publish a definition on their website, nor their reports. This confirms the theory that, while more businesses are announcing Net Zero targets, “their plans are hard to compare and definitions loose” (Rogelj, 2021, p.1).

According to the experts, not defining the term Net Zero can lead to misinterpretations about the company’s environmental commitments and goals. Clear definitions are essential for holding companies accountable for their sustainability goals. Without precise definitions, it becomes challenging to measure progress accurately towards Net Zero emissions, creating opportunities for greenwashing (De Freitas, 2020).. Even though for some companies no definitions are provided, further research is necessary to fully indicate instances of greenwashing.

During the interviews, experts highlighted three reasons for the lack of elaboration on a Net Zero definition among companies. First, some companies may have a limited understanding of the concept of Net Zero, prompting them to keep their communication vague or avoid a definition altogether. Second, there is a perception among companies that stakeholders,

including investors and the public, already possess sufficient knowledge about Net Zero, thus reducing the perceived need for detailed definitions. Third, the development of a Net Zero definition can be influenced by geographical location and regulatory frameworks. In regions where Net Zero is a focal point of the sustainability discussion and regulatory requirements are stringent, companies may be more inclined to provide precise definitions. Conversely, in regions where awareness of Net Zero is limited or regulatory pressures are less pronounced, companies may not prioritize developing explicit definitions. These factors collectively underscore the complexities involved in defining and communicating sustainability concepts like Net Zero across diverse global contexts.

Conclusively, advancing the understanding of the term Net Zero is crucial to establish robust definitions. The current lack of clarity in definitions poses risks, potentially facilitating greenwashing practices within the corporate sector. As recommended during the interviews, developing sector-specific definitional frameworks with detailed knowledge and explanations would be beneficial. Such frameworks would enable companies to formulate more precise and meaningful definitions aligned with their operational contexts and sustainability goals. This approach not only mitigates the risk of greenwashing but also promotes transparency and accountability in corporate sustainability practices, ultimately fostering trust among stakeholders. Further research is essential to refine these frameworks and ensure they effectively guide companies in their Net Zero commitments across various sectors and global contexts.

5.1.3 Net Zero goals

Despite the challenges in comparing Net Zero targets due to missing, or various definitions, the fact that all analyzed companies have committed to publishing and aiming for Net Zero emissions by 2050 suggest that the concept of Net Zero is playing a significant role. It signifies a collective acknowledgment and effort among these companies towards addressing climate change by reducing their greenhouse gas emissions to net zero by mid-century. This commitment is essential in advancing sustainability goals globally and promoting accountability within the corporate sector regarding environmental impact mitigation. It should, however, be noted that some differences are observed as well. Whereas first, PetroChina has published a slightly different goal, and secondly, the details of the goals differ for each analyzed company. Contrary to these differences, two similarities have been observed, where the companies take the Paris Agreement as a base for their goals and use cautionary statements to limit the consequences.

Even though “Net Zero targets are hard to compare” (Rogelj, 2021, p.1), all analyzed companies have published their Net Zero targets, aimed at reaching zero emissions in the year 2050. PetroChina, however, forms the only exception, focusing on becoming Net Zero “by around 2050” (PetroChina ESG Report 2022, p.10). PetroChina may face uncertainties regarding the transition path to achieve Net Zero emissions by a specific year. Factors such as technological advancements, regulatory developments, and market dynamics could influence the pace and feasibility of emissions reduction efforts (Ramanathan, 2020; Deutch 2020). By using a more flexible timeframe, such as "by around 2050," PetroChina allows for adaptability to changing circumstances and minimizes the risk of overcommitting to targets that may become unattainable (Pors, 2022). Another reason for choosing “by around 2050”, is that setting bold targets carries risks, including reputational risks if targets are not met or if the company encounters challenges along the way (ibid). PetroChina may adopt a cautious approach to

target-setting as a form of risk management, seeking to avoid potential backlash or criticism if circumstances prevent them from achieving a precise target year of 2050 (Chen et al., 2023)

As expected, the Paris Agreement forms a base for goal setting for companies. As indicated by the expert interviews, this Agreement was a first big step for many companies to start focusing on sustainability improvement and the trend Net Zero. By targeting Net Zero emissions in 2050, these companies contribute to the broader international effort to mitigate climate change and limit its impacts, as well as increasing the company's credibility and reputation as responsible corporation (Höhne et al., 2021).

Although it was expected that all large energy companies would focus on the term Net Zero similarly, there is a distinction among companies in their goals to achieve Net Zero emissions, transform into fully Net Zero entities, or contribute towards helping the world reach its Net Zero targets. The implementation of the term has been more prominent for BP, Shell and TotalEnergies. Chevron, ExxonMobil and PetroChina are lacking slightly, compared to the prior three. This is observed in the frequency of the term's usage, both in total and on a per-page basis. This high frequency of use of the term Net Zero, especially for BP and Shell, could be because of different reasons. First, companies headquartered in regions with strict regulatory frameworks, such as the European Union, may face greater pressure to align with Net Zero targets (Sheate, 2012). The EU's ambitious climate goals, including the European Green Deal and the commitment to achieve climate neutrality by 2050, have catalyzed corporate action on emission reductions (Apostu et al., 2020). Second, societal pressure and investor expectations play a pivotal role in driving companies towards Net Zero commitments (Fankhauser et al., 2020). With growing awareness of climate change and its implications, stakeholders, including consumers, investors, and advocacy groups, are increasingly demanding transparency and accountability from corporations (ibid). This pressure can incentivize companies to adopt ambitious Net Zero targets. Third, the impending implementation of the Corporate Social Responsibility Directive (CSRD) by the European Union is expected to further increase the focus towards Net Zero commitments (Esty et al., 2023). The CSRD, which aims to enhance corporate transparency and accountability on environmental, social, and governance (ESG) issues, will require large companies to disclose comprehensive sustainability information, including their approach to climate change mitigation (*Corporate Sustainability Reporting*, n.d.). This regulatory framework will likely add pressure on companies, particularly those operating in the EU, to align with Net Zero targets and demonstrate tangible progress towards emissions reduction (Sheate, 2012).

Surprisingly, even though the final deadline of 2050 is the same for each company, it's unexpected that the reference years vary significantly. There could be different reasons for choosing a different reference year. First, some companies may choose reference years that align with significant regulatory milestones or policy developments (Fankhauser, 2020). For example, adopting a reference year of 2016 could be linked to the signing of the Paris Agreement, which occurred in the same year (Bjørn et al., 2021). By aligning their Net Zero targets with the Paris Agreement, companies signal their commitment to international climate goals and demonstrate compliance with global efforts to mitigate climate change (ibid). Secondly, the choice of reference year could also be influenced by historical emission data and baseline assessments (De Vries, 2023). Companies may select reference years that capture a representative snapshot of their historical emissions profiles and provide a meaningful benchmark for tracking progress towards Net Zero (ibid). Third, the strategic priorities and emission reduction initiatives may influence the businesses choice of reference years (ibid). For example, a company that has already implemented significant emissions reduction measures

prior to a specific reference year may choose to use that year as a baseline for setting Net Zero targets. Not being transparent about the specific reference years could lead to greenwashing claims (De Freitas, 2020). Even though more research is needed to investigate whether these companies are greenwashing, it is said vague terms and leaving out important information are types of greenwashing (ibid).

Several of the analyzed companies have, in addition to their targets, also published cautionary statements. Cautionary statements about Net Zero allow companies to acknowledge and communicate the uncertainties and risks associated with achieving Net Zero targets (Berger-Schmitz, 2023). Given the complexity of the Net Zero concept, determining its achievability by the target year of 2050 is difficult. Key challenges include the scale and complexity of emissions reduction efforts across multiple sectors, the need for technological innovation and deployment, the necessity of supportive policy and regulatory frameworks, the economic and social implications of the transition, and scientific uncertainties regarding future climate outcomes. By issuing cautionary statements, companies demonstrate transparency and accountability by openly acknowledging the potential obstacles that may impact their ability to achieve Net Zero targets (ibid). Additionally, cautionary statements help manage stakeholder expectations by providing them with a realistic assessment of the challenges and uncertainties involved in achieving Net Zero emissions (ibid). Both are used to try and eliminate greenwashing practices (De Freitas, 2020).

The findings highlight that while all analyzed companies aim for Net Zero emissions by 2050, varying definitions and approaches create challenges in comparison. PetroChina's flexible timeframe acknowledges uncertainties, while the Paris Agreement guides global alignment. Differences in reference years and cautionary statements emphasize transparency and manage stakeholder expectations. These factors underscore the importance of clear communication and regulatory frameworks in navigating complexities and enhancing credibility in corporate sustainability efforts.

5.1.4. Net Zero strategies

In the energy sector, companies generally share similar strategies for achieving Net Zero emissions, such as adopting renewable energy sources, bioenergy, liquefied natural gas, and electricity, alongside efforts to reduce CO₂ and methane emissions. While this research anticipated such alignment, variations in the level of implementation across companies have been observed, depending on the individual company's priorities, capabilities, and operational contexts. Some companies may prioritize investments in renewable energy infrastructure, while others may focus on carbon capture and storage technologies or the development of blue and green hydrogen. Additionally, strategies may involve offsetting emissions through nature-based solutions and forest preservation, as well as participation in memberships and partnerships aimed at advancing sustainability goals. Ultimately, the strategies for achieving Net Zero emissions are tailored to each company's unique circumstances, reflecting differing levels of commitment, resources, and strategic objectives (Hakovirta et al., 2023).

The difference in the implementation of Net Zero strategies among companies can be attributed to varying factors, including differences in geographical locations, regulatory environments, corporate priorities, and technological capabilities (ibid). Companies operating in different countries face unique challenges and opportunities shaped by local policies, market dynamics, and resource availability (Van Soest, 2021). For instance, companies headquartered

in regions with strict climate regulations or abundant renewable energy resources may prioritize investments in clean energy infrastructure, while those operating in fossil fuel-dependent economies may face greater barriers to decarbonization (ibid).

The selection and prioritization of Net Zero strategies by companies offers a critical insight in their approach to emissions reduction and offsetting, providing valuable indications of their commitment to addressing climate change. Companies that prioritize strategies focused on emissions reduction, such as investments in renewable energy, energy efficiency measures, and emissions reduction technologies, demonstrate a proactive stance towards reducing their carbon footprint and transitioning to a low-carbon economy (Rogelj et al., 2021). It signifies a genuine commitment to mitigating climate risks and minimizing their environmental impact. Conversely, companies that prioritize offsetting strategies, such as carbon offset projects or nature-based solutions, may rely more on external mechanisms to neutralize their emissions rather than implementing internal emissions reduction measures (ibid). While offsetting can play a role in achieving Net Zero emissions, an overreliance on offsetting without major emissions reductions may raise questions about the company's genuine commitment to sustainability and climate action. This phenomenon is also highlighted during the expert interviews, explaining that the balance between emissions reduction and offsetting is an important indicator of the seriousness of a company's sustainability efforts.

It was expected that companies would engage in partnerships, certifications, and memberships as part of their sustainability strategies. Contrary to these expectations, the analyzed companies did not focus on the same international certificates and partnerships. The variation in the levels and types of certifications, partnerships, and memberships among companies can be linked to several factors, reflecting the unique priorities, contexts, and strategic orientations of each company (Valbuena-Hernandez et al, 2022). One key factor influencing this diversity is the geographical location of companies, as not all membership companies operate globally. Another reason that contributes to the diversity of partnerships among companies originates from differences in priorities (ibid). Some companies may prioritize certifications that validate their commitment to specific sustainability standards or environmental performance metrics, while others may place greater emphasis on partnerships and memberships that enable collaboration, knowledge sharing, and collective action on sustainability issues (ibid). As highlighted during the interviews, certifications and memberships are important indicators of a company's seriousness and credibility in addressing sustainability challenges, underscoring the significance of strategic engagement with these initiatives.

Even though several strategies are discussed in the sustainability reports of the analyzed companies, a full explanation is missing. The limited elaboration on strategies in sustainability reports could stem from various factors (Traxler et al., 2020). First, companies may be hesitant to disclose detailed sustainability strategies due to concerns about revealing crucial information to competitors, preferring to maintain a competitive edge in the market (ibid). Secondly, the interviews highlight that sustainability planning is often an iterative process, with companies continuously refining their strategies in response to evolving factors, leading to broad outlines of goals without extensive details. Lastly, some companies may still be in the early stages of developing comprehensive sustainability strategies or may prioritize regulatory compliance over detailed strategy disclosure in their reports (ibid).

5.2 Limitations

While this study offers an initial insight into how energy companies relate the theoretical concept of Net Zero to their practical goals and strategies, several limitations should be acknowledged. Firstly, the research focuses solely on the energy sector, which restricts the scope of the study. Consequently, the findings are limited to insights derived from this specific industry and do not encompass other sectors. Secondly, due to time constraints, only six companies were analyzed, which may limit the generalizability of the results. Third, the reliance on publicly available data from these specific companies may introduce bias and restrict the range of conclusions drawn. Adding to this point, no interviews were organized with the analyzed companies, meaning that the information on the internal view and reasoning is limited. Fourth, the geographical distribution of the companies' headquarters across different continents provides preliminary insights into the global variations in the adoption of Net Zero practices, these results can only serve as a preliminary base and cannot be used as a generalization of the worldwide functioning considering Net Zero. With most companies located in Europe and North America, the representation of other regions, such as Asia, may be limited. Lastly, it's essential to note that this research focuses solely on the discourse surrounding Net Zero goals and strategies as communicated by the companies on their websites and in reports. The study does not directly address the actual emissions of these companies or their effectiveness in reducing emissions. Therefore, conclusions drawn from this research are confined to the disclosed information and may not accurately reflect the companies' real-world impact on emission reduction.

5.3 Future research

Because this research provides small insights into the connection between Net Zero and the practical implication in goals and strategies, six possible options for future research are provided in this section.

For future research, conducting similar studies across diverse sectors and companies would enhance the robustness and generalizability of the current findings. Additionally, taking this study as a benchmark and revisiting this research in five years would provide valuable insights into how sustainability terms and commitments evolve among the analyzed companies over time. This longitudinal approach would facilitate tracking changes in corporate strategies and goals, offering a clearer understanding of trends in sustainability reporting and practices.

Secondly, according to the expert interviews, it is important to investigate the location of the sustainability teams within a company. According to the experts, there are often two possibilities: in the marketing and communication team or the finance and strategy team. Determining the organizational placement of sustainability employees provides critical insights into the commitment and prioritization of sustainability goals within companies. When sustainability teams are situated within the marketing and communication team, it suggests that their initiatives may be primarily driven by external communication and branding considerations. Conversely, when sustainability teams are located within the finance and strategy team, it signals a deeper integration of sustainability goals into core business strategies, decision-making processes, and financial planning. Future research initiatives would greatly benefit from incorporating an examination of the organizational placement of sustainability teams within companies.

Third, for future research, it would be insightful to elaborate on the real emissions from the specific companies. Exploring the real emissions from specific companies in future research will offer critical insights into the effectiveness of their Net Zero strategies, thus validating sustainability claims and addressing potential greenwashing concerns. This study would be useful in assessing the actual effectiveness and credibility of their Net Zero strategies, providing empirical evidence to validate sustainability claims. In this study, it would also be valuable to examine which specific types of emissions companies prioritize in their journey towards Net Zero, as this insight can inform targeted mitigation strategies and enhance overall effectiveness in achieving sustainability goals beyond CO₂ emissions. This additional research on greenwashing is essential for ensuring corporate accountability, promoting transparency, and protecting stakeholders from misleading claims. It encourages authentic sustainability efforts, contributing to genuine environmental and social progress.

Fourth, there is a need for future research to investigate the impact of different reference years. This study revealed that companies adhere to diverse reference years, which could significantly influence their Net Zero goals and strategies. Delving deeper into this aspect would provide valuable insights into the dynamics of setting and achieving sustainability targets.

Additionally, examining the influence of countries and specific regulations is important. The variance in terminology observed in this research, differentiating between Asia, Europe and North America offers valuable insights into the differences between nations. Therefore, it would be valuable to explore various nations and continents, examining their regulatory frameworks, cultural norms, and societal values. Beyond terminology, regulations may significantly affect how companies communicate their sustainability initiatives, including their approaches to Net Zero objectives. This analysis could illuminate not only the linguistic differences but also whether they stem from translation issues or reflect diverse norms, values, and regulations within each country.

Lastly, it would be insightful to center on the strategies themselves, offering deeper insights into how companies pursue their Net Zero objectives. Given the diversity of strategies observed in this research, it would be valuable to examine which aspects receive the greatest emphasis among these companies. For instance, analyzing the ratio of energy-saving methods versus offsetting strategies could shed a light on the priority areas within their sustainability efforts. Insights from the expert interviews suggest that this ratio could offer further understanding of the companies' commitment to their stated goals.

06

Conclusion

6. Conclusion

In conclusion, while it was initially anticipated that energy companies within the same sector and of similar sizes would adopt uniform goals and strategies toward achieving Net Zero emissions, this study revealed both similarities and differences. The observed increase in the use of the term Net Zero varied among companies, reflected by the frequency of its usage and the depth of reporting. With Net Zero being an increasingly used term, only BP and Shell provided definitions within their reports. Despite these variations, all companies align their Net Zero goals with the target year of 2050, in accordance with the Paris Agreement. Despite this common goal of getting to Net Zero in 2050, unexpected differences occur in the choices of reference years. After defining and publishing their Net Zero goals, cautionary statements have been added by most companies, acknowledging the uncertainties and challenges linked to the Net Zero goal. While companies share similar strategies, such as adopting renewable energy sources and reducing CO₂ emissions, the extent of their implementation varies based on individual priorities, resulting in differences in depths of explanation of the strategies. The same occurs for certifications and partnerships, which are different for each company.

Furthermore, it was not possible to indicate instances of greenwashing using only the reports, highlighting the necessity for future research to address this issue comprehensively. Additionally, more regulations on Net Zero do help in drawing attention to it; however, they do not necessarily reflect the intrinsic motivation of companies. Better definitions and frameworks will aid more companies in excelling in their Net Zero efforts. In conclusion, this research elaborates on the connection between the theoretical term Net Zero and the practical implementations of goals and strategies within the energy sector.

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08

Appendix

8. Appendix

8.1 Appendix 1 | Initial analysis of Top-30 revenue companies

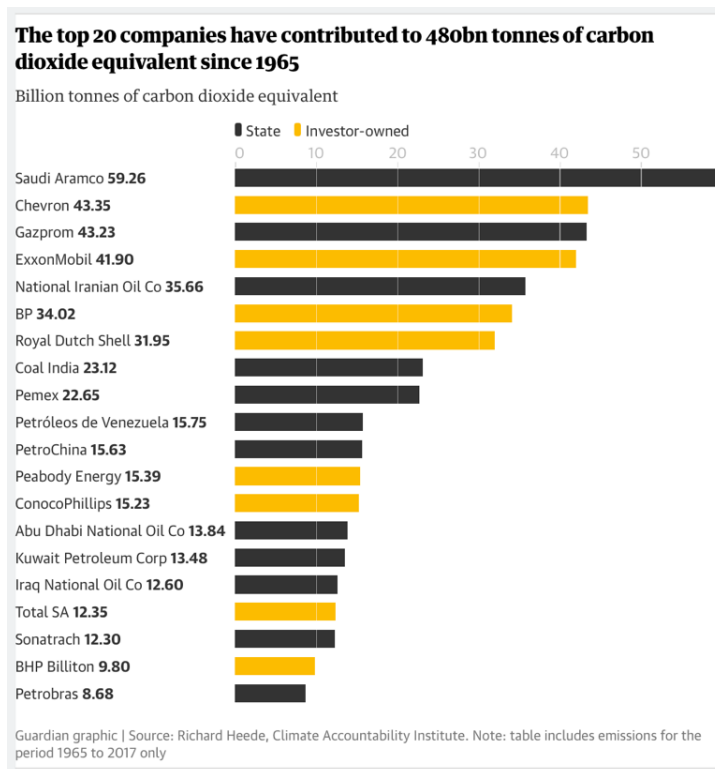
This graph displays the first part of the research, where the 30 businesses with the highest revenues, worldwide, have been checked for a Net-Zero and Net Positive statements, sustainability and annual reports. A legend has been added below the graph, explaining the types of reports found.

Business name	Sector	Location	Net zero	Net positive	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	
Walmart	Retail	USA	Net zero by 2040 / 2050	Regenerative company (climate positive) by 2020	ESG	ESG	ESG	ESG	GRR	GRR	GRR	GRR	GRR	GRR	GRR	GRR	GRR	GRR	GRR	GRR	GRR	GRR
Amazon	Consumer goods	USA	Net zero by 2040	A little bit: about faster net zero	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Saudi Aramco	Oil and gas (energy)	Saudi Arabia	Net zero by 2050	A little bit: about net positive impact	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Sinopec	Petroleum and petrochemical	China	Net zero by 2060		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
PetroChina	Oil and gas (energy)	China	X		ESG	ESG	ESG	AR	ESG	SR	SR	SR	SR	AR	AR	-	-	-	-	-	-	-
Berkshire Hathaway Energy	Energy?	USA	Net zero by 2050		AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
Apple	Computer manufacturer	USA	All products carbon neutral 2030 (already carbon neutral in 2020)		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
UnitedHealth	Healthcare	USA	Net zero by 2035		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
CVS Health	Healthcare	USA	Net zero by 2050		CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR
Exxon Mobil	Energy	USA	Net zero by 2050		SR	O	SR	SR	SR	SR	O	O	O	O	O	O	O	O	O	O	O	O
Shell	Energy and petrochemical	UK	Net zero by 2050		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Volkswagen	Automotive	Germany	Net zero by 2050		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
China State Construction Engineering	Construction	China	Carbon neutral by ??		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Google (Alphabet)	Information (search engine)	USA	Net zero by 2030		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Toyota	Automotive	Japan	Net zero by 2050 (Europe: by 2040)	Beyond carbon neutrality	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Mckesson	Healthcare	USA	X																			
Cencora	Drug wholesale	USA	X																			
Glencore	Metals and mining	Switzerland	Net zero by 2050		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Costco	Warehouse	USA	X																			
TotalEnergies	Oil and gas (energy)	France	Net zero by 2050		SR	O	SR	SR	SR	SR	O	O	O	O	O	O	O	O	O	O	O	O
BP	Oil and gas (energy)	UK	Net zero by 2050		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Exor	Diversified holding	Italy	Carbon neutral 2022, net zero 2025 / 2040?		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Microsoft	Information technology	USA	Net zero by 2030	Carbon negative 2030, remove historic emissions 2050	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Cardinal Health	Healthcare	USA	net zero by 2050		ESG	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Shinco	Oil and gas (energy)	USA	net zero by 2050		CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR	CSR
Foxconn	Technology	Taiwan	Net zero by 2050		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Samsung	Technology	South Korea	Net zero by 2050		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Cigna	Healthcare	USA	X																			
Allianz	Insurance	Germany	Net zero by 2050		SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Ford	Automotive	USA	Carbon neutral by 2035		O	O	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR

LEGEND
 ESG = Environmental social and governance report
 SR = Sustainability report
 GRR = Global responsibility report
 CSR = Global sustainability report
 O = Other (ethical sourcing, sustainability progress.)

8.2 Appendix 2 | Top-20 polluters worldwide companies

This graph shows the top-20 most polluting businesses in the world (Taylor & Watts, 2021)



8.3 Appendix 3 | Interview guidelines

This graph shows the top-20 most polluting businesses in the world (Taylor & Watts, 2021)

An interview guideline has been provided for the interview with the business professionals. The intention is to engage in a discussion about the results derived from this research using open-ended questions in a conversational manner. The primary focus is on the perspectives and ideas from the participants.

Linguistic sustainability trends

1. Based on your observations, what are the main sustainability trends of the last few years and which have been introduced lately? Have you seen any changes in the past years when it comes to the use of these trends? Looking forward, what trends do you expect to arise?
2. Do you know the trend Net Zero, if so: how do you define Net Zero? If not, have you heard from 'low carbon', 'carbon neutral' or 'near zero' and do you know what these terms mean?
3. Do you feel like others (academics, politics, businesses, and organizations) are aware of the definition of this trend? Do you feel like businesses use these trends correctly?
4. Why do you think these businesses use the trends? Do you feel like using trends creates a better perception of the company?
5. Do you feel like businesses are slowly starting to better understand (and use) the trends?
6. Do you think these trends help to shape sustainability goals and strategies?
7. How does your company deal with the trends in goals and strategies?

Results

8. I've seen a sudden increase in the use of the trend Net Zero in the energy sector, do you recognize this within your sector as well?
9. I've seen that companies use different terms to describe the same trend: Net Zero, near zero, low carbon and carbon neutral. Do you recognize this from your sector and do you have any similar terms to add to this list?
10. If you would be able to, what aspects would you add to my research?

Finalize

11. Are there any additional insights or perspectives you would like to share regarding linguistic sustainability trends in businesses?

8.4 Appendix 4 | Full overview with results

The following graphs illustrate the full overview of the results.

8.4.1 BP

BP (1/2)													
Year	Report (pages)	Title of the report	# Net Zero	# Net Positive	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2023	Report (39)	Net Zero Progress Update	263	x	170	x	x	x	x	Entire report	4 definitions: Net Zero, Net Zero Operations, Net Zero Production, Net Zero Sales. Net Zero in the phrase "to help the world get to net zero" means achieving a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases* Net Zero for BP means achieving a balance between the relevant Scope 1 and 2 emissions, Scope 3 emissions or product lifecycle emissions and the aggregate of applicable deductions from qualifying activities such as sinks under our methodology at the applicable time. (Glossary)	Goal: BP's aims to reach net zero operational greenhouse gas (CO2 and methane) emissions by 2050 or sooner, on a gross operational control basis. We want to be a net zero company by 2050 or sooner and to help the world get to net zero. (p.1)	Our strategy is to become an integrated energy company. We believe we are set up to deliver energy security and affordability today, and to accelerate the energy transition. (p.6) 3 aims to get to net zero: net zero operations (scope 1+2), net zero production (scope 3), net zero sales, reducing methane, more money into transitions. 5 aims to get the world to net zero: advocating, incentivizing employees, aligning associates, transparency leader, clean cities and corporates
2022	Sustainability report (66)	Reimagining energy	223	5	202	49	x	x	x	Specific chapter	Same as above	Same as above	We have made it clear that EV charging is a key part of our strategy (p.32) Divestment continue to be an important part of our strategy (p.18)
2021	Sustainability report (61)	Reimagining energy	131	8	151	31	x	1	x	Specific chapter	Help the world get to Net Zero, we mean achieving a balance between sources of anthropogenic emissions and removal by sinks of greenhouse gases. When referring to becoming a Net Zero company by 2050 [1], this means achieving a balance between: the relevant Scope 1, 2 and 3 emissions, the total applicable deductions from qualifying activities such as sinks, for example carbon capture (CCUS) and land carbon projects.	Same as above	As well as embedding sustainability across our strategy, we designed it to be resilient across a wide range of scenarios. (p.1) In 2020, we set out our new net zero ambition and a new strategy to become an integrated energy company. (title from IOC to IEC). (p.4) We do not plan to rely on offsetting to meet our 2030 net zero aims (p.20). We see electric vehicles (EV charging) as a transition growth engine for our convenience and mobility strategic focus area (p.27). Divestments are, and continue to be, an important part of our strategy (p.20). Non-operational joint ventures (NOJVs) are an important part of BP's business strategy, including with respect to methane management and net zero. (p.20)
2020	Sustainability report (97)	Reimagining energy	151	14	238	56	1	1	2	Specific chapter	Same as above	Same as above	Sustainability is a foundation of our new strategy (p.2) We do see offset helping us go beyond those aims, when our businesses use them to meet compliance needs to when we offer them to customers to help them meet their own goals (p.32)
2019	Sustainability report (82)	Energy with purpose	62	1	251	69	12	1	8	No specific chapter or section	Same as above	Same as above	We will offset any increase in our GHG emissions above a 2015 baseline that cannot be managed through reductions (p.23)

BP (2/2)													
Year	Report (pages)	Title of the report	# Net Zero	# Net Positive	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2018	Sustainability report (84)	Responding to the dual challenge	1	x	207	56	16	2	7	x	x	x	x
2017	Sustainability report (88)	How will BP respond to global change?	1	x	179	48	13	3	12	x	x	x	x
2016	Sustainability report (52)		x	x	131	14	4	1	6	x	x	x	x
2015	Sustainability report (56)		x	x	131	1	x	x	2	x	x	x	x
2014	Sustainability report (56)		x	x	73	2	x	1	x	x	x	x	x
2013	Sustainability report (52)		x	x	94	2	x	x	x	x	x	x	x
2012	Sustainability report (52)		x	x	83	7	x	x	x	x	x	x	x
2011	Sustainability report (54)		x	x	57	4	x	x	1	x	x	x	x
2010	Sustainability report (50)		x	x	78	15	x	2	2	x	x	x	x
2009	Sustainability report (40)		x	x	131	34	x	x	5	x	x	x	x
2008	Sustainability report (28)		x	x	60	25	x	x	2	x	x	x	x

8.4.2 Chevron

Chevron (1/2)													
Year	Report (p)pages	Title of the report	# Net Zero	# Net Positive	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2023	Climate change resilience report (88)	Advancing energy progress	27	1	485	18	x	6	8	No chapter or specific section	x	We aspire to reach net zero upstream emissions (scope 1 and 2) by 2050 (p.39)	Energy management; efficiency improvements; lower carbon sources; CCUS; offsets; methane management. (p.39)
2022	CSR report (84)	Enabling human progress	9	5	256	5	x	5	1	No chapter or specific section	x	We aspire to reach net zero upstream emissions (scope 1 and 2) by 2050 (p.16)	Energy management; efficiency improvements; lower carbon sources; CCUS; offsets; methane management. (p.16)
2021(b)	CSR report (84)	Getting results the right way	10	x	197	6	x	6	1	1 full page dedicated to net zero	x	We aspire to reach net zero upstream emissions (scope 1 and 2) by 2050 (p.16)	Energy management; efficiency improvements; lower carbon sources; CCUS; offsets; methane management. (p.16)
2021(a)	Climate change resilience report (75)	Advancing a lower carbon future	50	x	493	17	1	8	1	Small section (p.4 and p.14)	x	We aspire to reach net zero upstream emissions (scope 1 and 2) by 2050 (p.1)	Energy management; efficiency improvements; lower carbon sources; CCUS; offsets; methane management. (p.40)
2020	CSR report (68)	Corporate sustainability report	5	x	93	4	x	7	10	Small section (p.12 and p.14)	x	Reaching global net zero in the second half of this century	Lower carbon intensity, increase renewable and offsets and invest in low-carbon technologies. (p.13)
2019	CSR report (50)		x		30	1	x	x	2	x	x	x	x
2019	Climate change resilient report (24)		x		35	6	x	x	1	x	x	x	x
2018	CSR report (46)		x		14	x	x	x	x	x	x	x	x
2018	Climate change resilient report (47)		x		89	8	x	x	x	x	x	x	x
2017	CSR report (36)		x		6	x	x	x	x	x	x	x	x
2016	CSR report (36)		x		13	x	x	x	x	x	x	x	x
2015	CSR report (36)		x		8	x	x	x	x	x	x	x	x
2014	CSR report (20)		x		4	x	x	x	x	x	x	x	x
2013	CSR report (26)		x		6	x	x	x	x	x	x	x	x
2012	CSR report (48)		x		10	x	x	x	x	x	x	x	x

Chevron (2/2)													
Year	Report (p)pages	Title of the report	# Net Zero	# Net Positive	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2011	CSR report (52)		x	x	7	x	x	x	x	x	x	x	x
2010	CSR report (48)		x	x	11	x	x	x	x	x	x	x	x
2009	CSR report (48)		x	x	25	x	x	x	x	x	x	x	x
2008	CSR report (48)		x	x	28	x	x	x	x	x	x	x	x

8.4.3 ExxonMobil

ExxonMobil (1/2)													
Year	Report (p)pages	Title of the report	# Net Zero	# Net Positive	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2022 (b)	Infographic (1)	Pathway to Net Zero in the Permian	4	x	3	2	x	x	x	Infographic about Net Zero	x	Net Zero in Permian Basin by 2030 for both scope 1 and 2. (p.1)	Net Zero in the Permian Basin; Electrify with low-carbon power (with low-power sources, such as wind, solar, hydrogen); natural gas; carbon capture and storage; upgrade equipment; enhance methane monitoring; minimize flaring (p.1)
2022 (a)	Brochure (3)	Exxon Mobil's Net-Zero Ambition	11	x	8	-	x	x	x	Full report about Net Zero	x	Claims to achieve net-zero Scope 1 and 2 greenhouse gas emissions from the operation assets by 2050. (p.1) Compared to 2016 levels (p.2).	Achieving net-zero emissions in the Permian Basin will [...] account for more than 40% of ExxonMobil's net U.S. oil and natural gas production. (p.1) Methane reduction; flare minimization; electricity with lower-emission power; offset (p.3)
2021	Sustainability Report (84)	Sustainability Report	9	x	15	3	x	x	x	No chapter or specific section	x	Including its Scope 1 and 2 net-zero 2050 ambition. (p.21)	x
2019	Sustainability Report (43)	Sustainability Report Highlights	1	x	x	x	x	x	x	No chapter or specific section	x	We continue to invest in lower-emission technologies, such as carbon capture and advanced biofuels, which are necessary for society to achieve its ambition for net zero emissions by 2050. (p.4)	x
2018	Corporate Citizenship report (40)		x	x	29	x	x	x	x	x	x	x	x
2017	Corporate Citizenship report (35)		x	x	28	x	x	x	1	x	x	x	x
2016	Corporate Citizenship report (50)		x	x	54	2	x	x	x	x	x	x	x
2015	Corporate Citizenship report (95)		x	x	49	x	x	x	x	x	x	x	x
2014	Corporate Citizenship report (24)		x	x	11	x	x	x	x	x	x	x	x
2013	Corporate Citizenship report (84)		x	x	32	x	x	x	x	x	x	x	x
2012	Corporate Citizenship report (67)		x	x	28	x	x	x	x	x	x	x	x
2011	Corporate Citizenship report (54)		x	x	29	x	x	x	1	x	x	x	x
2010	Corporate Citizenship report (53)		x	x	42	x	x	x	x	x	x	x	x

ExxonMobil (2/2)													
Year	Report (#pages)	Title of the report	# Net Zero	# Net Positive	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2009	Annual report (53)		x	x	12		x	x	x	x	x	x	x
2008	Annual report (52)		x	x	11		x	x	x	x	x	x	x

8.4.4 PetroChina

PetroChina (1/2)													
Year	Report (#pages)	Title of the report	# Net Zero	# Near Zero	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2022	ESG Report (124)		1	5	285	69	32	15	2	No chapter or specific section	x	Setting a low-carbon goal of endeavoring to achieve "near-zero" emissions by around 2050. (p.10)	Renewable energy sources; geothermal; hydrogen and CCUS technologies. (p.12) Carbon reduction, utilization, distribution and storage (p.44) Carbon compensation by tree planting (p.48)
2021	ESG Report (104)		x	9	204	61	17	6	1	No chapter or specific section	x	Setting a low-carbon goal of endeavoring to achieve carbon emissions peak around 2025 and "near-zero" emissions by around 2050. (p.9)	We have formed a three-step overarching strategy of "clean energy substitution, strategic succession and green transition" (p.10) Energy conservation; methane reduction; hydrogen and CCUS. (p.31) Carbon reduction, use, substitution and storage. (p.36)
2020	ESG Report (42)		2	5	155	54	17	2	x	No chapter or specific section	Carbon neutrality means having net-zero carbon dioxide emissions. To achieve this, the companies, groups or individuals shall measure the total amount of GHG emissions produced directly or indirectly by themselves within a certain period of time. And the carbon emissions shall be offset by afforestation, energy saving and emission reduction activities (p.33)	We aim for achieving carbon emissions peak around 2025 and "near-zero" emissions around 2050. (p.6)	Energy-saving methods; Adapt energy-mix to more renewable sources; GHG recycling; CCUS (p.30)
2019	ESG Report (88)		x	x	142	63	1	1	1	x	x	x	x
2018	ESG Report (72)		x	1	111	48	1	1	2	x	x	x	x
2017	Sustainability Report (88)		x	x	93	45	x	-	2	x	x	x	x
2016	Sustainability Report (40)		x	x	122	45	x	1	3	x	x	x	x
2015	Sustainability Report (38)		x	x	70	37	x	-	1	x	x	x	x
2014	Sustainability Report (36)		x	x	52	15	x	1	x	x	x	x	x
2013	Annual Report (236)		x	x	2	x	x	x	x	x	x	x	x
2012	x		x	x	x	x	x	x	1	x	x	x	x
2011	x		x	x	x	x	x	x	x	x	x	x	x

PetroChina (2/2)													
Year	Report (#pages)	Title of the report	# Net Zero	# Near Zero	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2010	x		x	x	x	x	x	x	x	x	x	x	x
2009	x		x	x	x	x	x	x	x	x	x	x	x
2008	x		x	x	x	x	x	x	x	x	x	x	x

8.4.5 Shell

Shell (1/2)													
Year	Report (pages)	Title of the report	# Net Zero	# Net Positive	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2023	Sustainability Report (98)		125	10	255	20	1	x	8	Specific chapter	Becoming a net-zero emissions energy business means that we are reducing emissions from our operations, and from the fuels and other energy products we sell to our customers. It also means capturing and storing any remaining emissions using technology, protecting natural carbon sinks and providing high-quality carbon credits to our customers to compensate for hard-to-debate. (p.22)	Shell's climate target is to become a net-zero emissions business by 2050 (p.24) Our targets include reducing our absolute Scope 1 and 2 emissions by 50% by 2030 compared to 2016 levels (p.24)	Reduce emissions from our own operations and from the fuels and other energy products (such as electricity) we sell to our customers; nature-based solutions: to protect and enhance natural ecosystems (such as forests, grasslands, wetlands and coastal zones). (p.32) Use CCS to reduce emissions where there are currently no scalable low-carbon alternatives (p.32); Wind and solar energy (p. 34 and 35); Biofuels (p.36); Electric vehicle charging (p.37); Hydrogen (p.37)
2022	Sustainability Report (91)		149	9	203	13	1	x	9	Specific chapter	same as above (p.22)	Our climate target is to become a net-zero emissions business by 2050, in step with society's progress in achieving the goal of the UN Paris Agreement on Climate change (p.21)	same as above
2021	Sustainability Report (93)		132	6	158	9	2	x	15	Specific chapter	same as above (p.21)	same as above (p.21)	same as above
2020	Sustainability Report (102)		145	2	246	15	x	1	44	Specific chapter	A net-zero world is one where society stops adding to the total amount of greenhouse gases in the atmosphere. (p.31) Becoming a net-zero emissions energy business means that we are reducing emissions from our operations, and from the fuels and other energy products we sell to our customers. It also means capturing and storing any remaining emissions using technology or balancing them with offsets (p.32)	same as above (p.21)	x
2019	Sustainability Report (92)		12	1	204	14	4	x	59	No chapter or specific section	same as above (p.32)	Our target is to achieve net-zero emissions from all our operations, as well as from the energy we need to power them (p.32)	x
2018	Sustainability Report (86)		7	x	174	14	x	x	61	No chapter or specific section	x	We have no immediate plans to move to a net-zero emissions portfolio over our investment horizon of 10-20 years. Although we have no immediate plans to move to a net-zero emissions portfolio, in November of 2017, we announced our ambition to reduce our Net Carbon Footprint in accordance with society's implementation of the Paris Agreement. (p.0) In our technology centre in Bangalore, we aim to achieve a net-zero emissions footprint (p.16)	x

Shell (2/2)													
Year	Report (pages)	Title of the report	# Net Zero	# Net Positive	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2017	Sustainability Report (71)		2	x	88	11	x	1	10	No chapter or specific section	x	We have no immediate plans to move to a net-zero emissions portfolio over our investment horizon of 10-20 years. (p.2) In pursuit of this goal [Paris agreement], we also support the vision of a transition towards a net-zero emissions energy system. (p.17)	x
2016	Sustainability Report (74)		7	x	131	34	x	1	x	No chapter or specific section	In a net-zero world, emissions in some sectors are offset by efforts to remove carbon dioxide (CO2) from the atmosphere, including reforestation and large-scale industrial facilities built to capture and store CO2. (p.16) The world will need carbon capture and storage (CCS) to achieve the ambition of net-zero greenhouse gas emissions (p.22)	A world of net-zero emissions of GHGs is both technically and economically feasible towards the end of the century, according to our Scenarios team, which considers possible futures. (p.4)	x
2015	Sustainability Report (60)		8	x	141	31	1	1	1	No chapter or specific section	x	It will be necessary to achieve close to net-zero carbon dioxide (CO2) emissions as early as possible this century if we are to maintain a world below 2 degrees Celsius. In a net-zero emissions world, CO2 emissions would be safely absorbed by the earth's natural infrastructure – such as forests and oceans – with any remaining emissions safely stored underground by carbon capture and storage (CCS) Shell's New Lens Scenarios show that, while difficult, it could be possible for society to approach net-zero emissions by the end of this century (p.11)	To achieve an energy transition and approach net-zero emissions, our New Lens Scenarios suggest that society should grow its share of renewable energy to up to 70% by 2100. (p.12)
2014	Sustainability Report (60)		5	x	115	4	x	x	x	No chapter or specific section	x	Our Shell New Lens Scenarios published in 2013, show that net-zero annual energy system emissions is achievable by 2100. (p.6) The IPCC 5th assessment report recommends carbon dioxide emissions to be net-zero by 2100 (p.14)	
2013	Sustainability Report (44)		x	x	77	14	1	x	1	x	x	x	x
2012	Sustainability Report (44)		x	x	54	14	2	x	x	x	x	x	x
2011	Sustainability Report (40)		x	x	47	10	1	x	1	x	x	x	x
2010	Sustainability Report (40)		x	x	29	2	1	x	x	x	x	x	x
2009	Sustainability Report (40)		x	x	56	22	x	x	1	x	x	x	x
2008	Sustainability Report (46)		x	x	15	1	x	x	1	x	x	x	x

8.4.6 TotalEnergies

TotalEnergies (1/2)													
Year	Report (pages)	Title of the report	# Net Zero	# Net Positive	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2023	Sustainability and Climate Report (109)		57	x	266	56	9	x	8	Specific page	x	A net zero company by 2050, together with society (p.11) To get to the net zero together with society, TotalEnergies would help 'eliminate' the equivalent of 100 Mtyear of CO2 generated by our customers. (p.11) Cutting Scope 1 and 2 emissions by 40% (operational activities) in 2030, vs 2015	Carbon storage (p.11); forest presentation (p.58) Our strategy to get to net zero by 2050, together with society (p.86)
2022	Sustainability and Climate Report (84)		57	4	234	16	10	x	7	Specific page	x	In 2021, Total became TotalEnergies, a new name for a new ambition to become a major player in the energy transition, engaged towards getting to net zero by 2050, together with society. (p.4) Scope 1 and 2 emissions compared to 2015 target for a 40% reduction by 2030 (p.5)	Renewable energy and hydrogen [...], and the remaining quarter captures, recycled or offset (p.4); We are working with customers, suppliers, researchers and start-ups (p.5) Our business strategy, like our net zero ambition, is part of a transition dynamic that involved society as a whole (p.6)
2021	Factbook (140)		5	x	66	2	9	x	x	No chapter or specific section	x	TotalEnergies has factored this development into its strategy and set itself the ambition of achieving carbon neutrality (net zero emissions) by 2050, together with society. (p.4) Reduce scope 1 and 2 by 40% by 2030, compared to 2015 (p.4)	same as above.
2020	Getting to Net Zero (33)		16	x	249	22	45	1	3	No chapter or specific section	x	same as above.	same as above.
2019	Climate Report (60)		x	x	238	40	14	x	8	x	x	x	x
2018	Climate Report (56)		1	x	191	28	1	x	3	No chapter or specific section	x	x	Carbon capture, utilization and storage (CCUS) seems more and more crucial to achieve net zero emissions in the second half of the century (p.16)
2017	Climate Report (51)		x	x	128	25	7	x	x	x	x	x	x
2016	Climate Report (44)		x	x	75	8	1	1	2	x	x	x	x
2015	Factbook (126)		x	x	8	x	x	x	x	x	x	x	x
2014	Factbook (128)		x	x	12	x	1	x	x	x	x	x	x
2013	Factbook (130)		x	x	18	x	x	x	x	x	x	x	x
2012	Factbook (128)		x	x	16	x	x	x	x	x	x	x	x

TotalEnergies (2/2)													
Year	Report (pages)	Title of the report	# Net Zero	# Net Positive	# Carbon	# Low-carbon	# Carbon Neutral	# Carbon Reduction	# Carbon footprint	Placement within the report	Net Zero Definition	Net Zero Goal	Net Zero Strategy
2011	Factbook (13)		x	x	10	x	x	x	x	x	x	x	x
2010	x		x	x	x	x	x	x	x	x	x	x	x
2009	x		x	x	x	x	x	x	x	x	x	x	x

8.5 Appendix 5 | Interview results



Interview #1

Carola Put - de Vreugd (NL)

Manager Facilities (Sustainability) Advisory

Company: CSU

CSU is one of the largest cleaning companies in the Netherlands. CSU has established itself as a leader in the Dutch cleaning industry, known for its high-quality service, innovative cleaning solutions, and commitment to sustainability.

2030: 55% lower CO2 emissions, compared to 1990.

2050: 100% lower CO2 emissions, compared to 1990 (climate neutral).

What recent sustainability trends have emerged, and what do you anticipate for the future?

We offer dashboards showcasing the sustainability of our clients. Formerly, this only included 'green' aspects, but currently this has been elaborated to a 'green and social dashboard'. In addition to the social aspect, we see an increase in the interest and use of CSRD and the CO2 performance ladder. I expect that reporting and operationalization of sustainability will receive more attention in the near future.

Are you familiar with 'Net Zero'? If so, how would you define it? If not, what about terms like 'low carbon', 'carbon neutral', or 'near zero'? Within our company, we refer to Climate Neutral (klimaat neutraal), meaning we are lowering our CO2-emissions to operate climate neutral.

Do you feel like other companies are aware of the trend Net Zero? If so, do they define and use the trend correctly? Fortunately more and more people are aware of the sustainability issues and the solutions needed to minimize the environmental impacts. However, I see a lot of greenwashing from other companies. I feel like sustainability claims are made easily, whereas policies and supervision lacks.

Why do businesses follow the trend Net Zero? Do you think it improves their image? Yes, I notice a significant amount of greenwashing, where companies leverage trends like Net Zero to enhance their public image. When assessing a company's dedication to sustainability, I prioritize the integration of sustainability practices into its core business and operations. Is their commitment genuine, or is it merely a superficial claim? Additionally, I assess whether the company is held accountable for its sustainability efforts, as this demonstrates the level of commitment.

Do you think businesses are improving in their understanding and adoption of trends? Yes and no. While there's increased attention and understanding of various sustainability concepts, I find that many companies interpret the trend of Climate Neutrality differently. In the Netherlands, most companies have diverse approaches to implementing these concepts. One solution could be to make sustainability concepts more practical. For instance, waste reduction or meat consumption have become more tangible and easier to grasp. However, concepts like the circular economy and CO2 emissions are less straightforward, leading to misunderstandings and resistance.

Do you think these trends help to shape sustainability goals and strategies? Yes I think these trends help with creating goals and strategies. However, as I just mentioned, because of different interpretations the goals and strategies are different for each company.

How does your company deal with the trends in goals and strategies? At CSU, we're dedicated to enhancing our sustainability efforts. We've set ambitious Climate Neutral goals and prioritize collaborating with sustainable partners. Additionally, we develop our own Life Cycle Assessments (LCAs) and Green & Social dashboards to effectively visualize and track the sustainability

In my research, I have observed an increase in the use of the trend Net Zero, do you recognize this within your sector as well? Yes, it's a trend across all companies in the Netherlands. With the growing interest in sustainability, more companies are formulating sustainability objectives, goals, and strategies.

In my research, I've observed companies using various terms for similar concepts, while also interpreting trends like Net Zero differently. Do you recognize this in your sectors as well?

Absolutely, each company seems to have its own terminology. It's essential to establish clear and consistent definitions for sustainability concepts across the board. This will facilitate better understanding and practical application of these concepts.

If you would be able to, what aspects would you add to my research? Personally, I believe it is important to examine how sustainability is embedded in a company's core business, as it gives an indication about their commitment. Additionally, while many companies set targets for specific years, it's essential to ascertain the baseline year against which these targets are compared.

Interview #2

Yu-An Chen (ENG)

Sustainability Project Manager



Company: Vanderlande

Vanderlande is a global market leader in logistical automation solutions and services, renowned not only for its innovative technologies but also for its commitment to sustainability.

2040: Net zero; aiming for 100% renewable energy use in our facilities.

What recent sustainability trends have emerged, and what do you anticipate for the future?

Lately, I've noticed a transition from reactive approaches, like compensation, to proactive measures, emphasizing prevention. Trends such as EcoVadis and Science Based Target Initiative are becoming more popular. I anticipate sustainability goals to evolve further and become increasingly mature in the future.

Are you familiar with 'Net Zero'? If so, how would you define it? If not, what about terms like 'low carbon', 'carbon neutral', or 'near zero'?

Net Zero is becoming more and more important within the field of sustainability. For us, Net Zero means having 100% renewable energy in our facilities. Yes, I have also noticed that not every company refers to this as 'Net Zero'. Many businesses refer to Climate or Carbon Neutral. In our communication, we often refer to Zero Carbon Footprint, which refers to the same thing. I see so many companies using 'impact' in their communication, which bothers me a lot. Impact is something intangible and vague, they should be using more concrete vocabulary. Once you pay attention to it, everyone is using this term - it is definitely a trend!

Do you feel like other companies are aware of the trend Net Zero? If so, do they define and use the trend correctly? Yes, I feel like most of the companies are aware of this trend. However, you need to adhere to strict regulations when claiming to be Net Zero. Unfortunately, not all businesses do so, indicating a lack of comprehension regarding the concept and the ambition of achieving a Net Zero status. When trying to find new partners to work with, we prioritize companies committed to sustainability. This means they have to adhere to strict regulations, such as the Science Based Target Initiative. Such initiatives show us whether a business is genuinely interested in sustainability.

Why do businesses follow the trend Net Zero? Do you think it improves their image? Companies seem to be embracing this Net Zero trend to gain a firm grasp on sustainability and develop more cohesive goals and strategies. Of course, this enhances the company's image. For us, aspiring to achieve Net Zero is driven by the belief that articulating our goal moves us towards its realization. As the saying goes, "If you know what you want to be, then you inevitably become it." Furthermore, the pursuit of Net Zero facilitates internal alignment within our organization.

Do you think businesses are improving in their understanding and adoption of trends? No, it seems that many companies use various terms to describe similar concepts within sustainability. Despite a growing comprehension of sustainability concepts, there's still a notable gap in understanding significant trends like Net Zero. When a company doesn't align with the Science Based Target Initiative, we find it challenging to take them seriously.

Do you think these trends help to shape sustainability goals and strategies? Indeed, sustainability trends play a crucial role in shaping goals and strategies. However, I believe it's imperative to establish a standardized framework for these trends. Having a universally accepted definition within a specific sector would ensure consistency and clarity for all stakeholders involved.

How does your company deal with the trends in goals and strategies? At Vanderlande we first referred to Zero Carbon Footprint, but are currently using Net Zero to explain our goals and strategies. We are working with sustainable partners, highly prioritize the Science Based Target Initiative and are constantly looking for new ways to improve in the field of sustainability.

In my research, I have observed an increase in the use of the trend Net Zero, do you recognize this within your sector as well? Yes, definitely. Even though many different sustainability trends have been introduced lately, I feel like Net Zero or Carbon Neutral are receiving the most attention.

In my research, I've observed companies using various terms for similar concepts, while also interpreting trends like Net Zero differently. Do you recognize this in your sectors as well? Yes. As I mentioned there are no industry standards, enabling all companies to create their own terms. Right now, I feel like companies say are not interested in the topics of sustainability, but just want a clear roadmap that describes to them how to approach their Net Zero goals and strategies.

If you would be able to, what aspects would you add to my research? It would be really nice to pinpoint the location of the sustainability team within a company: whether it's housed within the finance team or the marketing and communication team. We look at this very often, to determine how serious the company is towards sustainability. Also, for future research, it would be interesting to look at the differences between countries. I feel like Europe is more ahead when it comes to the sustainability trends.

Interview #3

Jacqueline Baaijens-Bijman (NL)

Heading Sustainability – CSR – ESG



Company: Roompot / Landl Greenparks

As prominent players in the holiday park industry, both Roompot and Landal GreenParks have recently fused and made significant strides in integrating sustainability into their operations, setting a high standard for their peers to follow.

2030: 50% lower CO2 emissions (Roompot)

2030: 100% lower CO2 emissions, climate neutral (Landal Greenparks)

What recent sustainability trends have emerged, and what do you anticipate for the future?

Recently, I've noticed an increase in the use of ESG and CO2 reduction methods. For both, there has been an increase in the amount of concrete steps and plans. Additionally, biodiversity and a green environments are trends that have increased over the years. Another trend I've seen is the fact that businesses are becoming more careful with their statements, perhaps because they're hesitant about greenwashing and how people might react. Looking ahead, I anticipate further growth in commitments to Net Zero goals and transparent sustainability reporting.

Are you familiar with 'Net Zero'? If so, how would you define it? If not, what about terms like 'low carbon', 'carbon neutral', or 'near zero'?

Yes, Net Zero has certainly been a central focus for us. It entails reducing CO2 emissions to zero, primarily through reduction methods. If achieving zero emissions isn't feasible through reductions alone, offsetting methods can be employed. However, I personally prefer prioritizing emission reduction over relying on offsetting methods to meet our goals. Claiming you aim to achieve Net Zero sounds impressive, but for some companies, it may not be feasible, leading them to rely more on offsetting methods.

Do you feel like other companies are aware of the trend Net Zero? If so, do they define and use the trend correctly?

Yes, it seems that larger, well-established companies are embracing sustainability trends and have a clear understanding of their strategies. However, smaller startups often exhibit stronger commitment to Net Zero strategies, while larger corporations may lag behind in this transition. Additionally, there's inconsistency in how companies define Net Zero, making it challenging to compare their plans and actions effectively.

Why do businesses follow the trend Net Zero? Do you think it improves their image?

This varies from one company to another and relies on the decision-making team. However, I sense that consumers may not be as interested and can't be bothered with new sustainability trends. Nevertheless, the concept of Net Zero does have an appealing ring to it, making it a powerful tool for marketing purposes.

Do you think businesses are improving in their understanding and adoption of trends?

Absolutely, the importance of sustainability is becoming more widely recognized, leading to a better understanding of trends in this field. Due to the consideration of scope 3 emissions, smaller companies and suppliers are increasingly compelled to address their CO2 emissions.

Do you think these trends help to shape sustainability goals and strategies?

Net Zero is a clear goal, making it very useful for decision making. It also provides a clear vision for the future, as everyone understands the aim of achieving zero emissions by a specific year.

How does your company deal with the trends in goals and strategies? Since the recent merger of Roompot and Landal Greenparks, we are in the process of establishing a shared goal and strategy. Conducting a double-materiality assessment has helped us identify our key areas of focus. We recognize the significance of the Science Based Targets Initiative and intend to utilize it to assess and validate our sustainability goals.

In my research, I have observed an increase in the use of the trend Net Zero, do you recognize this within your sector as well? Certainly, there's a noticeable uptake in companies showing interest in sustainability, particularly in the trend towards achieving Net Zero emissions. However, as I've mentioned before, it's crucial to acknowledge that this goal isn't feasible for every company. Some may struggle to achieve zero emissions and end up relying heavily on offsetting methods.

In my research, I've observed companies using various terms for similar concepts, while also interpreting trends like Net Zero differently. Do you recognize this in your sectors as well? Yes, companies often use various terms, explanations, and definitions for sustainability, leading to considerable confusion. As a result, many companies are now working to define their sustainability plans and actions more clearly.

If you would be able to, what aspects would you add to my research? It's interesting to examine how companies are approaching their Net Zero goals—are they primarily relying on offsetting methods, or are they actively pursuing genuine CO2 reduction efforts?

Interview #4

Jacqueline Reeker (NL)
Sustainability Advisor



Company: Achmea

Achmea, one of the largest insurance companies in the Netherlands, has been increasingly integrating sustainability into its operations. With a focus on environmental, social, and governance (ESG) factors, Achmea is committed to fostering a more sustainable future.

2030: Net zero for own business operations.

2050: Net zero for their insurance portfolio.

What recent sustainability trends have emerged, and what do you anticipate for the future?

Recently, biodiversity and circularity have been a hot topic. But in the last years I have seen Net Zero and Net Positive taken a rise.

Are you familiar with 'Net Zero'? If so, how would you define it? If not, what about terms like 'low carbon', 'carbon neutral', or 'near zero'? Yes, I'm familiar with this trend. Actually, we use this in our own goals and strategies as well. For us, it means minimizing CO2 emissions as much as possible. Any residual emissions are then offset through a combination of certificates and tree-planting initiatives. This ensures that we're not only reducing our carbon footprint but also contributing positively to environmental sustainability.

Do you feel like other companies are aware of the trend Net Zero? If so, do they define and use the trend correctly? Definitely. Larger companies seem to be leading the charge in understanding and implementing the concept of Net Zero effectively. However, smaller businesses also appear to be aware of the term and its relevance to their goals and strategies. That said, there are instances where some companies may exploit the concept for greenwashing purposes. Given the complexity of the topic, it's understandable that such practices could occur more easily.

Why do businesses follow the trend Net Zero? Do you think it improves their image? Lately, I've noticed a significant shift in how seriously companies are taking sustainability. Terms like "Net Zero" seem to be gaining more weight in their agendas. Moreover, with the introduction of new CSRD regulations, it seems like companies won't be able to 'cheat' anymore. This means that greenwashing tactics are more likely to be exposed sooner rather than later.

Do you think businesses are improving in their understanding and adoption of trends? Absolutely, there's definitely been a noticeable increase in understanding sustainability-related terms. It's become more common to encounter discussions, readings, and conversations about these topics. Additionally, the implementation of stricter regulations provides a firmer framework, giving everyone a clearer direction.

Do you think these trends help to shape sustainability goals and strategies? Certainly, the emergence of these new concepts provides frameworks for setting new goals and developing strategies. However, I believe peer pressure also plays a significant role. When you see other companies actively engaging with these concepts, it becomes difficult not to follow.

How does your company deal with the trends in goals and strategies? We've found it relatively easy to implement our Net Zero goals and strategies overall. Getting started wasn't too challenging. However, we do face some difficulties due to the presence of three distinct branches within our organization, which makes it tricky to establish a cohesive goal.

In my research, I have observed an increase in the use of the trend Net Zero, do you recognize this within your sector as well? Definitely. I think that after the Paris Agreement in 2015, the importance of sustainability became explicitly clear. Since then, there has been a noticeable increase in businesses dedicating resources—time, money, and energy—to sustainability initiatives, including the trend towards achieving Net Zero.

In my research, I've observed companies using various terms for similar concepts, while also interpreting trends like Net Zero differently. Do you recognize this in your sectors as well? Indeed, there are numerous claims circulating with similar meanings, such as CO2 neutrality, energy neutrality, and climate neutrality. Each of these terms can essentially be interconnected.

If you would be able to, what aspects would you add to my research? I'd recommend consulting the EU Taxonomy to pinpoint accurate definitions for various concepts. Additionally, I've noticed that the energy sector stands out significantly from other industries, suggesting that it might require a special approach for researching this sector.