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How do the divestment trends correlate with the green transformation of oil and gas companies?

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ABSTRACT

The green transformation of oil and gas companies is necessary to tackle climate change. Most of the green transformation related activities have been launched since the Paris Agreement was ratified. The main purpose of this article is to highlight how oil and gas companies handle the pressure of shifting their fossil fuel-based portfolio by analyzing their divestment trends. In our sample, six large, medium, and small oil and gas companies – Shell Royal Dutch (UK-based), British Petroleum (UK-based), OMV (Austrian), PKN Orlen (Polish), Neste (Finnish) and Orsted (Danish) – are assessed regarding the maturity of their green transition via the lens of their divestment figures between 2017 and 2022. The biggest leaps in green transition have been taken by small companies with the support of their governments. The majority of the divested portfolios were purchased by companies outside of the European Union (EU). This research offers a significant contribution to the literature on green energy transition, focusing on the divestments trends of oil and gas companies.

KEYWORDS

green transition, oil and gas companies, divestments, Paris agreement

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1. INTRODUCTION

The energy transition creates ambiguous conditions for oil and gas companies. Some new opportunities are arising, but at the same companies face solid time pressures coming from both society and supranational regulations. Climate change is a global issue, however, there are significant differences between the companies inside and outside of the EU related to their involvement in the transition. The green transition of companies is inevitable, especially in those sectors which are significant emitters of greenhouse gases (GHGs). The paper focuses on the sustainable development of the oil and gas companies via analyzing their divestments and highlighting their impact on the climate. Since the Paris Climate Summit in 2015 and the ratification of the Paris Agreement, the global response to the climate change has become a central topic of the international arena (Akrofi et al. 2022). Oil and gas companies are responsible for 42% of global GHG emissions directly and indirectly (Beck et al. 2020). Falkner (2016) highlights the bottom-up logic of climate mitigation in the frame of the Paris Agreement, where domestic entities play a crucial role by implementing international agreements on the green transition (William et al. 2020).

The purpose of this study is to analyze the green transition of six selected European oil and gas companies: Royal Dutch Shell (Shell) and British Petroleum (BP), both headquartered in the UK, OMV in Austria, PKN Orlen in Poland, Neste in Finland, and Orsted in Denmark, through the lens of their divestments since 2017. The sale of GHG heavy operations and assets are one of the key elements of the green transition. Divestments are essential contributors to the ability of corporations to build up green portfolios and operations. However, there is a tension if divested assets continue emitting GHG into the environment (Nielsen 2021). The trends show that majority of the GHG heavy divestments were shifted to countries outside of the EU.

Divestment is one of the key dimensions for European companies to engage themselves with the green transition and avoid the EU's climate regulatory penalties. From a climate perspective, these companies have several assets which operate in non-European countries. Additionally, most of the oil and gas companies' divestments shown in this article have been taken over by non-EU entities which are not subject to the EU climate directives. The article seeks to answer the following question: What is the correlation between green transition and the divestment trends of oil and gas companies?

2. THEORETICAL FRAMEWORK

2.1. The green transformation of corporations in Europe

The green transformation of oil and gas companies is quite dubious and surrounded with multiple dilemmas. The changes that are required from companies have never happened before. Support for climate protection and an urgency for immediate actions has intensified globally after the Paris Agreement in 2015, and a majority of the literature was written after that period. Energy transition forges concerted actions of supranational, national, and subnational actors to achieve net zero economy. An unequal cost of energy transition appears, which requires the more active involvement of political actors (Healy – Barry 2017).

The green transformation has been researched quite extensively. Schmitz suggests a parsimonious definition: 'the green transformation is the process of restructuring that brings the

economy within the planetary boundaries' (Schmitz 2015: 171). This transformation requires a complex change in the society which completely affects the economy. In this framework, the public actors can further influence the transformative pace of the actors. The following factors contribute to the transformation: capital, expertise, organizational capacity, legitimacy and leadership (Schmitz 2015). Others link the transformation with green growth, preserving the environment and ensuring high quality and secure life for the present and future generations. The combination of economic and social factors is the basis of the green movement (Gu et al. 2018; Baranyai et al. 2024; Meckling – Hughes 2018).

In this section, we elaborate on European corporations' results related to the green transition, even though the global efforts are uneven in mitigating GHG emission. To reach net-zero economy by 2050, no financing should be initiated to fossil fuel infrastructure and the assets should be stranded (Baron – Fisher 2015). The local governments have a critical role in the green transition via triggering fossil fuel divestments. There is a significant link between the maturity of oil and gas companies' green transition and their governments' intention to protect the environment and their attitude towards climate change (Cojoianu 2019). These dynamics will be introduced in the empirical part of the paper in the frame of the comparative cases.

In case of the incumbent oil and gas industry, society has a crucial role in tackling climate issues by triggering divestments (Cojoianu 2019). We analyze the divestment trends between 2017 and 2022 from the environmental point of view and reveal whether its purpose was successfully achieved. The approach towards green transition by European countries is quite diverse from environmental, technical development, and political aspects (Sovacool et al. 2018). Due to this factor, our lemma is that the performance of European countries will influence the future path for international companies regarding their divestment trends. This motivated us to build our sample around European countries.

The European Commission (EC) has an essential role to incentivize the transition both from normative and monetary point of views. Based on the assessments of the last few years, the EC is expecting faster transition, as the GHG reduction targets were increased to 55% by 2030 compared to the level of 1990. One of the most effective tools in GHG emissions reduction is the emission trading scheme (ETS) pricing which fosters investments in green technologies and energy-efficient practices on individual and company levels. The pricing tool is triggering and accelerating energy generation from renewables (Akindote et al. 2023; Zhang et al. 2022). The role of the ETS pricing is to ensure the quantity of the emission. However, it has received many criticisms about its efficiency and the scale of reducing GHG emissions it achieves. The quality of the offset projects are not ensured, quantity is the dominant factor (Green 2021). Besides highlighting the role of some of the EU's tools, it is crucial to identify clear pathways which trigger environmental conscious behavior (Proka et al. 2018). The most recent EC proposal about the corporate sustainability reporting directive (CSRD) results in disclosing corporations' sustainable actions in a more comparable and reliable way (Baumüller – Grbenic 2021). The adaptation framework contains social, political, human, financial and environmental capitals. The adaptive capacity of the nation state can determine the ability to react to climate change and thus enhance green transition (Szopik-Depczynska 2022). Some contradiction might be revealed in the literature regarding the top-down approach in triggering green transition (Bhattarai et al. 2022). There are some scholars (Andersen 2015; Falkner 2016; Sabel – Victor 2017) who claim that before the Paris Agreement, the EU and other supranational organizations played a dominant role in incentivizing companies to move towards more

sustainable operations. However, the top-down approach shifted into a bottom-up approach over a decade, and after 2016, a national, country-level focus is more essential. Local actors formulate their scope and strategies, which is aggregated back to the supranational level (Lindenberg – Steg 2013).

While the moral, ethical motivations and regulatory incentives behind fossil fuel divestments are essential factors, financial reasoning is dominant as well (Healy – Barry 2017). Siegwart Lindenberg's Goal Framing Theory has introduced the concept of heterogenous motivations of companies to take part in the green transition. These goals are nurtured by both moral and rational motivations (Lindenberg – Steg 2013). The transformation of the oil and gas companies can be explained by the heterogenous goals of the actors, where the normative approach to save the planet for future generations is dominant in the narratives of companies. The financial incentives to invest into green projects, as well as to avoid significant penalties in the case of EU companies if they miss the GHG reduction targets, are important in deciding long-term green strategies. The green transformation of companies is dominated by a mix of material, emotional, and normative factors (Etienne 2011). As renewables are mostly subsidized by the EU, therefore when companies divest their portfolios, market based green solutions are less effective in the green transformation compared to the solutions that are financially supported by the regulators. Based on Helena Dill's research, 11% of emission reduction can be associated with carbon pricing initiatives (Dill 2024).

Besides the normative and social factors, the geography and natural resources of the given countries play an important role in the transition. In countries that are heavily reliant on coal or fossil fuels, companies have less intention to transfer their carbon-heavy portfolios into green ones (Patricolo 2020). The core competencies which represent the value and uniqueness of the given entities (Reynaud – Simon 2006) represent a dominant role in the green transition of the oil and gas companies. The core competences contain three interconnected elements that determine the green actions of companies (Ljungquist 2007): capabilities, timely reaction, and resources.

Additionally, technological aspects play a crucial role in the green energy transition. That is why Denmark, due to technological advancement and a smart integration-based energy system, is performing a well-balanced transformation (Hansen, 2022) along with its national oil and gas company, Orsted.

2.2. Green transformation via the lens of divestments

The green transformation of oil and gas companies in line with the divestment trends is quite dubious and surrounded with multiple dilemmas. The changes that are required by the companies have never happened before. It is inevitable to account for a more holistic energy governance, where the whole value chain is observed and assessed (Goldthau – Sovacool 2012). Many actors use divestment strategies to reinvest into greener projects (Healy – Barry 2017). Divestments as well as capital expenditures might be influenced by the company's core competences (Ansar et al. 2013). All the oil and gas companies need to go through a complete renewal of their core competences in a dynamic business environment (Ljungquist 2007).

According to Lamberth, from a business perspective, divestments offer business opportunities via selling units to other entities and refocusing strategies to build a new portfolio. In case of force majeure, divestments might be initiated due to major environmental harm, injustice,

or political unrest (Lamberth 2019). The former is a catalyst for oil and gas companies' green transition, with the purpose of generating cash-flow to have enough capability to build new sustainable portfolios (Orta-Martínez et al. 2022).

Shareholders also have an essential stake in divestment decisions. The pressure from their side is increasing, which indicates that recent trends in the divestment of carbon-heavy portfolios triggered by increasing social and environmental values (Edmans 2023). Shareholder engagement in divestment processes has received more attentions in policymakers' statements, however the potential reduction in exploration capacity of fossil fuels also results in a reduction in global supply and potentially in GHG emissions. Though there is a counter-argument that instead of external pressure coming from the shareholders, the most effective way of handling the green transition could be achieved via incentivizing management boards and executives to invest into green alternatives (Braungardt 2019).

3. METHODOLOGY

The article utilizes descriptive methods by presenting certain transition phenomenon via case studies and highlighting motives of European entities' green transformation. Content analysis is used for assessing whether divestments are led by green transition efforts or by optimization. The main purpose of this qualitative method is to structure the meaning of the collected data (Bengtsson 2016).

The scope of the study consists of six companies supporting the comparative case analysis within the green transformation: the big companies are Shell Plc. and British Petroleum (BP), from the Western part of Europe; the two mid-sized companies are OMV and PKN Orlen, from the Central Eastern European region; and the two smallest companies are Neste and Orsted, from the Nordic region. These companies are on the path to shift their portfolios into less carbon heavy ones. Additionally, they cover different geographic locations and different capabilities towards climate protection and transition. As Johnstone stated, the green transformation is not a spontaneous action, and is composed of international, national, regional, and local layers (Johnstone 2020) (Table 1).

In the quantitative part, we have assessed the divestment figures of the six companies between 2017 and 2022. Divestments refer to the companies' decision about eliminate part of their assets (Duhaime – Grant 1984) and part of their business portfolio. In general, divestment decisions are reactions to pressure, and serves as a strategic tool for the companies to renew their portfolio or operations (Dranikoff et al. 2002). The results reported in local currency were exchanged using the exchange rate from April 2023. The percentage portion of divestment of the total sales revenue were calculated. This logic helped to determine the effort share (%) of the oil and gas companies in divestments (Fig. 2), while the absolute figures showed how much was divested (Fig. 1).

The applied content analysis for both qualitative and quantitative assessments support to answer the research question: how do the oil and gas companies' fossil fuel divestments correlate with the green transformation? The primary data was collected from the annual reports of each entity.

Limitations of the empirical part of the research are rooted in the assessment of the financial data such as revenue and divestment figures. In certain cases, the accurate divestment amounts

Table 1. Clustering the oil and gas companies based on number of employees

Oil and Gas Companies	Number of Employees	Size Clusters	Headquartered
Shell	93,000	Big	Western Europe
BP	67,600	Big	
OMV	22,308	Medium	Cental & Eastern Europe
PKN Orlen	21,109	Medium	
Orsted	6,836	Small	North Europe
Neste	4,872	Small	

Source: authors, based on the annual reports of Shell, BP, OMV, PKN Orlen, Orsted and Neste in 2022.

were missing or were not shared publicly in the annual reports. The limitations in the data might raise a concern about how controllable and accurate the results are. Furthermore, not all the selected cases are applicable from a divestment point of view. This issue appeared at Neste and PKN Orlen, where divestment figures were mostly undisclosed in the annual reports. A dilemma has appeared whether the number of the selected cases was sufficient, and whether the geographic scope of the European companies can adequately represent the green transformation. Based on the empirical experience of this study, we might draw a conclusion that the precise figures will not be available, however, it does not jeopardize the results, as shown by the trends and patterns of company's behavior presented in the following chapter.

4. RESULTS

4.1. Analytical framework via the case analysis

In this section, we assess the selected oil and gas companies and apply a descriptive approach to better understand the results. The aim of this section is to elaborate how these selected companies move towards sustainable operations. Out of the six cases, Orsted from the Nordic region advanced the most in the green transformation. Based on the evaluation of the long-term strategies, they started to transform their portfolio earlier than any other actor in the international arena. Neste is a special case among all, because their divestments were limited; however, it is advancing rapidly with its green strategies. They have produced renewable diesel since 2007 with a refining technology that transforms fats into molecules that could replace fossil raw materials in fuel production (Neste 2023). The other companies in the case study pool are having a moderate transition. Since 2015, divestment narratives have started to appear for the sake of green transformation. Besides normative reasons, the EU's monetary incentives also triggered actions which led the companies towards sustainable operations (EUR-Lex 2020).

Orsted is an outstanding case for green transition. Within a decade, the Danish company has transformed its fossil fuel-based operations into the world's leading offshore-wind power producer (Szopik-Depczynska 2022). Orsted was previously called Dong, and was established in 2006 by merger of six companies. The portfolio contained power and heat generation based on

coal, oil and gas production, along with exploration assets in the North Sea. Primarily, the company was an integrated corporation with the state having a majority stake. 88% of earnings was coming from Denmark, while 12% from international business (Tryggestad 2020). The management was able to turn around the portfolio, the combination of wind and photovoltaic power stations gained a central role (Zammit-Maempel 2021). Two powerful events contributed to the green transformation: COP15 was held in Copenhagen in 2009, and a planned coal power project in North-East Germany was not supported by the stakeholders. From a regulatory point of view, the EU introduced a 20% target for renewables by 2020. The Danish government actively supported launching offshore wind power farms and generating a scalable business. Therefore, environmental protection has become a political priority (Vedula 2018). The institutional support plays a crucial part in a successful transition. To make a scalable business, Orsted launched a joint agreement with Siemens to build wind turbines. Such a successful green transition would not have been possible without the support of international organizations, national, and subnational groups (Orsted 2017).

Another front-runner case in the green transition is the Finnish company, Neste. They focus on renewables and circular economy. Neste gradually transformed its portfolio from a regional oil refiner to a global leader in renewables. The company was established in 1948 to secure Finland's oil supply with two refineries, Naantali and Porvoo. Their main portfolio contained natural gas, exploration and production, and chemicals. The company was listed on the Helsinki Stock exchange in 1995. Neste purchased the NEXBTL refining technology, which is capable of transforming fats into molecules and replacing fossil fuels in fuel production. Thus, Neste has become the world's largest producer of renewable and sustainable fuels.

The next two companies, the Polish PKN Orlen and the Austrian OMV, are on a slower transition path. Based on the collected data, both are showing increasing amounts of divestments in recent years, primarily since 2015. For example, OMV engaged in a USD 1.4 billion divestment of its Ofisi Terminal (OMV 2017), and the transaction appeared as the supporting milestone to deliver OMV's green corporate strategy. OMV is gradually moving away from traditional fossil fuels, by transforming towards circular economy and plastic recycling (Stern 2020).

PKN Orlen, an integrated oil and gas company with seven refineries in Europe, also focuses on petrochemicals, retail, offshore and onshore upstream and gas business (Orlen 2023). Some of their divestment activities represent a seemingly environmentally friendly approach, such as closing 30 retail stations in Poland. On the other hand, the company made a major investment to acquire Lotos, with approval from the European Commission. The transaction raised some concerns, as it might have resulted in a monopoly on the Polish market, therefore PKN Orlen was required to sell its 30% stake to Aramco (European Commission 2023).

The two biggest companies, Shell and BP, conducted very active divestment activities since 2017. Out of the six cases, Shell represents the highest divestment absolute value in the period between 2017 and 2022. Contrary, by assessing the percentage portion of the divested figures of the total sales revenue, these two companies had a very low percentage compared to others. The highest amount occurred in 2021, when the divested portfolio reached USD 15 billion. The divestment of its Nigerian operation was historical for Shell, as it was producing oil there for more than 63 years (Shell 2021). However, the ambitious goals to reach a 55% reduction in GHG emissions by 2030 triggered this step. The emissions from those assets in both onshore and in shallow waters were the biggest portion in Shell's global portfolio

(Anderson 2021). Another meaningful step in 2021 towards the green transition was the sale of its interests in the Permian basis to ConocoPhillips for USD 9.5 billion, with an operation equivalent for 175 thousand barrels per day (Shell 2021).

BP has had more moderate divestment results compared to Shell. One of the biggest divestments was the Oman Block 61 for USD 2.4 billion in 2022, and preparation of the sale of its petrochemical business and onshore logistics assets in the US (British Petroleum 2021).

4.2. The main results

One of the most influential dimensions are the divestment figures and portfolio shifts, which provide indications on how the companies are progressing with the green transition (Neville 2020). It is important to analyze the percentage share of the divestments (Fig. 2) of the total revenue (Fig. 3). The companies tend to divest their GHG heavy portfolios to shift their operations into a greener direction. This is essential to shift business logic and release capital for green investments. It might be misleading to solely check the divested figures in absolute value. It is important to note that divestments taken over by other companies raise concerns from a climate point of view. These operations continue to emit GHG, thus the green transformation of oil and gas industry is jeopardized globally. From a climate point of view the divestment trends do not lead to the desired results, as on the global scale GHG emissions are not reduced (Nielsen et al. 2021).

PKN Orlen is headquartered in Poland and internally, the company still builds on its core competencies in traditional fossil fuel operations. Similarly to the Polish government's approach, the company has taken a moderate, rather slow attitude towards the green transition compared to its Nordic counterparts. PKN Orlen just entered the Hungarian and Slovak markets by acquiring petrol stations. Externally, the Polish government within the EU belongs to the bloc which is slow in the transition. 80% of electricity production in Poland is based on coal. Due to this industrial structure, the country is exempt from the 2050 carbon neutrality goal (Mulhern 2020). The competencies of the entities and the government have major influence on the

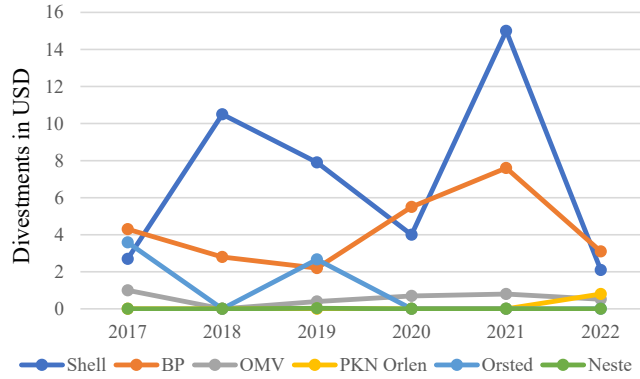

Fig. 1. Evolution of the divested values between 2017 and 2022 (in USD billion)
Source: authors, based on the annual reports of Shell (2017–2022), BP (2017–2022), OMV (2017–2022), PKN Orlen (2017–2022), Orsted (2017–2022) and Neste (2017–2022).

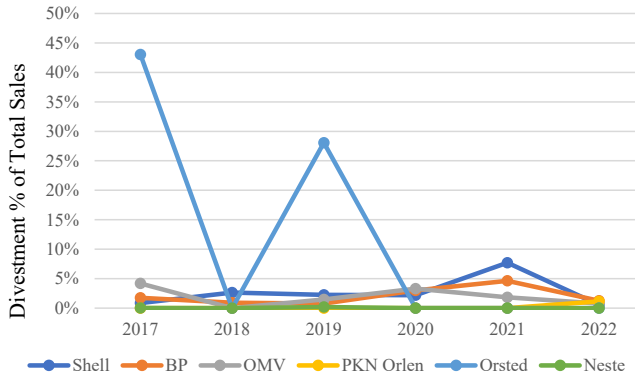

Fig. 2. Share of divestments in total sales revenue, in % (in USD billion)
Source: authors, based on the annual reports of Shell (2017–2022), BP (2017–2022), OMV (2017–2022), PKN Orlen (2017–2022), Orsted (2017–2022) and Neste (2017–2022).

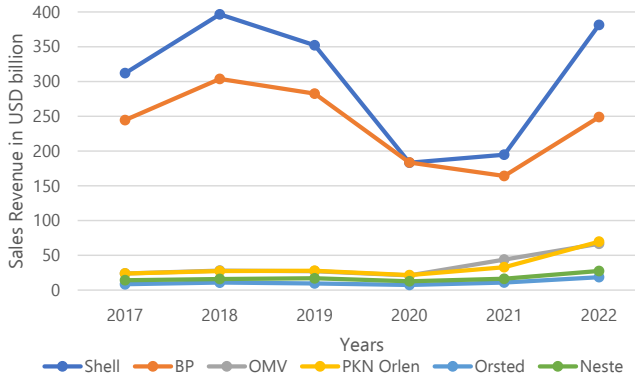

Fig. 3. Total sales revenue between 2017 and 2022 (in USD billion)
Source: authors, based on the annual reports of Shell (2017–2022), BP (2017–2022), OMV (2017–2022), PKN Orlen (2017–2022), Orsted (2017–2022) and Neste (2017–2022).

companies' appetite for green transition. According to the Polish Economic Institute (PEI), the optimistic scenario shows that Poland could become net-zero by 2056, while there is a pessimistic estimation of 2067 (Patricolo 2020). PKN Orlen only started to divest its carbon heavy portfolio in 2022 when the EU regulatory framework required it to do so regarding the Lotos acquisition. To ensure competitiveness on the market, the Polish company engaged itself in some divestment activities triggered by the European Commission's regulatory requirements (European Commission 2020). These trends prove that not only national governments, but supranational organizations can have significant impact on green transformation (Vaszkun – Sziráki 2023).

In 2017, INEOS bought Orsted's upstream oil and gas business for USD 1.3 billion (Tables 2 and 3) (Megaw 2017). The facility produces 100,000 barrels of oil equivalent on a daily basis in the North Sea (Orsted 2017). From a global point of view this shows that while some companies might become green via these actions, their divested portfolios bought by other companies will continue to emit GHG into the atmosphere. The ambition to become carbon neutral by 2050 seems unachievable as the divested carbon heavy operations continuing to operate (Nielsen et al. 2021).

Despite the fact that Neste is among the frontrunners in terms of the green transformation, the company represents a passive approach in divestment activities based on the collected data. It has conducted write-offs actively for carbon heavy machines and equipment (Neste Press Release 2021). This approach would dissolve the tensions mention above where the divested assets and businesses continue to emit. On top of that, Neste has applied new technologies which allowed renewable fuel productions.

Tables 2 and 3 assess the major divestments of each company between 2017 and 2022 (Table 2) along with the buyers indicating the industry and country (Table 3). Neste's base oil business was agreed to be sold to Chevron Corporation (Table 3) in the United States (Neste Press Release 2021). The information about the value of the divestments were not disclosed on any platform, however, in the less regulated environment in the USA, these operations will continue to emit GHG into the atmosphere.

The results indicate that the majority, 75% of divestments were acquired by companies outside of the EU (see peach colored boxes in Table 3) which means that those entities and countries are outside of the influence of the strict EU climate directives. One finding suggests that the green transition of the oil and gas companies would be more efficient and impactful in terms of climate protection if their assets, portfolios would not be divested, but rather they would be closed and financially written-off. In this case, GHG emissions could be reduced with a positive impact on the environment. Out of the six cases, Neste represents this approach the most, as they had more than USD 3 billions of write-offs of carbon-heavy assets in each year between 2020 and 2022 (Neste 2020, 2021, 2022). Additionally, most of the divestments listed in Table 2 were triggered from a climate point of view such as the Puget Sound Refinery by Shell, North Slope Oil Production in Alaska by BP or the Borealis Nitrogen Business Unit by OMV. On the other hand, there are some exceptions which were driven by different reasons such as BP's stake in Russian oil giant Rosneft. In this case, Russia's invasion of Ukraine triggered the divestment process.

Shell was the most active in divestment activities in terms of absolute value, the peak in the year of 2021 comes from two factors: the anticipation of EU regulatory pressure to decrease Scope 1 emissions, and value opportunities in the macro environment fully supporting green initiatives (Ziady 2021). The reason for the sale of Permian Assets to ConocoPhillips is the increasing focus on energy transition where the upstream business plays a central role. This transaction reflects that the company has started to focus on the sustainable green transition. Former chief financial officer, Jessica Uhl declared that Shell will focus in the upcoming years on building green operations, mainly based on electricity. The company is planning to grow its electric vehicle network from more than 60,000 charge points to 500,000 by 2025 (Zori et al. 2022). Shell continues to build on the strategy to reduce its global refinery footprints by divesting Deer Part in Texas, USA and PCK Schwedt Refinery in Germany (Shell 2022). However, all their divestments have been acquired by companies headquartered outside of the EU with less

Table 2. Major divestments of oil and gas companies between 2017–2022

Major divestments						
oil and gas companies	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Shell	Sadaf joint venture in Saudi Arabia Vivo Energy in Africa LPG Business in Macau	Assets in Iraq – West Qurna Field Malaysia Sabah Oil Recovery 45% stake in Irish Corrib Gas project 17% stake in Oman fields	50% in Shell Saudi Arabia	Martinez Refinery in California	Permian Basin Puget Sound Refinery	Malaysia's Baram Delta
BP	Pan American Energy	San Juan Basin natural gas and oil field	North Slope Oil production in Alaska Non-BHP US Lower 48 legacy gas assets	BP's Petrochemical Business	Oman Block 61 Refined products and logistics assets in the US	Stake in Russian oil giant Rosneft
OMV	Petrol Ofisi fuel distribution	Tunisia Upstream GmBH	69% interest in the Maari field	Gas Connect Austria logistics Subsidiary	Borealis' Nitrogen business units	285 Filling Stations in Germany
PKN Orlen	n/a	n/a	n/a	n/a	n/a	30% stake in Lotos 417 filling stations of Lotos
Orsted	Upstream oil and gas business	n/a	Liquified natural gas (LNG)	n/a	n/a	n/a
Neste	n/a	n/a	75 fuel stations and a terminal in St. Petersburg	n/a	Base oil business	n/a

n/a = not applicable.
Source: authors, based on the annual reports of Shell (2017–2022), BP (2017–2022), OMV (2017–2022), PKN Orlen (2017–2022), Orsted (2017–2022) and Neste (2017–2022).

Table 3. Buyers of the divested assets

Buyers of the divested assets and their countries												
Oil and gas companies	2017		2018		2019		2020		2021		2022	
	Company	Country	Company	Country	Company	Country	Company	Country	Company	Country	Company	Country
Shell	*SABIC in Saudi Arabia Vitol Africa DCC LPG USA Shell USA*	*Saudi Arabia USA*	*Itochu Corporation SEA Hibiscus Indian Oil Corporations*	*Japan Malaysia India*	*Saudi Arabian Oil Company*	*Saudi Arabia*	*PBF Holding petroleum refiner and supplier*	*USA*	*Alaska's crude oil producer ConocoPhilips Holly Frontier Corporation refiner*	*Texas, USA*	*Malaysia's Petroleum Sarawak Exploration and Production Sdn*	*Malaysia*
BP	*Bridas, oil and gas company*	*China and Argentina*	IKAV, Renewable company	Germany	*Hilcorp*	*Alaska, USA*	INEOS, petrochemical company	UK	*PTT Exploration and Production public company*	*Thailand*	Write-offs	
OMV	*VIP Turkey Enerji AS*	*Turkey*	Panoro Energy AS independent oil and gas company	UK	*Jadestone Energy Upstream company in Asia Pacific*	*Asia Pacific*	Gas Connect	Austria	Czech Agrofert Group	Czech Republic	*British EG Group*	*UK*
PKN Orlen	n/a		n/a		n/a		n/a		n/a		*Saudi Aramco* MOL Plc.	*Saudi Arabia* Hungary
Orsted	Ineos, a London-based petrochemical company	UK	n/a		*Natural Resource Company Glencore*	*Switzerland*	n/a		n/a		n/a	
Neste	n/a		n/a		*PJSC Tatneft, an oil and gas company*	*Russia*	n/a		n/a		n/a	

Note: Non-EU-member states are italicized.
Source: authors, based on the annual reports of Shell (2017–2022), BP (2017–2022), OMV (2017–2022), PKN Orlen (2017–2022), Orsted (2017–2022) and Neste (2017–2022).

regulatory restrictions. These attempts to divest actively carbon-heavy operations to become carbon-neutral has no impact on the climate on global scale.

BP is taking the second position in the absolute value of the divestments amounts. The majority of its attempts to divest its carbon-heavy portfolio are in line with a long-term carbon neutral strategy. However, the magnitude of its attempts is similarly low to Shell's, when taking into consideration their total revenue. As one of the oil and gas supermajors aiming to become carbon neutral by 2050, it should be more active in divesting carbon-heavy operations. On top of that, in 2022 the USD 25.5 billion write-off on stake in Russian oil giant Rosneft did not happen for the sake of becoming green, but was triggered by the Russia's invasion of Ukrainian (British Petroleum 2022).

Orsted is the frontrunner out of all the selected cases, which has already gone through the green transition from a traditional fossil fuel company to a renewable green one. In 2017 it divested its upstream oil and gas business. One of the key drivers, similarly to Neste, in becoming a frontrunner in the green transition, was the active involvement of pro-environmental governments which incentivized the implementation of green strategies to shift portfolios from carbon heavy to carbon neutral ones (Hvelplund – Djørup 2017). Despite the fact that Orsted has transformed the majority of its operations to sustainable ones, its carbon intensive portfolios were acquired by other companies. In our example INEOS took over Orsted's upstream oil and gas business (Orsted, 2017), therefore overall climate impact has changed little.

Before any conclusions are derived from the absolute values of divestments, where the largest companies – BP and Shell – show outstanding results (Fig. 1), the percentage share of divested figures based on total sales revenue will be critically analyzed (percentage share of divestments = divestments/total sales revenue 1). By assessing the results (Fig. 2), Orsted has put the most effort into divesting its portfolio. Its divestment share in total sales revenue in most of the cases was between 20% and 40%, which are mostly linked to the traditional fossil fuel business model such as LNG activities and upstream business (Orsted 2017).

The divestment share of the two large companies are relatively low compared to the total amount of their sales revenue. Shell has achieved 8% in 2021 which may have been triggered by COVID or regulatory pressure, but in all the other years it was between 1% and 2%.

The total sales revenue indicates that Shell and BP have the largest potential to divest from their portfolio (Fig. 3), however, the picture would be distorted without analyzing the percentage share of the divested amount. The results in Fig. 2 show that the highest portion of divestments appear in the case of Orsted, which has continuously sold their carbon-heavy portfolios during the green transition. The portion of the divested figures might achieve 40%, which is the highest among all the other entities' results (Fig. 2). On the other hand, Shell and BP have relatively smaller between shares of divestments, between 1 and 8%. Neste has a special dimension with an almost zero share of divestments, as some of their assets have already been written-off, or transformed into green production (Neste 2023).

Multiple external circumstances have appeared since 2020 which influenced the percentage of divestment figures in total sales revenue. One of the most significant factors was the COVID-19 pandemic in the years of 2020 and 2021, and the increasing energy insecurity due to Russia's invasion of Ukraine in 2022. The cases have proven that climate incentives are not the only factors influencing divestment trends. BP has divested its assets in Russia due to the war and not for climate reasons. The taxonomy and methodology of classification (Sokal 1986) supported more detail analysis of which divestment activities can be considered as part of the green

Table 4. Taxonomy, categorization of the divestments

Divestment types in the fossil fuel value chain (taxonomy)	Part of the value chain	Asset divestments	Oil and gas companies	Part of green transition (yes/no)
Assets of oil and natural gas fields	Upstream	West Qurna Field in Iraq	Shell (2018)	No; Optimization
		North Sabah in Malaysia	Shell (2018)	No; Optimization
		Oman fields	Shell (2018)	No; Optimization
		Corrib Gas Field in Ireland	Shell (2018)	No; Optimization
		San Juan Basin	BP (2018)	No; Optimization
		North Slope Oil	BP (2019)	No; Optimization
		Non-BHP US Lower 48 legacy	BP (2019)	No; Optimization
		Maari Field in New Zealand	OMV (2019)	Yes
		Permian Basin	Shell (2021)	Yes
		Oman Block 61	BP (2021)	Yes
		Baram Delta in Malaysia	Shell (2022)	Yes
Upstream business	Upstream	Upstream Oil and Gas Business	Orsted (2017)	Yes
		Tunisia Upstream GmBH	OMV (2018)	No; Optimization
LPG business	Downstream	LPG business in Macau	Shell (2017)	No; Optimization
Refinery	Downstream	Martinez	Shell (2020)	Yes
		Puget Sound	Shell (2021)	Yes
Petrochemical business	Downstream	Sadaf Joint Venture in Saudi Arabia	Shell (2017)	No; Optimization
		Shell Saudi Arabia	Shell (2019)	No; Optimization
		Petrochemical Business	BP (2020)	Yes
Refined products and logistics assets	Downstream	Gas Connect Austria	OMV (2020)	No; Optimization
		US Refined Products and Logistics Assets	BP (2021)	No; Optimization
Filling station, retail business	Consumer, retail	Vivo Energy in Africa	Shell (2017)	Yes
		75 fuel stations, Terminal in St. PetersbourgSSS	Neste (2019)	Yes
		285 filling stations in Germany	OMV (2022)	Yes

(continued)

Table 4. Continued

Divestment types in the fossil fuel value chain (taxonomy)	Part of the value chain	Asset divestments	Oil and gas companies	Part of green transition (yes/no)
		417 filling stations	PKN Orlen (2022)	Yes
Base oil business	Downstream	Base oil business	Neste (2021)	Yes
Stake in oil and gas company	Downstream, upstream	Pan American Energy	BP (2017)	No; Optimization
		Rosneft oil giant in Russia	BP (2022)	No; Optimization
		Lotos	PKN Orlen (2022)	Yes
Fuel Distribution Center	Downstream	Petrol Ofisi	OMV (2017)	No; Optimization
Liquified natural gas (LNG) Business	Downstream	LNG	Orsted (2019)	Yes
Nitrogen Business Unit	Downstream	Borealis	OMV (2021)	Yes

Source: authors, based on the annual reports of Shell (2017–2022), BP (2017–2022), OMV (2017–2022), PKN Orlen (2017–2022), Orsted (2017–2022) and Neste (2017–2022).

transition. Different types of divestments were categorized in the value chain of the fossil fuel business: downstream, upstream, and consumer/retail. The majority of the divestments were driven by optimization purposes and maintaining cashflow and balance sheet. A further outcome is that regulation is shaping the intentions behind divestment efforts. Within the same divestment type and value chain categories, the motives behind the divestments have been alternating. The samples prove that the main reasons for the divestments between 2017 and 2019 were optimization and the reduction of weakly performing business activities. The turning point is the year 2020 when the EC introduced the Green Deal to achieve net-zero by 2050, and in 2022 adopted the Corporate Sustainability Regulatory Directive (CSRD) for companies to report sustainable development actions based on the European Sustainability Reporting Standards (ESRS), which resulted in a bigger focus on climate action and a reduction in asymmetries in disclosed information about sustainability (Hummel – Jobst 2024). In parallel, with the stricter regulatory environment, the narratives about divestments increasingly contained references to the green transformation. The categorization of the divestment activities in Table 4 allows us to draw the conclusion that fossil fuel divestments, such natural gas and oil assets, have happened for optimization purposes, however, after 2020 these actions are happening due to the green transformation according to the communications from the companies (Table 4).

As the frontrunner case, Orsted demonstrates that the energy transition along with the divestments cannot be successfully achieved without a concerted actions of supranational institutions, national governments, and civil society. The transition requires that all the actors work simultaneously together. Orsted's case shows that the transition's pace might be faster if the state is involved actively. Moreover, the core competencies of each country and the entities

have a great influence on the direction and pace of the green transition. Green transformation may therefore be more likely in case of small companies compared to internation oil companies (IOCs). However, small size is not prerequisite for successful transition. Based on the diverse characteristics of the green transformation among the selected entities, the social, moral and regulatory factors in the Nordic region, and the technological advancements there have resulted in successful transformation. Another essential factor is the regional approach towards green transition along with social and economic trends. The regulations play a crucial role, which is reflected in the categorization of divestments (Table 4.). Majority of the brown divestments after 2020 are tagged with the green transformation label in the annual reports. There might be certain parallels drawn between divesting fossil fuel heavy assets and the EU's phasing out of coal-based power generation. The linkage is substantial with the ETS's cancellation of the

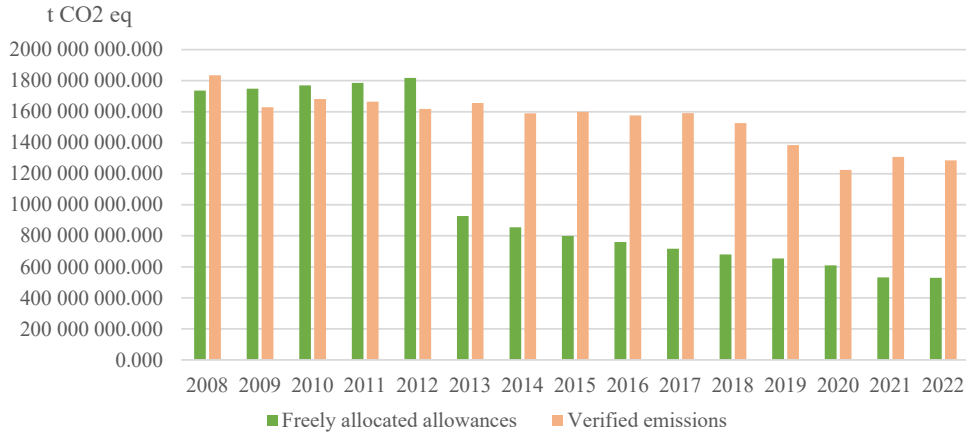

Fig. 4. Freely allocated allowances and verified emissions (CO_2 equivalent tons)
Source: European Environment Agency's EU Emissions Trading System ETS data viewer (European Environment Agency 2024)

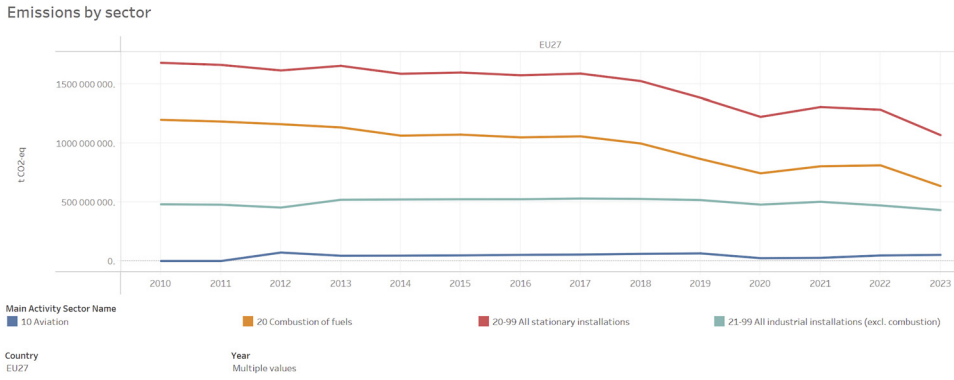

Fig. 5. Emissions by sector (CO_2 equivalent tons)
Source: European Environment Agency's EU Emissions Trading System ETS data viewer.

emissions allowances (Böhringer – Rosendahl 2022). The data Fig. 4 collected by the European Environmental Agency (EEA) proves that the EU's ETS regulation impacted the freely allocated allowances significantly (Fig. 4). There is a correlation between the decreasing trend of freely allocated allowances and sectoral GHG emissions (Figs 4 and 5). Since 2013, the freely allocated allowance has significantly dropped from 1,817 million CO_2 equivalent tons to 927 million in 2023, and continued declining in both sectoral emissions and ETS allowances. Based on the collected GHG emissions statistics, companies with headquarters in the countries with essential decreases in their pollution from 2017 to 2020 (Denmark −12%, Finland −20%) are more advanced in the green transition. The absolute amounts represent whether the countries belong

Table 5. Emissions by countries (million tons of CO_2, CH_4 and N_2O)

EU Countries	2017	2022	Change from 2017 to 2022
GHG Emission Trends	million tones		
Austria	47.6	43.7	-8%
Belgium	71.6	65.2	-9%
Bulgaria	46.6	43.8	-6%
Croatia	13.7	11.6	-15%
Cyprus	5.8	5.4	-7%
Czechia	84.6	76.9	-9%
Denmark	67.4	59.3	-12%
Estonia	19.1	11.6	-39%
Finland	42.2	33.6	-20%
France	264.0	235.2	-11%
Germany	656.4	542.4	-17%
Greece	73.8	57.6	-22%
Hungary	39.5	35.0	-11%
Ireland	41.7	38.1	-9%
Italy	261.1	247.2	-5%
Latvia	7.2	6.1	-15%
Lithuania	13.0	13.6	5%
Luxembourg	7.5	7.0	-7%
Malta	1.5	1.5	0%
Netherlands	151.0	120.3	-20%
Poland	300.2	288.1	-4%
Portugal	49.6	35.8	-28%
Romania	65.5	54.5	-17%
Slovakia	30.2	25.0	-17%
Slovenia	10.6	9.5	-10%
Spain	216.0	181.4	-16%
Sweden	37.4	32.8	-12%
United Kingdom	480.0	410.0	-15%

Source: Eurostat Data Browser (2024).

to the major emitters based on their economic, social and welfare structures. In general, the Nordic countries have lower total emission rates compared to others: GHG emissions were at 410 million tons (UK) and 288 million tons in Poland, vs. 59 million tons in Denmark and 33 million in Finland in 2022 (Table 5).

6. CONCLUSIONS

To conclude, the oil and gas companies have been on transition path since 2015, however, the proportion of the divested assets and carbon heavy operations are on different maturity levels. A national level pro-environmental approach might significantly boost the green transformation (Williams et al. 2020). Additionally, regional capabilities are playing essential role in terms of successful transformation (Tosun et al. 2023), besides the active supranational regulatory environment. The reviewed six cases show that divestments are significantly impacted by the core competences of the enterprises and the countries' social and welfare environment. Orsted is the frontrunner and a globally leading company in offshore wind turbines, and has become a catalyst for structural change for greener society, while maintaining sufficient financial return. On the other hand, PKN Orlen, as a Polish enterprise, faces a slower transition pace by having some level of exemptions from the ambitious EU targets related to the GHG emissions.

Based on the collected primary data, the divested values are quite high at entities like Shell and BP when measured in absolute values. However, when the share of divestments in sales revenue is assessed, the outlook changes. The companies from the socially and environmentally advanced Nordic region, Orsted and Neste, achieve more meaningful results in the green transition compared to their larger counterparts (Shell and BP) and medium-sized competitors (OMV and PKN Orlen). A dilemma arises from the fact that while one company might contribute to the green transformation by divesting its GHG heavy portfolio, on a global scale GHG emissions remain the same. 75% of the divestments have been sold to companies outside the EU, therefore these transformational attempts are losing great momentum. Even though the EU is a frontrunner in the green transition, it lacks influence or instruments to control assets outside of its member states. Individually, the selected companies are achieving significant results to protect the climate; however, on a global scale, their divested operations continue to emit GHGs into our atmosphere, jeopardizing all the attempts to ease climate change.

The article aimed to contribute to the broader research area by stimulating academic discourses about the green energy transition via comparing entities and highlighting their divestment trends. The novelty of this approach was not only the analysis of the divested figures as a share of sales revenue and the geographic specifications, but also the narratives about fossil fuel divestments. Some of the big and medium-sized entities could divest their portfolio in a higher proportion to attain meaningful results in the green transformation and to achieve net-zero by 2050. Due to the strict EU regulatory environment, almost all the GHG heavy operations were acquired by companies outside of Europe, raising concerns about the EU's effectiveness to tackle climate change. This indicates that European companies attempt to avoid penalties and reduce GHG emissions by selling their carbon heavy assets to countries outside of the EU.

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