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TRANSFERRED EMISSIONS ARE STILL EMISSIONS

Why Fossil Fuel Asset Sales Need Enhanced Transparency and Carbon Accounting

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List of Acronyms and Abbreviations

ADC	Asset Dump Co.
BBOE	Billion barrels of oil equivalent
BOE	Barrel of oil equivalent
CFD	Climate-related Financial Disclosure
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CRD	Enhancement and Standardization of Climate-Related Disclosures for Investors
CSRD	Corporate Sustainability Reporting Directive
DID	Difference-in-differences
EU	European Union
GHG	Greenhouse gas
IAS	International Accounting Standard
IFRS	International Financial Reporting Standards
NFRD	Non-Financial Reporting Directive
Mt	Million metric tons
$MtCO_2e$	Million metric tons of CO2 equivalent
SEC	United States Securities and Exchange Commission
SECR	Streamlined Energy and Carbon Reporting
t	Metric ton
UK	United Kingdom
UK MAR	UK Market Abuse Regulation
US	United States

Executive Summary

In a widely reported trend, the "Oil Supermajors"—BP, Chevron, ConocoPhillips, Eni, ExxonMobil, Shell, and TotalEnergies—are selling off many upstream fossil fuel assets.

Selling these assets to entities that will continue producing and selling the fossil fuel resources does not necessarily reduce greenhouse gas emissions, but the supermajors have used these asset sales to support claims that they are making progress toward reaching net-zero greenhouse gas emissions.

Emissions reporting frameworks allow companies to conflate the apparent emissions reductions from asset sales with direct reductions from efficiency improvements and asset retirements. In doing so, they hinder the ability of investors and the public to push for actual emissions reductions.

In addition, the companies that buy these assets are sometimes governed by less rigorous reporting requirements and subject to less public scrutiny than the supermajors, further removing the assets sold and their emissions from public scrutiny.

It is crucial to track and monitor the emissions attributable to fossil fuel assets even after they are sold. This report assesses the regulatory landscape governing the corporate disclosure of fossil fuel asset sales, outlines the scale of fossil fuel asset sales by the supermajors, and proposes regulatory reforms to enhance transparency around fossil fuel asset sales by oil and gas companies.

This report reaches four key findings:

1. **Existing corporate disclosure standards in the European Union, United Kingdom, and United States are insufficient to track fossil fuel asset sales by the supermajors.** Our review of new and emerging climate-related disclosure requirements in the European Union, United Kingdom, and United States reveals significant gaps in the disclosure regimes of these jurisdictions. While each jurisdiction requires publicly listed companies to disclose certain financial and nonfinancial metrics annually, in practice, specific assets may not be traceable through public reporting. The sheer scale of the supermajors also frustrates third-party analysis. While some jurisdictions specifically require companies to disclose certain large asset sales through real-time supplemental reporting, the most prominent oil and gas companies are so large that even multi-billion-dollar sales may not trigger these heightened disclosure requirements. (See Section 2).
2. **Sales of upstream fossil fuel assets are common and have led to the offloading of significant greenhouse gas emissions by the supermajors.** By analyzing a combination of public and proprietary emissions data, we used data on the scope 1 emissions of upstream assets to estimate the scope 3 emissions attributable to assets sold by supermajors between 2017 and 2021. On average, scope 3 emissions from sold assets totaled approximately 25% of their total corporate scope 3 emissions over these five years. (See Section 3.2.2).

3. **Fossil fuel asset sales by the supermajors do not just shift greenhouse gas emissions but may increase them.** We analyzed the emissions intensity of a sample of sold assets pre- and post-transaction. On average, sold assets demonstrated higher post-sale emissions intensities, which indicates that they operated less efficiently. (See Section 3.3).
4. **Fossil fuel assets sold by the supermajors may move to companies with worse track records in environmental and other matters.** By analyzing the violation track records of buyer and seller companies as recorded by the authorities in the United States and United Kingdom, we found that several buyer companies had a worse track record than the supermajors. (See Section 3.4).

Based on these findings, the report makes two groups of policy recommendations:

1. **Regulatory reforms based on existing greenhouse gas emissions accounting frameworks can substantially enhance transparency around fossil fuel asset sales.** Two tweaks to already-evolving emissions reporting frameworks would increase transparency around asset sales and prevent artificially inflating the apparent impact of the asset sales on emissions: (1) consistently applying "base year emissions recalculation" principles and (2) reporting life-cycle emissions from sold upstream assets as "scope 3.0" emissions in the transaction year. (See Section 4.2.1).
2. **Tracking asset- and jurisdiction-specific emissions and including upstream fossil fuel assets in existing greenhouse gas inventories may be more effective reform alternatives than tweaking emissions accounting frameworks.** A disaggregated asset-specific and jurisdiction-specific reporting regime, like the European Union's "country-by-country" payments reporting regime, could provide granular data about operational efficiencies and emissions. (See Section 4.2.2). Another approach could take point-source emissions inventories in the European Union, United Kingdom, and the United States as models for a comprehensive disclosure regime focused on assets, not corporate structures, avoiding issues related to the limitations inherent to corporate carbon footprinting and emissions accounting. (See Section 4.2.3).

Our recommended policies can address known limitations of traditional corporate carbon footprinting approaches, close the gaps in corporate emissions disclosures frameworks and practices, and create incentives for oil and gas companies to redirect efforts towards real global emissions reductions, including through asset retirement.

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Introduction

The increased atmospheric concentration of carbon dioxide (CO_2) and other greenhouse gases (GHGs) is driving global climate change on an unprecedented scale. Oil and gas companies, whose products cause approximately 86% of anthropogenic CO_2 emissions today,[1] are therefore facing increasing regulatory and market pressure to report and reduce their own and their products' GHG emissions. In response, corporate net-zero emissions pledges often incorporate plans to sell upstream fossil fuel assets worth billions of dollars.[2]

While these company-specific emissions reduction plans may seem like a step in the right direction, asset sales by fossil fuel companies to other entities that will produce and sell the resources may not actually reduce global net emissions. In recent years, investigative journalists have uncovered a trend of transfers by the so-called "oil supermajors"[3]—BP, Chevron, ConocoPhillips, Eni, ExxonMobil, Shell, and TotalEnergies—through which these companies sell some of their most carbon-intensive assets to less-scrutinized, generally privately owned companies.[4] In some well-documented cases, polluting assets are sold to companies with apparently lower management and environmental protection standards than the previous operator.[5]

Corporate asset sales have long presented an environmental governance challenge. The supermajors have established a "practice of spinning off or selling late-life assets to lesser producers"—often transferring environmental retirement obligations along with the assets.[6] Therefore, these sales may enable the supermajors to evade asset retirement obligations. The problem of transferred emissions is also not new; in 2013, the Greenhouse Gas Protocol (GHG Protocol)—a prominent emissions reporting standard—specifically

1 Valérie Masson-Delmotte et al., *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Geneva: Intergovernmental Panel on Climate Change, 2021), 80, https://www.ipcc.ch/report/ar6/wg1.

2 See, for instance: Committee on Oversight and Reform, *Memorandum Re: Investigation of Fossil Fuel Industry Disinformation* (United States House of Representatives, December 9, 2022), https://oversightdemocrats.house.gov/sites/democrats.oversight.house.gov/files/2022-12-09.COR_Supplemental_Memo-Fossil_Fuel_Industry_Disinformation.pdf. This memo highlights the role that emissions transfers play in supermajors' "climate plans," and notes particularly that "one BP executive privately admitted that divesting fossil fuel assets is 'an important part of our strategy' even though 'these divestments may not directly lead to a reduction in absolute global emissions'" (3).

3 Various definitions of the "oil supermajors" exist. In this study, the "oil supermajors" refer to BP, Chevron, ConocoPhillips, Eni, ExxonMobil, Shell, and TotalEnergies. Combined, these publicly listed companies have a market cap of over USD 1 billion. BP, Chevron, ExxonMobil, and Shell originated from a group of seven companies known as the "Seven Sisters." Antony Sampson, *The Seven Sisters: The Great Oil Companies and the World They Shaped* (New York Viking Press, 1976), https://doi.org/10.1177/000271627642500117. After successive mergers, the Seven Sisters are now four of the supermajors. Eni and TotalEnergies have also been considered supermajors. "Statista Dossier on the Six Largest Public Oil and Gas Supermajors," Statista, https://www.statista.com/study/61288/oil-supermajors. While ConocoPhillips has only seldom been included in the list of supermajors since it spun off its downstream operations, we are nonetheless including them in this analysis. "The Super-Majors…What and Who Are They?" *OilNow*, August 29, 2017, https://oilnow.gy/uncategorized/the-super-majors-what-and-who-are-they.

4 See Anjli Raval, "A $140BN Asset Sale: The Investors Cashing in on Big Oil's Push to Net Zero," *Financial Times*, July 6, 2021, https://www.ft.com/content/4dee7080-3a1b-479f-a50c-c3641c82c142; Rachel Adams-Heard and Rachael Dottle, "What Happens When an Oil Giant Walks Away," *Bloomberg*, April 15, 2021, https://www.bloomberg.com/graphics/2021-tracking-carbon-emissions-BP-hilcorp.

5 Adams-Heard and Dottle, "What Happens When an Oil Giant Walks Away."

6 Robert Schuwerk, Greg Rogers, Theron Horton, *Flip Side: How Stranded Assets Will Give Rise to Stranded Liabilities* (London, UK: Carbon Tracker Initiative, February 2020), 3, https://carbontracker.org/wp-content/uploads/2020/02/Decommissioning-Analyst-Note_vwebsite-1.pdf.

adopted mechanisms to avoid incentivizing changes that "merely transfer emissions from one company to another without any change in emissions released to the atmosphere."[7] A recent study by Environmental Defense Fund found that, between 2017 and 2021, a large volume of assets shifted from operators with net-zero targets to companies without such targets.[8] Another study by the Private Equity Stakeholder Project reveals that since 2010, private equity firms, whose activities are often subject to less environmental scrutiny than those of the supermajors, have spent hundreds of billions of USD acquiring fossil fuel companies and their assets.[9]

While multi-billion dollar asset transfers are unlikely to be motivated solely by emissions reduction goals, the transfer of emissions through asset sales may become increasingly common as the supermajors' emissions come under increasing scrutiny and investors apply more pressure to public companies to offload their dirtiest assets.[10] Emissions reporting frameworks allow companies to conflate the apparent GHG emissions reductions from asset sales with direct reductions from efficiency improvements and asset retirements. In doing so, they hinder the ability of investors and the public to push for actual emissions reductions. This problem is heightened because, while fossil fuel asset sales may reduce the supermajors' *own* emissions, there is little transparency around the post-sale emissions from these assets.

In a carbon-constrained world marked by the need to phase out fossil fuels, it is crucial to track and monitor the emissions attributable to fossil fuel assets. *Transferred Emissions Are Still Emissions: Why Fossil Fuel Asset Sales Need Enhanced Transparency and Carbon Accounting* tracks upstream fossil fuel assets sold by the supermajors and exposes the gaps in corporate disclosures regarding emissions attributable to upstream oil assets sold by the supermajors. In this paper, we assess the regulatory landscape governing the corporate disclosure of fossil fuel asset sales, outline the scale of fossil fuel asset sales by the supermajors, evaluate the impact of these sales on asset-level emissions, and propose regulatory reforms to increase transparency around these sales.

This paper follows a three-part structure. First, we provide an overview of disclosure and reporting requirements in three major jurisdictions: the European Union (EU), the United Kingdom (UK), and the United States (US), and assess the extent to which the corporate and securities disclosure regimes of these jurisdictions require companies to disclose fossil fuel asset sales. To demonstrate the extent of existing disclosure requirements, this section traces specific fossil fuel asset sales through their reporting cycles. In addition, we examine a set of

7 See also GHG Protocol, *Corporate Value Chain (Scope 3) Accounting and Reporting Standard: Supplement to the GHG Protocol Corporate Accounting and Reporting Standard* (World Resources Institute and WBCSD, 2013), 104, https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporing-Standard_041613_2.pdf.

8 Gabriel Malek et al., *Transferred Emissions: How Risks in Oil and Gas M&A Could Hamper the Energy Transition* (Environmental Defense Fund, n.d.), https://business.edf.org/files/Transferred-Emissions-How-Oil-Gas-MA-Hamper-Energy-Transition.pdf.

9 Alyssa Giachino and Riddhi Mehta-Neugebauer, *Private Equity Propels the Climate Crisis: The Risks of a Shadowy Industry's Massive Exposure to Oil, Gas and Coal* (Private Equity Stakeholder Project, 2021), 4, https://pestakeholder.org/wp-content/uploads/2021/10/PESP_SpecialReport_ClimateCrisis_Oct2021_Final.pdf.

10 Nicholas Kuznets, "With Fossil Fuel Companies Facing Pressure to Reduce Carbon Emissions, Private Equity Is Buying Up Their Aging Oil, Gas and Coal Assets," *Inside Climate News*, October 24, 2022, https://insideclimatenews.org/news/24102022/fossil-fuels-private-equity/. This author claims that the transfer of polluting assets from publicly traded companies to private equity owners "is driven in large part by the flight of traditional investors seeking to green their portfolios."

proposed climate-related corporate disclosure requirements currently being debated in the EU and the US and discuss how these disclosures may shed light on fossil fuel asset sales.

Second, we empirically assess the GHG emissions performance of upstream fossil fuel assets sold by supermajors. After discussing the data collection process and the limitations associated with the data (Section 3.1), we delve into the details of fossil fuel asset sales from the supermajors (Section 3.2). Next, we seek to understand whether and the extent to which sold assets were operated differently following the transaction (Section 3.3), with a particular eye on assessing changes in post-transaction GHG emissions. Then, we evaluate the environmental track records of the transacting companies (Section 3.4) and attempt to empirically assess claims that fossil fuel asset sales degrade governance quality.

Third, we discuss regulatory reforms that can improve transparency around emissions attributable to sold fossil fuel assets. Alongside this discussion, we present four options for reform (Section 4). Two of these proposed reforms represent tweaks to already-evolving emissions reporting frameworks that would clarify the emissions impact of asset sales. The other two proposals point to models for more comprehensive and potentially more effective reforms that focus on tracking the underlying fossil fuel assets themselves.

2 Disclosure of Fossil Fuel Asset Sales under Existing Corporate Disclosure Regimes

This section analyzes the extent to which fossil fuel asset sales are disclosed under the existing corporate and securities disclosure regimes of three major jurisdictions: the EU (Section 2.1), the UK (Section 2.2), and the US (Section 2.3). To demonstrate the extent of existing disclosure requirements, our review traces specific fossil fuel asset sales through their reporting cycles in each jurisdiction.[11] Our review also analyzes proposed climate-related corporate disclosures currently being debated in the EU and the US.

2.1 European Union

2.1.1 Structure of Corporate and Securities Disclosures

In the EU, corporate conduct is governed by laws enacted by member states' legislatures as well as laws enacted by EU legislative bodies and transposed into national law.[12] EU laws are classified as either directives or regulations.[13] Directives are not enforceable until they are transposed into national law, which member states are obliged to do within a predetermined time period.[14] Member state legislatures have some flexibility in how they construct the transpositions, and transposed EU directives may be slightly different between member states.[15] Regulations become immediately effective in all member states without transposition by national legislatures and apply uniformly across EU member states.[16]

The EU's comprehensive system of financial reporting directives harmonizes financial disclosures across the EU. The EU's transparency regulations require issuers of securities to produce semi-annual condensed financial reporting and produce annual "audited financial statements and a management report," which must include "a fair review of the development and performance of the business" and the "principal risks and uncertainties" that it faces.[17] These reporting standards were originally based on the International Accounting Standard (IAS) framework, while later amendments are based on the International Financial Reporting Standards (IFRS) framework or interpretations by the International Financial

11 In 2022 the United Kingdom enacted the climate-related financial disclosure (CFD) regulations, which require specific climate-related disclosures in the annual reports of certain public and private companies. The CFD regulations have not yet impacted a full reporting cycle so their application is not yet evident in actual corporate reporting. See Department for Business, Energy & Industrial Strategy, *Mandatory Climate-Related Financial Disclosures by Publicly quoted companies and LLPs: Non-binding Guidance*. (February 2022), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1056085/mandatory-climate-related-financial-disclosures-publicly-quoted-private-cos-llps.pdf.

12 European Parliament, *Sources and Scope of European Union Law* (European Parliament, June 2022), https://www.europarl.europa.eu/factsheets/en/sheet/6/sources-and-scope-of-european-union-law.

13 European Parliament, *Sources and Scope*.

14 European Parliament, *Sources and Scope*.

15 European Parliament, *Sources and Scope*.

16 European Parliament, *Sources and Scope*.

17 European Parliament Directive 2004/109/EC, Article 4(2). The requirements for these financial statements are separately contained in Commission Regulation 1126/2008 of 3 November 2008 adopting certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council, O.J. L 320. See European Commission, *Financial Reporting* (EC, 2022), https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/financial-reporting_en.

Reporting Interpretations Committee (IFRIC).[18] Each disclosure requirement in the EU's financial disclosure framework is named after the IAS, IFRS, or IFRIC reporting guideline from which it is derived (for example, IAS 1, IFRS 5).

The EU also has a set of corporate disclosure requirements oriented at environment, social, and governance (ESG) factors within the 2014 Non-Financial Reporting Directive (NFRD). The NFRD requires reporting on a set of social and environmental impacts and risks and applies to public companies, banks, and insurance companies.[19] The NFRD is currently being updated and expanded to cover more entities, require a broader scope of reported information, and integrate reported data into a single database.[20] The new disclosure regime will be called the Corporate Sustainability Reporting Directive (CSRD) and is expected to be fully implemented by 2024.[21] The European Financial Reporting Advisory Group, charged with drafting the CSRD, released a revised set of draft standards in November 2022.[22]

Conceptually, both the NFRD and the proposed CSRD create a reporting framework based on "double materiality." Under a double materiality disclosure regime, companies are required to report (i) information with "financial materiality, in the broad sense of affecting the value of the company," and (ii) information with "environmental and social materiality," which "is necessary for an understanding of the external impacts of the company."[23]

Finally, all corporate activity of companies that issue European financial instruments takes place against the backdrop of the EU's Market Abuse Regulation (EU MAR),[24] which penalizes market manipulation and insider trading. In particular, the EU MAR requires issuers of securities to "inform the public as soon as possible of inside information which directly concerns that issuer."[25] The EU MAR defines inside information as "information of a precise nature, that has not been made public, relating, directly or indirectly, to one or more issuers or to one or more financial instruments, and which, if it were made public, would be likely to have a significant effect on the prices" of instruments or their derivatives.[26]

2.1.2 Disclosure of Fossil Fuel Asset Sales

The EU's financial reporting directives and transparency regulations require EU companies to provide a wide variety of disclosures, at least some of which reflect the economic and strategic impacts of fossil fuel asset sales. Notably, a handful of specific financial disclosure

18 Commission Regulation 1126/2008 of 3 November 2008.

19 European Commission, *Corporate Sustainability Reporting* (EC, 2022), https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en.

20 European Commission, *Corporate Sustainability Reporting*.

21 European Commission, *Corporate Sustainability Reporting*.

22 Corporate Sustainability Reporting, European Commission (n.d.), https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en.

23 European Commission, *Guidelines on Non-Financial Reporting: Supplement on Reporting Climate-Related Information,* 2019/C 209/1 (EC, June 20, 2019), 4, https://www.wlrk.com/docs/Double_Materiality.pdf. This document explains the double materiality standard embedded in the NFRD. See also Henry Engler, "'Double Materiality': New Legal Concept Likely to Play in Debate over SEC's Climate Plan," *Thomson Reuters Regulatory Intelligence*, April 12, 2022, https://www.thomsonreuters.com/en-us/posts/investigation-fraud-and-risk/sec-double-materiality-climate/. This document outlines the EU's conceptual framework of "double materiality."

24 2014 O.J. (L 596/2014), 173/1–173/61, *available at* https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0596 [hereinafter "EU MAR"].

25 EU MAR Art. 17(1).

26 EU MAR Art. 7(1)(a).

requirements address asset sales. IAS 1 requires companies to provide information about their financial position, including disclosures of "assets classified as held for sale."[27] While any reporting would likely be aggregated with other assets held for sale, IAS 1 does require disaggregation of line items when "such presentation is relevant to an understanding of the entity's financial position."[28] IAS 1 and IFRS 5 also require separate disclosure of material "items of income or expense," including "disposals of items of property, plant and equipment[,] disposals of investments[,] [and] discontinued operations."[29] Upstream asset sales may be disclosed as disposals or "discontinued operations,"[30] and upstream assets that are abandoned entirely must be disclosed if they would qualify as discontinued operations if held for sale.[31] Separately, fossil fuel asset sales will be reflected in disclosures under IAS 7, which requires statements of cash flows.[32] Although IAS 7 would yield information about the total value of a company's asset sales, these disclosures would shine little light on asset types, locations, or any information about individual asset sales.

In addition, IAS 34 requires interim reporting of certain financial information, including "significant events and transactions" that occur during an interim reporting period.[33] In particular, a reporting company must disclose "events and transactions that are significant to an understanding of the changes in [its] financial position and performance of the entity since the end of the last annual reporting period."[34] While disclosures under IAS 34 will provide information about fossil fuel asset sales with material financial impacts, smaller transactions would likely be excluded from this reporting. While these accounting standards may seem arcane, in practice, they mean that the financial impact of asset sales by publicly traded EU companies will be reflected in multiple places across their public reporting (see Box 1).

27 Commission Regulation 1126/2008 of 3 November 2008, IAS 1, paragraph 54(a), 54(j).

28 Commission Regulation 1126/2008 of 3 November 2008, IAS 1, paragraph 55.

29 Commission Regulation 1126/2008 of 3 November 2008, IAS 1, paragraph 55 and IFRS 5, paragraph 33, both outlining separate disclosure requirements.

30 A "discontinued operation" is defined as a distinguishable set of activities and cash flows "that has either been disposed of, or is classified as held for sale," and either (i) "represents a separate major line of business or geographical area of operations;" (ii) is part of a broader coordinated plan to dispose of a major line of business or geographical area; or (iii) "is a subsidiary acquired exclusively with a view to resale." See Commission Regulation 1126/2008 of 3 November 2008 at IFRS 5, paragraph 32. While some upstream asset sales—like the sale of a percentage of continuing operations—would likely not qualify as discontinued operations, fossil fuel asset sales are often disclosed as such.

31 Commission Regulation 1126/2008 of 3 November 2008, IFRS 5, paragraphs 13 and 33, details accounting principles surrounding the separate disclosure of "non-current assets that are to be abandoned" and specific procedures for reporting abandoned lines of business or geographic regions of operation.

32 Commission Regulation 1126/2008 of 3 November 2008, IAS 7.

33 Commission Regulation 1126/2008 of 3 November 2008, IAS 34, paragraph 15.

34 Commission Regulation 1126/2008 of 3 November 2008, IAS 34, paragraph 15.

BOX 1. DISCLOSING TOTALENERGIES' SALE OF A VENEZUELAN SUBSIDIARY UNDER THE EU'S FINANCIAL REPORTING DIRECTIVES

The effect of these financial reporting directives may be demonstrated by tracing an emissions-related asset sale through an EU company's public reporting. In July 2021, TotalEnergies SE, a French supermajor,[35] announced that it was selling its interest in Petrocedeño S.A. to a subsidiary of Venezuela's state-owned oil company.[36] The transaction was motivated, TotalEnergies claimed, by the fact that TotalEnergies does "not intend to allocate any future CapEx to some hydrocarbons, which clearly cannot fit with low-cost, low-emission oil projects."[37] In exchange for the Petrocedeño assets, TotalEnergies received a symbolic payment and "a broad indemnity in relation to the past and future participation of TotalEnergies' in Petrocedeño."[38] TotalEnergies realized a USD 1.38 billion loss from the transaction.[39]

This sale was signed on July 9, 2021, was announced in a press release on July 29, 2021,[40] and was evident throughout TotalEnergies' interim semi-annual report covering the period January–June 2021, signed that same day.[41] The imminent Petrocedeño sale was highlighted as a significant event,[42] reported as a significant net income adjustment,[43] flagged as a change to "assets held for sale,"[44] and reported under "Changes in the Company Structure" as a significant divestment.[45] The sale was even more evident in TotalEnergies' 2021 annual report, where it was disclosed on the company's consolidated balance sheet as a significant divestment under IFRS 5,[46] broken out as an asset sale resulting in a net income adjustment,[47] and highlighted as a material development affecting geopolitical risk.[48] The sale was also included in TotalEnergies' environmental reporting, as discussed later in this section.

Finally, the EU's tailored ESG disclosure regimes offer some insight into fossil fuel asset sales. The NFRD requires an annual statement of environmental matters relating to a reporting business that includes brief, qualitative descriptions of environmental risks and risk management, environmentally related policies and their outcomes, and "non-financial key performance indicators relevant to the particular business."[49] These disclosures might conceivably encompass policies related to fossil fuel asset sales since the sale of polluting assets could arguably serve as *de facto* environmental risk management. However, such disclosures are strategic, and companies would likely only be required to disclose asset

35 Nathan Reiff, "10 Biggest Oil Companies," *Investopedia*, August 5, 2022, https://www.investopedia.com/articles/personal-finance/010715/worlds-top-10-oil-companies.asp.

36 TotalEnergies, "Venezuela: TotalEnergies Exits From Petrocedeño," press release, July 29, 2021, https://totalenergies.com/media/news/press-releases/venezuela-totalenergies-exits-petrocedeno.

37 Patrick Pouyanné et al., "TotalEnergies' Strategy, Sustainability & Climate Presentation Conference Call" (TotalEnergies, March 24, 2022), 8, https://totalenergies.com/sites/g/files/nytnzq121/files/documents/2022-03/Strategy_Sustainability_and_Climate_investor_meeting_transcript.pdf.

38 TotalEnergies, "Venezuela: TotalEnergies Exits."

39 TotalEnergies, "Venezuela: TotalEnergies Exits."

40 TotalEnergies, "Venezuela: TotalEnergies Exits."

41 TotalEnergies, *Financial Report: First Half 2021* (2021), https://totalenergies.com/sites/g/files/nytnzq121/files/documents/2021-07/Financial-report-first-half-2021.pdf.

42 TotalEnergies, *Financial Report*, 4.

43 TotalEnergies, *Financial Report*, 11, 15.

44 TotalEnergies, *Financial Report*.

45 TotalEnergies, *Financial Report*, 30.

46 TotalEnergies, *Universal Registration Document 2021 Including the Annual Financial Report*. (TotalEnergies, 2022), 402, 409 https://totalenergies.com/system/files/documents/2022-03/DEU_21_VA.pdf.

47 TotalEnergies, *Universal Registration Document 2021*, 49.

48 TotalEnergies, *Universal Registration Document 2021*, 125.

49 European Union, Directive 2014/95/EU on Disclosure of Non-Financial Diversity Information (2014), https ://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:32014L0095.

sales that were part of an explicit risk-management policy. The relevant NFRD disclosures are further limited to general qualitative descriptions of company policies rather than precise details of sales.

BOX 2. TOTALENERGIES' SALE OF A VENEZUELAN SUBSIDIARY

TotalEnergies disclosed the sale of its Petrocedeño assets (see Box 1) among "climate-related risks and opportunities" as part of its risk mitigation[50] and resilience strategies.[51] However, these NFRD disclosures consisted of two short sentences restating the environmental motive for the sale and provided almost no details about the sale's environmental effect.[52]

While the CSRD standards applicable to reporting companies have not been fully adopted, the draft standards published by EFRAG provide a detailed preview of the climate-related disclosure framework of the CSRD. The CSRD, as proposed, would apply to all large EU companies, as well as all companies "with securities listed on an EU-regulated market."[53] It would require companies to, among other things, "have an emissions reduction target for specific years and to disclose overall progress towards the target," disclose their policies surrounding climate change mitigation and adaptation, and disclose "[p]erformance measures, including scope 1,[54] scope 2, and scope 3 GHG emissions."[55]

GHG emissions reporting requirements, like those incorporated in the proposed CSRD, potentially represent a new mechanism to track fossil fuel asset sales. A growing number of companies monitor and report their corporate emissions in accordance with various standards, the most dominant of which is the GHG Protocol.[56] The GHG Protocol is a set of standards developed by the Greenhouse Gas Protocol Initiative in a 20-year partnership between the World Resources Institute and the World Business Council for Sustainable Development. It is designed to ensure that the public can "track and compare GHG emissions information over time" with respect to a specific company.[57] Under the GHG Protocol, corporate emissions are categorized into three "scopes":

50 TotalEnergies, *Universal Registration Document 2021*, 290.

51 TotalEnergies, *Universal Registration Document 2021*, 298.

52 Nothing in TotalEnergies' reporting, for example, indicates whether the sold fossil fuel reservoirs will be extracted or left in the ground.

53 Kolja Stehl et al., "EU Corporate Sustainability Reporting Directive—What Do Companies Need to Know, *Harvard Law School Forum on Corporate Governance*, August 23, 2022, https://corpgov.law.harvard.edu/2022/08/23/eu-corporate-sustainability-reporting-directive-what-do-companies-need-to-know/.

54 Scope 1 emissions represent all direct emissions derived from sources owned or controlled by a company. See J. M. Allwood et al., "Glossary," in *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [O. R. Edenhofer et al (eds.)] (Cambridge: Cambridge University Press, 2014), https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-i.pdf.

55 PwC, "What's CSRD? It's Important to Know," *In the Loop*, September 2022, https://viewpoint.pwc.com/dt/us/en/pwc/in_the_loop/assets/whatcsrdsept22.pdf. This report summarizes European Financial Reporting Advisory Group regulatory proposals to date.

56 For a recent review of the prevalence of voluntary GHG accounting standards in the United States, see Lynn M. LoPucki, "Corporate Greenhouse Gas Disclosures," *UC Davis Law Review* 56 (November 22, 2022): 405, https://lawreview.law.ucdavis.edu/issues/56/1/articles/lopucki.html. This review documents the application of GHG reporting standards, finding that "the GHG Protocol is the dominant reporting standard," noting that, if anything, this dominance is underestimated because many non-GHG Protocol standards are based in large part on the GHG Protocol's design.

57 GHG Protocol Initiative. *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard* (Rev. Ed.). (World Resources Council for Sustainable Development and World Resources Institute, 2015), 8, https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf.

1. Scope 1: "Direct GHG emissions occur[ing] from sources that are owned or controlled by the company";[58]
2. Scope 2: "Electricity indirect GHG emissions," a category that "accounts for GHG emissions from the generation of purchased electricity consumed by the company";[59] and
3. Scope 3: "Indirect GHG emissions" that "are a consequence of the activities of the company, but occur from sources not owned or controlled by the company," like the "extraction and production of purchased materials" and the "use of sold products and services."[60]

None of these scopes directly contemplates the reporting of upstream fossil fuel asset sales. Instead, these scopes are centered on ongoing corporate operations, as the GHG Protocol's framework is designed to help "manag[e] and reduc[e] direct and indirect emissions [. . .] along a company's value chain."[61] Importantly, the GHG Protocol was designed to help the public "track and compare GHG emissions information over time" from each specific company—not to operate as industry-wide or sector-wide tracking tools.[62] Still, as noted elsewhere, the operation of upstream fossil fuel assets impacts scopes 1, 2, and 3, and so their sale into or out of the reporting structure entity will affect reported emissions.[63] In theory, a direct year-to-year comparison of emissions could indicate the scope and scale of emissions offloading.

However, in practice, corporate emissions are a poor way of understanding the emissions profiles of the underlying real assets. Companies rarely disaggregate reported emissions on an asset-by-asset basis, and the CSRD, as proposed, does not require such disaggregation. Additionally, some upstream fossil fuel assets, like reservoirs, may not actively produce annual emissions, although they represent a significant source of *future* emissions. Even when a company reports its emissions and conducts sales for the explicit purpose of reducing its corporate emissions, it can be impossible for third parties to understand an individual deal's impact on annual company-wide emissions. For example, while TotalEnergies reports estimated scope 3 emissions from its customers' use of energy products, and the Petrocedeño sale (see Boxes 1 and 2 above) was purportedly undertaken to meet TotalEnergies' "greenhouse gas emissions objectives,"[64] TotalEnergies' annual emissions disclosures do not discuss the Petrocedeño sale. In addition, the sale's impact on reported emissions, if any, is not readily apparent from TotalEnergies' reporting.[65]

58 GHG Protocol Initiative. *The Greenhouse Gas Protocol,* 25.

59 GHG Protocol Initiative. *The Greenhouse Gas Protocol.*

60 GHG Protocol Initiative. *The Greenhouse Gas Protocol.*

61 GHG Protocol Initiative. *The Greenhouse Gas Protocol*, 26.

62 GHG Protocol Initiative. *The Greenhouse Gas Protocol*, 8.

63 See Figure 11. Scopes of emissions: Oil supermajors.

64 TotalEnergies, *Sustainability & Climate 2022 Progress Report* (TotalEnergies, 2022), 18, https://totalenergies.com/system/files/documents/2022-03/Sustainability_Climate_2022_Progress_Report_EN_0.pdf.

65 TotalEnergies, *Universal Registration Document 2021*, 300–303.

2.2 United Kingdom

2.2.1 Structure of Corporate and Securities Disclosures

Public reporting obligations in British corporate law spring from two primary sources. All British companies, private or public, are subject to certain annual reporting requirements under the Companies Act of 2006[66] and its enacting regulations. Significantly, this act was recently amended by the Streamlined Energy and Carbon Reporting (SECR) regulations of 2018[67] and the Climate-related Financial Disclosure (CFD) regulations of 2022, each of which requires the annual reports of certain public and private companies to contain explicit climate-related disclosures.[68]

Publicly traded companies are further regulated by the Financial Services and Markets Act of 2000 and the related Listing Rules, which set forth additional disclosure requirements.[69] Publicly traded companies with "premium listing" status accept enhanced disclosure requirements under the Listing Rules in exchange for inclusion on indexes like the FTSE UK Index Series and as a governance quality signal to investors.[70] The list of companies with "premium listing" status includes oil supermajors Shell p.l.c. and BP p.l.c.

Finally, all corporate activity of companies that issue financial instruments takes place against the backdrop of the UK Market Abuse Regulation (UK MAR), which penalizes market manipulation and insider trading. In particular, the UK MAR penalizes "the wilful omission of material facts, as well as the knowingly inaccurate reporting of information" and individual trading on such information.[71] The UK MAR regulates the use of certain nonpublic information, defined as "information of a precise nature, that has not been made public, relating, directly or indirectly, to one or more issuers or to one or more financial instruments, and which, if it were made public, would be likely to have a significant effect on the prices" of instruments or their derivatives.[72] Relating to the disclosure of fossil fuel asset sales, the UK MAR has not materially diverged from the EU MAR following Brexit, so it contains ongoing public disclosure requirements that are substantially identical to those under the EU MAR.[73]

66 Companies Act 2006, c. 46 (U.K.), https://www.legislation.gov.uk/ukpga/2006/46/section/46.

67 Companies (Directors' Report) and Limited Liability Partnerships (Energy and Carbon Report) Regulations 2018 No. 1155 (Eng.), https://www.legislation.gov.uk/uksi/2018/1155/made; see also HM Government, *Environmental Reporting Guidelines* (March 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/850130/Env-reporting-guidance_inc_SECR_31March.pdf, which summarizes the SECR regulations.

68 Department for Business, Energy & Industrial Strategy, *Mandatory Climate-Related Financial Disclosures* summarizes the CFD regulations.

69 See Practical Law Corporate, "Listing Rules, Prospectus Regulation Rules, Disclosure Guidance and Transparency Rules: Overview," *Thomson Reuters Practical Law UK*, n.d., https://uk.practicallaw.thomsonreuters.com/1-203-5634, which summarizes the application of the Listing Rules.

70 See Practical Law Corporate, "Differences Between a Premium and Standard Listing of Shares," *Thomson Reuters Practical Law UK*, n.d., https://uk.practicallaw.thomsonreuters.com/2-501-7607, which summarizes the regulatory differences between listing statuses; Practical Law Corporate, "FTSE Indexation," *Thomson Reuters Practical Law UK*, n.d., https://uk.practicallaw.thomsonreuters.com/w-023-6287, which summarizes the indexation requirements of the FTSE UK Index, and notes that indexes like the FTSE use premium listing status as a quality signal to institutional investors, among other things.

71 UK MAR Recital 47, https://www.legislation.gov.uk/eur/2014/596/; see also Practical Law Financial Services, "UK MAR: Market Manipulation," Thomson Reuters Practical Law UK, n.d., https://uk.practicallaw.thomsonreuters.com/4-629-8605, which summarizes market manipulation under the UK MAR.

72 UK MAR Art. 7(1)(a).

73 See Simmons & Simmons, "Market abuse regime after Brexit," *Simmons & Simmons*, December 1, 2021, https://www.simmons-simmons.com/en/publications/ck3syn2ankauk0b48d8k8hbzb/market-abuse-regime-after-brexit, which discusses the divergence between UK MAR and EU MAR.

2.2.2 *Disclosure of Fossil Fuel Asset Sales*

As a general matter, the Companies Act requires companies in the UK to submit annual reports, including financial accounts that give "a true and fair view of the assets, liabilities, financial position and profit or loss" of the company and company group,[74] and strategic reports that provide a qualitative summary of the state of the company and outline "the principal risks and uncertainties facing the company."[75] These financial and strategic reports will reflect the economic and strategic impacts of significant fossil fuel asset sales in both qualitative and quantitative forms. However, these summaries may be brief, and the financial impact of relatively small sales may be aggregated with similar asset sales or acquisitions (see Box 3).

BOX 3. BP'S SALE OF ALASKAN ASSETS UNDER THE UK'S COMPANIES ACT

In August 2019, BP announced the proposed USD 5.6 billion sale of its Alaskan assets, including upstream interests in the Prudhoe Bay field, to Hilcorp Alaska.[76] The sale, completed on July 1, 2020, was reflected throughout the annual reporting of BP in both 2019 and 2020. In 2019, BP reported the pending Prudhoe Bay sale in its strategic analysis of North American upstream assets,[77] highlighted the Alaskan assets in its reporting of assets held for sale,[78] and noted the anticipated sale and certain retained liabilities in its consolidated reporting of US assets.[79] BP's 2020 report contained very similar disclosures[80] and noted that BP's assets held for sale decreased significantly after the sale of the Alaskan assets.[81] However, these disclosures were largely confined to topline economic details and were frequently aggregated with other similar line items. For example, BP's 2019 report condensed "assets classified as held for sale" into a single line-item amount, noting that this amount "principally relate[d] to two material disposal transactions."[82] While BP specifically highlighted the scope of the Alaskan sale, other unspecified upstream assets that were also "held for sale" did not receive individual disclosures.[83]

While the CFD regulations were enacted in 2022 and have not yet affected a full cycle of annual reporting, they add another layer of potential disclosures. The CFD regulations will require annual reports to specifically disclose key climate-related risks and opportunities, including the "actual and potential impacts" of these risks and opportunities, along with "the mitigations, where appropriate, that a business has already put in place and the mitigating actions that it is planning to take."[84] Fossil fuel asset sales that occur due to transition risks

74 Companies Act 2006, c. 46 § 393(1) (U.K.).

75 Companies Act 2006, c. 46 § 414C (U.K.).

76 BP, "BP to Sell Alaska Business to Hilcorp," press release, *BP*, August 27, 2019, https://www.bp.com/en/global/corporate/news-and-insights/press-releases/bp-to-sell-alaska-business-to-hilcorp.html.

77 BP, *Energy With Purpose: BP Annual Report and Form 20-F 2019* (BP, 2020), 25, 303–304, https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/investors/bp-annual-report-and-form-20f-2019.pdf.

78 BP, *Energy With Purpose*, 173.

79 BP, *Energy With Purpose*, 223.

80 BP, *Performing while Transforming from IOC to IEC: BP Annual Report and Form 20-F 2020* (BP, 2021), 9, https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/investors/bp-annual-report-and-form-20f-2020.pdf. The annual report discusses BP's broad strategy of asset divestment and highlights the sale of BP's Alaskan interests. See also pp. 303 and 308 for a strategic overview of BP's North American upstream assets.

81 BP, *Performing while Transforming*, 177.

82 BP, *Energy With Purpose*, 173.

83 BP, *Energy With Purpose*.

84 Department for Business, *Energy & Industrial Strategy, Mandatory Climate-Related Financial Disclosures*.

or are undertaken to mitigate corporate emissions must be specifically disclosed under these provisions.[85] In practice, however, significant asset sales are generally motivated by multiple factors, and companies might reasonably vary in whether they characterize certain sales as motivated by risk mitigation.

Public companies and large private entities are separately required to include scope 1 and scope 2 emissions disclosures in their annual reports.[86] Disclosure of scope 3 emissions is largely voluntary,[87] although it is "strongly encouraged" where scope 3 emissions represent a material source of value chain emissions.[88] Notably, "scope 3" emissions, as described in non-binding reporting guidance produced by the UK government, are slightly different than scope 3 emissions under the GHG Protocol and contemplate all "[e]missions that are a consequence of [the reporting company's] actions, which occur at sources which [it] do[es] not own or control and which are not classed as scope 2 emissions."[89] In practice, it is unclear whether the difference between the UK and GHG Protocol definitions will result in meaningfully different reporting requirements.[90] While SECR disclosures sometimes explicitly reveal fossil fuel asset sales, these disclosures can be perfunctory or vague (see Box 4).

BOX 4. BP'S SALE OF ALASKAN ASSETS UNDER THE UK'S SECR REGIME

As previously discussed, while GHG Protocol-style emissions reporting obligations do not directly create a requirement to report fossil fuel asset sales, the effect of such asset sales on scope 1 and scope 2 emissions may be reflected in emissions reporting. The emissions reporting of supermajors subject to the UK's SECR regime, however, shows just how limited these disclosures can be. For example, in the SECR section of its 2020 annual report, BP noted that its scope 1 emissions decreased by nearly 10% between 2019 and 2020 and specifically credited this decrease to the Prudhoe Bay divestment, alongside other factors.[91] This acknowledgment was limited to a six-word aside, however,[92] and BP's reporting contained no disaggregated analysis of the scopes 1, 2, and 3 emissions impact of the Prudhoe Bay sale.

Finally, some fossil fuel companies have enhanced transaction disclosure requirements. Listing Rule 10 requires companies with "premium listing" status, like Shell p.l.c. and BP p.l.c., to engage in real-time disclosure of significant transactions like asset sales or acquisitions "that are outside the ordinary course of the listed company's business and may change

85 See Department for Business, Energy & Industrial Strategy, *Mandatory Climate-Related Financial Disclosures*, 14, noting that mandatory transition risk disclosures might encompass "retirements of existing assets" and, 15, noting that companies should disclose significant "mitigating measures" that reduce emissions.

86 See HM Government, *Environmental Reporting Guidelines* 6–7, 50, for an outline of the statutory requirements underlying emissions disclosures.

87 While the CFD regulations require the reporting of certain scope 3 emissions from rental vehicles, this requirement is irrelevant to fossil fuel asset sales. See HM Government, *Environmental Reporting Guidelines*, 50, which describes the CFD regulations' scope 3 emissions mandate.

88 HM Government, *Environmental Reporting Guidelines*.

89 See HM Government, *Environmental Reporting Guidelines*.

90 In particular, it is unclear whether the UK's scope 3 focus on emissions that are a consequence of a reporting company's *actions* will be treated as materially different than the GHG Protocol's focus on emissions that are a consequence of the reporting company's *activities*.

91 BP, *Performing while Transforming*, 39, 50.

92 Specifically, BP credited the reduction to, among other factors, "divestments, including of our Alaska operations." BP, *Performing while Transforming, 41*.

a security holder's economic interest in the company's assets or liabilities."[93] Significance is determined by four "class tests": (i) a "gross assets" test that divides the gross assets in the transaction by the gross assets of the listed company; (ii) a "profits test" that divides the profits attributable to the transacted assets by the profits of the listed company; (iii) a "consideration test" that divides the transaction consideration by the aggregate equity value of the listed company; and (iv) a "gross capital" test that divides the gross capital of an acquired company by the gross capital of the listed company.[94] If any of these class tests result in a percentage ratio of more than 5% (a "Class 2" transaction), the listed company must provide prompt shareholder notice of certain details of the transaction, including the assets subject to the transaction and the effect of the transaction on the listed company, including any expected benefits that will result from the transaction.[95] If any of these class tests results in a percentage ratio above 25% (a "Class 1" transaction), the proposed transaction requires shareholder notice and approval.[96] These requirements allow for additional notice and monitoring of fossil fuel asset sales, although they are limited to sizable transactions by companies with premium listings. Still, the rules applicable to premium listings result in the specific disclosure of some fossil fuel asset sales (see Box 5).

BOX 5. SHELL'S SALE OF PERMIAN SHALE BASIN ASSETS

On September 20, 2021, Shell disclosed the USD 9.5 billion sale of its Permian shale basin assets to ConocoPhillips, which was categorized as a Class 2 transaction.[97] However, it is unclear what percentage of significant fossil fuel asset sales are reported under this requirement. Given the scale of some oil and gas companies, enormous transactions may fall outside of the scope of Listing Rule 10. For example, BP's USD 5.6 billion sale of its Prudhoe Bay interests was not reported as either a Class 1 or Class 2 transaction, presumably because it fell below the 5% threshold for each class test.[98]

2.3 United States

2.3.1 Structure of US Corporate and Securities Disclosures

Public disclosure obligations in the US arise chiefly from the Securities Act of 1933, which primarily regulates disclosures surrounding the public issuance of securities; the Securities Exchange Act of 1934, which regulates the sale of securities after their initial sale; and a series of related regulations enacted by the Securities and Exchange Commission (SEC).[99]

93 Listing Rule 10.1.4, *available at* https://www.handbook.fca.org.uk/handbook/LR.pdf.

94 See Practical Law Corporate, "Listing Rules: LR 10: Significant transactions," *Thomson Reuters Practical Law UK* (n.d.), https://uk.practicallaw.thomsonreuters.com/6-520-8761, which summarizes the "Class tests" applicable under LR 10.

95 Listing Rule 10.2.2(2) defines "Class 2" transactions as transactions "where any percentage ratio is 5% or more but each is less than 25%"; L.R. 10.4.1 describes notification obligations related to Class 2 transactions.

96 Listing Rule 10.2.2(3) defines "Class 1" transactions; L.R. 10.5 describes obligations related to "Class 1" transactions.

97 See Royal Dutch Shell plc, "Shell Signs Agreement to Sell Permian Interest for $9.5 Billion to ConocoPhillips," press release, September 20, 2021, https://shell.gcs-web.com/news-releases/news-release-details/shell-signs-agreement-sell-permian-interest-95-billion, which notes that the action qualifies as a Class 2 transaction under the UK Listing Rules.

98 BP, "BP p.l.c. Regulatory news service," *BP*, n.d., https://www.bp.com/en/global/corporate/investors/regulatory-news-service-and-filings/rns-bp-p-l-c.html.

99 See Harold S. Bloomenthal & Samuel Wolff, "§ 3:1. Securities and Exchange Commission," in *International Capital Markets and Securities Regulation* (vol. 10) (Clark Boardman Callaghan, September 2022), which provides an overview of the structure of federal securities laws.

Public companies in the US are required to publish comprehensive annual reports, along with quarterly reports. These reports include detailed financial statements and disclose qualitative and quantitative information about a company's financial condition, high-level executives, risks, stock performance, business operations, and legal proceedings.[100] Public companies also have an ongoing duty to report certain significant events like mergers, acquisitions, restructurings, and initiation or termination of material agreements.[101] In March 2022, the SEC issued a Notice of Proposed Rulemaking for a new climate disclosure rule called the Enhancement and Standardization of Climate-Related Disclosures for Investors (CRD), which would add a layer of climate-related disclosures.[102]

US corporate disclosure requirements are frequently qualified by "materiality" standards,[103] which often (but not always) prioritize economic and financial materiality.[104] Notably, the Securities Exchange Act and the SEC's implementing regulations make it unlawful for a company or any person transacting in securities to "make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made not misleading."[105] Although US law contains no quantitative definition of "materiality," information is generally deemed material "if a substantial likelihood exists that a reasonable investor would consider the information important in making a buy, sell, or hold investment decision or a voting decision."[106] This conceptual approach, which focuses disclosures through a lens of investor impact, distinguishes US ESG disclosure requirements from European "double materiality" standards, as previously discussed.[107]

2.3.2 US Disclosure of Fossil Fuel Asset Sales

Comprehensive annual and quarterly reports capture the economic impacts of fossil fuel asset sales in both qualitative and quantitative forms.[108] However, these summaries may be brief, and the financial impacts of relatively small sales may be aggregated with similar asset sales or acquisitions. More substantial disclosures are required for more significant transactions. Reporting companies must provide exhibits containing "material plan[s] of

100 See, generally, Legal Information Institute, "Form 10-K,"*Cornell Law School*, January 2022, https://www.law.cornell.edu/wex/form_10-k, which outlines annual filing requirements.

101 See Saul S. Cohen, Alan M. Hoffman, & Katurina Smith, *§ 14:36 Form 8-K: Current Report – Overview*, in Securities Regulation Forms (Thomson Reuters Westlaw Precision, November 2022), https://www.westlaw.com/Document/I50bced7ed68a11d9ad638db0a7ee0204/View/FullText.html, which reviews the general scope of occurrence-driven reporting under SEC Form 8-K.

102 The Enhancement and Standardization of Climate-Related Disclosures for Investors, 87 Fed. Reg. 21334 (proposed Apr. 11, 2022) (to be codified at 17 C.F.R. pts. 210, 229, 232, 239, and 249).

103 Victor Brudney, "A Note on Materiality and Soft Information Under the Federal Securities Laws," *Virginia Law Review* 75 (1989): 723, 732–35.

104 See Cynthia A. Williams, "The Securities and Exchange Commission and Corporate Social Transparency," *Harvard Law Review* 112(1999): 1197, 1264–65 (1999), which notes that, historically, certain disclosure requirements, like governance changes, have not been tied to financial significance, and that certain acts, like illegal management activity, have been treated as close to material *per se*.

105 17 C.F.R. § 240.10b-5(b), https://www.ecfr.gov/current/title-17/chapter-II/part-240/subpart-A/subject-group-ECFR71e2d22647918b0/section-240.10b-5.

106 Practical Law Canada Corporate & Securities, "Determining Materiality in Securities Offerings and Corporate Disclosure," *Thomson Reuters Practical Law US*, n.d., https://www.westlaw.com/3-521-5541; see also *Basic Inc. v. Levinson*, 485 U.S. 224, (1988), 231–32 (same).

107 See Engler, *"'Double Materiality,'"* which contrasts the conceptual framework of US "materiality" and EU "double materiality."

108 See Harold S. Bloomenthal & Samuel Wolff, "§ 12:26. Form 10-K and Form 10-KSB—Form 10-K," in *International Capital Markets and Securities Regulation* (Clark Boardman Callaghan, September 2022), *available at* https://1.next.westlaw.com/Document/I649bf532a6c911d9b090a11089c2b3bd/View/FullText.html, which provides an overview of annual reporting requirements.

acquisition [and] disposition,"[109] along with contracts "calling for the acquisition or sale of any property, plant or equipment" whose price exceeds 15% of the reporting company's assets.[110] Similarly, public companies have an ongoing duty to report "the acquisition or disposition of a significant amount of assets, otherwise than in the ordinary course of business."[111] For this specific reporting requirement, an acquisition or disposition involves "a significant amount of assets" if (i) the value exceeds 10% of the reporting company's total assets[112] or (ii) the transaction involves a business whose investment value, assets, or income exceeds 20% of the reporting company's consolidated equity value, asset value, or income, respectively.[113]

These specific reporting thresholds sometimes capture fossil fuel asset sales. For instance, in 2017, Callon Petroleum Company, an American upstream oil and gas company valued at the time at approximately USD 2.1 billion, was required to file both a contemporaneous report and a detailed acquisition agreement related to its USD 633 million acquisition of upstream assets in the Delaware Basin from American Resource Development, LLC, American Resource Development Upstream, LLC, and American Resource Development Midstream, LLC.[114] However, the high percentage thresholds for materiality, combined with the scale of major oil and gas companies, means that some enormous sales may be subject to only limited disclosures (see Box 6).

109 17 CFR § 229.601(b)2(i).

110 17 CFR § 229.601(b)10(ii)(C).

111 Joy M. Bryan, "§ 1:53. Current report on Form 8-K," in Corporate Compliance Series: Securities and Corporate Governance (Clark Boardman Callaghan, May 2022), *available at* https://1.next.westlaw.com/Document/I388d4302d85211d99742a162f9b30213/View/FullText.html.

112 Bryan, "§ 1:53. Current report on Form 8-K" notes that this requirement has a "bright-line quantitative threshold for materiality," unlike general disclosure requirements of "material definitive agreements."

113 See U.S. Securities and Exchange Commission, *Financial Disclosures about Acquired and Disposed Businesses* (December 30, 2020), https://www.sec.gov/corpfin/financial-disclosures-acquired-disposed-businesses-guidance#_ftn2, which summarizes business acquisition disclosure requirements.

114 See Callon Petroleum Company, *Current Report (Form 8-K)* (Callon Petroleum Company, February 13, 2017), https://www.sec.gov/Archives/edgar/data/928022/000092802217000017/cpe-20170213x8k.htm.

BOX 6. EXXONMOBIL'S SALE OF NORWEGIAN ASSETS

Since 2019, the American oil and gas multinational ExxonMobil Corporation has engaged in a number of large asset sales, "seeking to free up cash to focus on a handful of mega-projects."[115] As part of its strategic divestment plan, on September 26, 2019, ExxonMobil signed an agreement to sell its Norwegian upstream oil and gas assets to Vår Energi AS for USD 4.5 billion.[116] The assets were sold on December 10, 2019, when ExxonMobil's outstanding equity was valued at nearly USD 199 billion.[117] Given the relative scales of ExxonMobil and the asset sale, ExxonMobil did not file a contemporaneous report and did not disclose the sale contract in its 2019 annual report.[118] However, ExxonMobil's 2019 annual report briefly disclosed the asset sale across multiple financial and strategic categories. For instance, the economic effect of the asset sale was noted in ExxonMobil's consolidated financial statements and cash flows,[119] upstream asset earnings report,[120] and tax reporting,[121] as well as in ExxonMobil's strategic summary of its proven oil and natural gas reserves.[122]

The CRD proposes three new categories of disclosure that may separately capture fossil fuel asset sales. First, the CRD would require companies to provide a qualitative description of any climate-related risks that have had or are "reasonably likely to have a material impact on" the "types and locations of [their] operations" or on "suppliers and other parties in [their] value chain."[123] Climate-related sales might be reported under this element as a climate-related risk affecting the "types and locations" of corporate operations. Similarly, the CRD would require registrants who have adopted transition pans to disclose their strategy "to mitigate or adapt to any identified transition risks" including potential restrictions on GHG emissions.[124] Sales motivated in part by emissions reduction goals would likely be disclosed under this element, assuming that the sales were part of the registrant's structured transition strategy.

Second, the CRD proposes that financial statements include qualitative and quantitative descriptions of the impacts of climate risks and the climate transition on the registrant's financial statements.[125] The proposed rule specifically requires companies to disclose "changes to the carrying amount of assets (such as intangibles and property, plant, and equipment)" related to transition activities, including specific changes "due to a reduction of the asset's useful life or a change in the asset's salvage value by being exposed to

115 Ron Bousso and Shadia Nasralla, "Exclusive: Exxon Aims to Sell $25 Billion of Assets to Focus on Mega-Projects – Sources," *Reuters*, November 21, 2019, https://www.reuters.com/article/us-exxon-mobil-m-a-exclusive/exclusive-exxon-aims-to-sell-25-billion-of-assets-to-focus-on-mega-projects-sources-idUSKBN1XV1Q9.

116 ExxonMobil, "ExxonMobil to Sell Norway Upstream Operations for $4.5 Billion," press release, *ExxonMobil*, September 26, 2019, https://corporate.exxonmobil.com/news/newsroom/news-releases/2019/0926_exxonmobil-to-sell-norway-upstream-operations-for-4_5-billion.

117 WSJ Markets, "Exxon Mobil Corp.," *Dow Jones & Company*, n.d., https://www.wsj.com/market-data/quotes/XOM/financials/annual/balance-sheet.

118 See ExxonMobil Corporation, *Form 10-K: Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934, Commission file number 1-2256* (U.S. Securities and Exchange Commission, 2019), https://www.sec.gov/ix?doc=/Archives/edgar/data/34088/000003408820000016/xom10k2019.htm.

119 ExxonMobil Corporation. *Form 10-K: Annual Report*, 40 n.4, 78, 109.

120 ExxonMobil Corporation. *Form 10-K: Annual Report*, 46.

121 ExxonMobil Corporation. *Form 10-K: Annual Report*, 55, 106.

122 ExxonMobil Corporation. *Form 10-K: Annual Report*, 114.

123 17 CFR § 229.1502 (proposed).

124 17 CFR § 229.1503 (proposed).

125 17 CFR § 210.14-02 (proposed).

transition activities."[126] This rule could require companies to disclose details of fossil fuel asset sales when transition risks motivate them to sell assets for less than their previously reported carrying value. However, this proposed disclosure "is not required if the sum of the absolute value of all the impacts on the line item is less than one percent of the total line item for the relevant fiscal year."[127]

Finally, the CRD would require companies to disclose their scope 1 and scope 2 GHG emissions[128] and require companies to disclose their scope 3 emissions "if material" or if the company "has set a GHG emissions reduction target or goal that includes its scope 3 emissions."[129] As previously discussed, detailed annual emissions disclosures might reveal the effect of fossil fuel asset sales on reporting companies' emissions. Still, this method of emissions monitoring can be frustrated by the aggregation of corporate emissions across complex and changing companies like oil supermajors.[130]

126 17 CFR § 210.14-02(d)(3) (proposed).

127 17 CFR § 210.14-02(b)(1) (proposed).

128 17 CFR § 229.1504(b) (proposed).

129 17 CFR § 229.1504(c)(1) (proposed).

130 See Section 2.2.2 discussing the potential for GHG Protocol Reporting to indirectly reveal fossil fuel asset transfers.

3 Analysis of Fossil Fuel Asset Sales and Offloaded Emissions by the Supermajors

Having established the regulatory background of fossil fuel asset sales, this section empirically analyzes the supermajors' known fossil fuel asset sales between 2017 and 2021. In light of the regulatory disclosure gaps identified throughout Section 2, the analysis in this section is based on a dataset compiled from public disclosures produced under the previously discussed regulatory regimes, combined with proprietary datasets, as explained below.

First, this section describes our data collection methodologies and discusses the limitations of our available data. Next, it constructs a profile of the sold assets and their purchasers, assessing the geography of asset sales, the annual production of sold assets, the value of these sales, and the scope 1 and 3 emissions associated with the sold assets. This assessment is accompanied by a review of the buyers of the supermajors' assets and by a meta-analysis of the supermajors' transaction reporting and related disclosures. Finally, this section engages in an analysis of the post-transaction operation of sold assets, evaluating both the change in emission intensities of sold assets and the differences in governance quality between sellers and buyers.

Our empirical analysis of supermajors' fossil fuel asset sales resulted in three key findings. First, we confirm reports pointing to the scale of transferred emissions. We estimate that, from 2017 to 2021, some supermajors have sold assets that account for massive GHG emissions from both the facilities' scope 1 emissions and downstream scope 3 emissions. In some cases, the estimated scope 3 emissions from the assets sold over the course of the study are equivalent to up to 51 of the supermajor's total scope 3 emissions over the same time period (see Section 3.2.2). Next, and perhaps most significantly, we conclude that these asset sales are not just shifting but may be increasing carbon emissions (see Section 3.3). Finally, our analysis finds evidence that some of the sold assets are moving to companies with worse track records in environmental and other matters (see Section 3.4).

3.1 Data Collection and Limitations

Our first challenge in conducting an empirical analysis of fossil fuel asset sales was assembling a reliable dataset. As extensively discussed in the introduction of this paper (Section 1) and in our review of relevant disclosure regimes (Section 2), fossil fuel asset sales are poorly disclosed under existing regulatory regimes. As a result, the publicly available information about these transactions is incomplete. To aid in our thorough review, we scoured public and private datasets relating to asset sales and then synthesized additional metrics, like production-weighted emissions intensity, from the data derived from these sources. Below, we discuss the scope of our efforts, the resulting dataset, and the limitations of our data collection methodologies.

As an initial step in our data collection efforts, we searched for mentions of divestment or sales of specific assets in the supermajors' annual corporate reports and climate or

sustainability reports from 2017 (the first full year after the Paris Agreement entered into force on November 4, 2016) to 2021 (the most recent full year at the time of our research), as well as in news reports. We established a primary list of sold assets on this basis. We compared that list with a private mergers and acquisitions transaction database to build a list that included transactions not reported by the supermajors in their annual reports.[131]

We identified a combined list of 425 transactions in which the supermajors sold assets to other companies between 2017 and 2021. We narrowed down the number of transactions to be analyzed in this study based on the following criteria:

1. The asset must operate in the upstream business (i.e., extraction).
2. The asset must produce oil (as opposed to assets that only produce gas).
3. The supermajor must have fully divested from the asset, regardless of its initial ownership share.

We explicitly excluded transactions of the following types:

1. Farm-out agreements[132]
2. Swap deals[133]

We excluded these transactions from our sample as well as partial sales because they were most probably conducted for economic and operational reasons and less likely conducted to reduce emissions.[134]

We arrived at a list of 76 transactions that match our criteria and constitute the sample for this study. From a variety of sources—including news and company reports and a proprietary database with a goal of assembling emissions, production, and valuation data for each transaction—we assembled a list of transactions and related metrics, obtaining complete emissions, production, and valuation data for 31 transactions.

The data used in this project are from August 2022.[135]

Asset sales are generally reported on a transaction level, not on an asset level, with varying disclosures on the underlying assets. To be able to compare the supermajors' behaviors, we assessed the offloading of emissions at the transaction level. Each transaction may include assets other than oil fields.

131 IHS Markit, "M&A Transaction Analysis Database" (Proprietary), https://login.ihsmarkit.com. This database is maintained by IHS Markit and is regularly updated as transactions are announced and development details are released publicly.

132 Farm-out agreements occur when the interest holder assigns working interest to another party. Importantly, the farming-out party still retains an equity interest—it does not eliminate their involvement in the carbon emission activities of the project, it only lowers their equity share of it. For more information on farm-out agreements, see: https://oilandgaslawdigest.com/primers-insights/farmout-agreements-basics-negotiations-motivations.

133 A swap deal is an agreement between two parties to exchange assets.

134 For instance, in the case of farm-out agreements, the farming-out party will typically retain an interest in the property, and so remains directly involved in the GHG-emitting activities of the project. In addition, there is significant variation among the ways that companies set their "organizational boundaries" when reporting GHG emissions, and companies in the oil and gas industry "often ha[ve] complex ownership/operator structures" that affect organizational emissions reporting (source: HM Government, *Environmental Reporting Guidelines*, Annex A, which outlines alternative reporting methodologies under SECR and notes that oil and gas companies have particularly complex ownership structures that complicate emissions reporting). As a result, farm-in/out agreement transactions may have complex effects on corporate emissions reporting, and identical transactions by two supermajors might have significantly different impacts on each company's emissions reporting based on the organizational boundary that each company chooses to apply. This context provided another reason to exclude these transactions from our analysis.

135 For methodological consistency, we did not include updates to the database beyond August 2022 or other information provided by companies in press releases and corporate reporting.

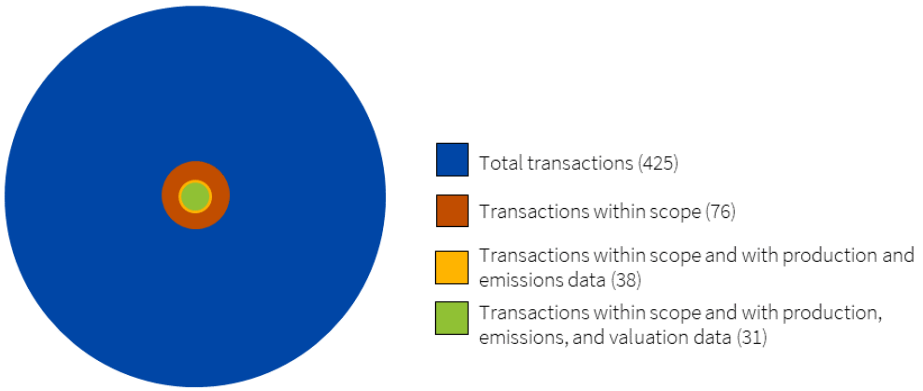

Figure 1. Scope of data: transactions by the supermajors, 2017–2021

Source: Prepared by the authors based on an analysis of data from supermajors' reporting, news reports, and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Absent consistent data on the supermajor's equity in the sold assets, we attributed 100% of production and 100% of emissions to the supermajor selling the assets.

The analysis is constrained by several factors, which are mostly related to the state of disclosure and lack of harmonized robust carbon accounting methods. These factors, in turn, affect the quality of the data obtained from the proprietary database, news releases, and corporate reports (cited in the Appendix). While we applied a rigorous methodological approach, the figures in this report should be viewed as estimates rather than exact calculations.[136]

3.2 Analysis of Fossil Fuel Asset Sales

Our data collection efforts confirmed a widely reported fact: the supermajors are selling fossil fuel assets and, as a result (whether by design or not), offloading the emissions attributable to them at a massive scale. The fossil fuel assets with production and emissions data generated scope 1 emissions of approximately 40 million metric tons of CO_2 equivalent (Mt CO_2e) annually in the period 2017–2021.[137] The sold assets were featured in deals jointly worth approximately USD 67 billion, with 33% of transactions occurring in 2021 (see Figure 2).

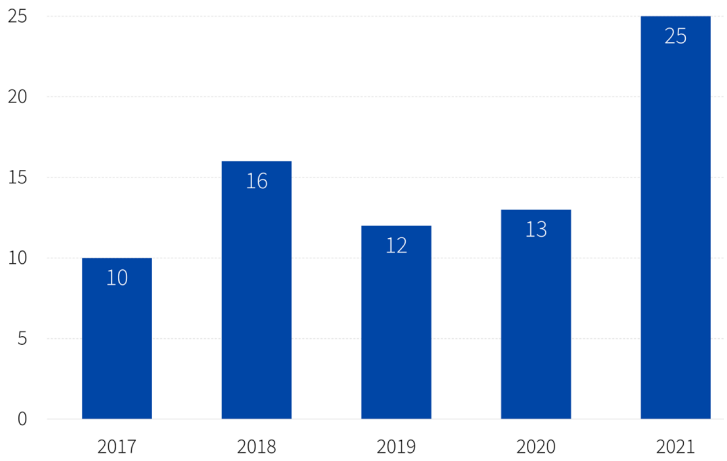

Figure 2. Number of transactions per year (n=76)

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

136 A discussion outlining the history and current status of literature on GHG emissions and other climate-related metrics is provided in IHS Markit, The Right Measure: A Guidebook to Life Cycle Emissions (November 2022) (proprietary).

137 This figure refers to the 38 transactions for which we have complete emissions and production numbers.

As an initial step in analyzing our gathered transaction dataset, we constructed a profile of the sold assets and their buyers. First, we constructed broad profiles of the sold assets, assessing the geography of asset sales, the annual production of sold assets, the value of these sales, and the scope 1 and 3 emissions associated with the sold assets. Next, recognizing that different buyers are subject to different regulatory disclosure regimes and operate with different levels of transparency, we looked into the buyers of the supermajors' assets. Finally, we conducted a meta-analysis of the companies' transaction reporting, briefly reviewing the extent to which the supermajors reported these asset sales in their annual reports, if at all.

3.2.1 Geography, Production, and Scope 1 Emissions

As an initial step in our analysis, we constructed broad profiles of the sold assets. This section evaluates (1) the geographic regions in which assets were being sold, (2) the annual production of sold assets in barrel of oil equivalents (BOE), and (3) the scope 1 emissions associated with assets sold by the supermajors on both an aggregate and production-weighted (or emissions intensity) basis.

The assets in approximately half of the transactions in our sample are located in the Americas, with 27 (35.5%) in North America and 10 (13.2%) in South America. Assets in Europe were featured in the second highest number of transactions, with 20 (26.3%), while assets in Africa were in 11 (14.5%), and assets in the Asia–Pacific region were in 10 (13.2%). Notably, all regions have some transactions that lack data on the production of their underlying assets, scope 1 emissions, or both (see Figure 3).

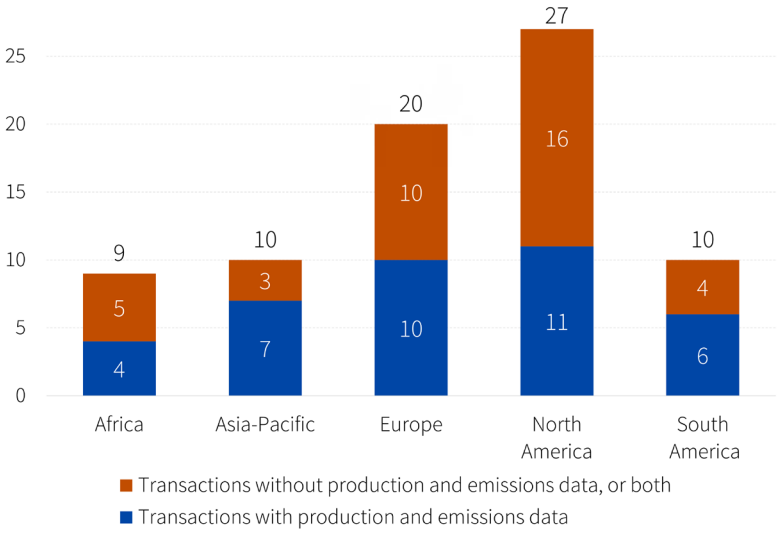

Figure 3. Transactions by region (n=76)
Source: Prepared by the authors based an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Figure 4 shows the breakdown of transactions by supermajor seller and considers all transactions, including those with incomplete data. ExxonMobil, TotalEnergies, and Shell conducted the most transactions, with ExxonMobil conducting 17 and TotalEnergies and Shell conducting 15 transactions each. BP conducted 5 transactions, and Eni conducted 3.

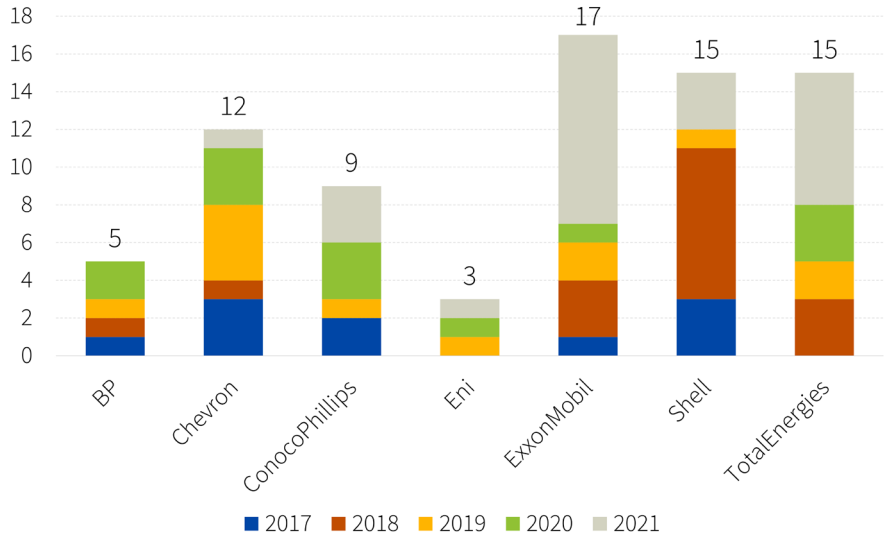

Figure 4. Transactions by supermajor (n=76)

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

The subsequent examination of production and emissions quantities takes into consideration only those assets that have corresponding data. The data in Figures 5 to 8 show the annual production and emissions figures between 2017 and 2021, regardless of when the asset was sold. The production and emissions numbers represent the total profile of the assets, as net equity share information was not consistently publicly disclosed. The Asian-Pacific, North American, and European assets, in this order, have the highest number of production quantities and scope 1 emissions in the sample. The assets in Africa and South America have low production and correspondingly low scope 1 emissions (Figure 5 and Figure 6).

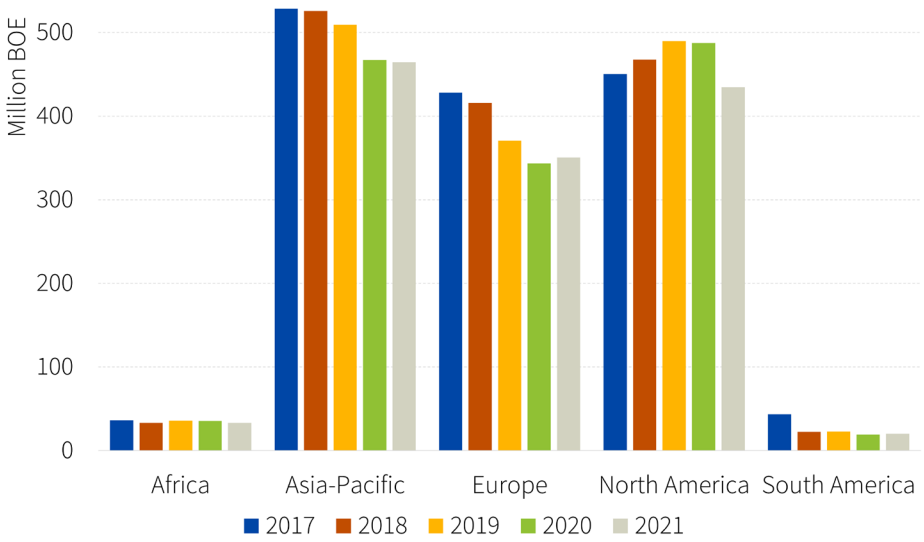

Figure 5. Annual production of sold assets by region (n=38)

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

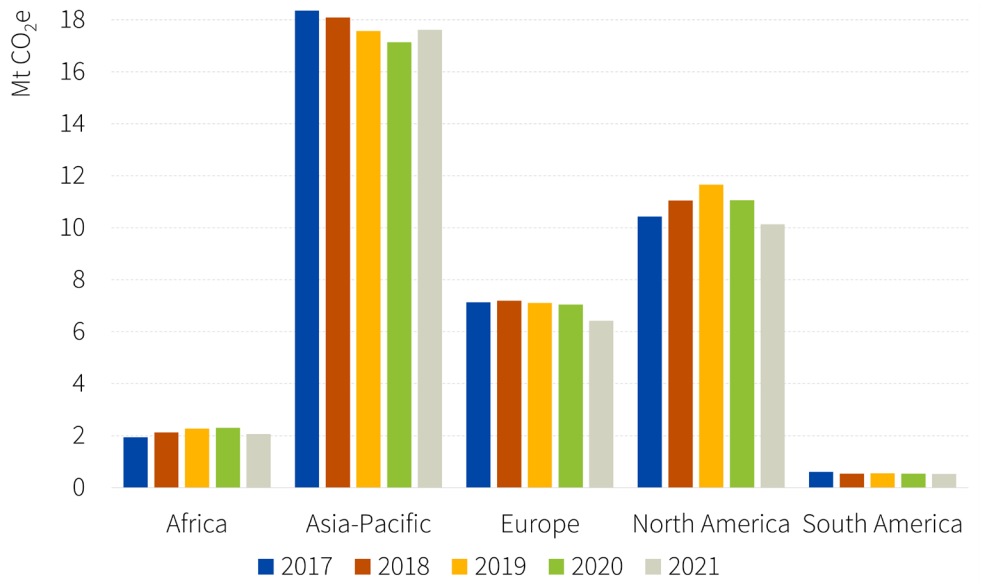

Figure 6. Annual scope 1 emissions of sold assets by region (n=38)

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Comparing the emissions from the supermajors' sold assets, Shell's produced and emitted the most during the five years. Eni had comparatively lower production and emissions levels, whereas the remaining supermajors' sold assets accounted for production ranging from 100 million to 325 million BOE and emissions ranging from 3.2 to 8.6 Mt CO_2e. This emissions range represents between 6% and 16% of these companies' average annual scope 1 emissions.

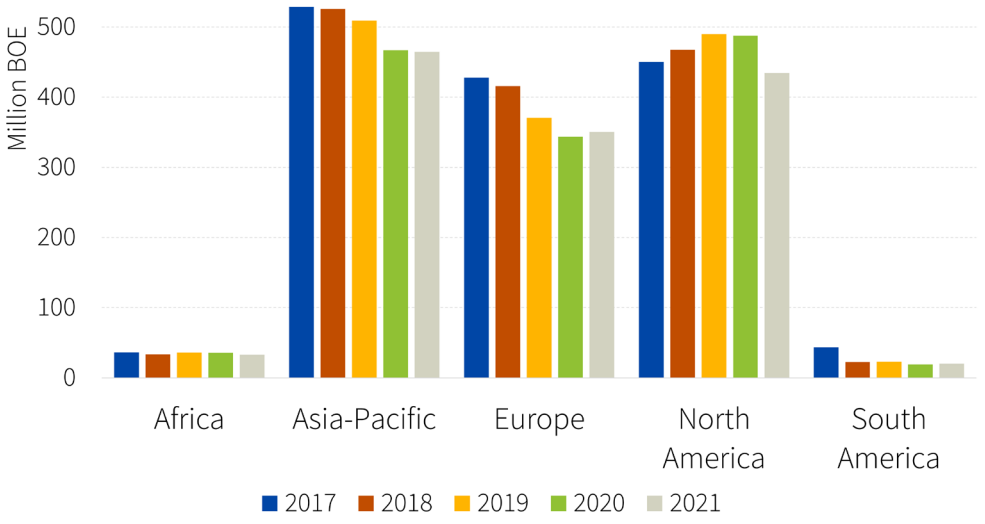

Figure 7. Production of sold assets by supermajor (n=38)

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

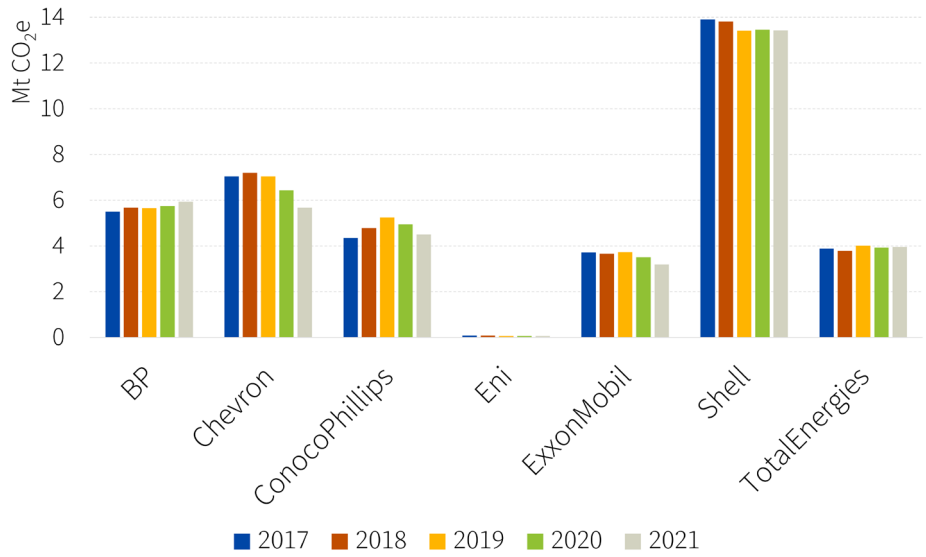

Figure 8. Scope 1 emissions of sold assets by supermajor (n=38)

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Emissions intensity, a unit that sheds light on the efficiency of upstream operations by revealing how much CO_2 is emitted per unit of production, is based on the upstream production and emissions numbers above. Figure 9 shows the emissions intensity of the sold assets by region. African assets had the highest emissions intensity, followed by Asia–Pacific, South American, North American, and European assets.

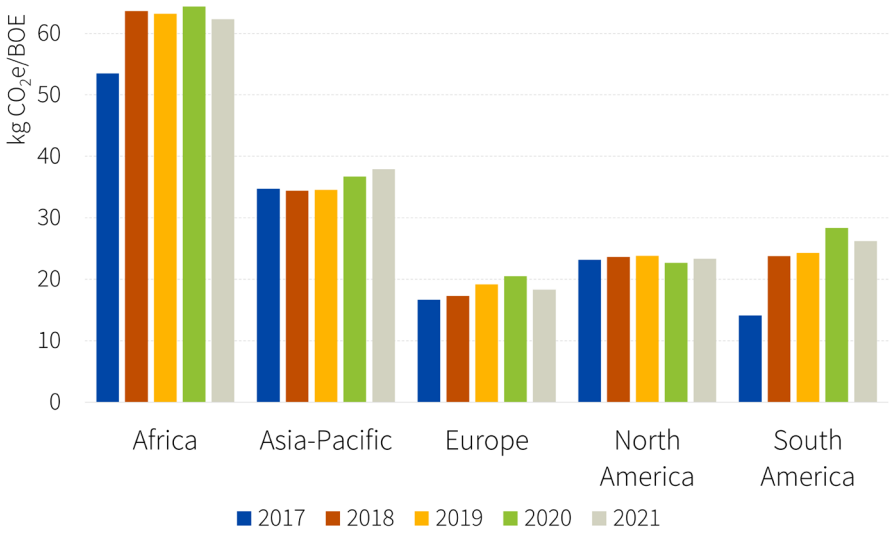

Figure 9. Emissions intensity by region (n=38)

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

BP's sold assets have the highest emissions intensity due to its second-lowest average production and relatively high level of scope 1 emissions. The remaining supermajors' emissions intensities are far lower, under 40 kg CO_2e/BOE. Eni, ConocoPhillips, and Chevron's sold assets have the lowest emissions intensities (see Figure 10).[138]

138 The Oil and Gas Climate Initiative indicates that its member companies' upstream carbon intensities in 2017, 2018, and 2019 were 23, 22.1, and 21.1 kg CO2e/BOE, respectively. Oil and Gas Climate Initiative, "OGCI's upstream carbon intensity target," *OCGI*, n.d., https://www.ogci.com/action-and-engagement/ogcis-upstream-carbon-intensity-target.

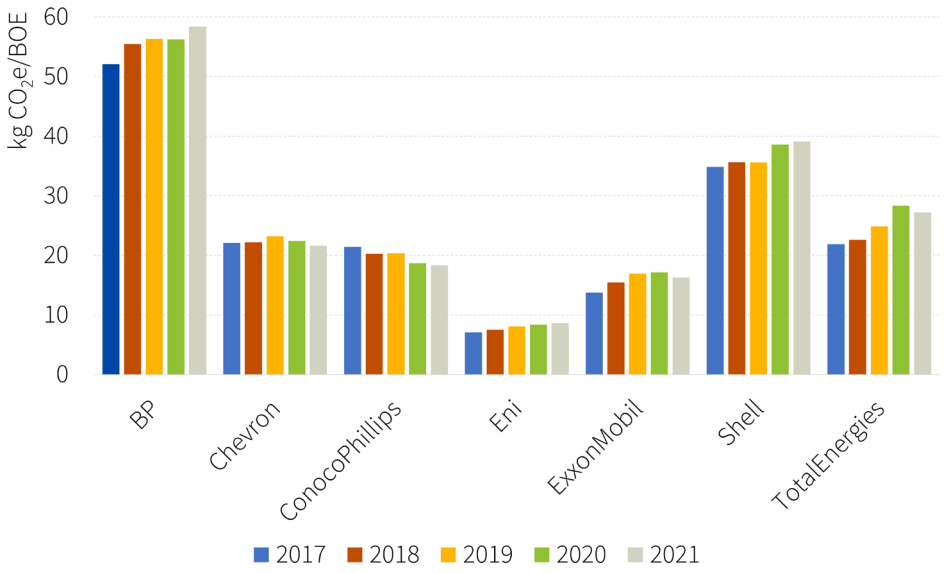

Figure 10. Emissions intensity of sold assets by supermajor (n=38)

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Overall, data on scope 1 emissions intensity is highly varied, with emissions intensities ranging from less than 1 metric ton of CO_2 (t CO_2) per unit of production to more than 200 t CO_2 per unit of production. Reasons for the variability may include:

1. Emissions accounting methodologies vary across the supermajors (See Table 1).
2. Due to subsea tie-backs[139] to other assets, some assets may have their emissions associated with another asset, thus leading to an underestimation of an asset's emissions.
3. Oil often comes with associated gas. If the asset has low flaring and venting rates, the emissions intensity estimate will be lower than average.[140]
4. Some assets are more efficient in their operations.
5. Assets that are older tend to have higher emissions intensity than newer assets.
6. Asset operators changed their strategy, sometimes due to regulatory policy.[141]

139 A subsea tie-back is an underwater connection between two or more existing assets.

140 Deborah Gordon and Jeffrey Feldman, "Breaking Down the Barrel: Tracing GHG Emissions Through the Oil Supply Chain," *Carnegie Endowment for International Peace*, February 9, 2016, https://carnegieendowment.org/2016/02/09/breaking-down-barrel-tracing-ghg-emissions-through-oil-supply-chain-pub-62722.

141 In Norway, for instance, high carbon taxes have led to rapid emissions intensity reductions.

Table 1. Different emissions accounting and reporting methodologies across oil supermajors.

SUPERMAJORS	*NET VOLUME ACCOUNTING METHODOLOGY FOR CATEGORY 11*	*REPORT SCOPE 3 – CATEGORY 11 EMISSIONS WHEN OIL IS PRODUCED/ REFINED BY OTHERS?*	*WHAT JOINT VENTURE EMISSIONS ARE REPORTED IN SCOPES 1,2, AND 3?*	*ARE PETROLEUM PRODUCTS CONSOLIDATED WITH NON-PETROLEUM PRODUCTS IN SCOPES 1, 2, 3?*	*IPIECA SCOPE 3 EMISSIONS CATEGORIES INCLUDED IN REPORTING*
BP	Production Method.	No.	Scopes 1 and 2: 100% operated and pro-rated to equity share. Scope 3: pro-rated to equity share (participation in Rosneft not considered).	Yes.	Category 11.
CHEVRON	Reports data in three methods: production, throughput, and sales methods.	Depends on the method.	Scopes 1, 2, and 3: 100% operated and pro-rated to equity share.	Yes.	Category 11.
ENI	Production method. Sales method used for Net GHG Life Cycle Emissions (scopes not disaggregated).	No (except for GHG lifecycle emissions).	Scopes 1 and 2: 100% operated. Scope 3: pro-rated to equity share.	Yes.	Categories 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 14.
EXXONMOBIL	Reports data in three methods: production (used in most disclosures), throughput (indicated), and sales (indicated).	Depends on the method used (production method is the most used).	Scopes 1 and 2: no separate reporting between 100% operated and pro-rated equity share. Scope 3: unclear.	Biofuels are excluded from scope 3.	Category 11.
SHELL	Sales method.	Yes.	Scopes 1 and 2: 100% operated and pro-rated to equity share. Scope 3: 100% operated.	Yes.	Categories 1, 3, 11.
TOTALENERGIES	Sales Method.	Yes.	Scope 1: 100% operated and pro-rated equity share. Scope 2: 100% operated. Scope 3: unclear.	Yes.	Category 11.

Source: Columbia Center on Sustainable Investment, 2022.[142]

3.2.2 Scope 3 Emissions

The upstream scope 1 emissions of sold assets revealed in Section 3.2.1 allow us to estimate the scope 3 emissions attributable to each transaction. This estimation is essential because the scope 3 emissions of a fossil fuel asset represent a huge portion of its impact on the climate. As discussed in Section 2.1.2, scope 3 emissions represent all indirect emissions

142 Columbia Center on Sustainable Investment, "How Much Have the Oil Supermajors Contributed to Climate Change? The Carbon Footprint of the Oil Refining and Petroleum Products Sales Sectors," *Columbia Center on Sustainable Investment*, 2022, https://ccsi.columbia.edu/content/oil-supermajors-carbon-footprint-refining-sales-climate-change.

that occur in a company's value chain, other than indirect emissions from purchased electricity, heat, and steam (which form scope 2).[143]

In the oil and gas industry, most scope 3 emissions arise from the "use of sold products."[144] This broad classification includes, for example, the emissions from the burning of fossil fuels by cars or home heating systems. Scope 3 emissions account for 89% of the global oil and gas industry's total GHG emissions, making it one of the industries with the highest proportion of overall emissions accounted for by scope 3; the remaining 11% are primarily scope 1 emissions, with scope 2 emissions accounting for less than 1% (see Figure 11).

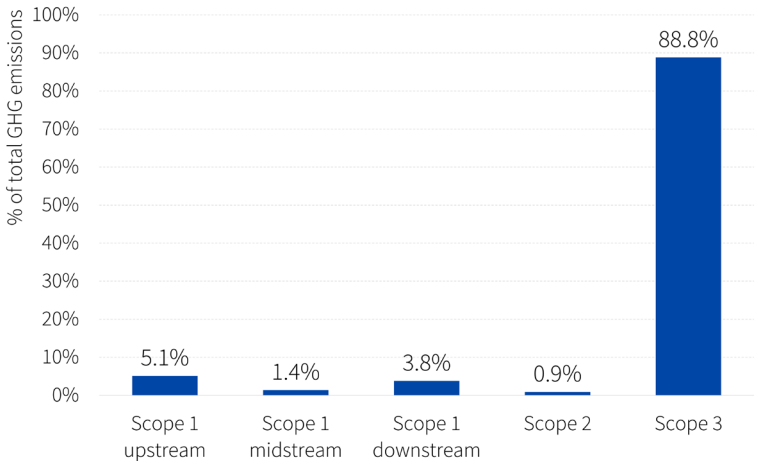

Figure 11. Scopes of emissions: Oil supermajors

Source: Prepared by the authors based on an analysis of corporate GHG emissions reporting and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Using the methods outlined in this section, we estimated the scope 3 emissions attributable to assets sold by the supermajors between 2017 and 2021. The supermajors have transferred scope 3 emissions at a massive scale; on average, scope 3 emissions from sold assets were equivalent to approximately 25% of the supermajors' reported scope 3 emissions over this period (see Table 5).

Based on the emissions reported by the supermajors in their annual and sustainability reports, our analysis confirmed that, on average, scope 3 accounts for approximately 89% of the supermajors' total emissions, with the percentage varying within an approximate range from 83% to 95% (see Table 2).

143 Allwood, "Glossary."

144 GHG Protocol and Carbon Trust. *Technical Guidance for Calculating Scope 3 Emissions: Supplement to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard* (v. 1.0). (World Resources Institute and WBCSD, n.d.), https://ghgprotocol.org/sites/default/files/standards/Scope3_Calculation_Guidance_0.pdf.

Table 2. Supermajors' reported 2021 scope 1, 2, and 3 emissions

SUPERMAJORS	*Scope 1 Emissions (Mt CO_2e)*	*Scope 2 Emissions (Mt CO_2e)*	*Scope 3 Emissions (Mt CO_2e)*	*Scope 3 over Total Emissions (%)*
BP	33.2	2.4	304.0	89.5
CHEVRON	57.0	4.0	469.3	88.5
CONOCOPHILLIPS	17.7	1.0	224.0	92.3
ENI	40.1	0.8	197.1	82.8
EXXONMOBIL	110.0	7.0	613.3	84.0
SHELL	60.0	9.0	1299.0	95.0
TOTALENERGIES	34.0	2.0	400.0	91.7
AVERAGE	**49.6**	**3.7**	**490.5**	**89.1**

Source: Prepared by the authors based on supermajors' reporting.

Notes:

1. Companies outline their calculation methods in the reports. In cases where companies reported their emissions on both operational and equity levels, we selected the equity level.

2. Chevron calculates their equity scope 3 emissions using three methodologies: (1) category 11 use of sold products – production method, (2) category 11 use of sold products – throughput method, and (3) category 11 use of sold products – sales method. The values of these three in 2021 were 408 Mt, 389 Mt, and 611 Mt, respectively. We used the average, resulting in 469.3 Mt. Similarly, ExxonMobil uses three methodologies: (1) upstream production, (2) refining throughput, and (3) petroleum product sales. The values of these three estimates in 2021 were 530 Mt, 620 Mt, and 690 Mt, respectively. We used an average, resulting in 613.3 Mt.

3. The supermajors report their respective scope 3 emissions using different accounting methodologies, and are therefore not directly comparable (see Table 1)."

4. Relevant supermajor reports:
BP Sustainability Report 2021[145]
Chevron 2021 Corporate Sustainability Report[146]
ConocoPhillips Sustainability Report 2021[147]
Eni for 2021 Sustainability Performance[148]
Advancing Climate Solutions: Progress Report[149]
Shell Sustainability Report 2021[150]
TotalEnergies Sustainability & Climate 2022 Progress Report[151]

Important context for understanding Table 2 is that the reporting of each supermajor's emissions is conducted differently, and each method can lead to different results. Chevron, for instance, reports their scope 3 emissions using three different methodologies. Further nuances of the reporting practices of the supermajors are explored in Table 1.

To understand the climate impacts of the assets in this study, next we estimated the scope 3 emissions attributable to each sold asset for which upstream scope 1 emissions data were available. We made these estimations through the following method:

145 *BP Sustainability Report* (London: BP p.l.c., n.d.), https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/sustainability/group-reports/bp-sustainability-report-2021.pdf.

146 *2021 Corporate Sustainability Report* (San Ramon: Chevron Corporation, n.d.), https://www.chevron.com/-/media/shared-media/documents/chevron-sustainability-report-2021.pdf.

147 *Sustainability Report 2021* (Houston: ConocoPhillips Company, n.d.), https://static.conocophillips.com/files/resources/conocophillips-2021-sustainability-report.pdf.

148 *Eni for 2021: Sustainability Performance* (Rome: Eni S.p.A., n.d.), https://www.eni.com/assets/documents/eng/just-transition/2021/eni-for-2021-sustainability-performance-eng.pdf.

149 *Advancing Climate Solutions: Progress Report* (Irving: ExxonMobil Corporation, n.d.), https://corporate.exxonmobil.com/climate-solutions/advancing-climate-solutions-progress-report#Greenhousegasemissionsperformancedata.

150 "Greenhouse Gas and Energy Data," Shell Sustainability Report 2021, Shell, n.d., https://reports.shell.com/sustainability-report/2021/our-performance-data/greenhouse-gas-and-energy-data.html.

151 *Sustainability & Climate 2022 Progress Report* (Courbevoie: TotalEnergies SE, March 2022), https://totalenergies.com/sustainability/reports-and-indicators/csr-reports.

1. Using the scope 1, 2, and 3 emissions numbers publicly reported by the supermajors in 2021 (see Table 2), as well as information regarding the ratio of upstream scope 1 emissions to overall scope 1 emissions for each supermajor from the proprietary database,[152] we calculated the proportion of upstream scope 1 emissions to scope 3 emissions for each supermajor.
2. By dividing the supermajors' total reported 2021 scope 3 emissions by the total estimated upstream scope 1 emissions, we calculated a scope 3 multiplier for the supermajors.[153] This multiplier allows for the estimation of a supermajor's scope 3 emissions based on the assets' upstream scope 1 emissions. The value of the multiplier is approximately 21.8, indicating that each t CO_2e of upstream scope 1 emissions correlates to 21.8 t CO_2e of scope 3 emissions.
3. By applying the multiplier to the data on emissions from its sold upstream assets, we estimated the scope 3 emissions attributable to each asset.

Table 3 presents our estimated 2021 scope 3 emissions of the sold assets, calculated by multiplying the scope 1 emissions of each supermajor's sold assets by the multiplier.

Table 3. Scope 3 emissions of sold assets (n=38, Mt CO_2e)

SUPERMAJORS	*2021 Upstream Scope 1 Emissions of Sold Assets*	*Estimated 2021 Scope 3 Emissions of Sold Assets*
BP	5.9	129.4
CHEVRON	5.7	123.8
CONOCOPHILLIPS	4.5	98.3
ENI	0.1	1.4
EXXONMOBIL	3.2	69.6
SHELL	13.4	292.8
TOTALENERGIES	4.0	86.4

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Table 4 provides additional insight into the offloading of scope 3 emissions by breaking the emissions down by transaction year. This table shows which years the supermajors sold assets with high volumes of scope 3 emissions attributable to them. The scope 3 emissions were calculated by multiplying the scope 1 emissions of the assets by the scope 3 multiplier, producing an estimation of the total emissions offloaded each year through the sales of assets in our sample.

Each cell represents one year of emissions from assets sold in that year only. For instance, the downstream combustion of products from the assets sold by BP in 2017 emitted approximately 5.2 Mt CO_2e. From a scope 3 perspective, BP's 2020 sales were more significant; assets sold in 2020 by BP emitted 114.1 Mt CO_2e.

152 IHS Markit, *Corporate Emissions Solutions* (proprietary).

153 The use of this multiplier, for simplicity purposes, should not be interpreted as suggesting that an increase or decrease in scope 1 emissions would necessarily lead to a corresponding increase or decrease in scope 3 emissions. For example, if total scope 1 emissions change as a result of a change in emissions intensity, without changes in the company's output volume, there may be no change in scope 3 emissions.

Table 4. Scope 3 emissions of sold assets by transaction year (Mt CO_2e, n=38)

SUPERMAJORS	*2017*	*2018*	*2019*	*2020*	*2021*
BP	5.2	6.4	-	114.1	-
CHEVRON	5.2	26.8	31.0	79.6	-
CONOCOPHILLIPS	68.9	-	0.4	-	97.5
ENI	-	-	1.1	-	0.4
EXXONMOBIL	2.3	6.8	-	32.5	34.6
SHELL	55.8	235.2	4.1	-	0.2
TOTALENERGIES	-	6.4	52.1	18.1	15.4

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Note: Blank cells (-) are years in which the company did not carry out any asset sales within the scope of the study, or for which the proprietary database did not have data on both production and emissions for the sold assets.

Table 5 presents the scale of the asset sales by aggregating the estimated annual scope 3 emissions of the sold assets in the period 2017–2021, comparing them with the aggregated reported and estimated company scope 3 emissions over the same period. The last column highlights the formidable size of the sold assets from an emissions perspective, except in the case of Eni, which offloaded a lower percentage of its emissions than the other supermajors. On average, the sold assets' scope 3 emissions were equivalent to 25% of the supermajors' reported and estimated scope 3 emissions in the period 2017–2021, emphasizing the massive scale of these emissions transfers.

Table 5. Offloaded and reported scope 3 emissions (Mt CO_2e, n=38)

SUPERMAJORS	*Total Scope 3 Emissions Attributable to Sold Assets (2017–2021)*	*Reported and Estimated[154] Company Scope 3 Emissions (2017–2021)*	*Total Scope 3 Emissions Attributable to Sold Assets as a Percentage of Reported and Estimated Company Scope 3 Emissions (2017–2021)*
BP	621.8	1901.5	32.70%
CHEVRON	728.2	2323.0	31.35%
CONOCOPHILLIPS	519.6	944.3	55.02%
ENI	7.9	1102.2	0.71%
EXXONMOBIL	388.3	2959.5	13.12%
SHELL	1483.1	7668.0	19.34%
TOTALENERGIES	426.9	2010.0	21.24%

Source: Prepared by the authors based on an analysis of supermajors' emissions reporting and Underlying Data from S&P Global Commodity Insights, @2023 by S&P Global Inc.

The massive size of the emissions related to the assets, as well as the variability among the supermajors, could be, in part, due to data limitations. As shown in Figure 12, the frequency at which we could find information regarding the production and emissions attributable to sold assets within the transactions that met our scope of study varied greatly among the supermajors. Thus, for ExxonMobil and TotalEnergies, for instance, the proportion of total scope 3 emissions of sold assets to reported and estimated company scope 3 emissions would have been higher if more production and emissions data had been available.

154 The first year when all seven supermajors reported their scope 3 emissions was 2021. For those supermajors that did not start reporting in or before 2017, we used the proportion of their 2021 scope 1 to 2021 scope 3 emissions to estimate their previous years' scope 3 emissions based on their reported scope 1 emissions from those years.

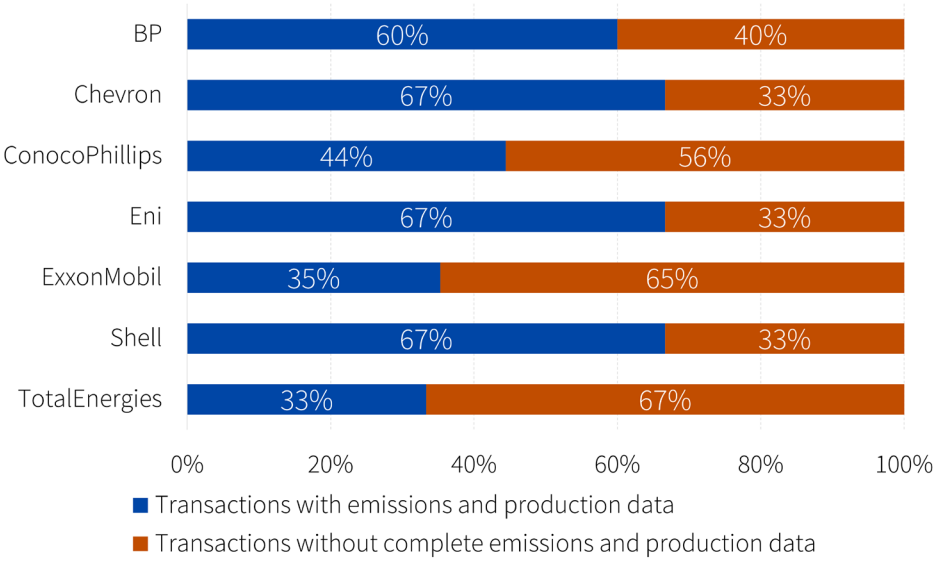

Figure 12. Transactions with vs. without emissions and production data (n=76)

Prepared by the authors based on an analysis of supermajors' emissions reporting and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

While the general lack of robust and consistent data makes determining more exact values and conclusions difficult, these estimates confirm the massive scale of offloading, particularly from a scope 3 emissions perspective.

3.2.3 Transaction Values

To further assess the scale of the supermajors' fossil fuel asset sales, we reviewed the transaction value of upstream asset sales. We conducted this analysis to understand the vast resources being mobilized to move these assets around. Particularly since some buyers are backed by private equity firms, who are tied to less stringent reporting requirements, it is useful to understand the extent of the financial mobilization to acquire out-of-favor supermajor assets.[155] Data on the value of the transactions were available for 52 transactions (68% of our sample). In other cases, the transaction value was either unavailable or intentionally omitted (see Figure 13). In the cases of omission, the company or news report offering other details of the transaction indicated, for example, that "financial and other terms of the deal were not disclosed."[156]

155 Kate Arnoff, "Private Equity is Quietly Keeping Fossil Fuel Companies in Business," *The New Republic*, October 14, 2021, https://newrepublic.com/article/164009/private-equity-quietly-keeping-fossil-fuel-companies-business.

156 Amanda Battersby, "Italian Giant Eni Streamlines its Upstream Portfolio," *Upstream*, March 10, 2021, https://www.upstreamonline.com/finance/italian-giant-eni-streamlines-its-upstream-portfolio/2-1-977418.

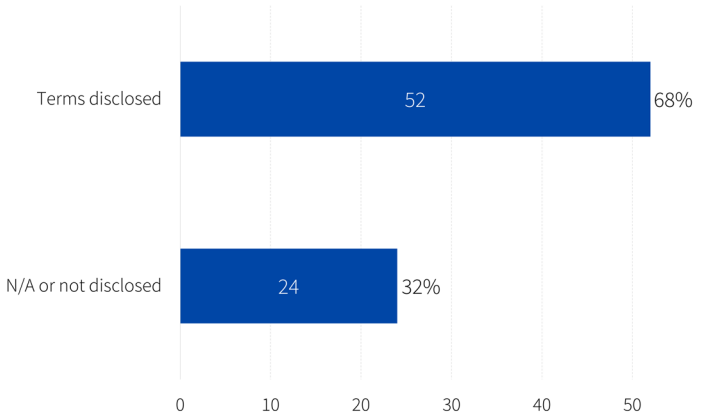

Figure 13. Transaction value data availability (n=76)

Prepared by the authors based on an analysis of data from supermajors' reporting, news sources, and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Transactions of assets in Europe were the least transparent in this regard: value data on the transaction were publicly available for only 11 of 20 transactions in Europe (Figure 14).

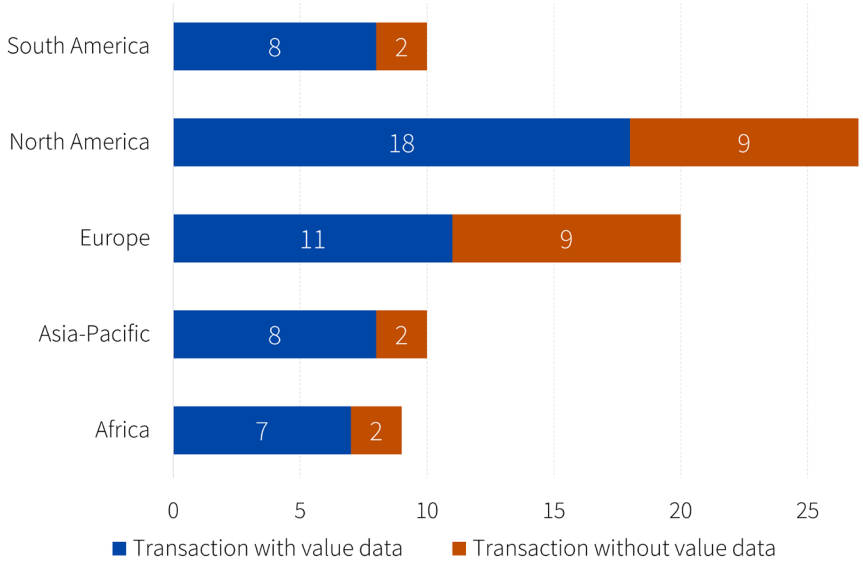

Figure 14. Transactions with vs. without transaction value data: geography (n=76)

Prepared by the authors based on an analysis of supermajors' reporting, news reports, and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

The transactions in our sample often bundle upstream assets relevant to our analysis with other assets. For instance, in ExxonMobil's 2017 sale of upstream assets in Norway to HitecVision, the transaction included a number of active fields outside of our scope of analysis, along with a floating production hub.[157]

Based on the data available, it is impossible to attribute a specific portion of the transaction value to the fields analyzed in this study. Our transaction valuation analysis uses the value of the overall transaction, not the value of the underlying oil assets. The data used in this section does not necessarily coincide with the data used in the previous section;

157 Offshore Energy, "Point Resources Completes Takeover of Exxon's Norway Assets," *Offshore Energy*, November 3, 2017, https://www.offshore-energy.biz/point-resources-completes-takeover-of-exxons-norway-assets/.

transaction value data may have been disclosed on transactions that did not disclose data on the production or emissions of the underlying assets or vice versa.

The value of deals among the 52 transactions with transaction value data ranges from less than USD 100 million to well over USD 1 billion (Figure 15). Though the distribution of deal valuation is varied, 13 deals (25% of the deals with transaction value data) were valued at more than USD 1 billion. The median deal size was USD 382 million.

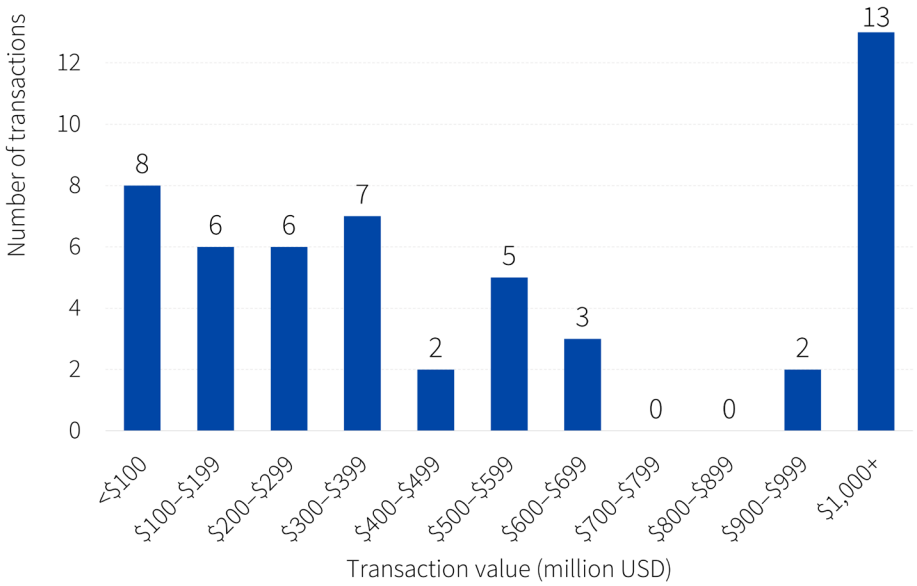

Figure 15. Value of transactions (n=52)

Prepared by the authors based on an analysis of supermajors' reporting, news reports, and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

The largest sum of transaction values occurred in 2017, despite having the lowest number of transactions. Between 2017 and 2020, transaction frequency varied only slightly, and in 2021 a notable jump in the number of transactions occurred, accompanied by a lower average transaction value (Figure 16).

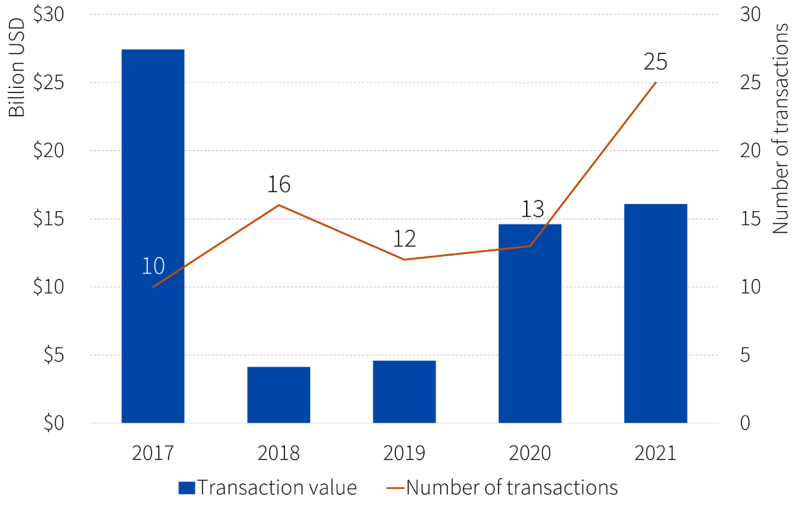

Figure 16. Transaction value and number

Prepared by the authors based on an analysis of supermajors' reporting, news reports, and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Note: For the transaction value, the sample size is 52 transactions, which represents those transactions with valuation data. The data on the number of transactions represent the complete sample of transactions: 76.

On a regional level, the highest transaction values were reported in North America, followed by Europe. Across other regions, the total transaction value was considerably lower (Figure 17).

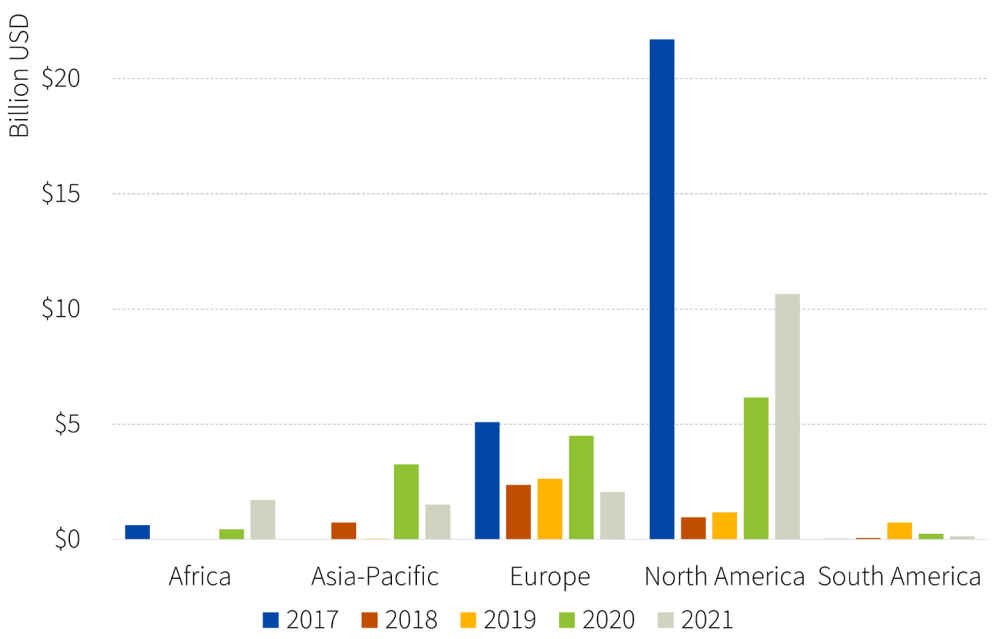

Figure 17. Transaction value by region (n=52)

Prepared by the authors based on an analysis of supermajors' reporting, news reports, and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Over the study period, Shell sold the highest aggregate value of assets, with ConocoPhillips and ExxonMobil following (Figure 18). As Wood Mackenzie indicated,[158] Shell appears to be the leading seller of assets on a transaction value basis in recent years, even outside of our sample.

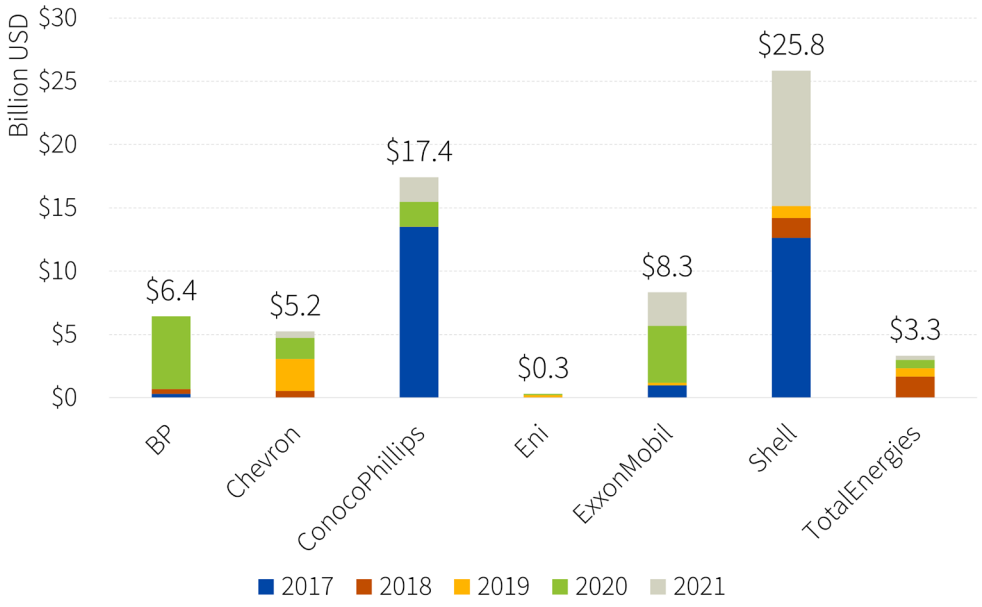

Figure 18. Transaction value by supermajor (n=52)

Prepared by the authors based on an analysis of supermajors' reporting, news reports, and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

158 Anjli Raval, "A $140bn Asset Sale: The Investors Cashing in on Big Oil's Push to Net Zero," *Financial Times*, July 6, 2021, https://www.ft.com/content/4dee7080-3a1b-479f-a50c-c3641c82c142.

3.2.4 Types of Buyer Companies

In evaluating the supermajors' asset sales, we also identified and categorized the buyers of sold assets. As discussed in Section 2, large publicly listed companies are consistently subject to more extensive disclosure requirements than privately held companies, and new climate-related disclosure regimes targeting publicly listed companies are currently being formulated in the EU and the US. While publicly listed companies may not consistently or visibly disclose information about their assets, products, and emissions under current regulatory regimes, asset sales from highly scrutinized publicly listed companies to privately held companies or state-owned enterprises can dramatically reduce the availability of information about the operation of those assets.[159] Accordingly, this section reviews the buyers of the fossil fuel assets sold by the supermajors.

In 43 transactions (56.6% of our sample), the buyers were publicly listed companies. In 2 of these 43, the transaction occurred between two supermajors. Privately held buyers account for 21 transactions (27.6%). In other transactions, the buyers were undisclosed (6.6%), state-owned companies (6.6%), or a mixture of publicly listed and privately held companies (2.6%) (see Figure 19). Though in more than half of the transactions, the buyers are other publicly listed companies, a significant proportion of assets are moving into the ownership of privately held or state-owned entities.

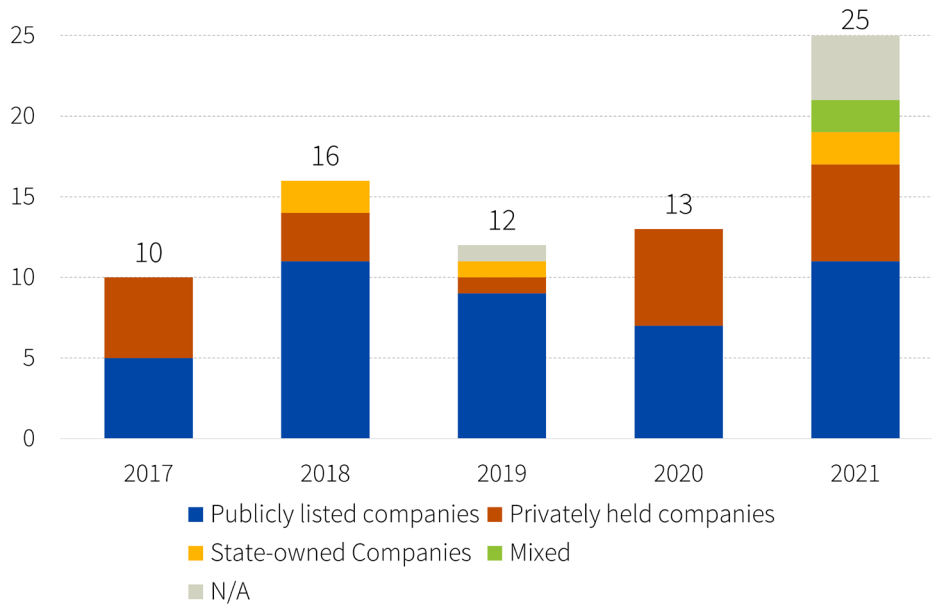

Figure 19. Transactions between supermajors and buying companies (n=76)
Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Table 6 shows the transaction values broken down by buyer type and year, total transaction value, and average transaction value. Not only did publicly listed buyers purchase the most on an aggregate level, but the average transaction involving publicly listed buyers was more valuable than the average transactions involving buyers of other types. Roughly 71% of all transaction value was paid by publicly listed buyers.

159 See, generally, Malek et al. *Transferred Emissions*, which analyzes risks associated with public-to-private transfers of upstream fossil fuel assets.

Table 6. Transaction values by buyer type (in USD billion, n=52)

Buyer Type	*2017*	*2018*	*2019*	*2020*	*2021*	*Total Transaction Value*	*Average Transaction Value*
Publicly Listed	21.8	1.8	3.9	7.9	12.0	47.5	1.6
Privately Held	5.6	0.5	0.6	6.7	2.2	15.7	0.9
State-Owned	-	1.8	-	-	1.1	2.8	0.95
Mixed	-	-	-	-	0.6	0.6	0.6
N/A	-	-	-	-	0.2	0.2	0.2
Total	27.4	4.1	4.6	14.7	16.1	66.9	1.6

Sources: Prepared by the authors based on an analysis of news reports and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Notes:

1. Sample size: 52 of 76 transactions disclosed transaction value information.

2. In many cases, the divested upstream oil asset we focus on in our analysis is not the only asset included in the transaction.

3. Mixed: A buyer type is classified as "mixed" when different types of buyers collaborate to purchase an asset or a share of an asset.

4. A buyer type is classified as "N/A" when the classification of the buyer is unknown, most frequently when the buyer was not disclosed.

5. Blank values (-) occur in years where transactions with the specified buyer type either did not occur or data were not available.

When considering how the buyer type might influence the availability of production, emissions, and transaction value data on the proprietary database, publicly listed companies did not stand out in our sample, as is shown in Figure 20 and Figure 21. In both figures, the proportion of transactions in which information was disclosed was nearly identical, regardless of whether the buyer was publicly listed.

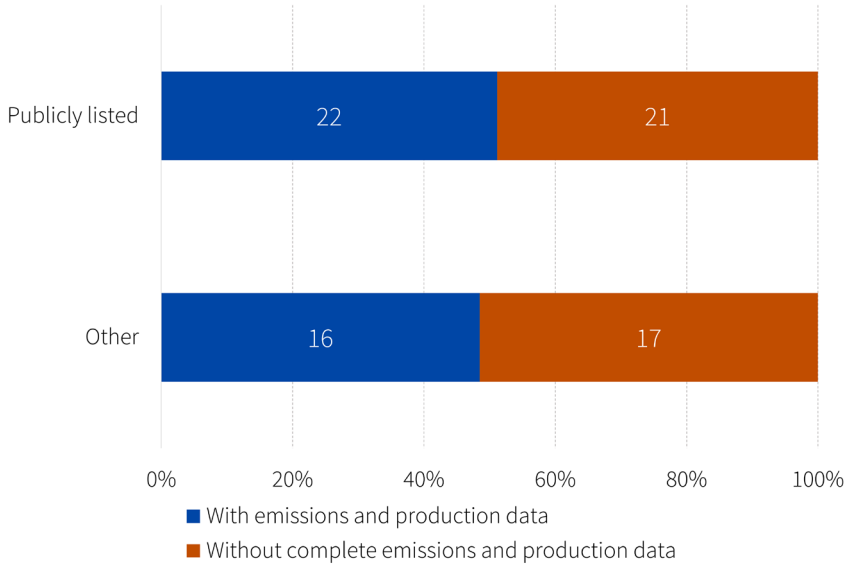

Figure 20. Transactions with vs. without emissions and production data: Buyers (n=76)

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

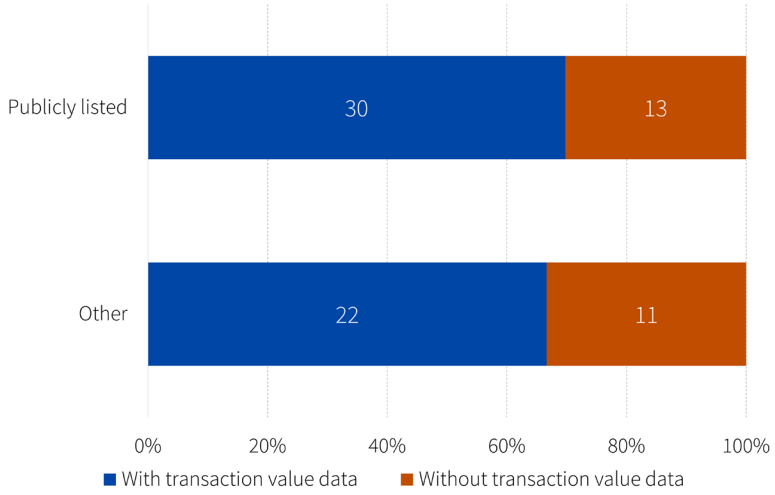

Figure 21. Transactions with vs. without transaction value data: Buyers (n=76)

Source: Prepared by the authors based on an analysis of supermajors' reporting, news reports, and Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

3.2.5 Disclosures

We thoroughly searched the supermajors' annual reports—which outline the company's activities, finances, and future targets—for mentions of sales of upstream assets. We also searched for sales activities in the supermajors' sustainability reports, hypothesizing that they might point to the impacts of sales on the supermajors' GHG emissions. Publicly accessible corporate reports mention, at least vaguely, 58 of the 76 transactions in our sample (Figure 22).

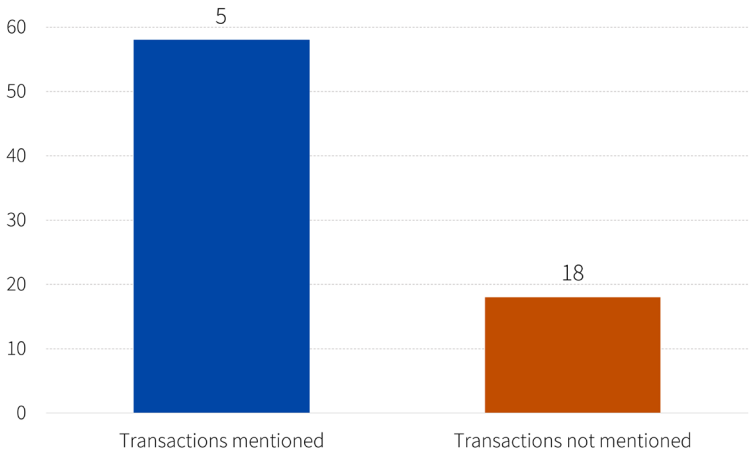

Figure 22. Transactions mentioned in annual reports (n=76)

Source: Prepared by the authors based on an analysis of the supermajors' 2017–2021 annual reports.

In many cases, however, the sold assets are not mentioned by name but are rather identified by their geography, thus requiring deeper investigation to understand which assets the report discusses. Even less frequently articulated were the data on the sold asset's production, emissions, and value, and the buyer was often not disclosed. Some supermajors published press releases on sales of specific assets, sometimes including relevant information helpful for this analysis. Overall, comprehensive data were not available in a consistent manner, and consequently, verifying our findings against a supermajor's annual report was not possible.

3.3 Post-Transaction Analysis

As the next step in our analysis, we assessed whether the supermajors' asset sales affected the actual GHG emissions attributable to the sold assets after the sale. To this end, we went down from the transaction level (used thus far) to the asset level and conducted this assessment through the use of a difference-in-differences (DID) regression, analyzing the emissions intensity of sold assets (as reported in the proprietary database[160]) before and after emissions responsibility shifts to the buying company. Here we used a sample of 46 assets, which featured in the transactions analyzed throughout this study, that had complete emissions and production data in the proprietary database from the period 2017–2021. In this sample, post-sale emissions intensities tended to be higher, indicating that, on average, assets operated less efficiently after the sale.

Figure 23 shows the interquartile range of the percent change in average scope 1 emissions intensity. For 33 of the 46 assets in this sample, this percent change is positive: most transactions resulted in higher average emissions intensity in the year or years after the transaction year.

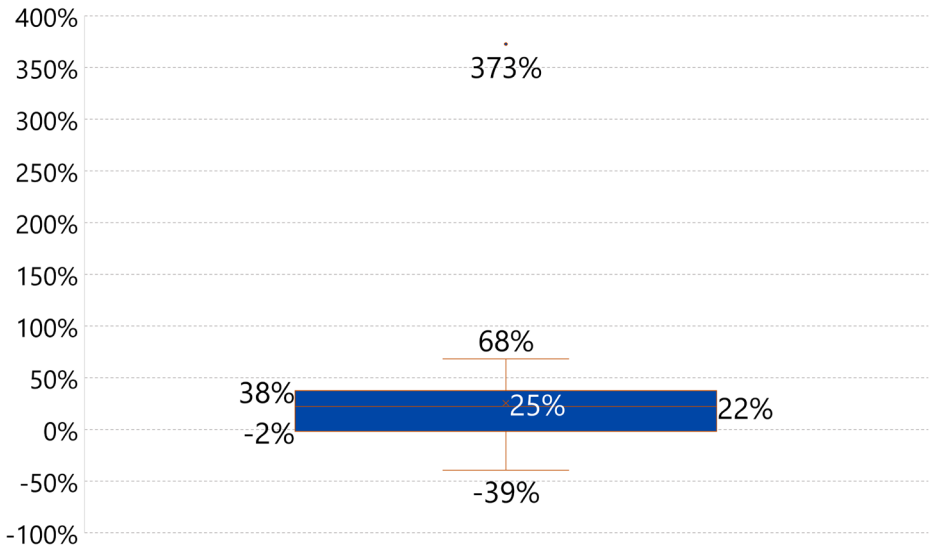

Figure 23. Box-and-whisker: Percent change in average scope 1 emissions intensity (n=46 assets)
Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

To further investigate the emissions trends of the assets within this section's sample, we set up a DID regression as follows:

$$EI = B_0 + B_1\ time + B_2\ treatment + B_3\ DID + e$$

time = 0 if the observation is pre-transaction and 1 if the observation is during the transaction year or post transaction.

treatment = 0 for the control group and 1 for the experimental/treatment group.

DID is the difference in differences estimator, namely *time* * *treatment*. This is our primary coefficient of interest.

160 Emission intensities are documented in IHS Markit, *Corporate Emissions Solutions* (proprietary), without further contextual information on the drivers of emissions intensities.

Since there was no explicit control group, as all the units in the sample were sold in the period 2017–2021, we defined the control group as the annual emissions intensities linearly forecasted from the observed pre-transaction annual emissions intensities. The experimental group included all the observed values, namely the pre-transaction emissions intensity rates and the annual emissions intensities during and after the transaction year.

Due to this setup, both the experimental and the control groups contain the same values during the pre-transaction period. The difference is evident in the post-transaction stage, as the control group contains linearly forecasted values, and the experimental group contains the observed values. The DID methodology tests the significance and direction of the deviation from the linear trend in the post-transaction period.

Figure 24 shows an abstraction of what the DID regression is testing. If the hypothesis is confirmed, the observed post-transaction emissions intensities should be greater than the values of the control group.

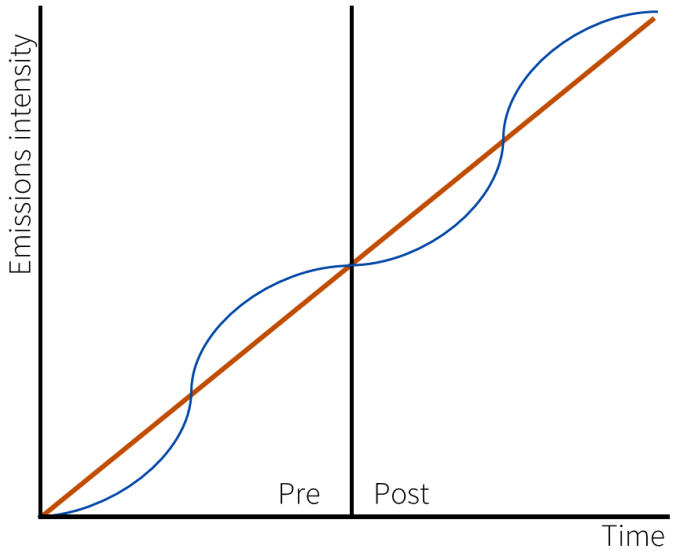

Figure 24. Theoretical DID model

Note: Pre-transaction values for both the "control" group and the experimental group are the same, represented by the blue curve. Post-transaction values for the control group are represented by the orange line, a linear forecast based on the observed pre-transaction values. The experimental group consists of the actual post-transaction emission intensity rates that were observed, abstractly represented by the blue curve.

To find a balance between having enough data points before and after the transaction and having a large enough sample size, we only included assets for which we had data for three years before the transaction, during the transaction year and two years after the transaction year. Accordingly, we only included assets in transactions occurring in the period 2017–2019, which gave us 35 assets.

A visual inspection revealed that nine of the assets seemed to deviate negatively from the linear trend post-transaction. We first concluded the DID with the other 26 assets in the sample to analyze the presence and significance of a potential positive treatment effect. We then included those nine assets and re-ran the DID to see how the treatment effect changed.

Table 7 shows the results from the first regression on the 26 assets.

Table 7. Test results using 26 assets

Name	*Estimate*	*p-value*
Intercept	27.229	1.12e-15
time	-2.826	0.5349
treatment	1.865	0.6792
DID	11.158	0.0808

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

For the first 26 assets, the transaction resulted in an 11.158-unit increase in post-transaction emissions intensity from the linear trend forecasted by pre-transaction values. Therefore, the treatment effect is positive and significant at the 10% level. This indicates that, among the 26 assets in this regression, emissions tend to increase at sold assets after the transaction is conducted.

To test the strength of this positive treatment effect, we added nine more assets to the sample with emissions intensities that did not positively deviate from the linear post-transaction trend to see whether the additional nine assets would overturn the positive DID coefficient. Table 8 presents the results.

Table 8. Test results using 35 assets

Name	*Estimate*	*p-value*
Intercept	33.821	< 2e-16
time	-0.967	0.819
treatment	1.197	0.775
DID	5.730	0.334

Source: Prepared by the authors based on an analysis of Underlying Data from S&P Global Commodity Insights, ©2023 by S&P Global Inc.

Even after adding nine assets to the sample for which the emissions intensities negatively deviated from the trend, the overall treatment effect was still positive, indicating that the asset-level emissions intensity tended to increase post-transaction. In this sample of 35 units, the transaction resulted in a 5.730-unit increase in emissions intensity from the linear trend forecasted by pre-transaction values. The p-value increased substantially in the second regression.

These calculations provide sufficient evidence to show that the occurrence of a transaction in our sample led to a positive increase in emissions intensities for the assets from the linear trend forecasted by pre-transaction values.

Further analysis covering a longer post-sale asset life would be needed to verify this finding. Buyers may be trying to extract value by increasing the development of a shorter-lived field. This would increase intensity but could reduce the life-cycle emissions attributable to the assets, leading to a shorter timeline for retiring the asset relative to the originally expected asset retirement timeline.

3.4 Track Records

In addition to calculating post-transaction emissions, we attempted to assess other aspects of post-transaction asset governance quality. This assessment is particularly important because both systematic reviews and case studies of sold assets have suggested that supermajor asset sales may result in decreased governance quality.[161] A case study of one such sale is presented in a 2021 Bloomberg article, "What Happens When an Oil Giant Walks Away," which documents the sale of upstream assets in Alaska from BP to Hilcorp. Following Hilcorp's takeover, Bloomberg reporters documented a notable increase in regulatory violations and other incidents, along with a corresponding increase in oil spills attributable to human error.[162] To understand whether the supermajors' divestments resulted in any widespread change in governance quality, we reviewed the environmental and non-environmental violation records of our buyers and sellers involved in the transactions in our sample, as tracked in Good Jobs First's US and British Violation Tracker databases.[163]

Good Jobs First's Violation Tracker databases contain data on the number and penalty amounts of offenses related to the environment, competition, consumer protection, employment, financial, government contracting, safety, and miscellaneous issues. The sources of the data are court cases resolved by regulatory agencies, cases from state attorney generals, and select cases from local regulatory agencies. One tracker exists for violations in the US and another for violations in the UK. The two trackers include violations reported in the period 2000–2022 and jointly account for 520,000 cases of misconduct. To our knowledge, there are no comparable, publicly available trackers in other jurisdictions. Accordingly, our analysis relied on the US and British databases (see Box 7 for the consequential limitations on the analysis).

BOX 7. LIMITATION OF THE VIOLATION TRACK RECORD ANALYSIS

The main limitation that the violation trackers pose is that they only track violations in the US and the UK. This limitation imposes the following constraints:

1. There are companies that do not have operations in the US or the UK, and therefore we do not have data on their violations. We were unable to find comparable databases for other geographic regions.
2. There are companies that do not have upstream operations in the US or the UK but have other types of operations and therefore may feature in the trackers; this could account for violations arising from any stage of operations, not only upstream.
3. There are companies (68% of our sample) that have upstream operations in the US or the UK and are included in the violation tracker, but the companies' upstream operations in those two countries account for less than 50% of their portfolio. We did not exclude those companies from our analysis of their environmental performance, but we recognize that a low track record in these countries, based on the available data on the violation trackers, can be explained by their relatively small share of operations located in the US or the UK.

161 See Malek et al., *Transferred Emissions*, 16–24, which describes trends in fossil fuel mergers and acquisitions between 2017 and 2021 and concludes that that "at minimum, the climate risk management, disclosure and governance of oil and gas facilities is weakening, making emissions more likely to stall out, or increase" (24).

162 Adams-Heard and Dottle, *What Happens When an Oil Giant Walks Away*.

163 "Violation Tracker," Good Jobs First, 2022, https://violationtracker.goodjobsfirst.org.

Assuming that a large company has a higher probability of being involved in violations than a small company, we calculated company-specific "violation intensities" to eliminate the bias introduced by the production size of a company. The numerators of the violation intensities are numbers of environmental (Figure 25) and non-environmental (Figure 26) violations reported in the U.S. and British violation trackers. The denominators are the global production numbers of each company.[164]

Of the 71 buyers or sellers (including the seven supermajors) interacting in the supermajors' divestment of assets in the period 2017–2021, 28 are featured in either or both the US or British Violation Tracker and jointly accounted for 1,900 environment-related violations and 900 non-environment-related violations.[165]

Figure 25 presents the number of environmental violations in the UK and the US per billion barrels of oil equivalent (BBOE) produced globally by these companies. W&T Offshore, Delek, Talos Energy, Hilcorp, and Occidental have the worst environmental track records. The supermajors are distributed throughout the sample, with Chevron having the most violations per BBOE (64.7) and Eni having relatively few violations per BBOE (0.3).

Overall, the seven supermajors have 280 environmental violations, averaging 40 violations per BBOE produced. The 27 non-supermajor buyer companies, in contrast, have a combined 1,632 environmental violations on their records, averaging 78 violations per BBOE produced.

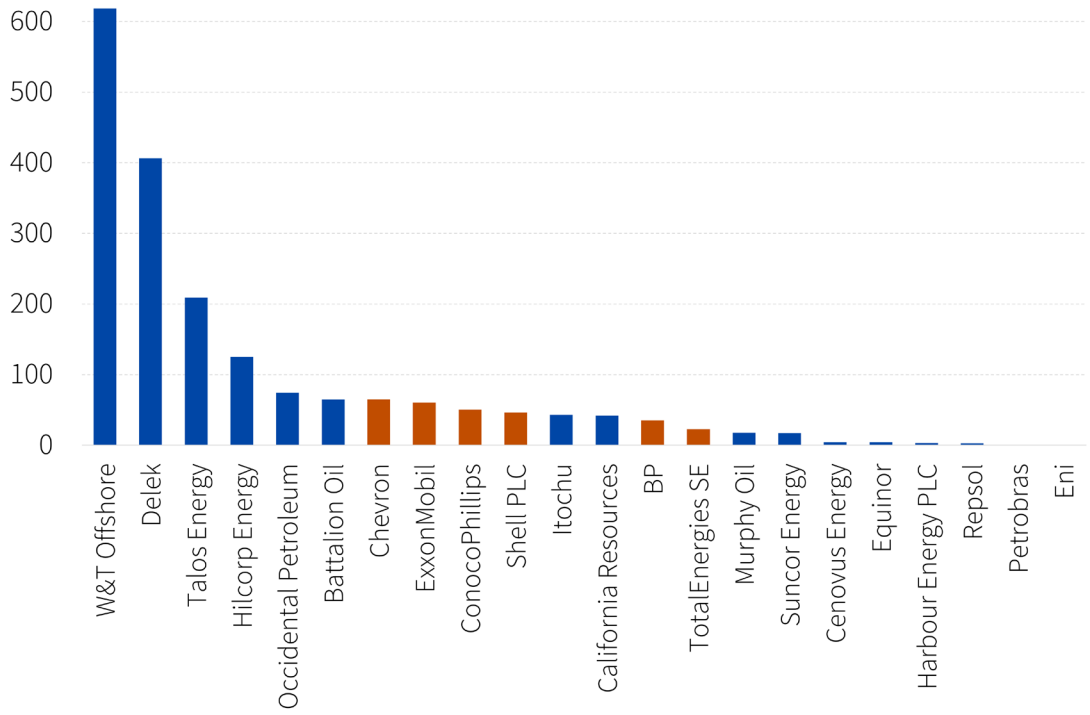

Figure 25. Number of environmental violations per BBOE produced globally
Source: Prepared by the authors based on an analysis of Good Jobs First's Violation Tracker data.

164 For the supermajors, the production data were taken from their annual reports and sustainability reports. We use global production values in our calculation because these reports do not break down the production by country. Please see the citations at the end of this piece for a full list of the supermajors' reports in the period 2017–2021. Production data for other companies were taken from IHS Markit, *Corporate Emissions Solutions* (proprietary).

165 Though our study focuses on transactions between 2017 and 2021, we used data from the full date range provided by Goods Jobs First (2000–2022) for a more complete understanding of a company's environmental performance. We also note that the database does not specify if the environmental violations are related to upstream or downstream assets.

Figure 26 shows the number of non-environmental violations in the UK and the US per BBOE produced globally by these companies. Similar to Figure 25, Figure 26 shows that while some buyers have worse non-environmental track records than the supermajors, others have better ones. In our sample, Delek, Capricorn, Itochu, Tailwind, and EnQuest performed the worst in terms of non-environmental violations, with the supermajors dispersed throughout. The seven supermajors averaged 16 non-environmental violations per BBOE, while the 27 non-supermajors averaged 49 non-environmental violations per BBOE.

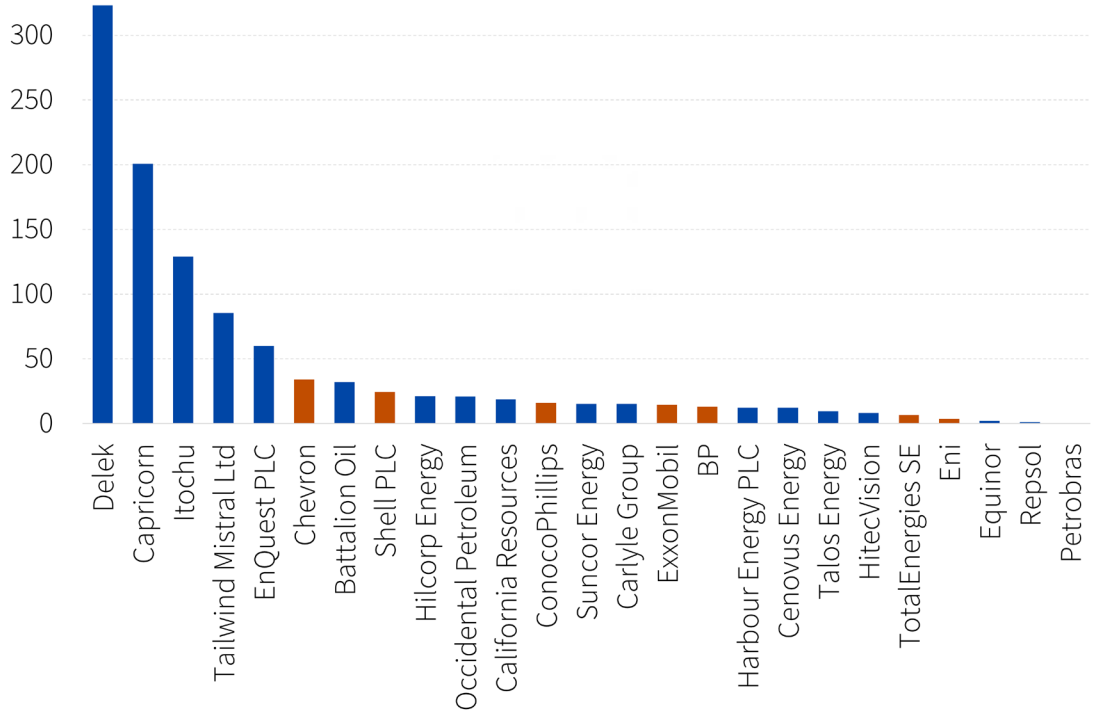

Figure 26. Number of non-environmental violations per BBOE produced globally
Source: Prepared by the authors based on an analysis of Good Jobs First's Violation Tracker data.

Section 3.4 hints at a general trend for assets to be sold to operators that are less scrupulous in their management of the assets, which might explain the trend discussed in Section 3.3 that points to a general increase in post-transaction emissions intensities.

4 Opportunities for Regulatory Reform

4.1 Transparency as a Goal of Regulatory Reform

Fossil fuel asset sales present two interrelated challenges to coordinated climate action. First, fossil fuel asset sales obscure the GHG emissions landscape. Under existing disclosure regimes (see Section 2), divestment of upstream assets can allow divesting companies to claim emissions reductions while actually shifting emissions "from the floodlit world of listed markets to shadier surroundings."[166] Second, as discussed in Sections 3.3 and 3.4, fossil fuel asset sales may result in higher global emissions, perhaps because these sales shift the highest-polluting assets "from owners that are committed to more responsible operation and decarbonization to owners that are not."[167]

The regulatory recommendations contained in this section focus on addressing the first problem: transparency and data access issues associated with fossil fuel asset sales. As discussed at length in this section, emissions reporting frameworks allow companies to conflate the apparent GHG emissions reductions from asset sales with direct reductions from efficiency improvements and asset retirements. This hinders the ability of investors and the public to push for actual emissions reductions. Given the gaps in the availability of company emissions data, more robust data on asset-specific emissions and the significance of fossil fuel asset sales are a necessary first step to supporting more significant policy actions, such as standards for economy-wide emissions disclosure and reduction or direct restraints on asset sales that degrade governance quality.[168] This focus on transparency is further warranted because, while this paper demonstrates that emissions from transferred assets may increase, economy-wide pressures on public companies to divest from polluting assets may have complex effects on global oil extraction and use.[169] Given the significant risks posed by this uncertainty, it is important for regulators, investors, researchers, and academics to understand where fossil fuel assets are going and how they are being operated by their ultimate owners.

166 The Economist, "Who Buys the Dirty Energy Assets Public Companies No Longer Want?" *The Economist*, February 12, 2022, https://www.economist.com/finance-and-economics/who-buys-the-dirty-energy-assets-public-companies-no-longer-want/21807594. This article describes the large-scale sale of fossil fuel assets from large oil companies with public disclosure requirements to private-equity firms, sovereign wealth funds, and state-owned enterprises.

167 The Glasgow Financial Alliance for Net Zero. *The Glasgow Financial Alliance for Net Zero: Our Progress and Plan Towards a Net-Zero Global Economy* (GFANZ, November 2021), 52, https://assets.bbhub.io/company/sites/63/2021/11/GFANZ-Progress-Report.pdf; see also Malek et al., *Transferred Emissions*, 16–24.

168 This is not to say that governments are poorly positioned to directly restrict sales of fossil fuel assets to companies with lower governance and reporting standards. Where a government holds title to mineral resources, either by default operation of law or as directly held property, restrictions might be implemented through concession or leasing regimes. Restrictions on both assignment and upper-tier sales are relatively common features of mineral leases, and governments could incorporate minimum governance standards limiting such sales in leasing and concession language. See, e.g., Blake A. Watson, "The Right to Limit or Prohibit Mineral Lease Transfers," Probate & Property (January/February 2020): 46, 48, which discusses the prevalence of anti-assignment provisions and the reasons why a landowner might wish to restrict lease assignments. For an overview of comparative mineral governance regimes, see Anna Elizabeth Bastida, *The Law and Governance of Mining and Minerals: A Global Perspective* (Oxford: Hart Publishing, 2020), 138–177.

169 See, e.g., G. Semieniuk et al., "Stranded fossil-fuel assets translate to major losses for investors in advanced economies," *Nature Climate Change* 12 (2022): 532–538, https://doi.org/10.1038/s41558-022-01356-y, which found that even in a "medium realignment" scenario, with significant sell-off behavior from oil investors, low-cost producers may see at least short-term windfall profits from their production.

Divestment's opacity itself presents two climate governance challenges. First, it allows companies to appear to reduce emissions through asset sales rather than through actions that substantively reduce global emissions. As the empirical analysis in this report highlights, it is difficult to monitor company-specific claims of emissions reductions without a clear picture of the asset-specific emissions reallocated by fossil fuel asset sales, and constructing meaningful emissions analysis from public disclosure requires significant labor.[170] The flexible nature of GHG emissions accounting frameworks and their often opaque application allow companies to claim success in reducing global emissions by selling high-emitting assets rather than by increasing operating efficiency or retiring assets. This is not hypothetical; some supermajors, like BP, have adopted divestment as an explicit emissions reduction strategy,[171] while others, like Shell, have articulated emissions reduction strategies that are (perhaps intentionally) ambiguous about their strategic emissions divestments.[172] Often, these assets are sold to companies subject to less stringent reporting requirements and less ambitious climate goals.[173] Second, fossil fuel asset sales to privately held companies or some state-owned enterprises reduce the availability of asset-specific emissions data that might otherwise be disclosed through reporting requirements imposed on publicly listed companies.[174] "In the aggregate, asset transfer from public to private markets is likely to make the oil and gas industry's climate impact even more opaque."[175] These two transparency challenges are discussed in the context of this report's proposed regulatory reforms.

4.2 Avenues for Regulatory Reform

This section discusses four specific avenues for regulatory reform that are categorized under three conceptual approaches designed to address the lack of transparency in fossil fuel asset sales. First, Section 4.2.1 proposes two targets for regulatory intervention arising from the implementation of scope 1, 2, and 3 reporting under the GHG Protocol: "base year recalculation" requirements (as outlined in Section 4.2.1.1) and "scope 3.1" emissions reporting (as defined in Section 4.2.1.2). Next, Section 4.2.2 highlights the EU's "country-by-country reporting" regime as a model for disaggregated project- and jurisdiction-specific emissions disclosures. Finally, Section 4.2.3 discusses reporting requirements focused on assets, as opposed to companies, and points to existing point-source GHG emission inventories in the EU, UK, and US as models for an asset-oriented disclosure regime.

170 See Section 3.1 discussing data collection issues.

171 See BP, *Performing while Transforming*, which credits a 2020 drop in scope 1 emissions to a large-scale divestment. See also Committee on Oversight and Reform, *Investigation of Fossil Fuel Industry Disinformation*, which highlights the role that emissions transfers play in supermajors' "climate plans," noting particularly that "one BP executive privately admitted that divesting fossil fuel assets is 'an important part of our strategy' even though 'these divestments may not directly lead to a reduction in absolute global emissions'" (3).

172 In particular, Shell's 2021 annual report outlines Shell's "target to reduce Scope 1 and 2 absolute emissions from assets and activities under our operational control (including divestments) by 50% by 2030 compared with 2016 levels on a net basis." See Shell, *Annual Report and Accounts 2021* (Shell, 2022), 89, https://reports.shell.com/annual-report/2021/. No additional context is provided for this statement, and it is unclear from the language Shell uses whether Shell includes divestment as a reduction in "absolute emissions," or if Shell incorporates emissions from divested assets in their "absolute emissions" calculation.

173 See Malek et al., *Transferred Emissions*, which finds that fossil fuel assets "are increasingly moving away from companies with environmental commitments" (7).

174 See Adams-Heard and Dottle, *What Happens When an Oil Giant Walks Away*, which discusses the challenges of tracking GHG emissions following a public-to-private transaction.

175 Malek et al., *Transferred Emissions*, 24.

While each of these avenues for regulatory reform is rooted in existing environmental disclosure practices, the recommendations vary in their complexity and ambition. Two represent tweaks to already-evolving emissions reporting frameworks that would clarify the emissions impact of upstream asset sales. The other two point to models for more comprehensive and potentially more effective reforms focused on tracking the underlying fossil fuel assets themselves through non-financial corporate disclosures or a new fossil fuel asset tracking regime.

4.2.1 Accounting for Sales in Emissions Reporting Structures

Lawmakers and regulators in the EU, UK, and US can increase transparency in fossil fuel asset sales through modifications to already-evolving emissions reporting frameworks. As discussed, the EU, UK, and US have implemented or are considering implementing reporting of corporate emissions modeled on the GHG Protocol's scopes 1, 2, and 3. In addition, the "double materiality" framework embedded in the EU's existing and proposed environmental reporting standards emphasizes the principle that companies should report environmental information that "is necessary for an understanding of the external impacts of the company."[176] In light of these evolving regulatory regimes, two structural features in the GHG Protocol can be leveraged to increase disclosures of fossil fuel asset sales: (1) base year emissions recalculation principles and (2) "scope 3.1" reporting of asset sales.

4.2.1.1 Base-Year Recalculation

First, strict application and implementation of the GHG Protocol's "base year" accounting principles may increase transparency around fossil fuel asset sales because the GHG Protocol does not entirely ignore the potential effect of asset sales on emissions reporting. While GHG Protocol–based frameworks focus on assessing the ongoing emissions associated with the day-to-day operations of reporting companies[177] and are not designed to track assets from one company to another, the GHG Protocol contains a mechanism to ensure that historical emissions reporting remains consistent over time. The GHG Protocol requires each reporting company to define and quantify a set inventory of emissions resulting from "chosen organizational and operational boundaries" that define that company's reporting universe.[178] Each company then establishes a "base year"—a year "for which verifiable emissions data [from the emissions inventory] are available"—and uses its base year as a reference point for future emissions reporting.[179] The emissions accounting principles underlying this structure explicitly consider asset divestments and set forth the following requirement:

176 European Commission. *Guidelines on Non-Financial Reporting*, 4, https://www.wlrk.com/docs/Double_Materiality.pdf. These guidelines explain the double materiality standard embedded in the NFRD.

177 See GHG Protocol Initiative, *The Greenhouse Gas Protocol*, which discusses the purpose and business value of a GHG Protocol emissions inventory.

178 While this discretion weakens the reliability and comparability of reported emissions, this problem relates to corporate GHG emission accounting in general. GHG Protocol Initiative, *The Greenhouse Gas Protocol*, 8, 99 for a definition of "inventory boundaries" and a discussion of the importance of clear inventory reporting. For broader critiques of the problems resulting from companies' subjective choice of organizational and operational boundaries under the GHG Protocol and other greenhouse gas accounting methodologies, see https://ccsi.columbia.edu/content/event-highlights-carbon-border-adjustments-eu-us-and-beyond; https://ccsi.columbia.edu/sites/default/files/content/docs/publications/ccsi-comet-conflicts-ghg-accounting-steel-industry.pdf; and https://ccsi.columbia.edu/sites/default/files/content/docs/publications/ccsi-oil-supermajors-carbon-footprint-refining-sales-climate-change.pdf.

179 GHG Protocol Initiative, *The Greenhouse Gas Protocol*, 35.

> Companies are required to retroactively recalculate base year emissions when significant structural changes occur in the reporting organization, such as mergers, acquisitions, or divestments. Structural changes trigger recalculation because they merely transfer emissions from one company to another without any change in emissions released to the atmosphere (e.g., a purchase or sale only transfers existing GHG emissions from one company's inventory to another's).[180]

The GHG Protocol further requires companies to develop an explicit "base year emissions recalculation policy, and clearly articulate the basis and context for any recalculations."[181] British emission disclosure regulations contain similar base year recalculation requirements triggered by significant divestments.[182] A recent report by the Environmental Defense Fund and Ceres notes that base year recalculation, if done transparently, should disclose "divested and acquired emissions" and allow stakeholders to "gain[] an understanding of emissions reduction efforts."[183]

A company applying this recalculation standard and appropriately reporting its recalculations, as required by the GHG Protocol, would be unable to achieve material emissions reductions simply by offloading emissions from sold assets. Instead, any significant divestment or set of divestments would require the company to both recalculate its base year emissions (by subtracting from them the emissions attributable to the sold assets) and disclose the full context for its recalculation.

However, there are two distinct limits to base year recalculation as a transparency tool. First, even when a company appropriately applies base year recalculation, the sale of carbon-intensive assets with harder-to-abate emissions could artificially inflate the apparent impact of the company's efforts in achieving global emissions reductions. The mechanism behind this "efficiency inflation" is best demonstrated through an example (see Table 9). Imagine a company, Asset Dump Co. (ADC), that owns two assets, Asset A and Asset B, each of which produced the same annual emissions in the company's base year.[184] Through technological or operational adaptation, ADC reduces Asset B's annual emissions by 50% over two years. However, ADC does not reduce the emissions attributable to Asset A; instead, ADC sells it at the beginning of Year 2.

180 GHG Protocol, *Corporate Value Chain (Scope 3)*.

181 GHG Protocol Initiative, *The Greenhouse Gas Protocol*, 35.

182 See HM Government, *Environmental Reporting Guidelines*, 17–19.

183 Andrew Baxter et al., *Tackling Transferred Emissions: Climate Principles for Oil and Gas Mergers and Acquisitions* (Environmental Defense Fund and Ceres, January 23, 2023), 19, https://business.edf.org/files/Climate-Principles-Asset-Transfer.pdf. Laetitia Pirson, Dominic Watson, Sudhanshu Matur, An Investor Guide to the Climate Principles for Oil and Gas Mergers and Acquisitions (Environmental Defense Fund and Ceres, March 2023), https://business.edf.org/files/Investor-Guide-Climate-Principles-Oil-and-Gas-Asset-Transfer.pdf.

184 For simplicity, this example elides the difference between scope 1, 2, and 3 emissions.

Table 9. Calculating emissions after a sale

ASSET DUMP CO. (ADC)	*Asset A*	*Asset B*	*Total Corporate Emissions (FT)*	*Corporate Emissions as % of Base Year Emissions*	*Corporate Cumulative Emissions Reductions Relative to Base Year Emissions*
Base Year (BY)					
Scenario 1: No asset transfers	4 Mt CO_2	4 Mt CO	8 Mt CO_2 ($A^{BY} + B^{BY}$)	**100%**	**0%**
Scenario 2: Y2 Transfer	4 Mt CO_2	4 Mt CO_2	8 Mt CO_2 ($A^{BY} + B^{BY}$)	**100%**	**0%**
Scenario 3: Y2 Transfer + Base Year Recalculation	[N/A]	4 Mt CO_2	4 Mt CO_2 (B^{BY})	**100%**	**0%**
Year 1 (Y1)					
Scenario 1: No asset transfers	4 Mt CO_2	3 Mt CO	7 Mt CO_2 ($A^{Y1} + B^{Y1}$)	**87.5%** (FT^{Y1}/FT^{BY})	**12.5%**
Scenario 2: Y2 Transfer	4 Mt CO_2	3 Mt CO_2	7 Mt CO_2 ($A^{Y1} + B^{Y1}$)	**87.5%** (FT^{Y1}/FT^{BY})	**12.5%**
Scenario 3: Y2 Transfer + Base Year Recalculation	[N/A]	3 Mt CO_2	3 Mt CO_2 (B^{Y1})	**75%** (FT^{Y1}/FT^{BY})	**25%**
Year 2 (Y2)					
Scenario 1: No asset transfers	4 Mt CO_2	2 Mt CO_2	6 Mt CO_2 ($A^{Y2} + B^{Y2}$)	**75%** (FT^{Y2}/FT^{BY})	**25%**
Scenario 2: Y2 Transfer	[N/A]	2 Mt CO_2	2 Mt CO_2 (B^{Y2})	**25%** (FT^{Y2}/FT^{BY})	**75%**
Scenario 3: Y2 Transfer + Base Year Recalculation	[N/A]	2 Mt CO_2	2 Mt CO_2 (B^{Y2})	**50%** (FT^{Y2}/FT^{BY})	**50%**

In this hypothetical, the total emissions attributable to the company's remaining assets and any sold asset would be reduced from 8 Mt CO_2 in the base year to 6 Mt CO_2 by the end of Year 2—an actual 25% reduction. In Scenario 1, without divestment, ADC would claim corporate emissions reductions of 25% by Year 2. In Scenario 2, with divestment but without base year recalculation, ADC would appear to have reduced its emissions from 8 Mt CO_2 in the base year to 2 Mt CO_2 by the end of Year 2—a 75% reduction, well beyond the 25% actually reduced—simply from selling the carbon-intensive Asset A. To avoid this overestimation of emissions reductions, the GHG Protocol requires companies to recalculate their base year emissions. However, even in Scenario 3, in which ADC adheres to the GHG Protocol and recalculates its base year emissions, ADC would appear to have reduced its emissions by 50%. Even though base year recalculation avoids the overestimation of emissions reductions resulting from an asset sale in the absence of recalculation (Scenario 2: 75% reductions), it still allows the company to claim emissions reductions that are significantly greater (Scenario 3: 50% reductions) than the total emissions reductions actually achieved considering all the assets originally owned (Scenario 1: 25% reductions).

A simpler issue with base year recalculation is that recalculation is only triggered by "significant" changes. Companies are only obligated to recalculate their base year emissions following individual or cumulative changes that exceed a "significance threshold"

established by the reporting company.[185] The GHG Protocol does not suggest a significance threshold, and neither the EU nor the UK have implemented one. Therefore many fossil fuel asset sales may go unreported under these regimes for some time until aggregate sales require base year recalculation. This issue could be addressed by setting appropriately low significance thresholds that require recalculation based on a change's impact on reported scope 1, 2, or 3 emissions.

4.2.1.2 Scope 3.1 Reporting

The narrow windows for regulatory arbitrage and nonreporting of sales discussed above could be addressed by a second regulatory proposal, which requires a slight modification of the existing GHG Protocol: "scope 3.1 reporting."

As previously discussed, reporting under the GHG Protocols is designed to "allow for meaningful comparisons of [a company's GHG] emissions over time,"[186] and so disclosures are focused on the emissions resulting from the ongoing activities of each reporting company. Scope 3 disclosures, in particular, encompass "indirect GHG emissions" that "are a consequence of the activities of the company, but occur from sources not owned or controlled by the company," like the "extraction and production of purchased materials" and the "use of sold products and services."[187] While a broad interpretation of the GHG Protocol could read asset sales as "activities of the company," and therefore consider emissions attributable to the company's sold assets as "indirect GHG emissions [that] are a consequence of the activities of the company," companies and regulators may not agree with this reading. The examples of scope 3 emissions provided throughout the GHG Protocol focus on third-party emissions related to the regular and ongoing operations of the reporting company—not emissions resulting from the third-party operation of divested assets no longer in the reporting company's value chain. Additionally, the GHG Protocol's guidance on measuring scope 3 emissions lists highly detailed categories of scope 3 activities; the divestment of operating assets or lines of business is not included.[188] Instead, the guidelines address divestment solely through benchmark recalculation, as discussed in Section 4.2.1.1.

However, the GHG Protocol is not, in and of itself, binding law, and regulators in the EU, UK, and US could expand scope 3 reporting to encompass life-cycle scope 1, 2, and 3 emissions attributable to sold fossil fuel assets. This expansion would treat the scope 1, 2, and 3 emissions of a transferred asset as scope 3 emissions of the seller company—that is, emissions that "are a consequence of the activities of the company, but occur from sources not owned or controlled by the company."[189] In short, this revision would expand "activities" to include fossil fuel asset sales and treat sold assets identically to sold products or services.[190]

185 GHG Protocol Initiative, *The Greenhouse Gas Protocol*, 35; HM Government, *Environmental Reporting Guidelines*, 18.

186 GHG Protocol Initiative, *The Greenhouse Gas Protocol*, 7.

187 GHG Protocol Initiative, *The Greenhouse Gas Protocol*, 25.

188 GHG Protocol Initiative, *Corporate Value Chain (Scope 3)*, 33–56.

189 GHG Protocol Initiative, *The Greenhouse Gas Protocol*, 25.

190 If an asset were transferred to a company that also reports its emissions under the GHG Protocol, this revision may result in some double counting, as that company would also report scope 1, 2, and 3 emissions from the acquired assets. However, double counting is inherent to the GHG Protocol, which is designed to evaluate a company's own emissions over time rather than capture global emissions. Scopes 2 and 3, by their nature as third-party emissions metrics, double count the scope 1 emissions of other companies.

Such an expansion could be implemented through a rule as simple as the following paragraph:

> In each reporting period, scope 3 emissions must include the reasonably anticipated lifetime emissions resulting from the operation of capital assets and lines of business that are sold during that reporting period [, *excluding emissions from sold assets that have been excluded from the reporting company's emissions inventory following a base year emissions recalculation*]. For the purposes of this requirement, "lifetime emissions" consist of the aggregated scope 1, 2, and 3 emissions over the working life of any sold capital assets.

This report refers to emissions captured by this definition as "scope 3.1 emissions" because they represent a slight modification to the GHG Protocol's scope 3 emissions but are not categorically distinct from them. The bracketed and italicized language in this proposal represents an optional clause that, if included, would align this reporting with the "base year recalculation" principles discussed in Section 4.2.1.1.[191]

The scope 3.1 implementation language proposed above incorporates two important reporting principles contained elsewhere in the GHG Protocol. First, the GHG Protocol contains an anti-amortization principle, which is embodied in the rule by requiring companies to report the *lifetime* emissions of a divested asset in the year in which it is sold. As a general matter, companies reporting scope 1, 2, and 3 emissions "should not depreciate, discount, or amortize [reported] emissions . . . over time."[192] For example, companies purchasing long-lasting capital goods "should account for the total cradle-to-gate emissions of purchased capital goods in the year of acquisition."[193] As applied to scope 3.1 emissions, this anti-amortization principle would require a buying company to attribute the *total anticipated lifetime emissions* attributable to sold fossil fuel assets in the reporting period in which those assets are sold. Second, the accounting and reporting principles set forth in the GHG Protocol require reporting companies to attempt to track their *actual* emissions rather than simply reporting industry averages or rough estimates.[194] This best-efforts requirement is particularly emphasized with regard to reporting third-party emissions, although the GHG Protocol acknowledges that some estimation may be necessary.[195] As applied to scope 3.1 emissions, these principles would require a selling company to gather data about a seller's proposed use and governance of the assets and report scope 3.1 emissions consistent with that use.

The effect of this reporting change can be demonstrated using the same example used in Section 4.2.1.1. In this example, as previously, from Year 0[196] to Year 2, ADC reduces emissions from Asset B from 4 to 2 Mt CO_2/year, while Asset A steadily produces 4 Mt CO_2/year and is sold in Year 2. In this example, Asset A and Asset B are treated as though they have a maximum 5-year operating life, and emissions are reported without any base year

191 While aligning scope 3.1 reporting with base year recalculation would reduce the total scope 3.1 emissions reported by a transferring company, it would also allow investors to more accurately assess year-over-year changes in emissions from that company's continued operations.

192 GHG Protocol Initiative, *Corporate Value Chain (Scope 3)*, 39.

193 GHG Protocol Initiative, *Corporate Value Chain (Scope 3)*, 39.

194 GHG Protocol Initiative, *The Greenhouse Gas Protocol*, 8–9.

195 GHG Protocol Initiative, *The Greenhouse Gas Protocol*, 31.

196 This section uses "Year 0" instead of "Base Year" because this example quantifies emissions in absolute terms, not relative percentages.

recalculation. This example also disaggregates emissions for each asset and for scopes 1, 2, and 3 to better show the effect of Asset A's divestment on ADC's reported emissions.

Scenario 1 shows the status quo without divestment (see Figure 27). Annual corporate emissions decrease from 8 Mt CO_2 in Year 0 to 6 Mt CO_2 in Year 2 (a 25% reduction over two years), solely as a result of the improvements in Asset B, and remain constant at 6 Mt CO_2/year afterwards.

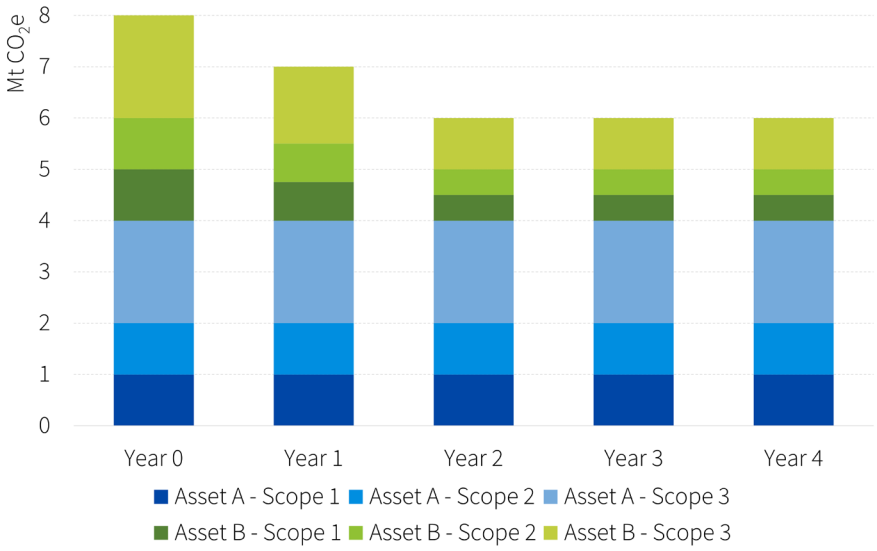

Figure 27. Scenario 1: No divestment

Source: Prepared by the authors.

In Scenario 2, ADC divests from Asset A without base year recalculation or scope 3.1 reporting (see Figure 28). ADC's total emissions appear to be reduced from 8 Mt CO_2 in Year 0 to 2 Mt CO_2 in Year 2 (a 75% reduction). However, only 25% are actual reductions from Asset B's net emissions reductions; the remaining decrease of 50% results from the sale of Asset A.

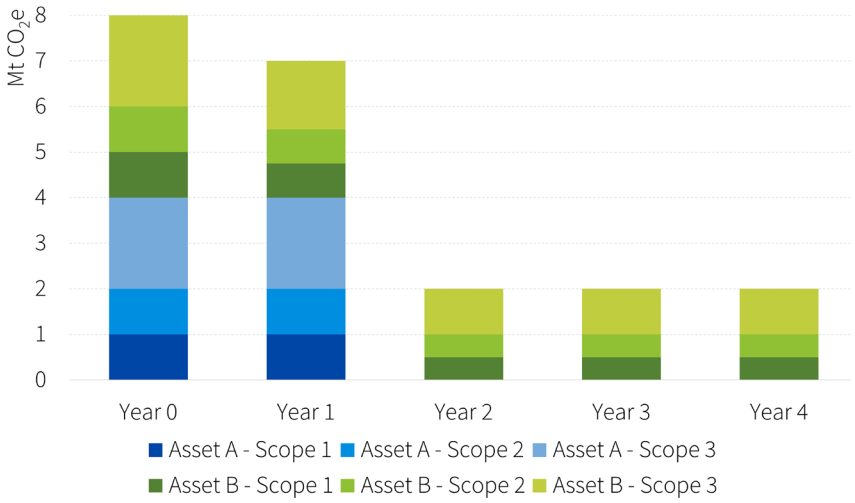

Figure 28. Scenario 2: Divestment, no scope 3.1 reporting

Source: Prepared by the authors.

In Scenario 3, ADC sells Asset A at the beginning of Year 2 to a company with no emissions reduction plan that continues to operate Asset A for the remainder of its lifetime (see Figure 29). Under the scope 3.1 framework, ADC reports scope 3 emissions of 12 Mt CO_2 within its Year 2, corresponding to the remaining life-cycle emissions (scope 1, 2, and 3) of the sold Asset A (4 Mt CO_2/year for each of Year 2, Year 3, and Year 4). As a result, ADC's firm-wide aggregate emissions *increase* from 8 Mt CO_2 in Year 0 to 14 Mt CO_2 in Year 2 (a 75% increase) but *decrease* significantly to 2 Mt CO_2/year as of Year 3, when the company's emissions reporting no longer reflects the sale.

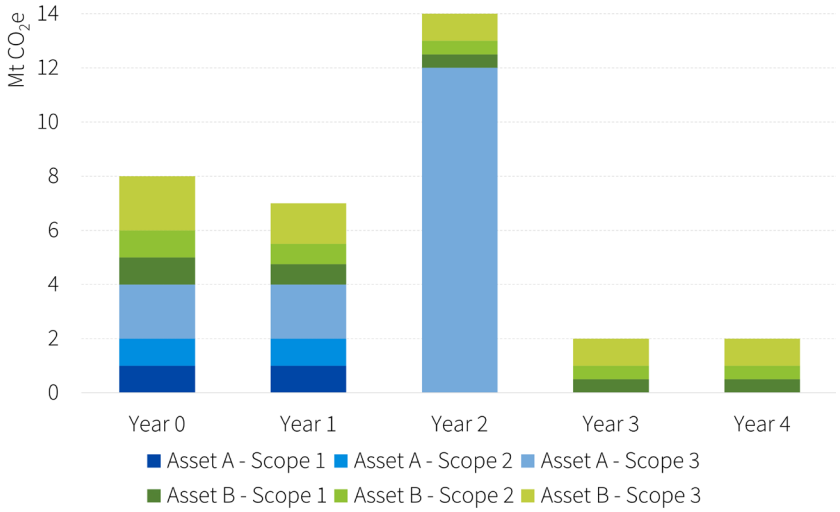

Figure 29. Scenario 3: Divestment with scope 3.1 reporting (sale with no emissions reduction plan for Asset A)

Source: Prepared by the authors.

In Scenario 4, ADC sells Asset A at the beginning of Year 2 to a company with a plan to immediately reduce Asset A's emissions by 50% (see Figure 30). ADC reports scope 3 emissions of 6 Mt CO_2 within its Year 2, corresponding to the remaining life-cycle emissions (scope 1, 2, and 3) of the sold Asset A (2 Mt CO_2/year for each of Year 2, Year 3, and Year 4). While ADC still reports an increase in Year 2 emissions as compared to Scenario 2, its reported emissions are substantially lower than in Scenario 3.

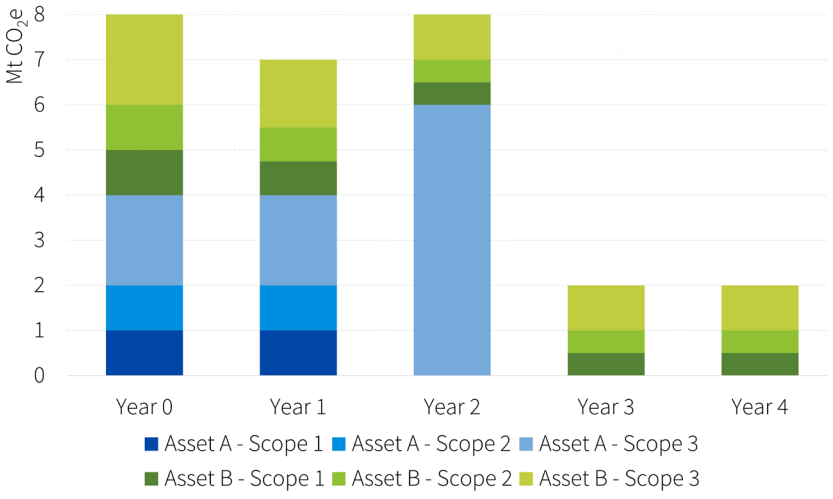

Figure 30. Scenario 4: Divestment with scope 3.1 reporting (sale with 50% emissions reduction plan for Asset A)

Source: Prepared by the authors.

Tracking scope 3.1 emissions would plug several of the regulatory gaps identified in this report. First, requiring companies to realize the anticipated emissions of their sold assets as scope 3.1 emissions would decrease corporate incentives to reduce reported emissions by selling assets. Fossil fuel asset sales would not simply reduce reported emissions—in the year of sale, the seller's reported emissions would generally increase. Second, scope 3.1 would increase transparency around upstream fossil fuel asset sales, both because such sales would generate significant changes to reported scope 3 emissions and because reporting companies would need to justify the estimated future emissions from the asset. Finally, scope 3.1 would require companies to obtain data from the buyers of their assets to estimate and report the anticipated scope 3.1 emissions attributable to their sold assets.

Scope 3.1 reporting would represent a relatively simple—if politically and legally complex—adjustment to scope 3 accounting practices, designed to work in concert with other regulatory efforts and is unlikely to result in major emissions reductions without external pressure to reduce net emissions through efficiency gains and retirement of assets. Without such pressure, either from regulators or investors, companies that have set emissions targets for scopes 1 and 2 but have not set scope 3 targets may still be incentivized to sell upstream assets. While a sale of upstream fossil fuel assets would massively increase a reporting company's scope 3.1 emissions in the year of sale, it would still reduce that company's scope 1 and 2 emissions. This paper recommends that regulators adopt scope 3.1 because it more accurately reflects emissions that result from corporate asset transfers, not because it is a silver bullet.

Still, a comparison between Scenario 3 and Scenario 4 shows the potential impact of scope 3.1 reporting—in a scope 3.1 regime, the identity of the purchaser matters a great deal. In a regulatory or market environment that incentivizes scope 3 reductions, scope 3.1 reporting would incentivize asset transfers to companies with clear emissions reduction strategies and high climate governance standards.

4.2.2 Requiring Asset-Level Direct Disclosure of Fossil Fuel Asset Emissions

Acknowledging the limitations of corporate footprinting and company-level GHG emissions disclosures, regulators could also ensure transparency in fossil fuel asset sales by requiring companies to disclose their disaggregated emissions on project-by-project and jurisdiction-by-jurisdiction bases. Asset-level disclosure requirements are not uncommon, and a recent report by the Environmental Defense Fund and Ceres sets forth the principle that companies should publicly disclose asset-level emissions in connection with asset sales.[197] A more comprehensive model for an industry-wide, asset-level disclosure regime is the EU's "country-by-country reporting" requirements. EU directives require "issuers whose securities are admitted to trading on a regulated market and who have activities in the extractive or logging of primary forest industries" to annually disclose "payments made to governments in the countries in which they operate."[198] These disclosures are disaggregated for each of the jurisdictions where the issuer operates and (along with other

197 Baxter et al., *Tackling Transferred Emissions*, 15.

198 Directive 2013/50/EU, Recital 7.

similar disclosures) are referred to as "country-by-country reporting."[199] The core purpose of the EU's country-by-country disclosure regime is to allow "civil society and investors" to monitor government corruption in resource-rich countries.[200] This reporting produces detailed and granular data; for example, TotalEnergies incorporates this reporting in its publicly disclosed annual "Universal Registration Document" and provides a detailed country-by-country and project-by-project accounting of its payments.[201]

Direct project-specific reporting requirements could provide granular data about operational efficiencies and emissions and would allow governments and the public to closely monitor fossil fuel asset sales by regulated companies. However, a disaggregated emissions reporting requirement that does not capture all companies could still be the target of regulatory arbitrage—public pressure on reporting companies to reduce emissions could result in widespread sales outside the reporting structure. It might also be difficult to track sales of non-producing assets, like idled oil wells, which might produce few reportable emissions in any given year. The potential for this monitoring gap can be seen in the EU's country-by-country reporting regime. For example, this paper previously discussed TotalEnergies' 2021 sale of non-producing Petrocedeño assets to a Venezuelan state-owned enterprise. Although TotalEnergies is subject to the EU's country-by-country reporting regime, the non-producing Venezuelan assets did not generate reportable payments at the time they were sold.[202] As a result, TotalEnergies' 2021 sale of these assets did not affect the company's disclosures.[203] In an emissions-oriented disclosure regime without forward-looking reporting, a scenario like the Petrocedeño asset sale could hide significant sales of non-operating assets that nevertheless have the potential for future GHG emissions.

These monitoring gaps could be addressed by integrating scope 3.1 reporting (see Section 4.2.1.2) into any disaggregated reporting regime. As previously discussed, scope 3.1 reporting is a forward-looking regime that requires a company to estimate and report the lifetime—not just annual—emissions from a transferred asset. As lifetime emissions are substantially affected by the anticipated future use of an asset, a disaggregated scope 3.1 regime would require reporting companies that sell assets to disclose details like the buyers' identities, post-transfer emissions reduction plans, and projections of post-transfer emissions over the asset's lifetime.

4.2.3 Including Upstream Fossil Fuel Assets in Point-Source GHG Inventories

Finally, fossil fuel asset sales may be best tracked outside of the realm of corporate disclosures. In recent years, many climate activists have used securities law as a lever to affect corporate GHG emissions. Securities law provides strict disclosure requirements, mechanisms for both public and private litigation around the accuracy of those disclosures,

199 For a description of country-by-country reporting, see European Commission, *Public Country-by-Country Reporting: Overview* (EC, 2022), https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/public-country-country-reporting_en.

200 Directive 2013/50/EU, Recital 7.

201 See TotalEnergies, *Universal Registration Document 2021*, 541–569.

202 TotalEnergies' annual reporting for the 2020 fiscal year includes no payments to Venezuela, possibly due to the impact of various international economic sanctions. See TotalEnergies, *Universal Registration Document Including the Annual Financial report 2020* (2021), 30, 131, https://totalenergies.com/system/files/documents/2021-03/2020-universal-registration-document.pdf, which discusses the impact of sanctions on TotalEnergies' Venezuelan operations; *see also* TotalEnergies, *Universal Registration Document 2020*, 445–463 about disclosing 2020 payments to governments.

203 TotalEnergies, *Universal Registration Document 2021*, 541–569.

and opportunities for civil society members to pressure polluting companies in lieu of direct government action.[204] However, regulators and civil society members may also seek to monitor fossil fuel assets through more direct GHG-monitoring regimes.

The simplest way to track upstream fossil fuel assets, and the emissions attributable to them, may well be to target regulation towards the assets rather than the owners. The EU, UK, and US all maintain centralized databases of certain significant GHG emission point sources, along with databases of the beneficial owners of these sources. The EU and British databases are integrated into the respective jurisdictions' emissions trading systems.[205] While the US does not have a centralized national GHG market, its Environmental Protection Agency tracks the beneficial ownership of both point-source GHG emitters and certain non-emitting suppliers of GHG sources, like midstream oil companies.[206] These databases could serve as a model for national or regional GHG reservoir inventories.

Tracking proven fossil fuel reservoirs alongside emissions offers some clear benefits. First, comprehensive reporting regimes focused on immobile physical assets like upstream fossil fuel facilities may be significantly less subject to manipulation and legal arbitrage than reporting regimes rooted in securities law or corporate governance. Next, integrating reservoirs of potential GHG sources into GHG inventories could make it easier for jurisdictions to set and monitor national carbon budgets.[207] Recognizing the necessity of reservoir tracking, in 2022 the Carbon Tracker Initiative launched the Global Registry of Fossil Fuels,[208] which "brings together thousands of government and corporate data sources into one place in a fully open source manner, from the global right down to the individual project level."[209] However, the public's ability to track upstream assets is limited by significant data gaps; as the Global Registry of Fossil Fuels notes, "information on reserves is typically held by private companies, and greenhouse gas emissions associated with global reserves vary widely based on a range of different methodologies."[210] A government-run monitoring regime would give policymakers and civil society members clear and consistent data about upstream GHG assets.

However, while a government-run reservoir ownership database may allow more effective tracking of fossil fuel assets, reservoir tracking is a complement to—and not a substitute for—corporate emissions tracking. Used alone, estimates that track resources, not uses, could be prone to inaccuracies in circumstances where different end-users could produce significantly different emissions profiles—for example, petroleum used for petrochemicals may have a

204 See Nina Hart, *Legal Tools for Climate Adaptation Advocacy: Securities Law* (Sabin Center for Climate Change Law, Columbia Law School, May 2015) for an overview of the techniques that civil society actors can use to leverage securities laws against polluting companies.

205 For an overview of the EU's Emissions Trading System, see Mirabelle Muûls et al., *Evaluating the EU Emissions Trading System: Take It or Leave It? An Assessment of the Data After Ten Years*, Briefing Paper No. 21 (Grantham Institute, May 2016). Information about the UK's Emissions Trading System, which "replaced the UK's participation in the EU ETS on 1 January 2021," following the exit of the UK from the EU, may be found in Department for Business, Energy & Industrial Strategy. *Participating in the UK ETS*, (HM Government, October 18, 2022), https://www.gov.uk/government/publications/participating-in-the-uk-ets/participating-in-the-uk-ets.

206 See 40 C.F.R. § 98.1; 40 C.F.R. § 98.2 Subpt. A, Tbl. A-5; 40 C.F.R. § 98.3(11).

207 See Carbon Tracker Initiative, "Carbon Budgets: Where Are We Now?" *Carbon Tracker Initiative*, May 11, 2020, https://carbontracker.org/carbon-budgets-where-are-we-now/.

208 Carbon Tracker Initiative, "Finally We Have a Global Registry of Fossil Fuels," press release, September 19, 2022, https://carbontracker.org/finally-we-have-a-global-registry-of-fossil-fuels/.

209 *About Us*, Global Registry of Fossil Fuels, https://fossilfuelregistry.org/about.

210 *About Us*, Global Registry of Fossil Fuels, https://fossilfuelregistry.org/about.

significantly different emissions profile than petroleum burned for energy.[211] Centralized monitoring regimes would likely also lack the private-sector enforcement mechanisms that make securities law disclosure requirements attractive.[212] In particular, under a centralized monitoring regime, misstatements would likely be subject to statutory penalties rather than the more flexible settlements that can result from private securities litigation.[213]

211 See Rene Cho, "More Plastic is On the Way: What it Means for Climate Change," *Columbia Climate School*, February 20, 2020, https://news.climate.columbia.edu/2020/02/20/plastic-production-climate-change/, which discusses emissions associated with the life cycle of plastics.

212 See Robert K. Cowan, "Time for Plan(et) b? Why Securities Litigation Is a Misguided Attempt at Regulating Climate Change," *Georgetown Environmental Law Review* 333 (2021): 355–62, 33, which outlines some of the "desirable characteristics" of securities laws that make securities litigation an appealing avenue for climate action.

213 Hart, *Legal Tools for Climate*, 9.

5 Conclusion

Increased investor and regulatory pressure around climate change and increased corporate attention to GHG emissions are welcome trends. In any scenario compatible with a livable future, corporate emissions reduction plans are an essential part of an orderly transition away from fossil fuel use. However, in response to these pressures, some oil supermajors have taken the shortcut of reducing their corporate emissions by selling, not decommissioning, polluting assets.

The problem of emissions transfers is as old as emissions accounting itself.[214] Although regulators around the world have taken enormous steps towards increasing transparency around corporate emissions, our legal analysis indicates that fossil fuel asset transfers still represent a regulatory blind spot—one that the supermajors can take active advantage of. In three major markets—the EU, UK, and US—existing corporate disclosure requirements are insufficient to track fossil fuel asset sales by oil supermajors.

This paper demonstrates the significance and impact of the gaps in corporate disclosure frameworks and practices regarding emissions attributable to upstream oil assets sold by the oil supermajors. Over the five-year period in our dataset, the supermajors sold upstream assets with carbon footprints amounting to a significant percentage of their corporate emissions. This paper demonstrates that some of these asset sales did not merely shift but generally increased GHG emissions attributable to upstream fossil fuel assets over the post-sale period of study. On average, transferred assets are operated less efficiently following their sale, possibly leading to increased GHG emissions attributable to those assets, not only after the sales of the assets but also over their lifetime. In addition, this paper shows that upstream fossil fuel asset transfers by the supermajors may degrade asset governance quality in other ways. When the supermajors sell fossil fuel assets, these assets may move to companies with worse track records in environmental and other matters.

These conclusions call for further research into fossil fuel asset sales and their impacts on GHG emissions that lie beyond the scope of this paper. These questions center around the motives, mechanisms, and impacts affecting post-transfer emissions. Possible areas for future exploration include (1) the impact of fossil fuel asset sales on the planned lifespan of the sold assets and on the life-cycle emissions attributable to them; (2) the operational drivers behind post-sale changes to emissions intensities; and (3) the role that asset retirement obligations play in motivating the sale of upstream fossil fuel assets. As we approach 2030—a crucial threshold for global emissions as a whole and corporate emissions in particular—we hypothesize that asset sales will become more frequent, particularly by highly scrutinized companies. Conducting this analysis while expanding the scope of study in terms of the years analyzed and in terms of companies and assets would shed more light on this phenomenon.

214 See GHG Protocol Initiative, *Corporate Value Chain (Scope 3)*, 104.

The findings of this paper emphasize the need for regulatory reform. Regulators in major markets like the EU, UK, and US are working to increase transparency around corporate emissions as part of broader global efforts to reduce and regulate emissions. The proposed reforms set out in this paper could shed light on fossil fuel asset sales and reduce incentives for oil companies to claim emissions reductions based on asset sales that do not necessarily lead to actual emissions reductions. Emissions transparency is not an end in itself, and emissions accounting alone cannot halt climate change. Instead, transparency, subject to continual improvement, is a necessary tool for the goal of limiting global warming to 1.5°C above pre-industrial levels. By mandating adjustments to corporate GHG accounting practices, or, preferably, tracking asset- and jurisdiction-specific emissions and including upstream fossil fuel assets in existing GHG inventories, policymakers and regulators can address known limitations of traditional corporate GHG footprinting approaches, close the gaps in corporate GHG emissions disclosures frameworks and practices, and create incentives for companies to redirect efforts towards real global emissions reductions, including through asset retirement.

Appendix. Data Sources

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