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Is the Oil & Gas industry ready for climate challenge?

Balancing core operations with energy transition initiatives

Jean-Baptiste Hecquet
Managing Director, Paris
+33 6 70 59 28 01
jean-baptiste.hecquet@sia-partners.com

Climate Analysis Center | CONSULTING FOR GOOD

Executive summary

Given the urgent global need for energy transition and climate change mitigation, the Oil & Gas industry is under increased scrutiny. This study delves into the **investment strategies of eight major companies** — BP, Chevron, Equinor, ExxonMobil, Saudi Aramco, Shell, Suncor, and TotalEnergies — **navigating the evolving energy landscape until 2050**.

Following a revenue decline during the COVID-19 pandemic, leading Oil & Gas firms rebounded with record profits, unveiling significant investment prospects in both primary activities and renewable energies.

By 2025, core business investments are set to rise, but their proportion of total investment is expected to decline in favor of low-carbon solutions, with **transition CAPEX poised to double compared to 2023**. Notably, a **segmentation emerges**:

- "**Carbon Efficiency Companies**" (Chevron, ExxonMobil, Saudi Aramco, and Suncor) **prioritize core business investments** while gradually exploring low-carbon solutions,
- "**Energy Transition Companies**" (BP, Equinor, Shell, and TotalEnergies) plan to **allocate nearly half of their investments to energy transition initiatives**, influenced by stringent European pressures. This shift entails a move towards sustainable ventures, with a strong focus on achieving ambitious targets for renewable energy production, notably in wind and solar sectors.

By 2050, emerging trends manifest with distinct groups engaging in contrasting activities:

- "**Carbon Efficiency Companies**" maintain their traditional economic model while prioritizing decarbonization through initiatives such as CCUS. They aim for **30% of revenue to come from renewable energy sources by 2050**.
- "**Energy Transition Companies**" adapt to meet rising demand for low-carbon electricity. They gradually reduce investments in Oil & Gas products while increasing investments in renewable energy sources. They target **75% of revenues to come from renewable energy sources by 2050.**

Foreword

Objectives of the study

Amid the urgent global need for **an energy transition and climate change mitigation**, the Oil & Gas industry faces critical examination.

This study investigates **companies' investment strategies amidst the evolving energy landscape until 2050**, aiming to determine whether firms adhere to traditional approaches, pivot core activities, or transition towards sustainable models.

Introduction
Methodology of the study

To assess the potential impacts of companies' investment strategies on achieving a net-zero trajectory in the Oil & Gas industry, we concentrate on eight companies and utilize a systematic three-step approach.

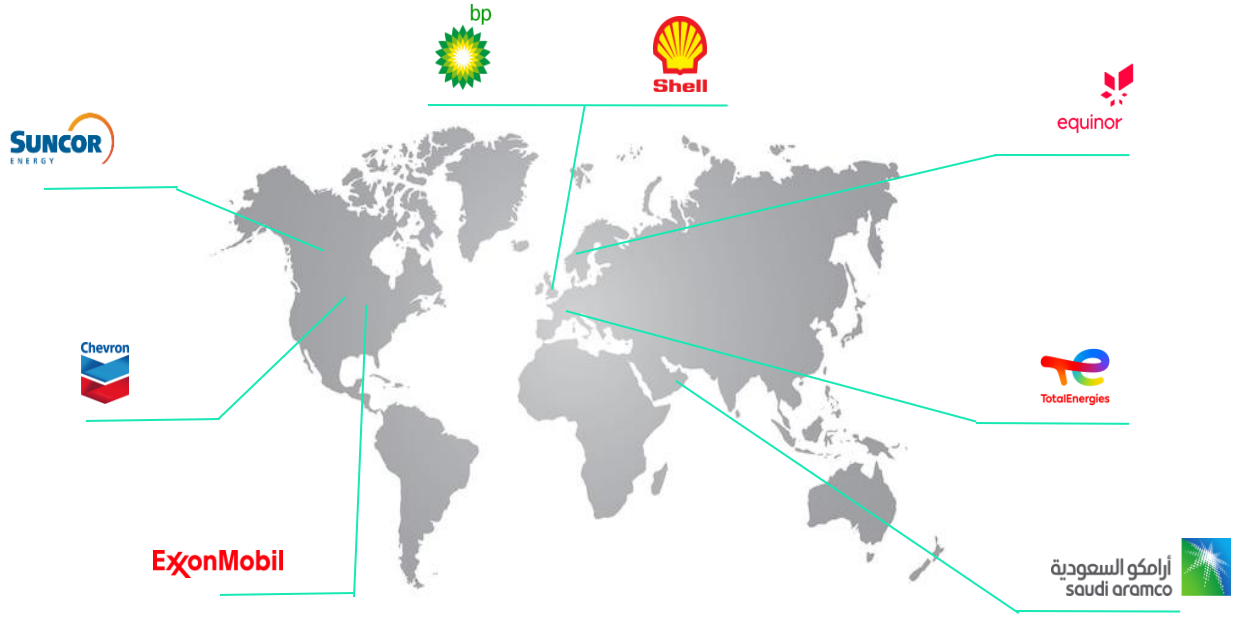
I.
Assess Oil & Gas companies' financial investments in the energy transition by analyzing their strategies from 2018 onwards and their anticipated strategies for 2025.

II.
Classify initiatives and projects funded by these companies in the energy transition sector, by distinguishing between carbon-related activities and transition activities, detailing their 2030 goals.

III.
Explore future projections for these eight companies and anticipate strategies for the transformation of Oil & Gas firms by 2050.

Introduction
Scope of the study

The eight selected companies are spread geographically and cover the global Oil & Gaz value chain. The primary data sources for the analysis include the companies' annual reports or sustainability reports.



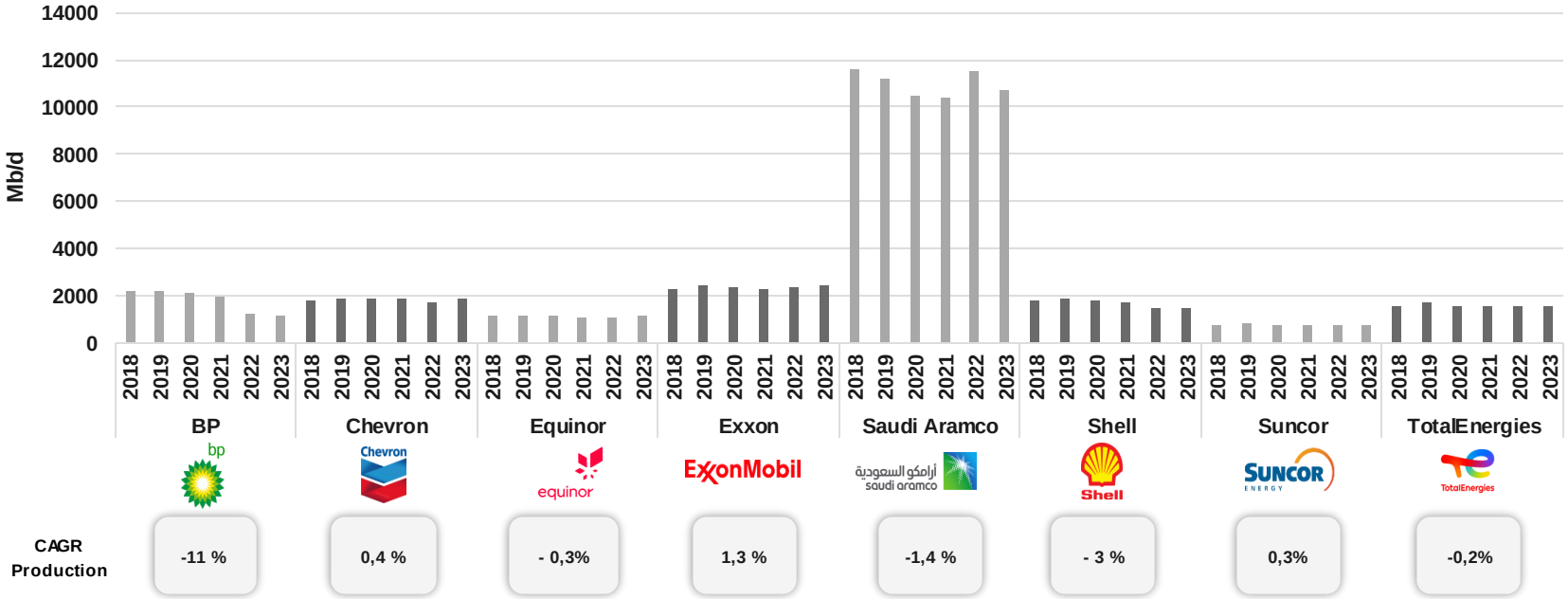
Introduction
Business segmentations

Sia Partners study will analyze the investment strategies* of Oil & Gas companies in the context of the energy transition. To grasp their strategic positioning, we have distinguished between their historical carbon-related activities (“core business”) and efforts directed towards reducing greenhouse gas emissions (“transition activities”) as outlined below.

Core business activities	Transition activities				
Oil & Gas exploration, production, refining, and distribution	**Streamlining core activities for energy transition** • Cut Methane emissions • Reduce flaring • Reduce operational emissions	**Renewable electricity Generation** • Solar • Offshore & onshore w ind	**Biofuels** • Biogas • Solid biofuels • Liquid biofuels	**Hydrogen** Blue, green and gray hydrogen production, storage, distribution and supply	**CCUS** Carbon Capture Utilization and Storage

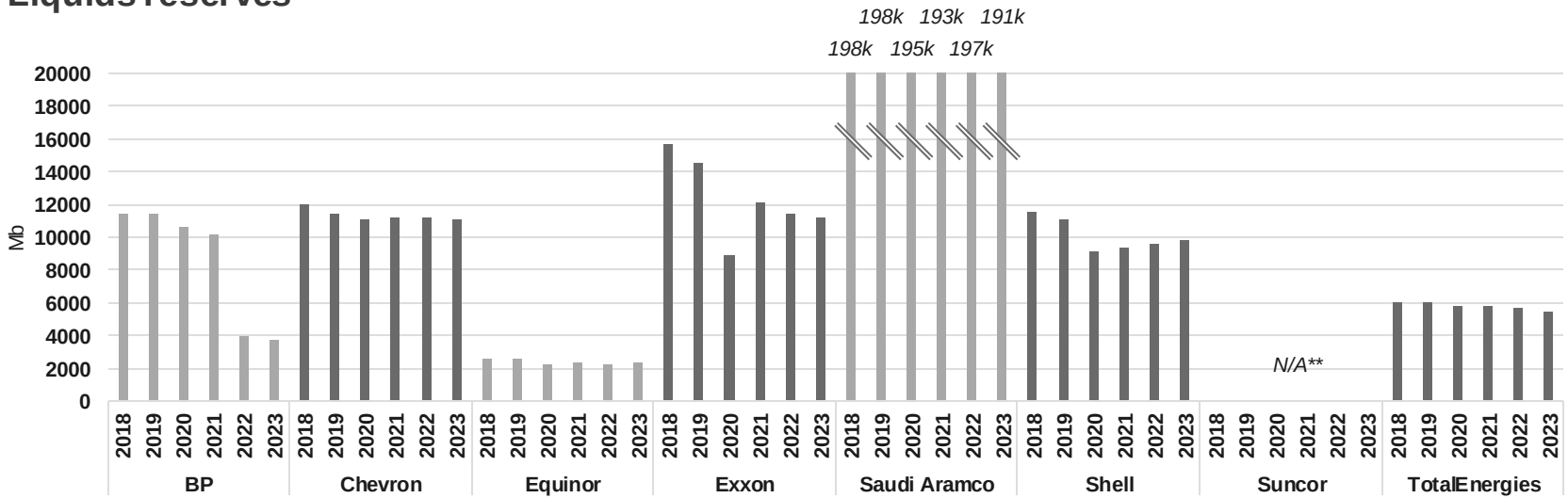
**In examining the investment strategies of Oil & Gas companies, attention is directed towards both CAPEX (capital expenditures) and R&D investments.*

Introduction
Liquids production



Liquids production has remained broadly stable since 2018, with an average difference of less than 2%. However, BP saw its liquid production fall further over the period due to the divestment of a Russian subsidiary in connection with the war in Ukraine.

Introduction
Liquids reserves

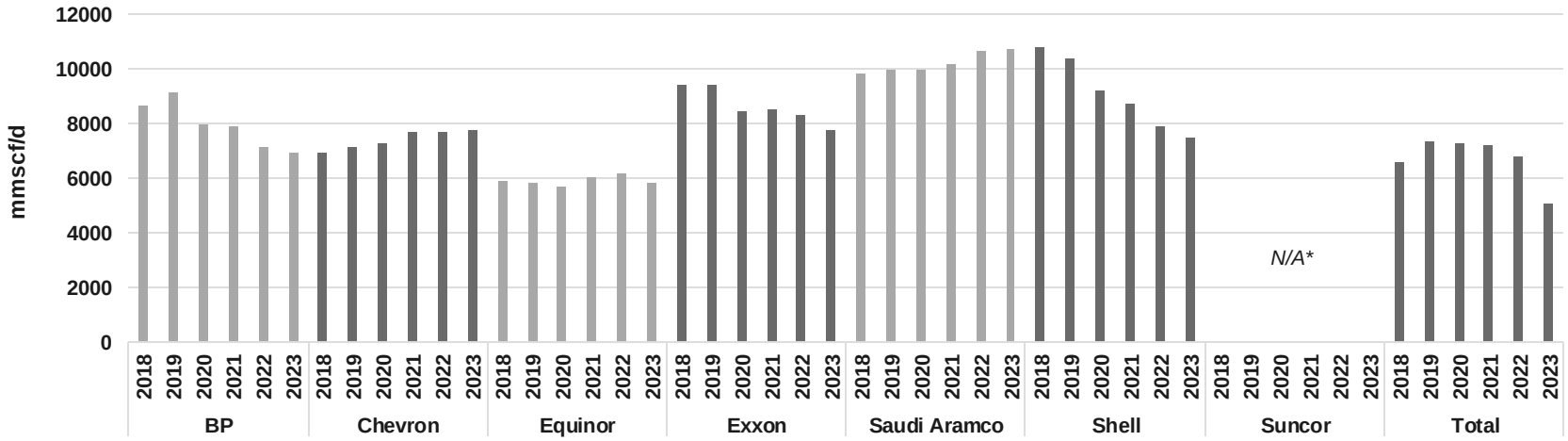


	BP	Chevron	Equinor	Exxon	Saudi Aramco	Shell	Suncor	TotalEnergies
CACR Reserves	-17%*	-1,4%	-1,2%	-5,5%	-0,6%	-2,8%	N/A	-1,6%
R/P	9,2	16,9	5,9	12,5	49	18,4	N/A	9,7

Reserves saw a slight decrease during the period, particularly for BP, which experienced a reduction due to divesting its Russian assets. As a result, the Reserve/Production ratio (R/P) shows significant variation among different players.

***Suncor does not report on liquids reserves*

Introduction
Natural gas production

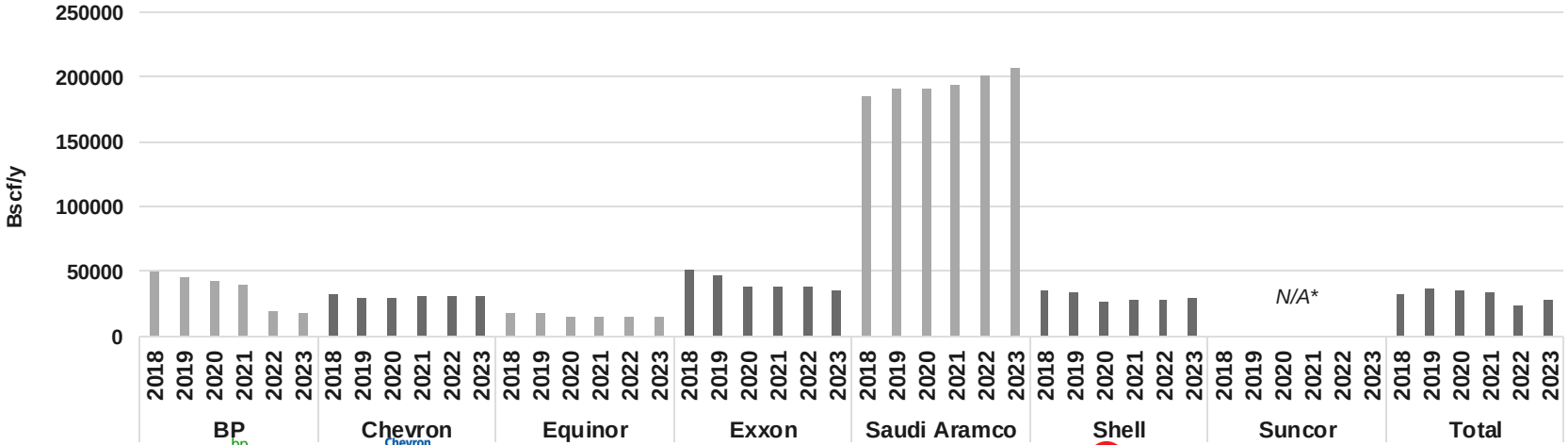


	BP	Chevron	Equinor	Exxon	Saudi Aramco	Shell	Suncor	Total
CAGR Production	-3,6%	2%	0%	-3%	1%	-6%	*N/A*	-4%

In regards to 2018 levels, the production of natural gas has dropped or stabilize across all European majors as well as Exxon. It is mainly a consequence of the European's strategy to gradually move away from fossil fuels.

**Suncor does not produce natural gas.*

Introduction
Natural gas reserves



	BP	Chevron	Equinor	Exxon	Saudi Aramco	Shell	Suncor	Total
CACR Reserves	-15,9%	-1%	-4%	-7%	2%	-3%	N/A*	-3%
R/P	6,9	10,7	6,8	12,2	53,1	10,9	N/A	15

Reserves have remained relatively stable but with a downward trend, in regards to 2018 levels, for all majors except Saudi Aramco. Similarly to liquids, the divestment and derecognition of BP's Russian assets following the Ukrainian war has led to a significant drop in their reserves.

*Suncor does not produce natural gas

1. **Current revenues and global investments**

Current Revenues and global investments

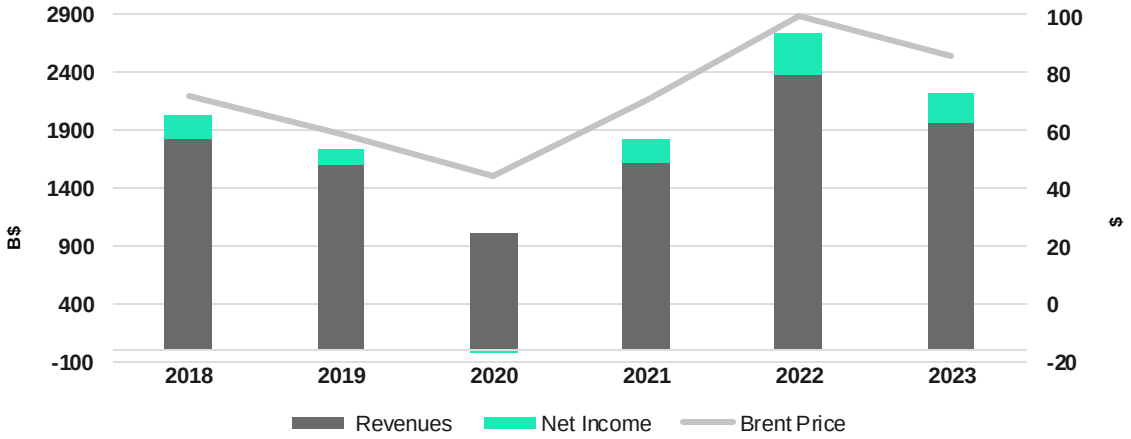
Introduction

Following a **revenue decline** during the COVID-19 years, leading Oil & Gas companies have rebounded with **record profits** and are poised **for reinvestment.**

This study will examine **the investment patterns** of these eight companies from 2018 onwards and their **anticipated strategies for 2025.**

I. Current revenues and global investments

Evolution of revenues and net income (2018-2023)



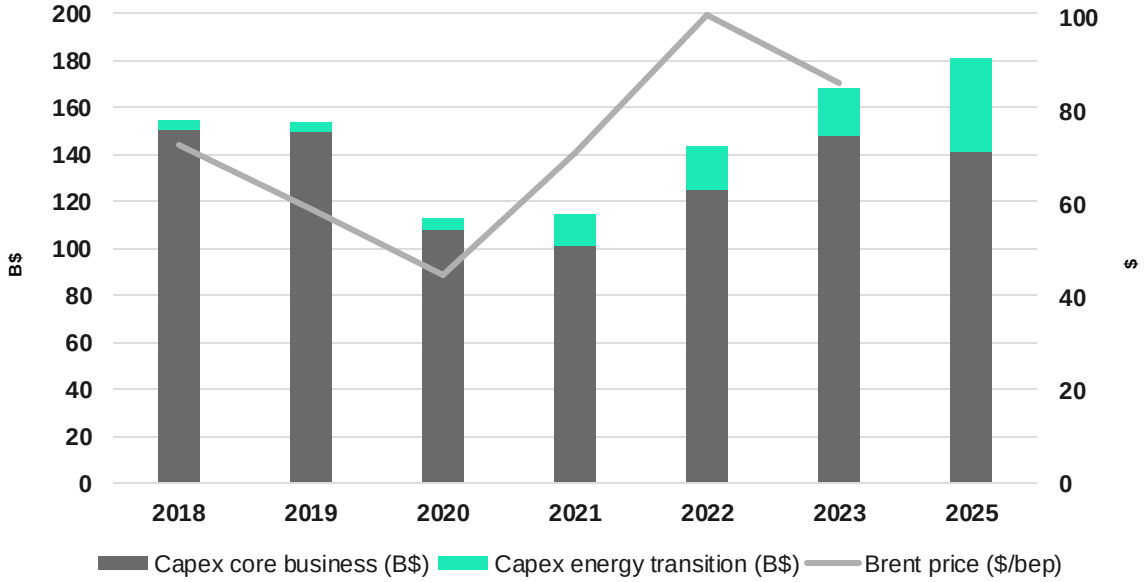
	bp	Chevron	equinor	ExxonMobil	saudi aramco	Shell	SUNCOR ENERGY	TotalEnergies
CAGR Revenue	- 6 %	3,6 %	5,1 %	2,1 %	5,7 %	-3,3 %	4,7%	2,1 %
CAGR Net income	8,4 %	6,3 %	7,9 %	9,5 %	1,5 %	-3,2 %	16,6 %	10,8 %

- **The COVID-19 crisis initially led to a decrease in net income, with a $179 billion decline in 2020** compared to 2019.
- The **resumption of economic activity** has contributed to an **increase in the price of hydrocarbons**.
- It has allowed some key industry players to achieve **record profits in 2022,** albeit slightly revised downwards in **2023 (with a 26% increase compared to 2018)**, owing to a minor decrease in hydrocarbon prices.

The upturn in economic activity and geopolitical events have empowered key players to attain record profits. This scenario presents significant investments opportunities in both their primary activities and renewable energies.

I. Current revenues and global investment

Investments from 2018 to 2025

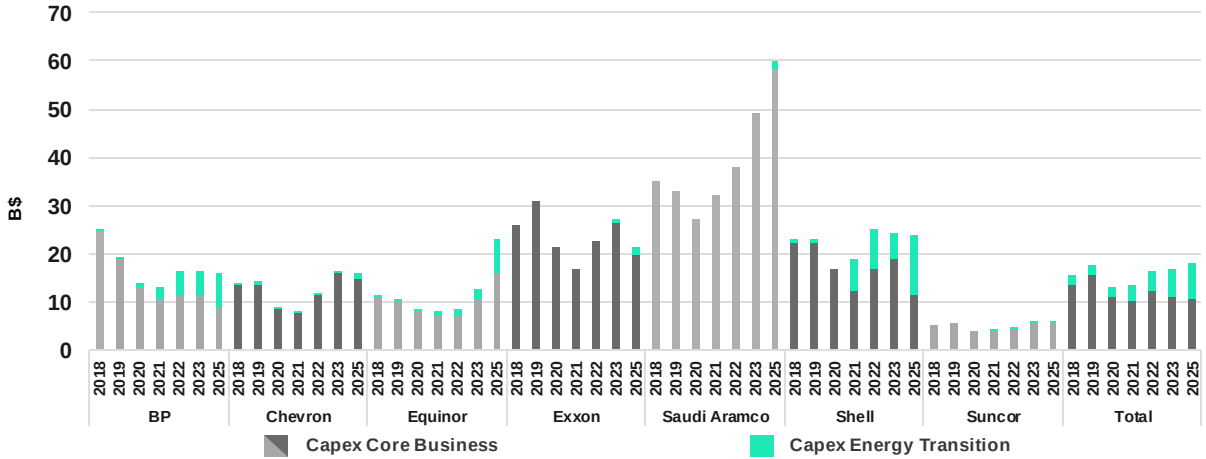


- **Fluctuations in Brent prices significantly impact investment strategies**, with decreases leading to reduced investments in the core business. Conversely, **fluctuations in Brent prices minimally affect investments directed towards the transition**, which persistently escalate despite market volatility.
- Despite these fluctuations, **cumulative investments by the 8 companies show a consistent upward trend**, although they are anticipated to decline by 2% between 2023 and 2025 for the core business.
- Moreover, there's a significant shift towards investments in energy transition. **These investments are forecasted to double, reaching 20% by 2025.**

Although investments in the core business are expected to rise in the coming years, their proportion of the total energies investment amount is anticipated to decline in favor of investments in low-carbon solutions.

I. Current revenues and global investments

Distribution of Capex: core business versus low carbon solutions investments



Focus 2025 : share of low-carbon investments

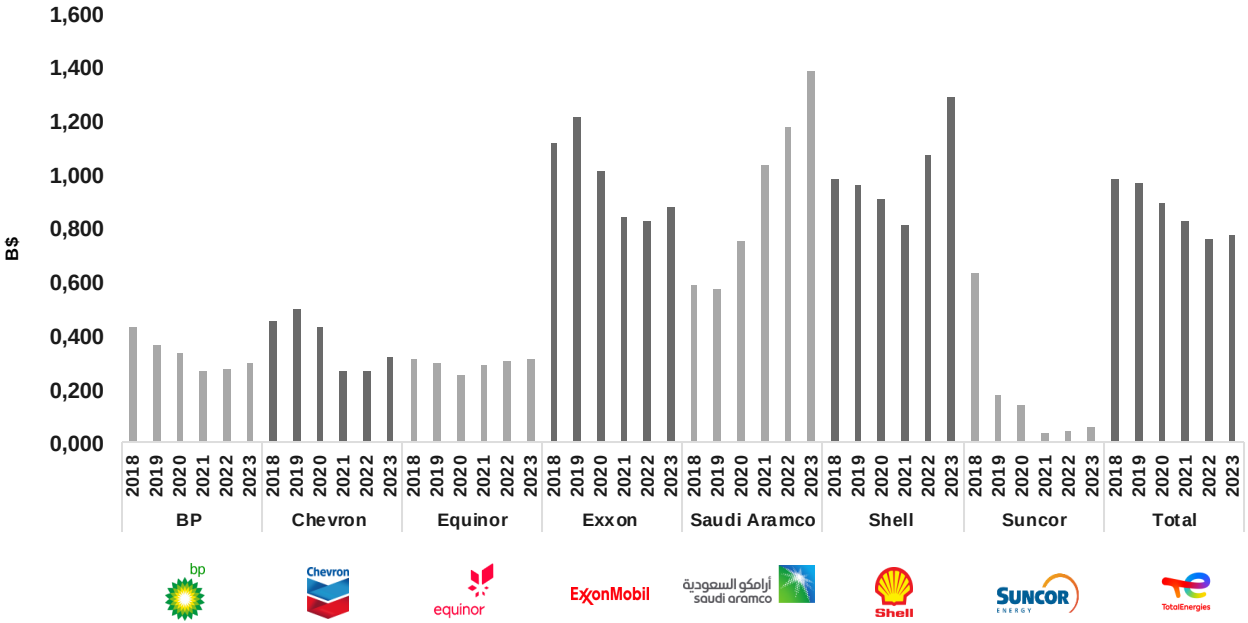
By 2025, two distinct groups emerge:

- **"Carbon efficiency companies", such as Chevron, ExxonMobil, Saudi Aramco, and Suncor** are beginning to venture into low-carbon solutions but that **prioritize investments in their core business**.
- **On the other hand, "Energy transition companies", including BP, Equinor, Shell and TotalEnergies** which intend to **allocate half of their investments to low-carbon solutions**, influenced by European pressures.

Saudi Aramco leads in core business investments, while European companies highlight a significant shift toward low-carbon solutions, exemplifying a dual strategy within the industry as we approach 2025.

I. Current revenues and global investments

Evolution of R&D investments (2018-2023)



In R&D sector, **two distinct groups** have also emerged:

- Companies that **have maintained their R&D spending from 2018 to 2023**,
- Companies that have **reduced these type of expenditures.**

The consistent investments over the past 6 years indicates these industry leaders' commitment to pursuing two significant options:

1. **Diversifying activities** with the objective of **achieving energy transition,**
2. **Implementing technological innovation** to reduce **the carbon footprint** of their petroleum operations.

The COVID-19 induced decline in investments among Oil & Gas companies prompted varied responses, with some opting to substantially increase R&D expenditures, revealing a divergent trend in strategic priorities.

Current revenues and global investments

Conclusion

The recent economic upswing and geopolitical shifts have led key players to achieve record profits post-COVID-19, despite a 27% decline in 2023 compared to 2022.

CAPEX is increasing, mainly directed towards green initiatives, with transition CAPEX set to double by 2025 compared to 2023.

By 2025, a segmentation within the energy sector is emerging:

One group, termed **"Carbon Efficiency Companies“**, prioritizes investments in core business activities, expected to reach 90% by 2025, while also beginning to invest in low-carbon solutions to decarbonize their operations.

On the other hand, the **"Energy Transition Companies“,** predominantly European companies, plan to allocate nearly half of their investments to energy transition initiatives, driven by stringent European pressures.

2. Deciphering investment trends up to 2030: Core business versus energy transition

Deciphering investment trends up to 2030: Core business versus energy transition

Introduction

After analyzing global investments in both energy transition and core business, the study will delve into **how companies distribute their investments between core operations and energy transition activities.**

Core business activities	Energy transition activities			
Oil & Gas exploration, production, refining, and distribution	Renewable electricity generation	Biofuels	Hydrogen	CCUS

Deciphering investment trends up to 2030: Core business versus energy transition

Introduction

Following a **revenue decline** during the COVID-19 years, leading Oil & Gas companies have rebounded with **record profits** and are poised **for reinvestment.**

This study will examine **the investment patterns** of these eight companies from 2018 onwards and their **anticipated strategies for 2025.**

II. Deciphering investment trends until 2030: Core business versus energy transition

Oil & Gas – Overview

	2023 production		Position on the value chain	Oil production target	Gas production target	2030 forecast
bp	1115 (kb/d)	6944 (mmscf/d)	Integrated Oil & Gas company	• From 2022 to 2025: grow th in underlying production • By 2030: targeting a decrease in oil and gas production by about 25% from 2019 levels		Medium
Chevron	1830 (kb/d)	7744 (mmscf/d)	Integrated Oil & Gas company	Target a 3% annual grow th in oil and gas production by 2027		High
equinor	1012 (kb/d)	5820 (mmscf/d)	Integrated Oil & Gas company	• O&G production is projected to grow by 5% from 2023 to 2026. • By 2030, the aim is to maintain the overall O&G production at around 2,000 mboe/d (2023 level: 2,039 mboe/d)		Medium
ExxonMobil	2449 (kb/d)	7734 (mmscf/d)	Integrated Oil & Gas company	Boost oil and gas production by 10% to 4.2 mnb/d by 2027		High
أرامكو السعودية saudi aramco	10700 (kb/d)	10700 (mmscf/d)	Integrated Oil & Gas company	Expanding production capacity to 13mmb/d1 by 2027	Achieve over 60% target gas production growth by 2030 (compared to 2021 levels)	High
Shell	1454 (kb/d)	7454 (mmscf/d)	Integrated Oil & Gas company	Stabilize oil production and gas production through a $40 billion investment spanning from 2023 to 2035		Medium
SUNCOR ENERGY	746 (kb/d)	N/A	Integrated Oil & Gas company	Expanding oil sands capacities	N/A	Low
TotalEnergies	1550 (kb/d)	5028 (mmscf/d)	Integrated Oil & Gas company	Ensure oil production stability to constitute by 2030	Increase gas production, mostly LNG, to reach 50% of the energy mix by 2030	Medium

2030 forecast: High Medium Low

II. Deciphering investment trends until 2030: Core business versus energy transition
Oil & Gas – Strategic analysis

Oil & Gas investments are focused on 3 main areas

1. **Reducing the cost of operations:** automation, asset performance,
2. **Reducing emissions from operations**: focus methane emissions, energy efficiency and carbon capture,
3. **Improving employee's safety**: digitalization and robotization to reduce drudgery and improve safety.

Oil

When it comes to oil, companies are faced with two challenges: improving the productivity of their assets, while reducing their environmental footprint.

Gas

At COP 28 in Dubai in December 2023, it was agreed that **gas** would be considered a **transitional energy** and would not be included in the agreement to "phase out" from fossil fuels.

Mega Deals Reshaping the Oil &Gas Landscape in 2023

ExxonMobil's Acquisition of Pioneer Natural Resources - $59.5B

- **Deal Overview:** ExxonMobil acquires 100% share in Pioneer Natural Resources for $59.5 billion. Expected completion: June 2024.
- **Financial Significance:** largest upstream transaction since Exxon's 1999 merger with Mobil. Equity value: $59.6 billion,. Enterprise value: $64.5 billion.
- **Impact on ExxonMobil:** establishes ExxonMobil as the leading producer in the Permian basin. Permian basin contributes approximately 11% to the global basin output

Chevron's Acquisition of Hess - $53B

- **Deal Overview:** Chevron acquires 100% stake in Hess for $53 billion. Expected completion: June 2024.
- **Strategic Importance**: diversifies Chevron's portfolio. Gains control of Hess's offshore oil block "Stabroek" in Guyana.
- **Key Assets Acquired**: Stabroek block estimated to hold 11 billion barrels of oil equivalent. Chevron secures 30% of exploitation rights in Stabroek.
- **Expanded Presence**: in addition to Guyana, Chevron gains foothold in the Bakken Basin, Gulf of Mexico, and Gulf of Thailand.

The companies stress the importance of ongoing oil and gas production to meet present and future needs amid the energy transition, focusing on reducing carbon intensity rather than stopping production entirely. By 2030, the same strategy will continue with the "Carbon Efficiency Companies" prioritizing emission reduction while preserving core operations, and the "Energy Transition Companies", shifting towards sustainable ventures.

II. Deciphering investment trends until 2030: Core business versus energy transition

Wind and Solar electricity – Overview

	2023 production	Position on the value chain	Target 2030 Renewable installed capacity	2030 forecast
bp	6.2 GW	Production · Storage · Distribution · Supply	10 GW	
Chevron	0,5 GW	Production · Storage · Distribution · Supply	Undisclosed	
equinor	0,9 GW	Production · Storage · Distribution · Supply	12-16 GW	
ExxonMobil	0 GW	Production · Storage · Distribution · Supply	Undisclosed	
saudi aramco	5.3 GW	Production · Storage · Distribution · Supply	12 GW	
Shell	2,5 GW	Production · Storage · Distribution · Supply	50 GW	
SUNCOR ENERGY	0 GW	Production · Storage · Distribution · Supply	Undisclosed	
TotalEnergies	17 GW	Production · Storage · Distribution · Supply	100 GW	

2030 forecast: High · Medium · Low

II. Deciphering investment trends until 2030: Core business versus energy transition
Wind and Solar electricity – Strategic analysis

Production capacity requirements are expected to increase significantly, driven by the emergence of new electric services and the electrification of the energy system.

- The electricity production sites (solar and wind) are **mostly in the process of development,**
- Oil & Gas companies aim to compete with traditional energy operators by investing in technologies that enable the **management of the intermittent nature of renewable energies** (storage solutions, hydroelectricity).

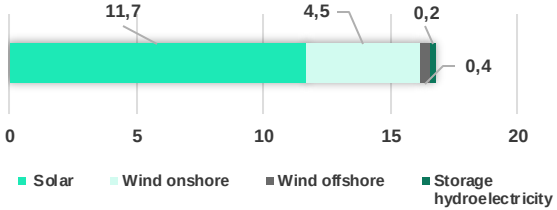
European majors transform their activities to become pure players in the electricity market

TotalEnergies

TotalEnergies share of renewable installed capacity

100 GW

Renewables installed capacity in 2030



Integrated Power concept :

- TotalEnergies' ambition is not only to invest in renewable energies, but to **create an integrated business** unit with a global strategy in the electricity market,
- The goal is to **establish itself as a major player** in the electricity sector, with a strategy including renewable energy assets and flexible assets to capitalize on the intermittent nature of renewable energies.

With the increasing demand for electricity, renewable energy production continues to be the primary sector of development for the "Energy Transition Companies", each setting ambitious 2030 targets, reaching up to 50 GW for Shell and 100 GW for TotalEnergies. Additionally, Saudi Aramco also plan to boost renewable installed capacity.

II. Deciphering investment trends until 2030: Core business versus energy transition

Biofuels – Overview

	2023 production	Biofuels product types	Position on the value chain	Target 2030-2035	2030 forecast
bp	32 kb/d		Production → Supply	100 kb/d	High
Chevron	5 kb/d		Production → Supply	100 kb/d	High
equinor	N/A	N/A	Production → Supply	12 kb/d	Low
ExxonMobil	6 kb/d		Production → Supply	200 kb/d	High
أرامكو السعودية saudi aramco	N/A	N/A	Production → Supply	N/A	Low
Shell	167 kb/d		Production → Supply	N/A	High
SUNCOR ENERGY	N/A	N/A	Production → Supply	N/A	Low
TotalEnergies	6 kb/d*		Production → Supply	100 kb/d	High

*Sia Partner analyse

2030 forecast: High Medium Low

II. Deciphering investment trends until 2030: Core business versus energy transition
Biofuels – Strategic analysis

The biofuels sector is expected to continue growing as demand for renewable and sustainable energy sources increases.

- **Exxon** holds the most ambitious goals in the biofuels market, aspiring to reposition itself as a pure player in this refining type,
- **TotalEnergies** has decided to position itself in the production of sustainable aviation fuels with the aim of capturing a 10% market share in the sector by 2030,
- **BP and Chevron** have also ambitious goals in this sector, including acquisitions of companies within the industry for the latter.

However, there are still challenges to overcome, including raw material availability, production profitability, and competition with fossil fuels.

Focus: The Grandpuits project

Operation date	Planned capacity
2025	SAF : 210 - 285 kt/y (2027)
Location	**Partners**
Grandpuits (France)	TotalEnergies, SARIA, Air Liquide

- TotalEnergies' Granpuits Platform is a strategic initiative aimed at exploring and **developing alternative solutions** to traditional petroleum products,
- This project, with a total implementation cost estimated at over 500 million €, is based on the development of several future activities in:
  - Biomass valuation,
  - Renewable energies (biofuels, SAF, bionaphta),
  - Circular economy.

The transition towards activities with lower carbon emissions and regulatory requirements within the transportation sector has spurred oil companies to view biofuels as a crucial component of their long-term energy transition strategy. This is further emphasized by companies setting highly ambitious 2030 targets, particularly American firms that are leading the way.

II. Deciphering investment trends until 2030: Core business versus energy transition

Hydrogen – Overview

	First operational project	Position on the value chain	Target 2030	2030 forecast
bp	2021	Production Storage Distribution Supply	0,5 – 0,7 Mtpa (net hydrogen production)	High
Chevron	2021	Production Storage Distribution Supply	150 Mtpa (hydrogen equity production capacity)	High
equinor	2019	Production Storage Distribution Supply	0,5 Mtpa (net hydrogen production)	High
ExxonMobil	2027-2028	Production Storage Distribution Supply	No target announced	Low
أرامكو السعودية saudi aramco	2022	Production Storage Distribution Supply	2 Mtpa (low-carbon hydrogen production)	Medium
Shell	2021	Production Storage Distribution Supply	No target announced	Low
SUNCOR ENERGY	2021	Production Storage Distribution Supply	No target announced	Medium
TotalEnergies	2018	Production Storage Distribution Supply	No target announced	Medium

2030 forecast: High Medium Low

II. Deciphering investment trends until 2030: Core business versus energy transition
Hydrogen – Strategic analysis

Hydrogen use is on the rise globally, prompting companies to strategically navigate the hydrogen sector.

- **While some firms**, like TotalEnergies with the Masshylia project (2018), **took early strategic leaps in the sector**, others, such as ExxonMobil, are still exploring market opportunities. ExxonMobil is planning its inaugural world-scale plant for low-carbon hydrogen production (Baytown), with a scheduled startup in 2027-2028,
- **Most of these companies have outlined targets for H2 production by 2030**, with BP, for instance, aspiring to be a global leader in the hydrogen market and targeting a 10% share in core markets by 2030,
- In pursuit of these goals, these enterprises are channeling investments into hydrogen projects through strategic means, including **partnerships, acquisitions, or joint ventures**.

Focus: The NorH2 project

Operation date	Planned capacity
2030 (launch in 2020)	0,4 Mt of green H_2 production in 2030
Location	**Partners**
Netherlands	Shell, equinor, Groningen Seaports, RWE

- Objective: **produce green hydrogen** using renewable electricity from offshore wind off the coast of the Netherlands, aiming for around 4 gigawatts by 2030 and over 10 gigawatts by 2040.
- Environmental impact: **abate 8 to 10 Mt of CO_2 emissions**, equivalent to yearly emissions from road traffic in Norway.
- Contribution to hydrogen economy: the **rapid expansion of offshore wind aligns well with the development of a sustainable green hydrogen value chain**.

Companies are strategically maneuvering within the hydrogen sector, anticipating the future demand for clean energy solutions, and aligning their business strategies accordingly, particularly with a focus on achieving net-zero ambitions by 2050.

II. Deciphering investment trends until 2030: Core business versus energy transition

Carbon Capture Utilization and Storage (CCUS) – Overview

	First operational project	Position on the value chain	Target 2030 (CO_2 captured and stored)	2030 forecast
bp	2026	Capture → Transport → Storage → Utilisation	No target announced	Low
Chevron	1972	Capture → Transport → Storage → Utilisation	25 Mtpa	High
equinor	1996	Capture → Transport → Storage → Utilisation	30-50 Mtpa	High
ExxonMobil	1986	Capture → Transport → Storage → Utilisation	No target announced	High
أرامكو السعودية saudi aramco	2015	Capture → Transport → Storage → Utilisation	11 Mtpa *(2035)*	Medium
Shell	2015	Capture → Transport → Storage → Utilisation	25 Mtpa	High
SUNCOR ENERGY	2025	Capture → Transport → Storage → Utilisation	No target announced	Low
TotalEnergies	2008	Capture → Transport → Storage → Utilisation	10 Mtpa	Medium

2030 forecast: High Medium Low

II. Deciphering investment trends until 2030: Core business versus energy transition
Carbon Capture Utilization and Storage (CCUS) – Strategic analysis

Well-established in the O&G sector, **CCUS has traditionally served for Enhanced Oil Recovery** (EOR) locally and for internal operations. However, the recent surge in CCUS as a decarbonization tool has prompted market players to reassess their strategies.

- They now see it as a **potential avenue for diversification**, notably by providing such services to their clients.
- In the realm of CCS, companies are **focusing their efforts on the transport and storage phases**, leveraging their existing business experience and expertise. Some are also venturing into the capture side, often through R&D or acquisitions.
- Some of them, like TotalEnergies, aim to engage in **CO_2 capture and utilization** (CCU), mainly for e-fuels production, but with a **lower priority** than storage.

Focus: The Northern Lights CCS project

Operation date	Planned capacity
2024	1,5 Mt CO2/year (phase 1)
Location	**Partners**
Norway	Shell, TotalEnergies, equinor

- The Northern Lights project is a component of the Norwegian CCS initiative known as "Longship". The aim of the project is to **transport and store the CO_2 previously captured** by Longship.
- The CO_2 will be transported by ship to an intermediate onshore storage terminal. Subsequently, a pipeline will convey the CO_2 to its permanent offshore storage site, where it will be injected into a saline aquifer situated 2600 meters beneath the northern North Sea.

Oil & Gas companies aim to maintain their pioneering position in the CCUS sector, capitalizing on their core business expertise, and see CCUS as a new service to offer their customers. Meanwhile, the "Energy Transition Companies" group has slightly forged ahead.

Deciphering investment trends up to 2030: Core business versus energy transition

Conclusion

The strategies within the oil and gas sector gain significant momentum when considering the outlook for 2030.

The **"Carbon Efficiency Companies"** - Chevron, ExxonMobil, Saudi Aramco, and Suncor - prioritize emission reduction while maintaining core operations.

Conversely, the **"Energy Transition Companies"** - BP, Equinor, Shell, and TotalEnergies - are transitioning towards sustainable ventures, emphasizing renewable energy production, particularly in wind and solar sectors, with ambitious 2030 targets.

In the biofuels sector, both groups have set highly ambitious objectives, with American companies leading the way.

For hydrogen and CCUS, both groups exhibit similar strategies, indicating a convergence towards reducing dependence on fossil fuels.

3. Shaping the future: Strategic plans by 2050

Shaping the future: Strategic plans by 2050

Introduction

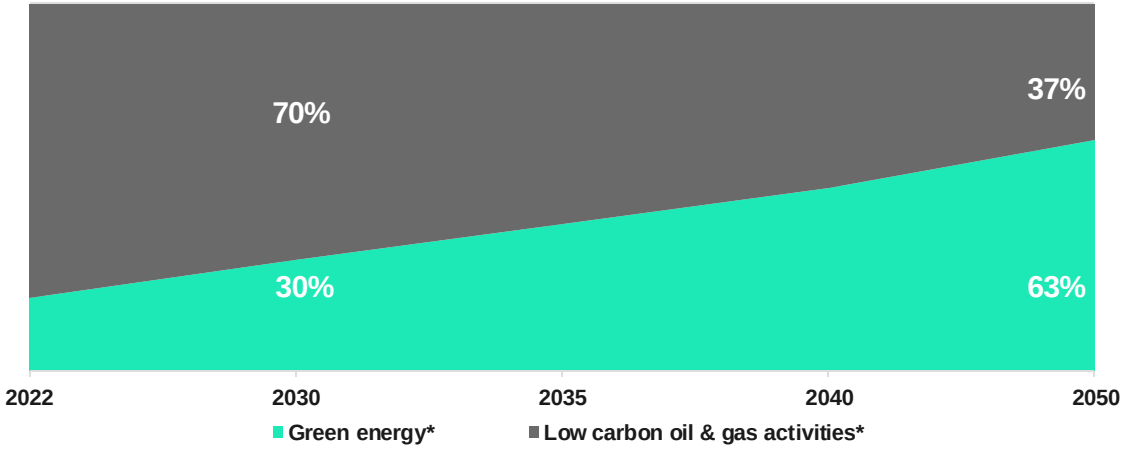
Oil & Gas companies are navigating environmental concerns and the evolving energy landscape by tackling climate change through decarbonization of traditional activities and transitioning towards cleaner energy alternatives.

This **transformative phase** in the industry entails pivotal decisions that **will define the future energy terrain by 2050.**

III. Shaping the future: Strategic plans by 2050

Overview of the energy landscape by 2050

The evolution of global energy supply based on the IEA's "APS" scenario



	bp	Chevron	equinor	ExxonMobil	saudi aramco	Shell	SUNCOR ENERGY	TotalEnergies
Emissions reduction objectives	40%	40%	50%	30%	N/A	50%	N/A	50%

- In a Net Zero energy mix projected for 2050, around 37% of the energy supplied would derive from low-emission oil & gas technologies, , and the remaining 63% would be supplied by green energy sources.
- With mounting expectations from investors, governments, and society, major corporations are compelled to intensify their initiatives and expedite the shift towards low-carbon emitting activities. Consequently, there is a projected rise in the share of low-carbon investments in the coming years.
- Major Oil & Gas companies aspire to reach net zero emissions by 2050 and have set ambitious objectives for 2030. However, these goals do not currently address scope 3 emissions.

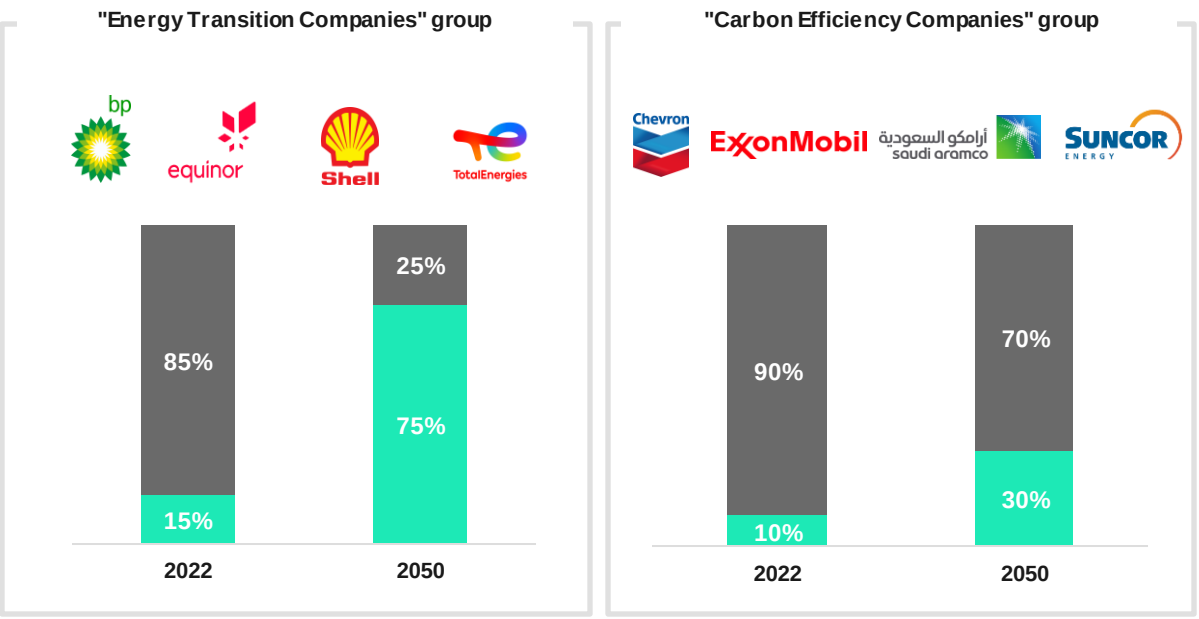
The energy landscape will drastically change by 2050. Oil & Gas, which currently represents 70% of global energy demand, is expected to decline to 37% in favor of green energy sources. The remaining Oil & Gas production will be associated with reduced emissions of core activities.

*Green energy combines the energy supplied by renewable electricity generation, Biofuels, hydrogen & CCS

** Low Carbon Oil & Gas activities include the energy supplied by cutting methane emissions, reduced flaring & reduced operational emissions

III. Shaping the future: Strategic plans by 2050

Transformation of Oil & Gas companies by 2050: two major groups emerge



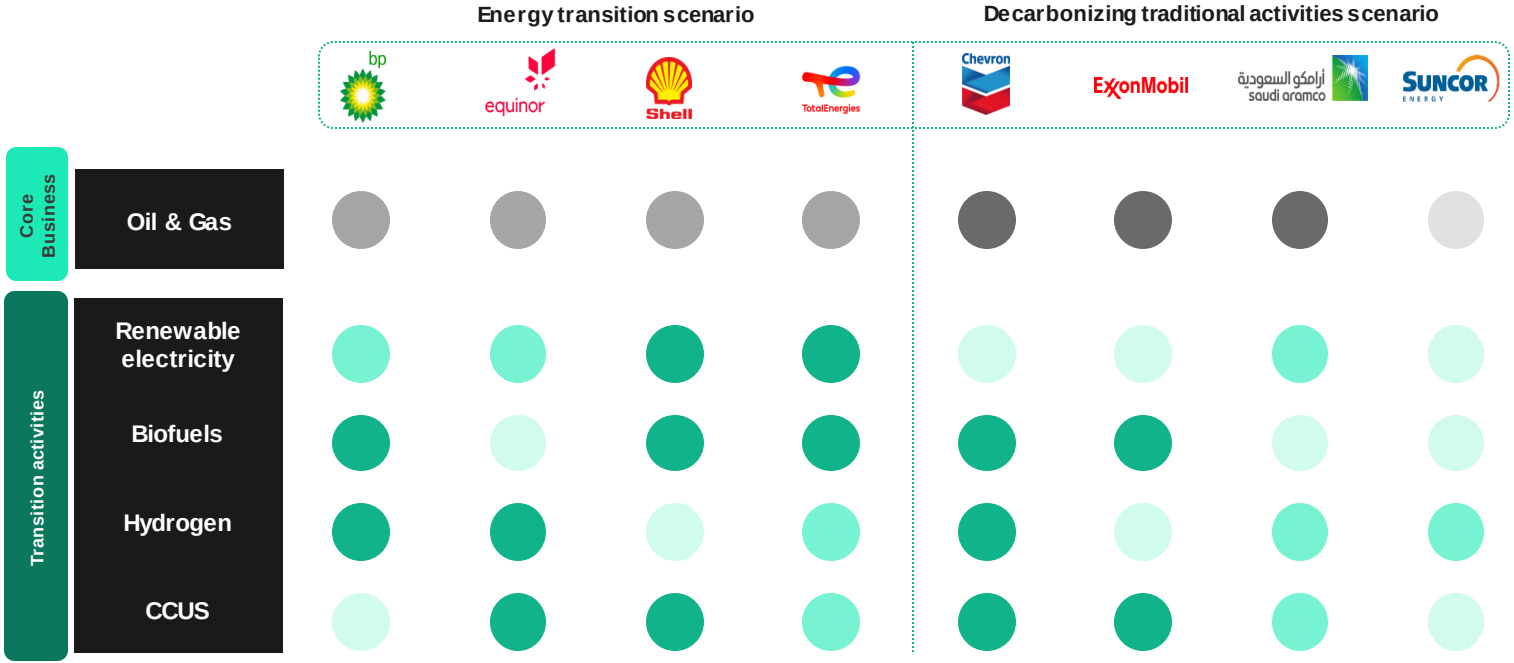
Revenue distribution strategies for major oil companies in 2022 and 2050

- "Energy Transition Companies" including TotalEnergies, Shell, Equinor, and BP, are embracing an energy transition. They plan to gradually reduce reliance on Oil & Gas products (from 85% in 2022 to 25% in 2050) while increasing investments in low-carbon molecules and renewable energy sources (from 15% in 2022 to 75% in 2050).
- "Carbon Efficiency Companies", such as Aramco, Chevron, Equinor, Exxon, and Suncor, are prioritizing the decarbonization of their activities. They maintain a traditional economic model with 70% of revenue from Oil & Gas, employing Carbon Capture, Utilization, and Storage (CCUS) to reduce their core activities emissions.

To achieve net zero by 2050, the "Energy Transition Companies" group will adapt to meet the growing demand for low-carbon electricity. Meanwhile the "Carbon Efficiency Companies" will continue to predominantly sell petroleum products and gas to meet the still significant demand for these products in 2050.

III. Shaping the future: Strategic plans by 2050

Two supermajor groups emerge, one maintaining its core focus and another expanding in new businesses



Shaping the future: Strategic plans by 2050

Conclusion

In 2050, current emerging trends are manifesting with two distinct groups engaging in different activities:

To achieve net zero by 2050, the **"Energy Transition Companies"** – BP, Equinor, Shell and TotalEnergies - are adapting to meet the increasing demand for low-carbon electricity. This group is gradually reducing their investments in Oil & Gas products, while ramping up investments in renewable energy sources (75% by 2050).

Meanwhile, the **"Carbon Efficiency Companies"** - Chevron, ExxonMobil, Saudi Aramco, and Suncor - are expected to continue primarily selling petroleum products and gas to meet the still significant demand for these products in 2050. While maintaining their traditional economic model, with 70% of revenue from Oil & Gas by 2050, they prioritize decarbonization of their activities through initiatives such as CCUS.

These diverging strategies highlight **the complex landscape of energy transition**, where companies must balance traditional revenue streams with the imperative to reduce carbon emissions to meet ambitious climate target.

Conclusion and global recommendations for transformations

Our convictions for Oil & Gas companies to navigate the energy transition

1. Reducing operational emissions will require significant investments

- **The road to reduce emissions is clear:** operational emissions can be mitigated by measures such as minimizing methane emissions, ending flaring or venting, and enhancing operational efficiency through green PPAs or by increasing operational performances.
- **Carbon reduction can yield new revenue streams:** instead of flaring, companies can leverage the excess gas extracted by generating power to mine cryptocurrencies or servers' operations.

2. Improvements in the core business are necessary

- **Improved capital use for upstream assets: r**educing core business emissions will involve high costs. Oil & Gas companies will have to improve the resilience of their core business to maintain high financial performances. This means improving and rationalizing the portfolio of assets and cutting unnecessary costs.
- **Portfolio rationalization: d**ue to the high costs and level of emissions of some wells. Oil & Gas companies will have to choose strategically where they invest and operate. This will push the industry into more consolidation.

3. Electrification services can yield interesting returns

- **Leveraging high oil prices: h**igh profits for Oil & Gas companies can enable them to become early leaders in the race to a more sustainable world. Oil & Gas companies can build the capabilities to become clean energy champions by sustaining important investments in new ventures.
- **Leveraging Stimulus Plan subsidies: g**overnment offer important public subsidies that reduce the risks associated with investments in ventures such Solar or EV Charging Stations.

Appendix
Acknowledgments and contacts

Contacts

Jean-Baptiste HECQUET
Managing Director Energy & Environment
jean-baptiste.hecquet@sia-partners.com

Authors

Peter-Abraham ASSOGBAVI
Senior Consultant Energy & Environment
peter-abraham.assogbavi@sia-partners.com

Jean-Luc MATTAR
Senior Consultant Energy & Environment
jean-luc.mattar@sia-partners.com

Margot TARDET
Senior Consultant Energy & Environment
margot.tardet@sia-partners.com

Quentin BRETTE
Consultant Energy & Environment
quentin.brette@sia-partners.com

Appendix Glossary

Glossary

- R/P ratio: Reserve/production ratio
- Mb: million barrel
- Kb/d: thousand barrel per day
- Mboe : million barrel of oil equivalent
- Bscf: billion standard cubic feet
- Mmscf/d: million standard cubic feet per day
- MW: megawatt
- Mtpa: million tonnes per annum

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