

Arendalsuka 2021

The Future of Energy: An Analyst's Perspective

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A Verisk Business



Energy transition is the biggest change in the history of oil and gas

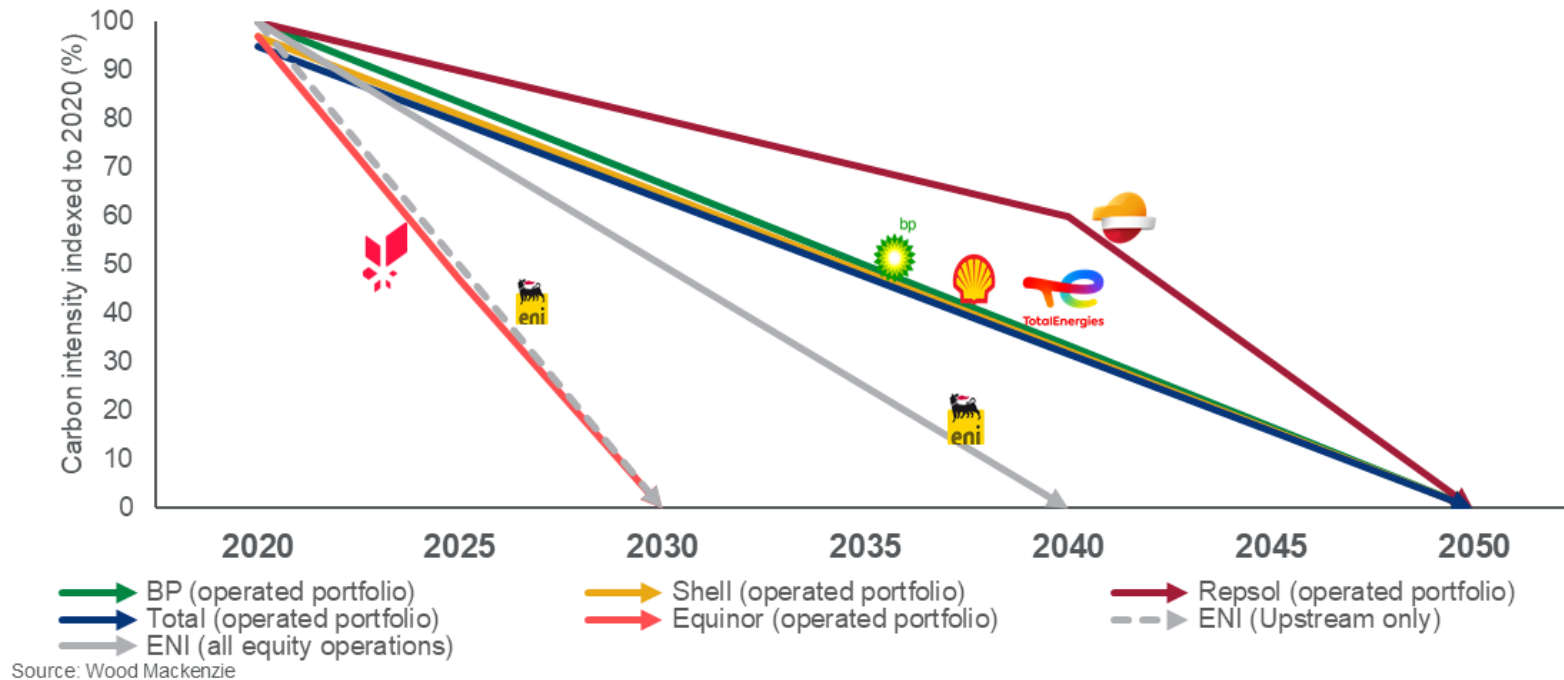
“Peak Oil” is no longer about demand and supply – it is now a global policy commitment

- **Reality of climate change is forcing change at an accelerating pace**
 - » Governments are making Net Zero commitments ahead of COP26
 - » The latest IPCC report only adds to the sense of urgency
- **Pressure is rising *from* stakeholders in large part because the pressure is rising *for* stakeholders. Investors and lenders are also under pressure to decarbonise equity and credit portfolios**
 - » *Net Zero Asset Managers* has quadrupled this year and now account for half of global assets under management
 - » Members of the new *Net Zero Banking Alliance* already account for a quarter of global banking assets
- **Analysts must anticipate the changes ahead**
 - » We help companies, investors and governments decide on the optimal strategies, investments and policy responses
 - » But this is a new energy reality with no established playbook



Scope 1 & 2 emissions reduction targets

Euro Majors have set Net Zero targets for Scope 1 and 2 – Net Zero by 2050 is now table-stakes





Greater complexity

The 'future of energy' is uncertain – the future of energy companies even more so

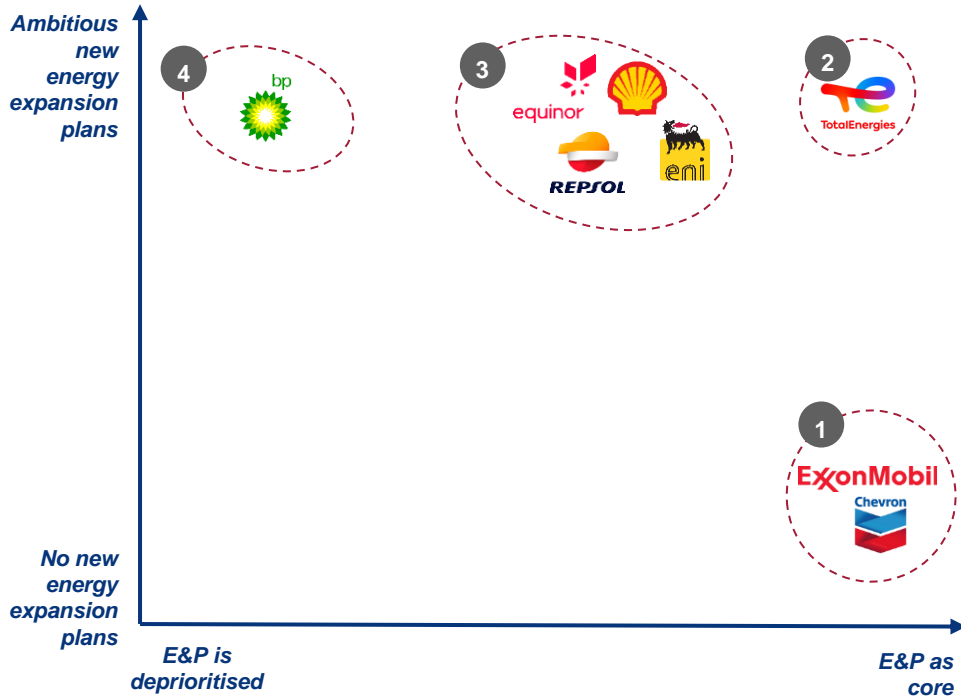
- **Multitude of future energy scenarios from IEA to Wood Mac, Equinor to BP**
 - » What do different scenarios tell us about the future of oil and gas? How should companies and governments incorporate this into their planning?
- **Company strategies are evolving rapidly; businesses are becoming more diverse and complex**
 - » Reporting standards and conventions have yet to catch up
 - » Company self-reporting is varied for example on inclusion of JVs, net zero targets, use of offsets, financials
- **Government responses are wide ranging, only a few have matched targets with credible policy**
 - » Trend toward national net zero targets, but not all countries have backed targets with credible plans and frameworks
 - » Norway's carbon pricing, and consistent government fiscal and regulatory framework help capital allocation towards upstream decarbonisation (but Norway is the exception)
- **Analysts play an important role in valuing and benchmarking energy transition progress**



Decarbonisation, Diversification and Divestment

Euro Majors diversifying into 'Big Energy'; US Majors still focused on oil and gas

Energy Transition Ambitions of the Majors



- 1 The 'Big Oil' business model
- 2 Grow E&P and diversify into new energy
- 3 Harvest E&P and diversify into new energy
- 4 Shrink E&P and displace with new energy



New questions for analysts and other stakeholders

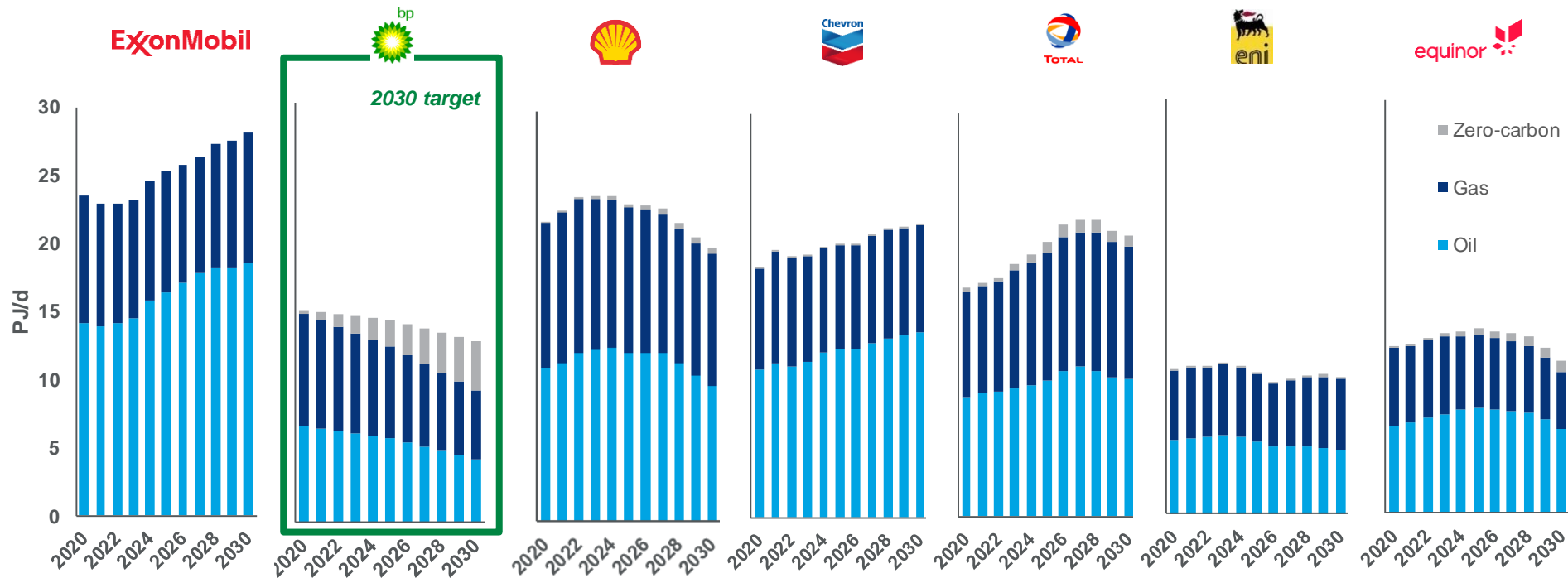
New business models don't fit the old mould

- **New metrics will complement and, in many cases, replace the traditional KPIs of production growth, reserve replacement, exploration success, PV10 valuation, etc**
 - » Renewables with lower risk / lower return profiles
 - » Nascent technologies such as CCUS and blue/green hydrogen with unproven commercial models
- **How do we benchmark and aggregate diverse businesses?**
 - » New structures – spin-offs, JVs, partnerships, growing in importance.
 - » New units – should we switch from boe to PJ? Or is it CO₂e? And how do we do the conversion?
 - » New reporting standards – new segments, carbon accounting – what does 'Net-zero' actually mean?
- **Greater corporate emphasis on intangibles**
 - » integration, trading uplifts, customer-centric strategies (e.g. cities), digitalisation, ...

New energy growth: electrons will radically change production by 2030

Current outlook – zero-carbon numbers will likely prove to be too conservative

Net energy production from oil, gas and zero-carbon power (PJ/d)





Rising to the challenge

Example of how we're responding to the new complexity

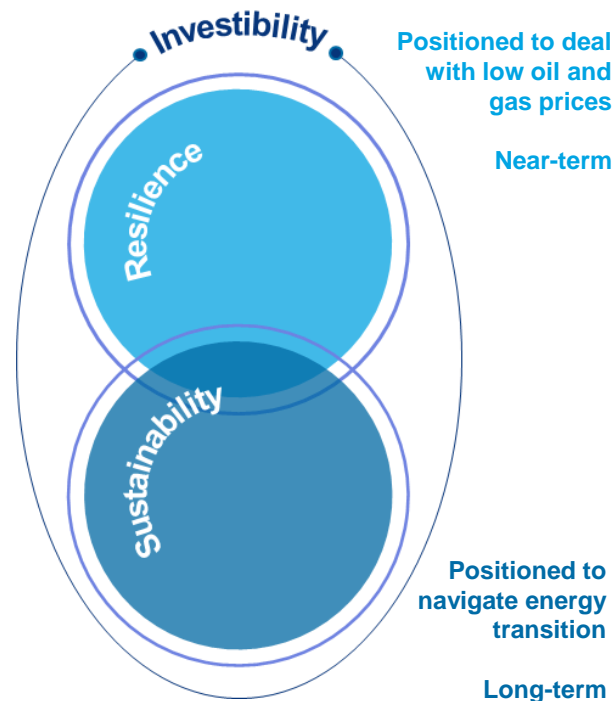
- **Analysts help shape the debate and establish new conventions and standards**
 - » Benchmarking companies by calibrating their individual net zero plans against different macro scenarios.
- **We work with companies and other stakeholders on evolving the analyst's toolkit and response**
- **Examples of our evolving response to the new energy future:**
 - » Corporate Resilience & Sustainability Index
 - » Majors' new energy benchmarking (offshore wind, solar, hydrogen and CCUS)
 - » Emissions benchmarking (from asset to corporate)



Corporate Resilience and Sustainability











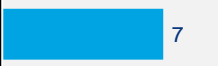
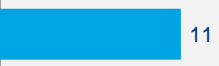













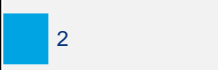
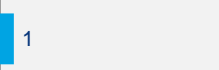










New strategic analytical framework



- Characteristics of a model **resilient** oil and gas company...
 - » Strong financial platform, scale and diversity
 - » Legacy oil and gas businesses are cash flow positive at low prices
 - » Flexibility to make deep capex cuts if required
 - » Concentration risk is low – across segments, sub-segments, commodities, geographies, time
- Characteristics of a model **sustainable** oil and gas company...
 - » Cash flow longevity, stability and predictability
 - » Strong margins, protected during periods of price weakness, leveraged to upside during periods of strength
 - » Low emissions intensity and value at risk
 - » Commitment to decarbonisation, clear strategy for transition and tangible progress in zero/low carbon
 - » Business weighting is shifting toward zero/low carbon segments; Upstream is shifting toward gas; Downstream toward marketing and chemicals



The Majors offshore wind portfolios are diversified and mostly early life (pre-FID)

The composition of Majors' offshore wind portfolios

	Size of portfolio (GW)	Number of markets (#)	Number of alliances (#)	Market maturity*	Portfolio maturity*	Technology*	PPA (GW)
							
							
							
							
							

 Net capacity
 Gross capacity

 Established
 Committed
 Emerging
 Pre-emerging

 Operational
 Post-FID
 Pre-FID

 Bottom-fixed
 Floating

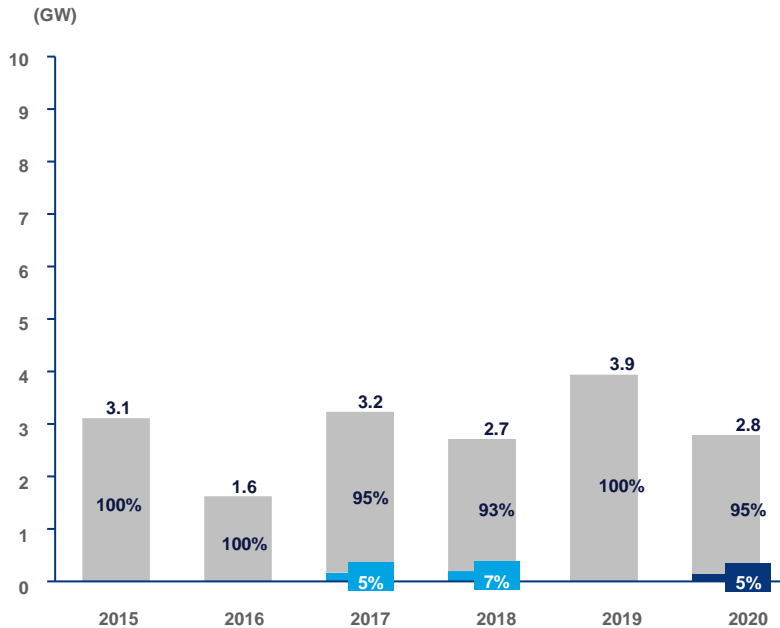
Note: Data as of March 2021. *Based on net capacity, e.g. if a major owns 10% of a 100 MW project, the net capacity would be 10 MW and the gross capacity would be 100 MW.

Source: Wood Mackenzie Corporate New Energy Series

Offshore wind: Majors accounted for 30% of the record 8.7 GW that reached FID in 2020

Despite owning just 3% of operational capacity and accounting for only 5% of capacity additions in 2020, the Majors' growing role in offshore wind is highlighted by their increased participation in new project approvals.

Offshore wind new-build capacity additions (excl. China)



Offshore wind final investment decisions (excl. China)



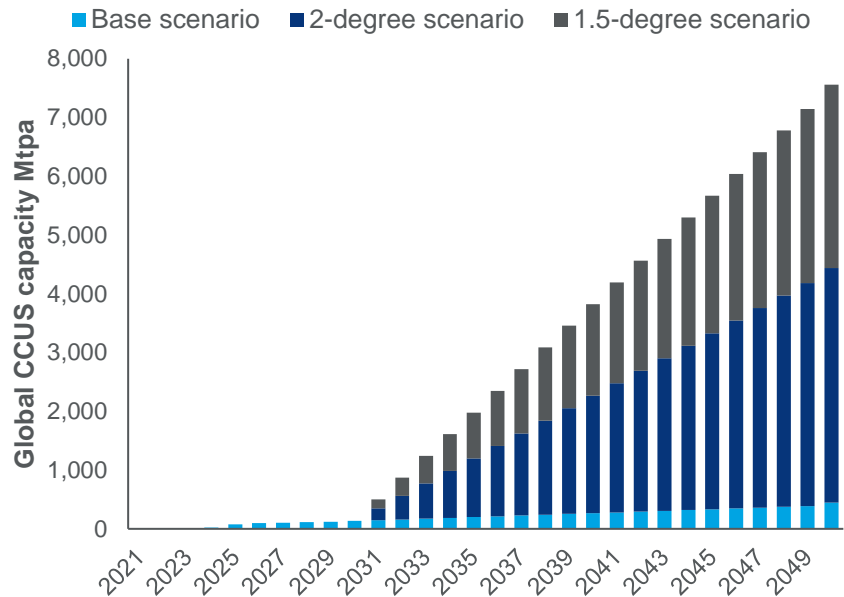
Note: Including Total's share in Seagreen Phase 1, and Eni's share in Dogger Bank A & B, all of which were finalised at FID. *Excluding China.



CCUS is key focus for the Majors

CCUS has exponential growth potential next decade. The Majors' net share accounts for 30% of CCUS global operational capacity. ExxonMobil is the leader.

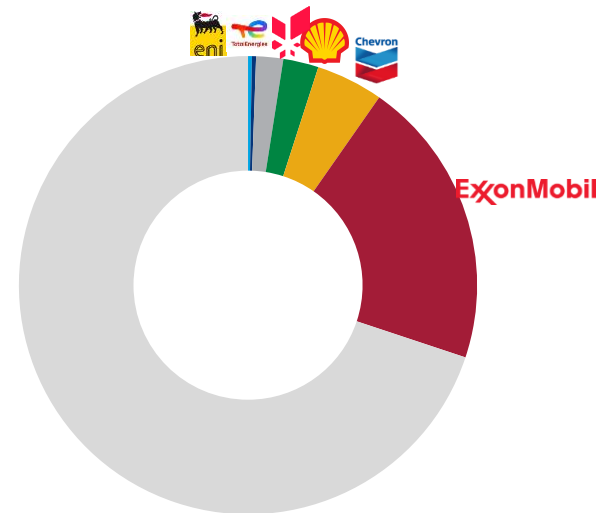
Global CCUS/DAC capacity required by 2050



Source: Wood Mackenzie

Operating CCUS capacity (Mtpa)

Total operational capacity 44 Mtpa CO₂



Source: Wood Mackenzie



How do oil & gas companies stay investable?

Future capital allocation in focus

- **Commit capital to decarbonisation and new energy**
 - » The current oil-price upcycle presents a golden opportunity to accelerate the transition
 - » Articulate stronger investor proposition with transparent dividend policy and clear financial framework for investment in low carbon and decarbonization alongside oil and gas.
- **Credible strategies offer both corporate resilience and sustainability**
 - » Survive and thrive through the energy transition
 - » In upstream, favour gas over oil, and ruthless focus on costs
 - » Build material optionality in the entire energy value chain



Erik Mielke

Senior Vice President – Corporate Research

Biography

Erik leads our Corporate Research, providing data-driven analysis and insight into companies' strategies, performance and outlook, across the energy and natural resources sectors.

Erik brings more than 25 years of energy industry research and corporate management experience to his role. Prior to joining Wood Mackenzie, he was VP Business Development and Commercial at Buried Hill Energy. He was also previously a managing director at Bank of America Merrill Lynch, leading emerging markets energy and US oil and gas research, and a research fellow with Belfer Center's Energy Technology Innovation Policy research group at Harvard.

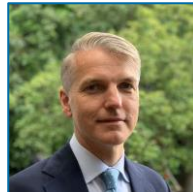
Education

MPA, Energy Policy, Harvard Kennedy School

BSc, Economics, London School of Economics

Chartered Accountant (FCA, ICAEW)

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