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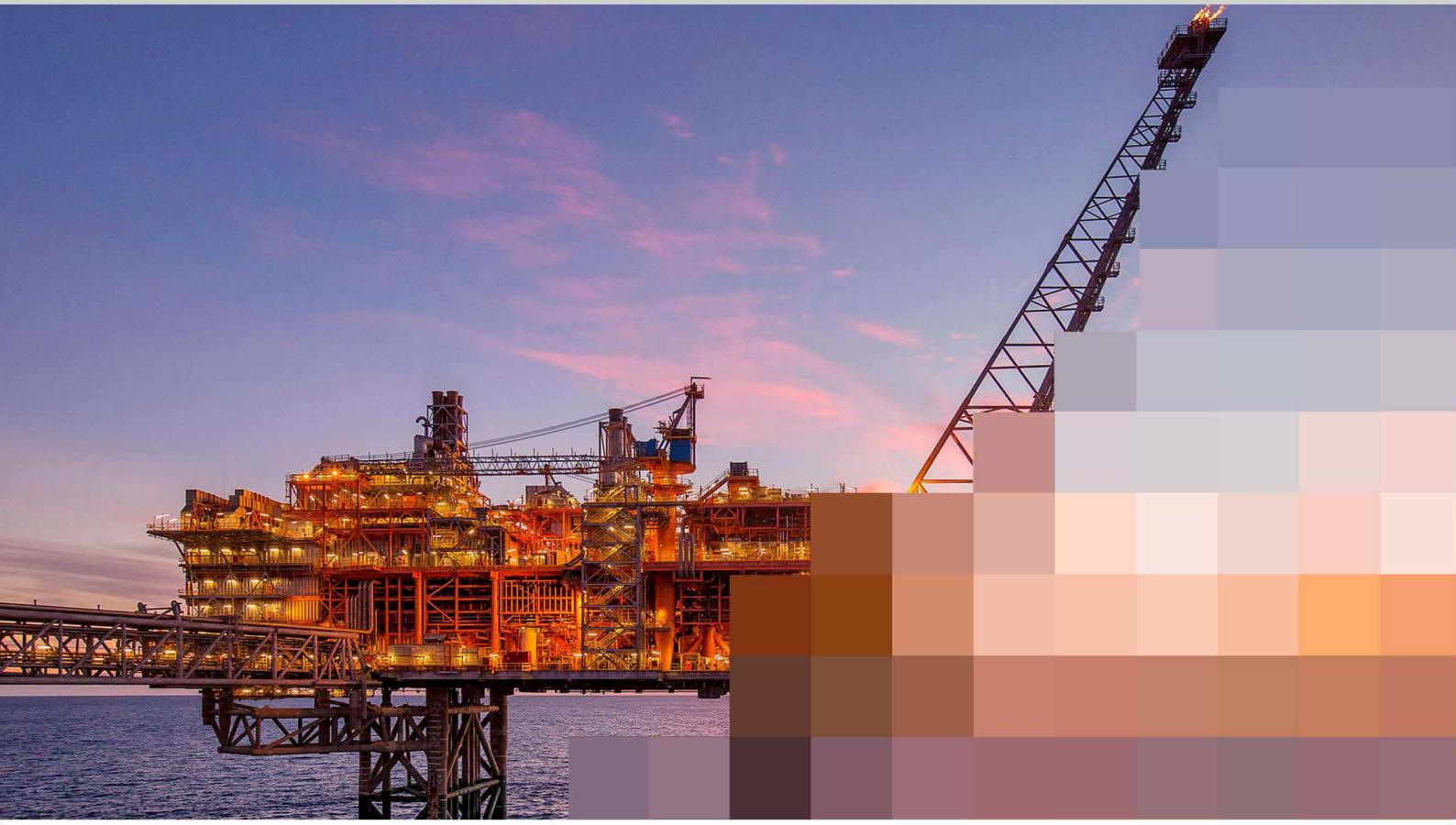
Woodside's growth portfolio: what's in it for shareholders?



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Woodside's growth portfolio: what's in it for shareholders?

A risk-adjusted financial analysis of Woodside's growth portfolio, compared to a capital return strategy.

Contents

1. Introduction

1.1 Executive summary

Woodside Energy Group Ltd is in a strong financial position, with close to zero net debt and a portfolio of assets producing strong cash flows. Current company management and the board intend to use this position to pursue the "next wave of growth opportunities",[1] including potential expansion into new, high-risk emerging markets in Mexico, Senegal, Trinidad and Tobago, and Timor Leste. This strategy, however, would mean growing production in a difficult industry environment and against scientific consensus on the urgent need to reduce absolute greenhouse gas emissions. The oil market is facing long-term structural demand decline, and larger, low-cost Organisation Of The Petroleum Exporting Countries (OPEC) producers are forecast to capture an increasing market share. The success of a production growth strategy will be dependent on both project execution and the future oil prices, with history indicating that Woodside needs an appreciating oil price to generate long-term shareholder value from production growth.

ACCR has undertaken a financial analysis to test whether Woodside's current production growth strategy is an optimum approach to delivering long-term shareholder returns. We found that Woodside's portfolio of unsanctioned projects does not appear to be a material source of value add, at 2.5% of market capitalisation. Furthermore, this portfolio is increasingly dominated by projects with higher country and project risk profiles, and results in significant expenses on exploring and progressing non-viable projects. The portfolio is also sustained by investment criteria which are considerably more bullish than most large European and US oil companies.

We have assessed Woodside's existing production growth strategy, compared to an alternate strategy wherein capital which is currently allocated to production growth is instead used to pursue share buybacks. Our analysis suggests that re-allocating capital to a share buyback offers more Net Present Value (NPV) upside than the company's existing production growth strategy, while avoiding the constellation of risks attached to production growth.

Woodside's current lack of alignment with global temperature goals has been established across a range of sources,[2] and is a persistent source of risk and investor discontent.[3] The projected lifecycle emissions of Woodside's unsanctioned growth portfolio is 536 $MtCO_2e$. Our analysis demonstrates that a strategy which delivers value accretion without further emissions growth is available to Woodside.

1.2 Key findings

Woodside's unsanctioned projects are not a material source of value add.

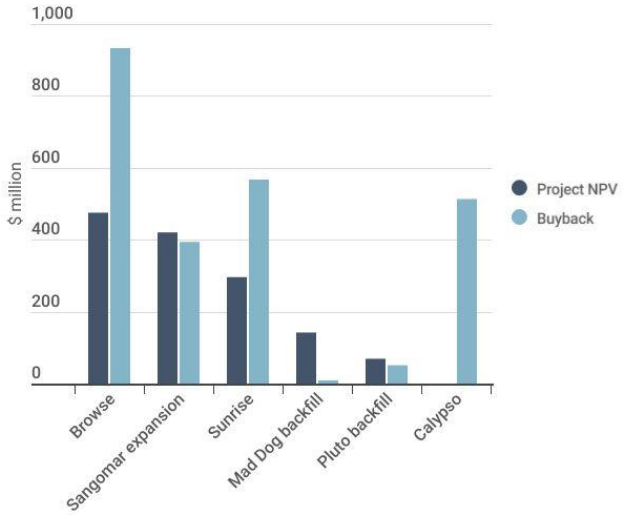
[1] Chair Richard Goyder. 2023 AGM opening address
[2] Transition Pathways Initiative, Woodside Petroleum; Climate Action 100+, Company assessment: Woodside Petroleum; Carbon Tracker Initiative, Oil and gas companies invest in production that will tip world towards climate catastrophe, 2022; World Benchmarking Alliance, 2023: Woodside Energy.
[3] Macdonald-Smith, Investors want Woodside directors held to account on climate, Australian Financial Review, 2022

- **The NPV of Woodside's unsanctioned projects represent 2.5% of market capitalisation.** These projects have a combined capex of 41% of Woodside's market capitalisation, suggesting even minor slips in project execution will result in value destruction.
- **Acquisitions and exploration do not appear to be attractive options to replenish the project portfolio.** For example, Woodside has spent $1.1 billion (nominal) acquiring the Sangomar oil and gas field in Senegal that had an estimated NPV of negative $703 million at Final Investment Decision (FID).

A "capital return" strategy appears to create more value, with lower risk and fewer emissions than a "production growth" strategy.

- **As a portfolio, Woodside's unsanctioned projects create less value than a share buyback,** assuming investors see Woodside's shares at a 10% discount to the current NPV.
- **The few projects that do create incremental value over a share buyback, do not justify the expense of Woodside maintaining its project development capabilities.** This is an opportunity for a simpler, leaner organisation.

Chart 1-1: Value of delivering each unsanctioned project compared to using the capital for a share buyback



- **Woodside's production growth strategy results in significant expenses on exploring and progressing non-viable projects.** For example, Calypso does not appear to be a viable project, despite more than $500 million having been spent on exploration.

- **Cost and schedule increases for Sangomar highlight that Woodside does not always deliver on FID guidance.** Woodside's last major project, Pluto, also overran its cost and schedule. When accounting for historic cost and schedule realities, Pluto's NPV was negative $2.8 billion at the time of FID (Real 2007).

- **A capital return strategy delivers value accretion without further emissions growth.** The projected lifecycle emissions of Woodside's unsanctioned growth portfolio is 536 $MtCO_2e$. Woodside's corporate strategy is not aligned with a 1.5°C pathway and its

portfolio is not well placed for a low carbon transition. A share buyback offers more shareholder value, without more emissions risk.

A production growth strategy may face increasing challenges

- **Historically, chasing production growth hasn't added value when the oil price has stayed flat.** Over the past 16 years Woodside's total shareholder return is only 3.5% p.a. while production has doubled. Over a 30-year period, Woodside's total shareholder return (TSR) seems to be more closely related to the oil price than production growth.

Table 1-1: Woodside Total Shareholder Return relative to production growth and the oil price

	1993-2007	2007-2023
Production growth (%)	210%	198%
WTI oil price growth (%)	275%	0%
TSR (USD basis; % pa)	**28.3%**	**3.5%**

- **Woodside is facing a difficult longer term industry environment.** According to the 2023 International Energy Agency (IEA) Net Zero Emissions by 2050 (NZE) scenario, OPEC members are forecast to increase their share of oil supply from 2021 levels of 35% to 52% by 2050. Even in the IEA Stated Policies (STEPS) scenario, the OPEC market share is forecast to increase to 43% by 2050.
- **Woodside's unsanctioned project portfolio is increasingly dominated by projects with higher country and project risk profiles**. Woodside should account for this in its capital allocation framework, but it's not clear that it does.
- **Woodside's fossil fuel investment criteria appear to be more bullish than most large European and US oil companies**, with higher oil price forecasts and lower new project Internal Rate of Return (IRR) hurdle rates relative to the peer group. The recently approved Mexican project, Trion, would not have met most large European hydrocarbon companies' investment criteria.

1.3 Recommendations

A "capital return" strategy appears more attractive to shareholders than a "production growth" strategy. We recommend that Woodside consider a capital return strategy, wherein capital which is currently allocated to production growth is instead used to pursue share buybacks. This would align Woodside more closely with longer-term industry dynamics, and current shareholder distribution trends of peers. It would also avoid significant project execution risk.

Appendix 1 contains a list of questions that investors could consider asking Woodside's board and management.

1.4 Terminology conventions

Unless otherwise stated:

- All production and commercial values are expressed on a Woodside share, as per today's equity ownership of each asset.
- Emissions include scope 1 and 3 are determined by assuming all production is combusted. Scope 2 emissions are considered to be immaterial.
- Currency is USD.
- Discount and escalation rates are project specific Weighted Average Cost of Capitals (WACCs), adjusted from KPMG's Independent Expert Report (IER)[4] to reflect the risk free hurdle rate as at 30 June 2023.

[4] KPMG, Independent Expert Report and Financial Services Guide, April 2022, pp 247-249

2. Woodside's project portfolio

2.1 Overview and methodology

Woodside has a range of sanctioned and unsanctioned projects.

The projects that have achieved commercial FID (sanctioned) are Scarborough, Sangomar, Shenzi and Trion.[5]

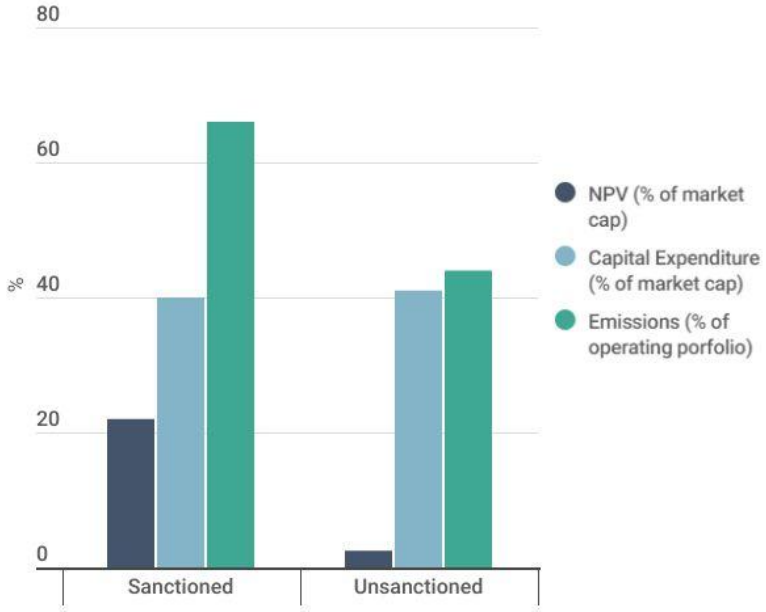
Six unsanctioned projects have also been modelled. These are Browse, Pluto backfill, Mad Dog backfill, Sunrise, Calypso and Sangomar expansion. The unsanctioned projects include those that Rystad concludes are commercial or uncertain[6]. Sunrise and Calypso are deemed uncommercial by Rystad, but have been included in our analysis as unsanctioned projects, since Woodside is 'committed to the development [of Sunrise]'[7] and lists Calypso[8] as a current development on its website.

We assessed the NPV for each of these projects and compared it to the NPV upside in a scenario where Woodside redeployed the forecast capex of its unsanctioned projects towards a buyback. The buyback calculations assume that a Woodside investor viewed the share price to be trading at a 10% discount to the current NPV. Our analysis uses Rystad data to forecast free cash flows and the KPMG April 2022 Independent Expert Report to calculate discount rates. We used discount rates specific to each unsanctioned project (see Table 3-2). All discount rates reflect the risk-free rate as at 30 June 2023.

Woodside's sanctioned project portfolio presents a material value opportunity at 22% of market capitalisation.[9] However, its unsanctioned projects, at 2.5%, appear immaterial especially in consideration of the amount of capital expenditure (41% market cap) required for these projects.

[5] At the time of writing, Pemex has not yet made FID on Trion.
[6] Nearly all of the uncertain component of Woodside's portfolio relates to Browse, where 393 MMboe is deemed to be uncertain, and 434 MMboe is commercial.
[7] Woodside, Greater Sunrise, 2023.
[8] Woodsie, Prioritising competitive growth opportunities, 2023.
[9] Market cap of A$65 million, and FX of 0.67 USD/AUD as at 30 June 2023.

Chart 2-1: NPV and capex of Woodside's sanctioned and unsanctioned projects



2.2 Unsanctioned projects

Table 2-1 shows that Woodside appears to have minimal potential NPV in its unsanctioned projects. Table 2-2 compares the NPV value accretion of a share buyback to the NPV of each unsanctioned project. Appendix 2 provides an example of how the buyback NPV upside is calculated.

Table 2-1: Unsanctioned projects

Project	**Location**	**Capex** *$ million*	**NPV** *$ million*	**Emission** *$MtCO_2e$*	***NPV: IER Mid-Point***[10] *$ million*
Browse	Australia	8,397	475	275	*398*
Sangomar expansion	Senegal	3,543	420	124	*290*
Sunrise	Timor Leste	5,106	296[11]	104	*296*
Mad Dog backfill	USA	77	142	7	*N/A*
Pluto backfill	Australia	461	69	25	*N/A*
Total		**17,583**	**1,402**	**536**	
Unviable					
Calypso	Trinidad	4,615	Negative	131	*118*

[10] KPMG, Independent Expert Report and Financial Services Guide, April 2022, pp 109, 128 and 133 (Sangomar Expansion NPV estimate 15% of total project NPV of $1,929 million).
[11] KPMG, Independent Expert Report and Financial Services Guide, April 2022, p128. The IER does not provide enough information to calculate a WACC for Sunrise, so we have included their valuation, rather than a DCF analysis using Rystad data.

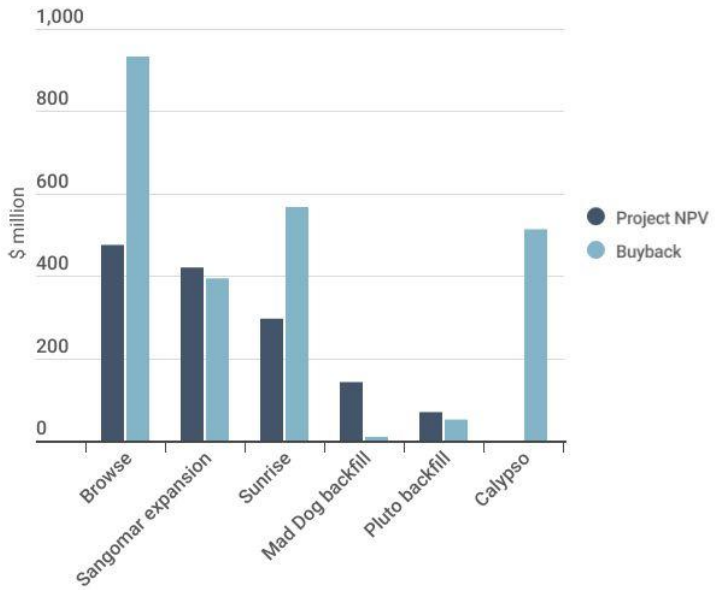
and Tobago

Table 2-2: NPV value accretion of buyback for unsanctioned projects

Project	Capex *$ million*	Buyback NPV upside *$ million*	Project NPV *$ million*	Buyback NPV – Project NPV *$ million*
Mad Dog backfill	77	9	142	-134
Sangomar expansion	3,543	394	420	-8
Pluto backfill	461	51	69	-18
Sunrise	5,106	567	296	271
Browse	8,397	933	475	458
Unviable				
Calypso	4,615	513	Negative	> 513

Share buybacks offer higher NPV upside than delivering many of these projects, with no unsanctioned project offering significant NPV upside over a buyback. Mad Dog is the only project where the NPV upside from the Project relative to a buyback is over $100 million (0.3% of market cap). The Sangomar expansion and the Pluto backfill offer marginal upside relative to a buyback. For Browse, Sunrise and Calypso the NPV upside from a buyback is considerably higher than the NPV upside from the project. In aggregate, and compared to a scenario where Woodside proceeds with all of its unsanctioned projects, share buybacks offer $570 million (ex-Calypso) more NPV upside.

Chart 2-2: NPV of unsanctioned projects relative to a buyback



2.3 Sanctioned projects

Woodside's sanctioned projects, mostly Sangomar and Scarborough, are forecast to provide material NPV upside for Woodside. This is partly driven by the significant amount of capex that has already been spent on these projects. As can be seen in Table 2-3, when adjusting the base year from 2023 to when the FID was made, project NPVs are materially lower.

Table 2-3: Sanctioned projects

Project	Location	2023 base year		FID base year		Emissions
		Capex *$ million*	NPV *$ million*	Capex *$ million*	NPV *$ million*	*$MtCO_2e$*
Sangomar	Senegal	2,256	2,346	4,952	-703	81
Scarborough	Australia	9,865	6,175	12,159	4,527	583
Trion[12]	Mexico	4,869	349	4,869	349	115
Shenzi (TLP)	USA	110	431	414	150	13
Total		**17,100**	**9,301**	**23,393**	**4,323**	**793**

2.4 View on acquisitions

The Sangomar project (see section 3.1) shows purchasing reserves can be a high risk strategy and such acquisitions can erode significant shareholder value.

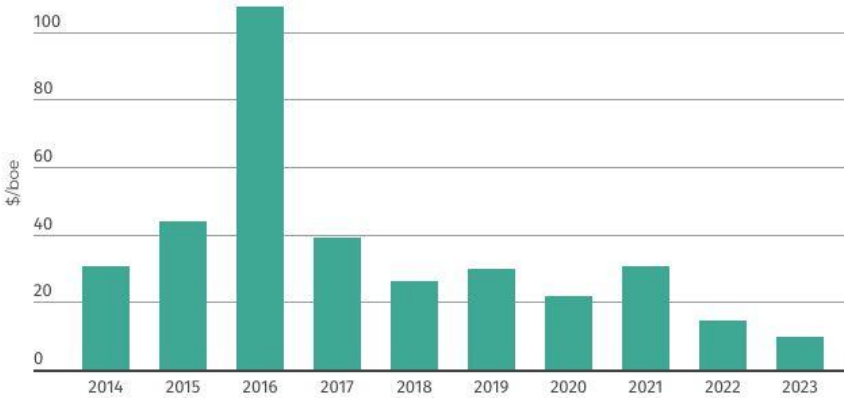
An acquisition strategy may be more optimal if Woodside limited its acquisitions to operating assets at compelling valuations. In this scenario, Woodside would accumulate cash during peaks in the energy cycle, to use when the energy cycle troughs and pessimism is built into industry valuations. Purchasing operating assets would avoid capex risk and may also mitigate social licence issues related to fossil fuel expansion. In order to encourage capital discipline, a high hurdle rate would need to be set, similar to those used by some of the large European oil majors (see section 3.3). While difficult to quantify and outside the scope of this analysis, this strategy could be more value accretive than Trion or Woodside's current unsanctioned project portfolio.

2.5 Exploration

Woodside has a history of high exploration finding costs, with a ten-year average finding cost of $35 / boe.[13]

[12] The Trion capex and NPV are based on ACCR's Try Harder than Trion report updated to 30 June 2023. Rystad deem Trion commercial but with a lower NPV. We have therefore given Woodside the benefit of the higher NPV valuation in our analysis.
[13] Woodside, 2022 Annual Report, p206. This data is based on Woodside as the listed entity. It does not, for example, include legacy BHP assets prior to the merger.

Chart 2-3: Exploration finding costs (3 year average)



Although some of Woodside's future exploration activities may beat historic norms, Woodside has ten years of experience, suggesting its exploration capabilities are not a competitive advantage.

3. Other challenges with a production growth strategy

We identified six other considerations for comparing a production growth with a capital return strategy:

1. Exploration, corporate and acquisition costs
2. Woodside's project execution track record
3. Return hurdle rates and oil price assumptions relative to major US and European oil companies
4. The risk profile of Woodside's new projects
5. Oil and gas industry capex and distribution trends
6. Historic analysis of Woodside's total shareholder return relative to both production growth and the oil price

3.1 Exploration, corporate and acquisition costs

Exploration costs of non-commercial projects

When forecasting the NPV of a production growth strategy, the exploration costs of non-commercial projects can be a material cost that is not captured in a point-in-time NPV analysis of individual projects. Calypso is a good example of this.

Rystad forecasts that Calypso has a negative NPV, which makes it unlikely that Calypso will proceed to production. However the project has **over $500 million (nominal) in sunk exploration costs**. Under the current production growth strategy, these sunk costs will likely continue with Woodside recently being the highest bidder for 12 leases in the Gulf of Mexico and also picking up three African licences.[14]

Corporate overheads

Woodside does not provide details about how many staff work in each division. But, if we assume that 5% of staff are associated with exploration and growth projects, and that they each have an annual salary of $200,000, this equates to an operating cost of $48 million per year. Assuming a Price-to-Earnings (P/E) ratio of 10 and a corporate tax rate of 30%, removing this division would create **$330 million of savings on an NPV basis**. There would be other cost savings associated with a leaner organisation, however due to the difficulties in quantification we have not attempted to approximate these costs.

Acquisition costs

Like exploration costs, acquisition costs can also be a material cost that is not captured in a point of time NPV analysis of individual projects.

Although Sangomar has not yet been completed, it offers powerful insights into the impact of expenses incurred prior to FID.

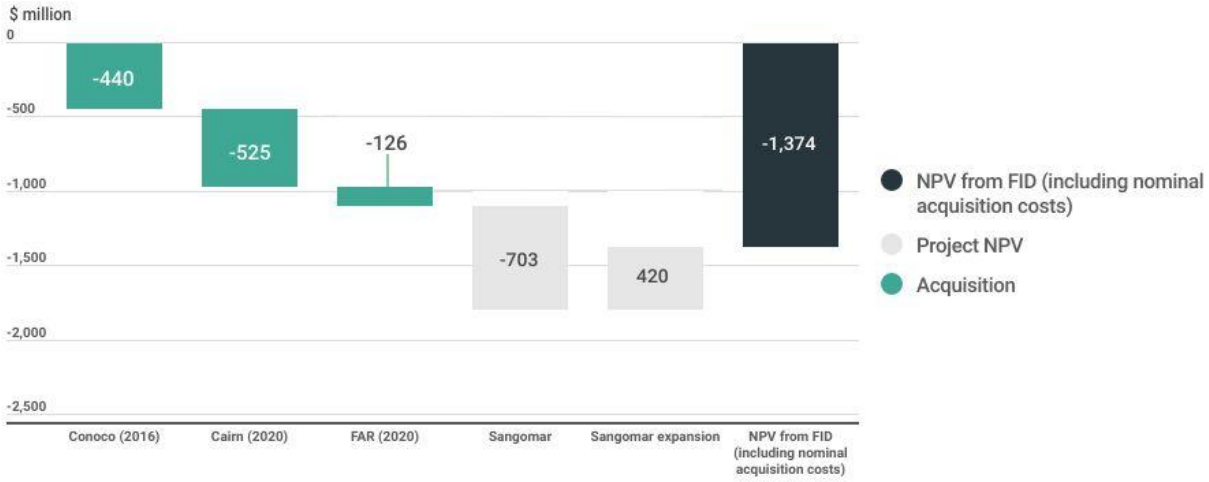
[14] Woodside, First quarter report for period ended 31 March 2023, p12

Sangomar has been acquired by Woodside in three separate deals:

1. 35% from ConocoPhillips in 2016 for $440 million[15]
2. 40% from Cairn in 2020 for $525 million[16]
3. 15% from FAR[17] in 2020 for $126 million[18]

The net impact is that Sangomar is forecast to erode $1.4 billion of value[19]. This is before any contingency payments to Cairn or FAR, and excludes any development costs not otherwise captured in the acquisition deals.

Chart 3-1: Value of Sangomar project from FID



3.2 Woodside's project execution track record

Woodside has a history of major projects exceeding FID cost and schedule guidance.

Although Pluto is currently Woodside's most productive asset, the project cost greatly exceeded Woodside's FID capex estimates. Current Rystad data, which incorporates these cost and schedule overruns, shows that Pluto had a NPV of negative $2.8 billion at FID in 2007.

The recent cost and schedule increases for Sangomar[20] suggest Woodside has not resolved its challenges delivering projects according to the FID guidance. Sangomar is now due to start up more than 12 months late[21] and at 18% more than the initial $4.2 billion cost.[22]

[15] Woodside, Woodside complete acquisition of ConocoPhillips' interests in Senegal, 2016, p1
[16] Woodside, Woodside completes Sangomar acquisition from Cairn, 2020, p1
[17] FAR was formerly known as First Australian Resources NL, but became FAR Limited in 2010
[18] Woodside, Woodside pre-empts FAR's Sangomar transaction, 2020, p1. This includes $45 million purchase costs; pro rates the working capital cost based on the Cairn deal and ignores the $55 million contingency component.
[19] This data is based on Woodside as the listed entity.
[20] Woodside, Sangomar project update, 2023, p1
[21] Woodside, Sangomar field development approved, 2020, p1
[22] Macdonald-Smith A, Woodside gets Senegal tick fo4 $6b oil project, Financial Review, 2020

3.3 Return hurdle rate for new hydrocarbon projects relative to major US and European oil companies

Woodside has a higher oil price assumption and/or lower fossil fuel hurdle rates than large European and US oil companies.

Only Eni has a higher 2023 oil price forecast than Woodside, but it assumes a longer-term decline in the oil price from 2026. Equinor has the same oil price assumption as Woodside but has a much higher IRR hurdle rate for new projects of 30%, compared with 15% for Woodside. Total has the same short term oil price forecast, but assumes a longer-term decline in the oil price from 2030 and has a much tougher <$30 $/bbl after-tax breakeven hurdle rate for new upstream oil projects.

Among the selected peer group, the only use of a lower new project hurdle rate is by Shell, for its Integrated Gas projects. At 11%, this is 1% lower than Woodside's 12% IRR hurdle rate for gas.

Table 3-1: New project hurdle rates and oil price assumptions for major US and European oil companies[23]

Company	Investment Hurdle	2028 Oil Price assumption (nominal $/bbl)
Woodside	IRR 15% (oil) IRR 12% (gas)	$79
Shell	IRR 15% (oil) IRR 11% (gas)	$73
BP	IRR 15-20%	$66
Exxon	ROCE[24] 17%	$68
Chevron	ROCE 12%	$61
Total	Capex + Opex < $20/boe or After-tax breakeven < $30/bbl	$79
Equinor	IRR 30%	$79
Eni	IRR 25%	$70
ConocoPhillips	ROCE 15%	$74

The recently approved investment in the Mexican project, Trion, was forecast by Woodside to deliver an IRR of >16%[25] and a breakeven of <$50/bbl.[26] Based on ACCR's financial model of Trion:

- Trion would not meet the hurdle rates of Equinor, Eni, or Total.
- Due to the lower 2028 oil price assumption of BP, Trion would not meet the 15-20% hurdle rate for BP.
- Trion would meet Shell's 15% hurdle rate using Woodside's oil price, but Shell's lower oil price assumption means that Trion would be a marginal decision.

[23] References and source data are in Appendix 3
[24] Return on Capital Employed
[25] Woodside, Woodside Approved Investment in Trion Development, 2023, p1
[26] Woodside, Woodside Approved Investment in Trion Development, 2023, p3

- Exxon and Chevron do not appear to disclose hurdle rates, but they have lower oil price assumptions than Woodside and Trion would not achieve Woodside's 15% hurdle if assessed at these companies' oil price assumptions.
- ConocoPhillips also does not appear to disclose a hurdle rate. Its oil price assumption is only marginally lower than Woodside's, resulting in an IRR of around 15%.

3.4 The risk profile of Woodside's new projects

The recently announced investment in the Mexican project, Trion, carries additional risks that may not be fully captured in the IRR, which we discussed in a detailed note in March 2023.[27]

Emerging market projects generally carry additional risks. The country risk rating applied by KPMG in the April 2022 Independent Expert Report highlights the degree of country/project-specific risk embedded in the current list of Woodside's unsanctioned projects.

Table 3-2 shows the risk premium for Trion and Woodside's unsanctioned projects. It also shows the WACC from the IER, after adjustment for the change in the risk free rate since the IER was published.

Of particular note is that Sangomar's WACC is higher than Woodside's hurdle rate. This means that a positive FID in Senegal does not necessarily ensure the project will cover its cost of capital - even before considering other costs such as corporate overheads, development and acquisition costs.

Table 3-2: Country- and project-specific risk premiums

Project	Location	Capex *$ million*	Country/Project specific risk Premium[28] (% pa)	WACC (% pa)
Recently Approved				
Trion	Mexico	4,869	2.5%	11.9%
Unsanctioned Projects				
Sangomar expansion	Senegal	3,543	7.0%	15.7%
Browse	Australia	8,397	3.0%	12.3%
Mad Dog backfill	USA	77	1.0%	11.1%
Pluto backfill	Australia	461	1.0%	10.2%
Calypso	Trinidad and Tobago	4,615	3.5%	12.6%
Sunrise	Timor Leste	5,106	Not disclosed in the IER	

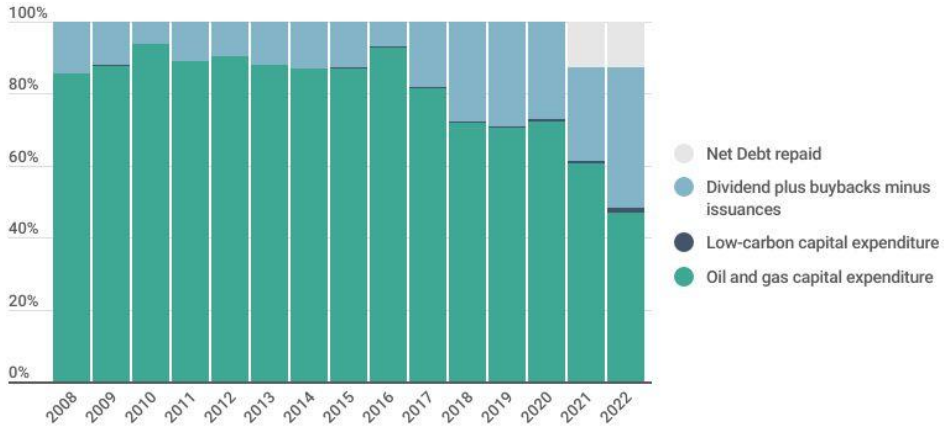
[27] ACCR, Can Woodside try harder than Trion, 2023
[28] KPMG, Independent Expert Report and Financial Services Guide, April 2022, pp 247-249

3.5 Oil and gas industry capex and shareholder distribution trends

The oil and gas industry is directing an increasing proportion of cash to dividends and buybacks, as shown in Chart 3-2. In 2022, cash spending on oil and gas capital expenditure was around 20% higher than shareholder distributions (e.g. buybacks and dividends) the lowest since at least 2008. By contrast, Woodside's capital expenditure is still around 30%[29] higher than shareholder distributions, which is forecast to increase materially into 2023 given the intention to increase capital expenditure by between 49-62%.[30]

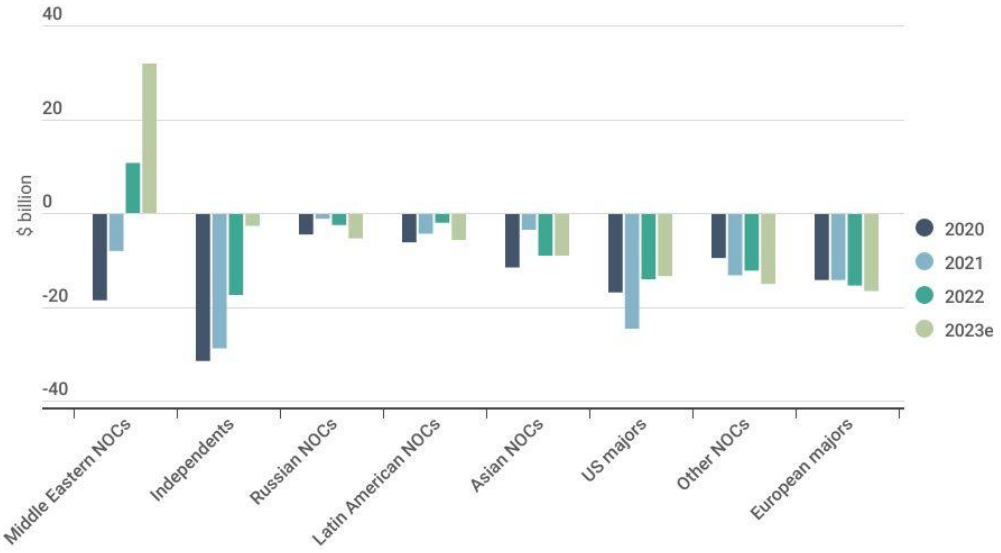
In contrast, Chart 3-3 shows the IEA's forecast that industry oil and gas capital expenditure will only increase 7%,[31] driven mainly by low-cost Middle Eastern National Oil Companies (NOCs) – which is the only region with more capital expenditure in 2023 than pre-Covid-19.

Chart 3-2: Distribution of cash spending by the oil and gas industry, 2008-2022[32]



[29] Woodside, Annual Report 2022, p15 (Capex: $4,023 million, Dividends $3,080 million)
[30] Woodside, 2022 Full-Year 2022 results, p35 (2023 Capex $6-6.5 billion)
[31] IEA, World Energy Investment 2023, p67
[32] IEA, World Energy Investment 2023, p11

Chart 3-3: Change in oil and gas capex relative to 2019 by company type, 2020-2023e[33]



The IEA's 2022 World Energy Outlook shows that oil consumption peaks in all scenarios, with the peak ranging from 2019 through to the mid-2030's.[34] All IEA scenarios also show OPEC's share of the oil market increasing from 35% in 2021 to 43-52% in 2050.[35]

3.6 Woodside's total shareholder return relative to production growth

Looking at a 30-year history from 1993 to 2007, Woodside's total shareholder return was 28.3% p.a., while the oil price increased 275% and sales volumes by 210%.[36] Despite short term volatility, the oil price remained broadly flat from June 2007 to June 2023. Although Woodside's sales volumes have increased 198% (approximately 60% ex-BHP), this did not lead to strong total shareholder returns (3.5% p.a.). Raw data for TSR and oil price is in Appendix 4.

The lessons of Woodside's share price history suggest over the long-term: if the oil price materially appreciates, shareholder returns will be strong; if the oil price is flat or declining, shareholder returns will underperform the broader market, and a production growth strategy will not add value.

Given the industry faces longer-term structural demand decline, it is unsurprising that both the futures price and several large US and European oil and gas companies forecast reducing long-term oil prices (in real terms). If this eventuates, history suggests a production growth strategy is unlikely to deliver sufficient TSR and a capital return strategy is likely to generate stronger TSR.

[33] IEA, World Energy Investment 2023, p68
[34] IEA, World Energy Outlook 2022, p325
[35] IEA, World Energy Outlook 2022, p329
[36] This section is based on Woodside as the listed entity. It does not, for example, include legacy BHP assets prior to the merger.

Table 3-3 Woodside's Total Shareholder Return relative to production growth and the oil price

	1993-2007	2007-2023
Production growth (%)	210%	198%
WTI oil price growth (%)	275%	0%
TSR (USD basis; % pa)	**28.3%**	**3.5%**

4. Strategy alignment with a 1.5°C climate scenario

4.1 Overview

Woodside's corporate strategy does not align with a 1.5°C pathway. The CA100+ benchmark assessment,[37] Carbon Tracker,[38] the World Benchmarking Alliance[39] and the Transition Pathway Initiative[40] have all found Woodside's current strategy to be misaligned with the Paris Agreement's global temperature goals, including pursuing efforts to limit temperature increases to 1.5°C. Recent Annual General Meeting (AGM) voting results reflect a growing level of investor discontent with Woodside's approach to climate change. As investors have reminded Woodside, scientific evidence is that the remaining carbon budget "for limiting warming to 1.5°C is becoming very small".[41] At current emissions levels the 1.5°C budget will be exhausted within six years.

Since its May 2021 flagship Net Zero report, the IEA has maintained that there is no room for new fossil fuel developments in its NZE pathway.[42] Woodside proceeded to FID on Scarborough in November 2021, at a cost of $12 billion and 583 $MtCO_2e$. Scarborough will not come online until at least 2026 and its cost of supply exceeds the value of gas in China and Japan under the NZE.[43]

In its March 2023 Synthesis report, the IPCC recommended that a 1.5°C future should be characterised by drastic climate efforts.[44] It stated with high confidence that "[p]rojected CO_2 emissions from existing fossil fuel infrastructure without additional abatement would exceed the remaining carbon budget for 1.5°C".[45] Woodside made FID on Trion in June 2023, with a cost of $4.9 billion and 115 $MtCO_2e$. Trion will not come online until at least 2028.

A May 2022 scientific paper concluded that "staying below 1.5°C may require governments and companies not only to cease licensing and development of new fields and mines, but also to prematurely decommission a significant portion of those already developed".[46]

The projected lifecycle emissions of Woodside's low-value, high-risk unsanctioned growth portfolio is 536 MtCO2e. Our analysis demonstrates that a strategy which delivers value accretion without further emissions growth is available to Woodside.

[37] Climate Action 100+, Company Assessment: Woodside Petroleum Ltd, 2023
[38] Carbon Tracker Initiative, Oil and gas companies invest in production that will tip world towards climate catastrophe, 2022
[39] World Benchmarking Alliance, 2023: Woodside Energy
[40] Transition Pathway Initiative, Woodside Petroleum, 2022
[41] P. M. Forster et al., Indicators of Global Climate Change 2022: annual update, 2023
[42] IEA, Net Zero by 2050: A Roadmap for the Global Energy Sector, 2021
[43] ACCR, Facts over fiction, 2021, pp 32-33
[44] IPCC, AR6 Synthesis report: Climate Change, 2023
[45] IPCC, Climate Change 2023 Synthesis Report, 2023
[46] Kelly Trout et al, Existing fossil fuel extraction would warm the world beyond 1.5°C, 2022

4.2 Woodside's selected climate pathway

In its 2022 Climate Report, Woodside used the Intergovernmental Panel on Climate Change's (IPCC) P3 'indicative pathway' to justify the climate ramifications of its capital allocation strategy.[47] The IPCC indicative pathways are groups of climate scenarios that achieve a 1.5°C climate outcome. Woodside appears to have highlighted the P3 because it "involves relatively higher levels of natural gas together with a marked increase in levels of carbon capture and storage (CCS)".

The IPCC compiles rigorous peer-reviewed research, but in our view, the structure and purpose of the IEA means that its scenarios are more relevant to investors. IPCC scenarios meet certain climate outcomes, but they are not statements on feasibility. The IEA scenarios have greater regional granularity and are subject to constraints, beyond just the requirement to achieve a certain temperature outcome. The IEA states that its NZE scenario is the most "technically feasible, cost-effective and socially acceptable" scenario that achieves net zero emissions by 2050 and the goals of the Paris Agreement.

The IEA also updates its scenarios annually, allowing them to respond to changes in the energy market. A recent example of this is the Ukraine war. In 2022, the IEA updated its NZE to reflect, amongst other things, geopolitical concerns around gas supply. Compared to the 2021 NZE, the 2022 NZE shows steeper declines in LNG demand in the 2030s, and total gas well before 2030. Although the IPCC's P3 is still 1.5°C aligned, it was published in 2019, so cannot reflect the changes to the energy system that have happened since then.

The IPCC described the P3 as 'middle of the road' in 2019. This is because it involves moderate action which delays emissions reduction, rather than the P3 representing a 'typical' 1.5°C scenario. The P3 consumes more gas than 85% of the scenarios included in the IPCC's database, and more sees CCS applied to fossil fuels than 80% of the scenarios.

[47] Woodside, 2022 Climate Report, p11

Appendix 1: Potential questions for Woodside's board and management

Investors should consider asking Woodside's board:

1. Woodside's history indicates shareholder value comes from oil price appreciation rather than production growth. Why is this, and what is being done differently with the current list of sanctioned and unsanctioned projects to generate shareholder value?

2. Why are the IRR hurdle rates for new projects generally lower than major US and European oil companies?

3. Why does Woodside have more optimistic oil price assumptions than major US and European peers? Why does Woodside not assume a decrease in the oil price over time given the projections of long-term demand decline?

4. With regard to Trion, and the unsanctioned projects, how does Woodside consider the downside asymmetric risk profile of capex, oil price and partner risk?

5. How is country risk factored into final investment decisions? Why is the growth portfolio increasingly concentrated in high risk locations? Has Woodside exhausted options in low risk jurisdictions, or is it only able to meet its hurdle rates by taking on higher levels of risk?

6. Longer term, who gains/loses market share in the oil industry? Is Woodside expecting to gain market share over time, if so why and who does it take market share from?

7. Woodside has a history of poor project execution and based on the recent Sangomar announcement this does not seem to be remedied. How can we gain comfort that Woodside will deliver FID guidance for other projects?

8. Is the current remuneration structure aligned to maximising long term shareholder returns, and are the incentives indifferent to a production growth or capital return strategy?

Appendix 2: Methodology for share buybacks

Example from Trion assuming capex of $4,650 million.[48]

	Before buyback	Post buyback	Comments
Shares Outstanding (million)	1,899	1,720	($4,650 / $25.98)
Share Price (31 Jan 2023) ($)	$25.98		
Market Cap ($ million)	$49,330		
NPV ($ million)	$54,811	$50,161	($54,811 - $4,650)
NPV per share ($ million)	$28.87	$29.17	
NPV Upside from buyback (A$)		**$0.42**	($29.17 - $28.87) / 0.71

[48] ACCR, Can Woodside try harder than Trion, 2023

Appendix 3: Peer investment hurdles and oil price assumptions

Company	Product / segment	Oil and gas price assumption (central case)	Investment hurdle(s)	Implied 2028 oil price (nominal $/bbl)
Woodside[49, 50]	Oil: Brent	$70/bbl (Real-21)		$79/bbl
	Oil		IRR > 15%	
	Gas		IRR > 12%	
Shell[51]	Gas: Henry Hub	$4/MMBtu (Real-22)		$73/bbl
	Oil: Brent	$65/bbl (Real-22)		
	Upstream		IRR > 15%	
	Integrated Gas		IRR > 11%	
BP[52]	Oil	$60/bbl (Real-21)		$66/bbl
	Upstream oil and refining		IRR: 15-20%	
	Upstream gas		IRR: 15-20%	
Exxon Mobil[53, 54]	Oil: Brent	$60/bbl (Real-22)	ROCE: 17%	$68/bbl
Chevron[55]	Oil: Brent (2023 - 2027)	$60/bbl (nominal)	ROCE: 12%	$61/bbl
TotalEnergies[56, 57]	Oil: Brent (2022-2030)	$70/bbl (Real-22)		$79/bbl
	Oil: Brent (2040)	$50/bbl (Real-22). Decreasing linearly from 2030		
	Oil: Brent (2050)	$24.5/bbl (Real-22). Decreasing linearly from 2040		
	Oil: Brent (average 2023-2050)	$53.9/bbl (Real-22)		
	Oil		Capex+Opex < $20/boe or After-tax breakeven < $30/bbl	
Equinor	Oil	$70/bbl (Real-22)[58]		$79/bbl
	Oil and gas		IRR: 30%[59]	
Eni[60]	Oil: Brent (2026-2033)	$60/bbl (Real)		$70/bbl
	Oil: Brent (2050)	$43/bbl (Real)		
ConocoPhillips[61]	Oil: Brent	$65/bbl (Real-22)		$74/bbl

[49] Woodside, Approves Investment in Trion Development Presentation, 2023 p2
[50] Woodside, FY22 Annual Report p19
[51] Shell, Capital Markets Day 2023 Presentation pp 43, 45-46
[52] bp, FY22 Annual Report pp28, 30
[53] Exxon Mobil, 2022 Investor Day Presentation pp 49, 97
[54] Exxon Mobil, 2022 Corporate Plan Update p8
[55] Chevron, 2023 Investor Day Presentation pp 8, 31
[56] TotalEnergies, 2022 Form 20-F pF-17
[57] TotalEnergies, 2023 Strategy, Sustainability & Climate Presentation p12
[58] Equinor, Capital markets update 2023 p58
[59] Equinor, Capital markets update 2023 p33
[60] Eni, FY22 F-20 Filing, p160
[61] ConocoPhillips, 2023 Analyst & Investor Meeting p3

Appendix 4: Raw data for TSR, oil price and production

This Appendix treats Woodside as the historic listed entity. It does not, for example, include impacts from the BHP portfolio until after the merger.

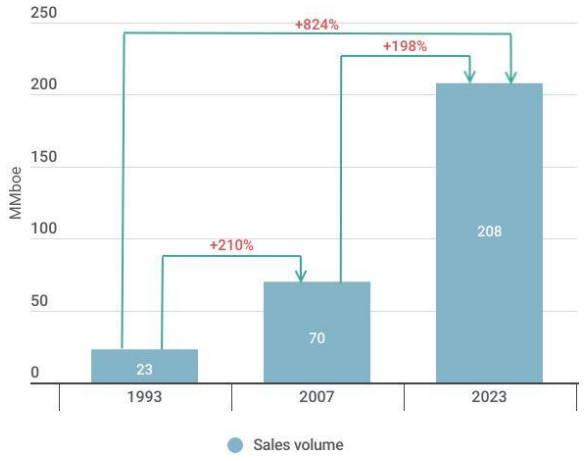
Woodside's sales volumes

	1993	2007	2023
Sales (MMboe)[62]	23	70	208
% change from prior period	-	210%	198%
% change (FY93-FY23)	-	-	824%

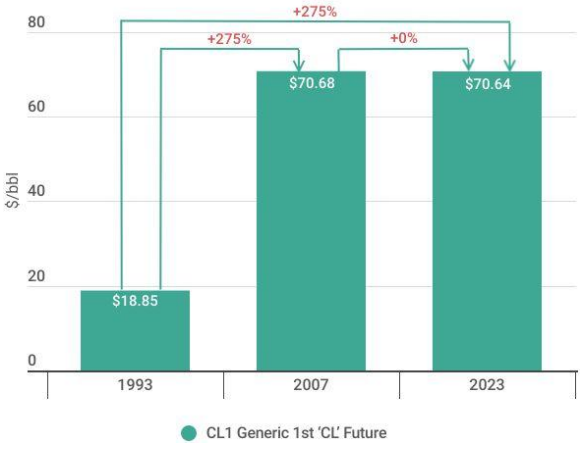
CL1 Generic 1st 'CL' Future (WTI oil futures)

Price	1993	2007	2023
CL1 ($/bbl)	$18.85	$70.68	$70.64
% change from prior period	-	275%	0%
% change (FY93-FY23)	-	-	275%

Woodside's sales volumes



CL1 Generic 1st 'CL' Future (WTI oil futures)



[62] Woodside Annual Report 1996 p16, Woodside Annual Report 2007 p133. Production data for 1993 & 2007 uses year-end data.

30 June 1993 to 30 June 2007[63]

Oil price ($/bbl):

TSR (USD basis; $):

[63] Bloomberg Finance L.P.; Used with permission of Bloomberg Finance L.P.

30 June 2007 to 30 June 2023[64]

Oil price ($/bbl):

TSR (USD basis; $):

[64] Bloomberg Finance L.P.; Used with permission of Bloomberg Finance L.P.

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Data sources

Most production and financial data has been sourced from Rystad's UCUbe, release date 4 July 2023. Rystad has verified that we have correctly interpreted these data as inputs to our analysis, but ACCR retains responsibility for any subsequent assumptions or errors.

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