WaveStone ESG Report
Quarter ending March 2024

ESG Quarterly: Comparing the Decarbonisation Plans of Woodside and Santos to EU Peers

Following this year's engagement efforts, and as a part of our ongoing evaluation of the decarbonisation plans of Woodside and Santos, we have undertaken a comparison of their relative plans compared to major EU Oil & Gas companies. Whilst the effort is informative, particularly in terms of highlighting the relative ambition, approach and timelines of each, it is also imperfect given different portfolio mix means there is considerable divergence in the approach to decarbonisation. Woodside and Santos are exploration & production (E&P) energy companies, whereas their EU counterparts tend to be fully vertically integrated energy businesses, with greater opportunity for decarbonisation of end markets through the sale of alternative fuels (such as supplying EV chargers powered with renewables). The analysis was also somewhat complicated by the differing start dates used as the baseline for decarbonisation. Despite these challenges the exercise provides important context which we will use in our engagement efforts going forward.

This note presents sector plans at a snapshot in time. The final decarbonisation pathway will likely evolve quite differently from those published to date. Government policies will also become more targeted (much like the 2023 Safeguard Mechanism reforms) plus consumer demand could pivot more quickly to greener solutions.

Our key learnings are:

- While there is a broad church of investor expectations there is a common desire to see the globe meet the climate objectives of the Paris agreement. Decarbonisation plans and ambition are shaped by these stakeholder expectations including Government policy, the existing portfolio positioning of each company, the anticipated pace of technological change (cost and availability) and end customer demand.
- Effective decarbonisation of the sector is difficult, leading many to a reliance on offsets, and in some instances divestments, on the path to net zero.
- There is a broad consensus in the ambition, that gas is likely to be an important part of the fuel mix for some time particularly given its ability to provide a supporting role to more intermittent renewables – providing time for alternate technologies to mature.
- The evolving technical landscape has the potential to change both the cost of delivery and opportunity set over time. Part of the problem for producers is the decarbonisation effort requires technologies that are so nascent that the economics remain unknown.
- Some producers have recently lowered/extended their decarbonisation targets.
- Woodside and Santos 2030 targets have been set with a lower level of ambition relative to European peers.
- Woodside and Santos have delivered a lower level of emissions reduction from their chosen baseline to date, but their 2022 to 2030 (baseline adjusted) ambition looks comparable to peers.

Woodside and Santos targets have been set with a lower level of ambition

We have collated the decarbonisation data for Woodside, Santos and the EU majors, Shell, TotalEnergies, BP, Equinor and Eni. The reported data shows that the Woodside and Santos targets have been structured similarly to the EU majors (absolute reductions), albeit at a lower level of ambition.

Comparability is hampered not only by the differences in the existing portfolio of assets but also in the varying baselines chosen. To aid with this, we rebased each companies 2030 absolute emission reduction target to their FY22 reported emissions. Our desire here is to see the future ambition of each on a like for like basis. On this basis we find less difference between the level of incremental ambition of the Australian names versus

their European peers but equally relying on this measure alone could see us penalising companies (such as Eni) where significant Scope 1&2 progress has been made to date.

Oil & Gas decarbonisation targets – comparison table

2030 Target Summary	Woodside	Santos	Shell	Total Energies	BP	Equinor	Eni
Carbon Emissions	Baseline: Avg 2016-2020	Baseline: 2019 (set in 2020)	Baseline: 2016 (set in 2021)	Baseline: 2015	Baseline: 2019	Baseline: 2015 (set in 2019)	Baseline: 2018
Net carbon footprint (scope 1+2)	-30% (net equity basis)	-30% (net equity basis - STO/OSH 5.9mt baseline)	-50% (100% operated asset)	>-40% (100% operated asset)	-50% (100% operated asset)	-50% (100% operated)(90% by absolute reductions)	Upstream Net Zero (equity accounted)
Net GHG lifecycle emissions (scope 1+2+3)	$5bn of spend on New Energy - 5mt CO2-e abatement target	Net Zero Scope 1&2 by 2040 and Scope 3 reduction of >1.5mtCO2epa	-15-20% scope 3 (oil products)	>-40% scope 3 end-use	-20-30% scope 3 end-use upstream		-35% lifecycle scope 1+2+3
Net Carbon Intensity (scope 1+2+3)		-40% scope 1&2 intensity vs 2019/20 (55ktCO2MMboe)	-15-20% lifecycle intensity	>-25% lifecycle intensity	-15-20% lifecycle intensity	-20% scope 1+2+ scope 3 end-use	-15% lifecycle intensity
2030 Emission reduction ambition versus 2022 Actual	-29%	-18%	-29%	-31%	-15%	-27%	-22%
Emission Reductions Achieved (scope 1+2 from formal baseline)	-10% from baseline	-16% reduction in scope 1&2 emissions (4.97mt in 2021/22)	-30% reduction in scope 1&2 emissions also -6-8% net carbon intensity (vs 2016)	-24% reduction in operated emissions	-41% reduction in operated scope 1&2 (ahead of 2025 target due to divestments) & 13% reduction in scope 3 emissions	-30% reduction in operated scope 1&2 emissions	Upstream -33% reduction in scope 1&2 (mainly due to offsets); -17% Net GHG lifecycle emissions
Methane Emissions	Taking action to reduce methane emissions to near-zero at operated assets by prioritising the mitigation of the most material sources		Net Zero methane emissions intensity	-80% methane emissions	Methane emissions intensity of 0.2% by 2025	Net Zero Methane emissions intensity	Methane emissions intensity well below 0.2% by 2025

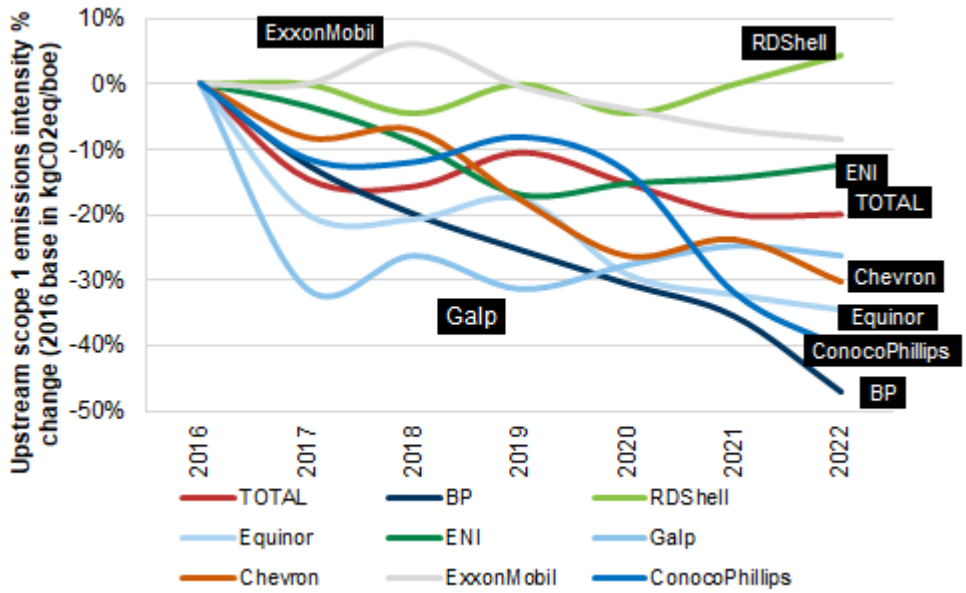
Implied 2030 target based on an earlier target or other company guidance

Source: Company data/presentations, WaveStone estimates.

The emission reductions achieved to date (2022) show a range of 10% for Woodside to 41% for BP. Unfortunately, divestments which fail to address the required reduction in global emissions, have contributed significantly to the progress of some obscuring true progress.

Goldman Sachs analysts estimate the large oil companies have collectively reduced their scope 1 carbon intensity by more than 20% since 2016. The chart below is illustrative as it shows how this has evolved over time but will be similarly impacted by portfolio changes/divestments over time.

Chart: Upstream Scope 1 emissions intensity % change from 2016 base



Source: Goldman Sachs Global Investment Research: The scale and profitability of low-carbon activities. Goldman Sachs Research - Marquee (gs.com)

There is a heavy reliance on offsets, and in some instances divestments, on the path to net zero

For scope 1&2 emissions the focus is generally on: i) a reduction in flaring and methane emissions; ii) an exit from the more carbon intensive extraction processes and other operational efficiencies; iii) portfolio changes – generally this is a shift in production toward gas and often includes divestment, which will not contribute to the global decarbonisation effort; and iv) greater renewable production. CCS and Offsets also feature prominently. Where possible we have tried to list each planned initiative by its relevant contribution to the decarbonisation target.

Primary mechanisms for 2030 decarbonisation plan – comparison table

2030 Target Summary	Woodside	Santos	Shell	Total Energies	BP	Equinor	Eni
Decarbonisation Source							
Scope 1&2	Operational efficiencies - largely Pluto	Operational efficiencies	Portfolio changes (incl. divestments)	Offsets	Portflio optimisation - Divestments	Portfolio optimisation (incl. divestments)	Energy efficiency
	Flaring minimisation	PNG Biomass	Energy efficiency	H2, electrification, biofuels	Flaring optimisation	Energy efficiency	Zero routine flaring
	Energy efficiency	CCS	Energy & chemicals park transformation	Energy efficiency - incl. increased gas	Operational efficiencies	Eliminate routine flaring	Lower methane emissions
	Offsets	Direct air capture	Use of renewable power	Flaring & methane	CCS	CCS	CCS
	Large scale abatement - requires >$80/t CO2-e		CCS	CCS		Green investment - H2	Offset
			Offsets				

Source: Company data/presentations, WaveStone estimates.

The evolving technical landscape has the potential to change both the cost of delivery and opportunity set over time. What we see today is just a snapshot in time. Part of the problem for producers is the decarbonisation effort requires technologies that are so nascent that the economics remain unknown.

Woodside's plan reflects this uncertain landscape somewhat with its decarbonisation projects split into smaller projects feasible at a carbon cost under $80/tonne CO2-e and longer term/larger scale abatement projects currently requiring >$80/t CO2-e cost. Potentially for this reason too, Woodside's long term $5bn new

energy/5m tonne CO2-e abatement target is struck such that it remains somewhat technology agnostic. The challenges of getting WDS's H2OK project to FID highlight the complexity of meeting both shareholder return hurdles and customer pricing expectations given development costs and the technology available today. It also shows the importance of government subsidies in aiding these types of decarbonisation projects, such as through the US's Inflation Reduction Act (IRA) 45V credits for qualifying hydrogen projects.

Woodside and Santos have CAPEX targets somewhat below their EU peers

Woodside and Santos each have investment (capex) targets, which are well below the EU Majors grouping (which has similar return hurdles of 6-8% for renewables and 10-15% for CCUS/Hydrogen/Bio). This is especially the case for Woodside, in part reflecting the opportunity set, with STO looking to CCS and the EU players able to use their vertical integration to support greater investment in alternative fuels.

Oil & Gas decarbonisation CAPEX commitments – comparison table

2030 Target Summary	Woodside	Santos	Shell	Total Energies	BP	Equinor	Eni
Capex	Committed to $5bn of spend on new energy projects - approx 19% of total	Up to $5bn in energy efficiency, decarb, low carb fuels and offset projects over 10yrs - approx 32% of total capex	c.17% of total capex in low carbon energy solutions (between 2023-25)	33% of total capex for electricity, renewable and new carbon molecules.	50% of total capex for investment in 'Transition Growth Engines'	>50% gross capex in renewables and low carbon	Green capex at 70% of total by 2030. 2023-2026 est EUR13.8bn
Renewables				>100 TWh by 2030 (net target)	50 GW net developed renewables to FID and 10 GW net installed capacity		
EV Charging			c.200,000 operated EV charge points	1,000 high power charger hubs in EU by 2028	>100,000 EV charge points (90% rapid / ultra fast)		c.50,000 EV charge points (100% Plenitude)
Hydrogen		Mgmt REM linked to delivery of min 1 hydrogen or clean fuel project by 2025		1mt pa Green Hydrogen by 2030	0.5-0.7 mtpa hydrogen production	3-5 clean hydrogen projects by 2035	
CCUS		Booked 100mt of CO2 storage in Cooper Basin and reached FEED for Bayu-Undan CCS (Barossa emissions)		>10mtpa CCS		5-10mt pa CO2 transport & storage capacity by 2030	Transport and storage capacity: >15mt pa before 2030; c.40mt pa after 2030
Biofuels				10% SAF maket share, 1.5mt pa	100 kboepd biofuel		>5mt pa of biorefinery
Biogas				20TWh/y biomethane production	70 kboepd biogas supply volumes		

Implied 2030 target based on an earlier target or other company guidance

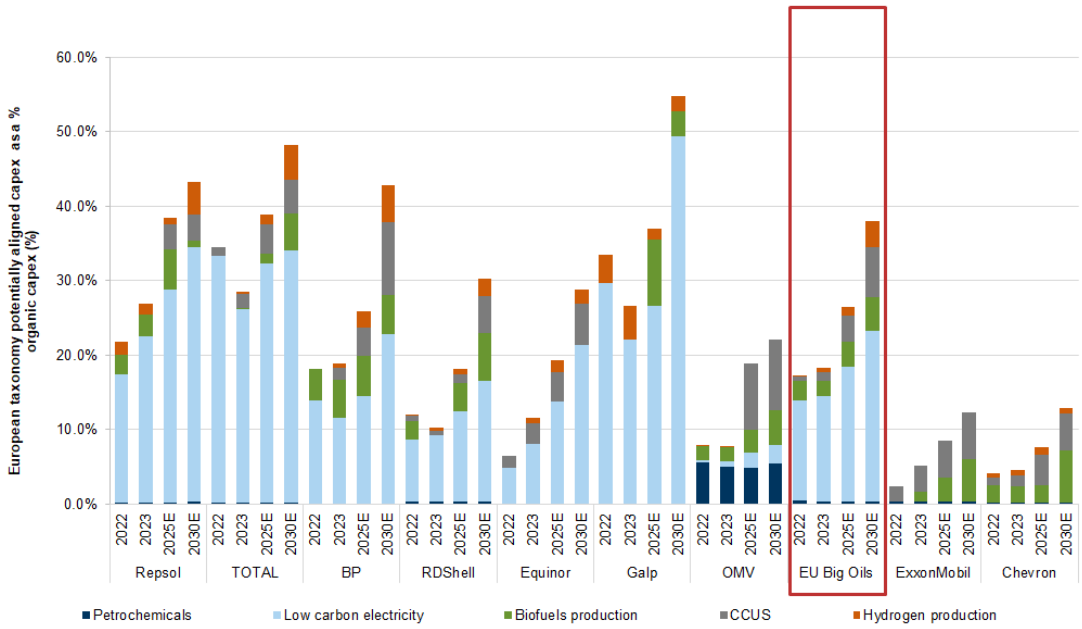
Source: Company data/presentations. WaveStone estimates.

Goodman Sachs has compiled a chart depicting capex commitments of the "Big Oils" overtime highlighting the difference in ambition between the EU and American operators.

European taxonomy potentially aligned capex as a % of organic capex

Exhibit 19: We estimate that European Big Oils on average could spend c.40% of their capex on low-carbon activities that are Taxonomy-aligned by 2030E, from c.20% in 2022

European taxonomy potentially aligned capex as a % of organic capex



Source: European Commission - European Taxonomy, Company data, Goldman Sachs Global Investment Research

Source: Goldman Sachs Global Investment Research: The scale and profitability of low-carbon activities. Goldman Sachs Research - Marquee (gs.com)

A Number of the EU Majors have recently lowered their ambitions

A number of the EU majors have recently lowered their 2030 ambitions. Contributing factors have been portfolio changes and management turnover but the shift also reflects the difficulty of the task at hand, particularly whilst meeting the return expectations of shareholders.

Changes in climate ambition over time

2030 Target Summary	Woodside	Santos	Shell	Total Energies	BP	Equinor	Eni
Change in strategy?							
Date of change	2023	2022	2023	2023	2023	2022	2022
Change	Unchanged	Introduced a 2030 target to reduce scope 1+2 emissions by 30%	Reduced 2030 NCI ambition from 20% to 15-20%	Raised 2025 scope 1+2 decarbonisation target to 38Mt vs. 40Mt previously	Reduced 2030 scope 3 ambition from a 35-40% reduction to 20-30%	Introduced a 2030 scope 1+2+3 NCI target and expanded 2050 target from -50% to -100%	Raised and brought forward 2035 ambitions to 2030
	Added a 5Mt abatement target to the scope 3 ambition to spend $5bn on new energy projects by 2030	Also announced a 40% reduction in the NCI of production by 2030 and Net Zero for scope 1+2 by 2040	Delayed emission reductions until after 2030	2030 scope 1+2+3 carbon intensity ambition lifted from >-20% to ->25%	Target decline in oil production lowered to 25% from 40%		Net Lifecycle Emissions (scope 1+2+3) -30% 2035 to -35% 2030
	Added a commitment to give a say on climate vote every 3yrs from 2024		Removing the annual vote on climate post 2024	Will align oil sales to production, removing low margin resale of oil and scaling back sales where low carbon alternatives are available	Scope 3 targets upgraded to include physically traded energy		Net carbon intensity (scope 1+2+3) -15% 2035 to -15% 2030

Source: Company data/presentations. WaveStone estimates.

CLIMATE AND DECARBONISTION METRICS IN REM

Proportionally the allocation to decarbonisation appears broadly similar across the companies in question. Woodside and Equinor sit apart from their peers given the lack of long-term climate/decarbonisation goals as a performance measure in the LTI. For Woodside, the inclusion of an explicit portfolio growth metric in the STI appears at odds with its decarbonisation plans, although presumably the financial metrics included in the LTI and STI of the others could imply a level of growth. The general lack of disclosure of specific targets in most cases makes it difficult to assess the level of stretch in the incentive.

Climate and decarbonisation metrics in REM – comparison table

2030 Target Summary	Woodside	Santos	Shell	Total Energies	BP	Equinor	Eni
Remuneration							
Annual Bonus	15% climate (scope 1&2 emissions performance) (70%) and new energy projects (30%). There is also a 20% allocation to growth - is that consistent with climate goals?	5% for environment & cultural heritage within the 25% sustainability allocation; 10% decarbonisation, lower carbon fuels, nature based projects	5% LNG sales (prev. sale of low carbon products); 5% reducing operational emissions; and, 5% partnering to decarbonise	5.5% Evolution of GHG emissions; 8.3% personal contribution relating to steering the carbon neutrality strategy; 5.5% profitable growth in renewables & electricity	15% scope 1&2 emissions reduction; 10% earnings growth in transition investments (convenienece and EV?)	Unclear: 50% of variable is the "what" which includes safety and CO2 intensity metrics among others; 50% is for "how" which references safety along with building trust together with other soft metrics	25% Environmental and human capital
LTI Performance Conditions	EIS determines LTI VAR which is gated 30% RTSR, 50% time gated and 20% in cash	Other metrics are TSR, FCF breakeven, ROACE	25% Absolute energy transition. No reference to growth. Other metrics are TSR, CF ROIC and FCF (all 2023)	15% change in GHG emissions scope 1&2; 15% change in GHG emissions scope 3. Other metrics are organic FCF, TSR, CF/share (all 2022)	15% Cumulative reduction in % operated carbon emissions		10% Decarbonisation; 15% Energy transition; 10% Circular economy

Source: Company data/presentations. WaveStone estimates.

SCOPE 3 DEMAND - WDS CONTRACTS SHOW APAC IS A KEY SOURCE OF FUTURE LNG DEMAND WITH PROXIMITY A COMPETITIVE ADVANTAGE

Scope 3 are the largest component of well to wheel emissions (>85%) however given they are generated by customers, the less vertically integrated Oil & Gas companies have little control over the decarbonisation options surrounding them.

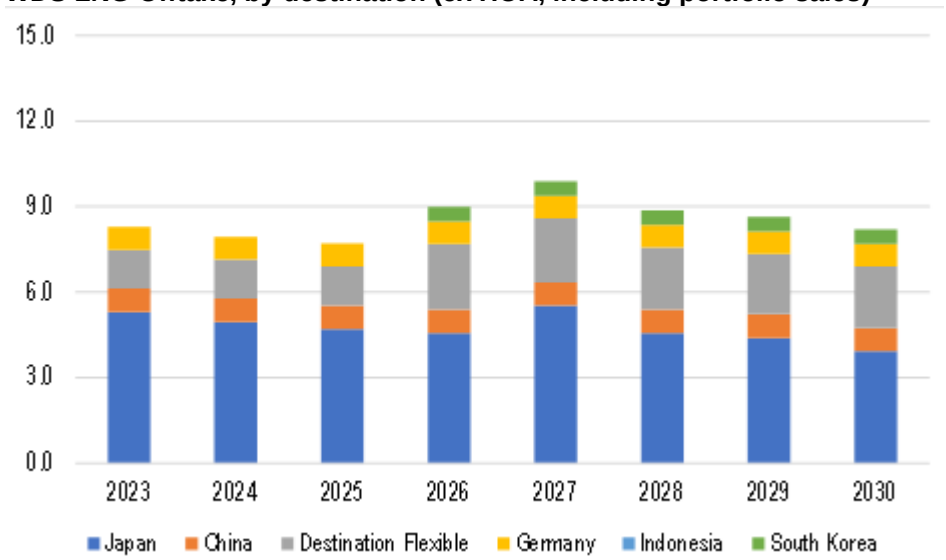
In order to test the long term resilience of the portfolio and demand risk, we have used our understanding of Woodside's contract portfolio to re-create their CTAP charts on both global LNG contracts by destination and global LNG contracts by duration. This work shows the nature of Woodside's LNG contracts do seem to afford some portfolio resiliency, especially as contract duration through the middle-part of the decade should help them navigate new (near-term) supply hitting the market. In turn this should also allow them some time to contract out more of the LNG book by the back-end of the decade, although clearly this could come with re-price risk.

The first chart below shows WDS's contracts by destination, clearly showing greater concentration towards Asia vs the global average (second chart). This isn't surprising given the geographical location of WDS's assets, and where growth comes from (Scarborough).

Japan is currently the largest customer, accounting for ~60-65% of LNG offtake but based on the current book will fall to ~50% by the end of the decade as some of legacy NWS and Pluto contracts roll-off. South Korea volumes will ramp-up from 2026 as volumes start to be delivered into the recently signed supply & purchase agreement (SPA) with KOGAS. It is worth noting Europe represented ~1/3 global LNG volumes but WDS only ships ~0.6Mtpa to Uniper.

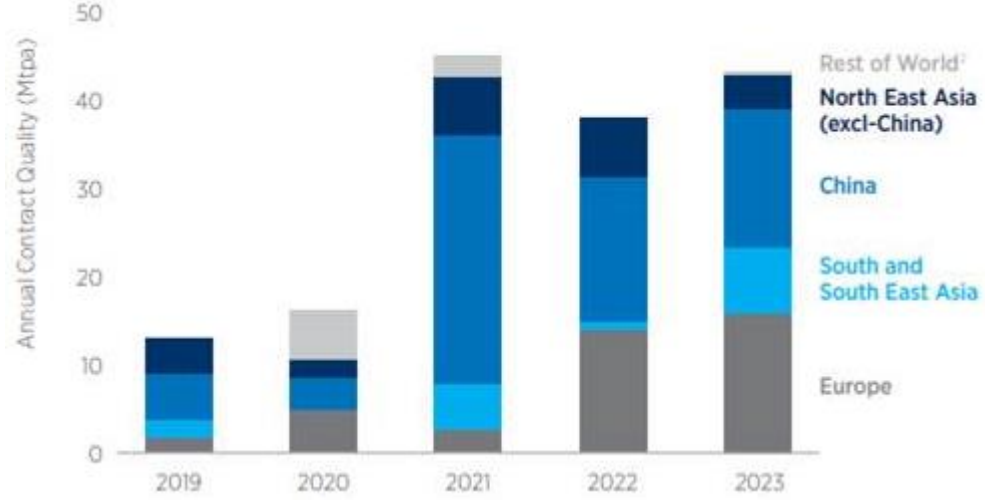
Unsurprisingly, WDS sees APAC as a key source of LNG demand growth going forward: "One of Woodside's competitive advantages lies in the proximity of our LNG operations to Asia. Asia is a prominent manufacturing and trade region that utilises LNG already but also relies heavily on coal for power generation, creating the opportunity for a further shift towards gas to support decarbonisation."

WDS LNG Offtake, by destination (ex HOA, including portfolio sales)



Source: WaveStone, Broker estimates.

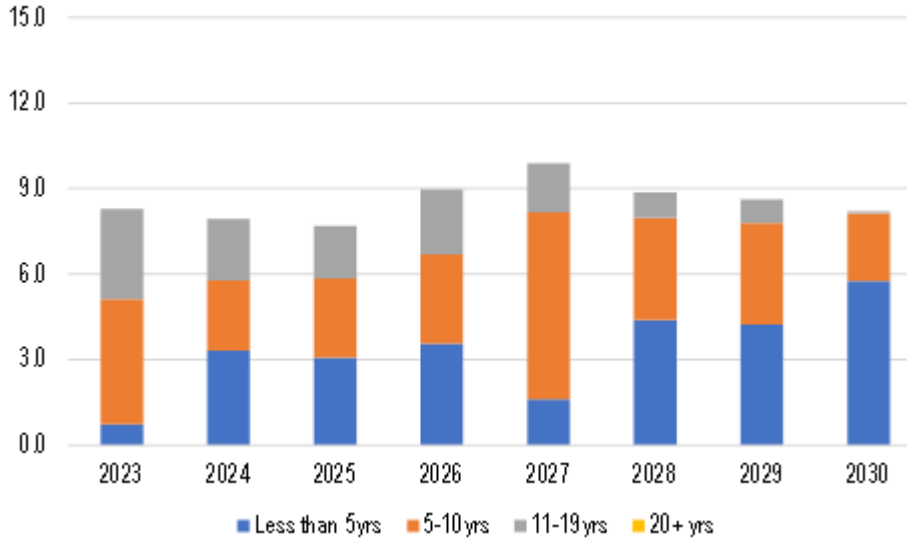
Global LNG offtake, by destination



Source: Woodside presentations.

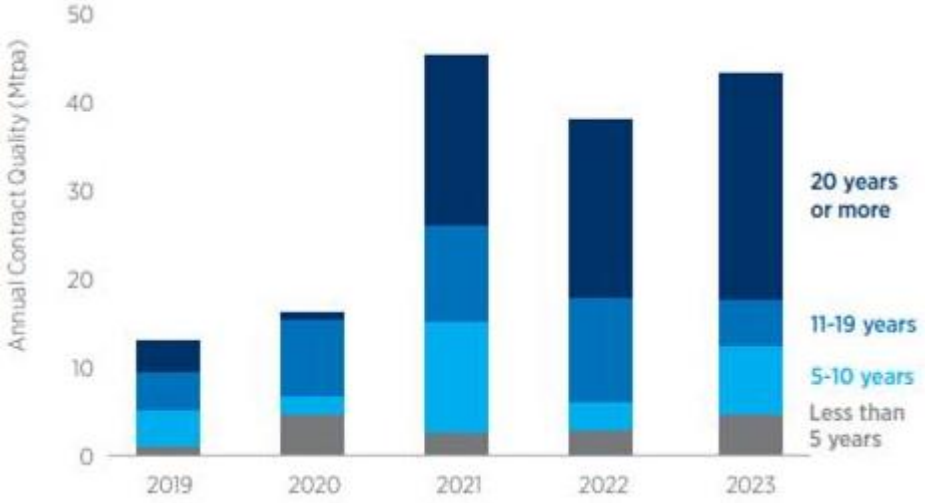
We have also looked at the data by contract duration, which looks sound over the next 2-3 years, with the data showing only 20% of contracts will have a duration of less than 5 years in 2027. This adds some level of comfort around the resiliency of the book over the medium term, especially in the context of the ~200Mt of new LNG supply (c.50% of 2023 volume) expected to come on-line by 2030. However clearly there is re-pricing risk, as these contracts are rolled and new contracts signed which will either be referenced to a (potentially) weaker JKM price (given oversupplied market) and/or increasingly lower slopes to Brent.

WDS LNG offtake, by duration (ex HOA, including portfolio sales)



Source: WaveStone, Broker estimates.

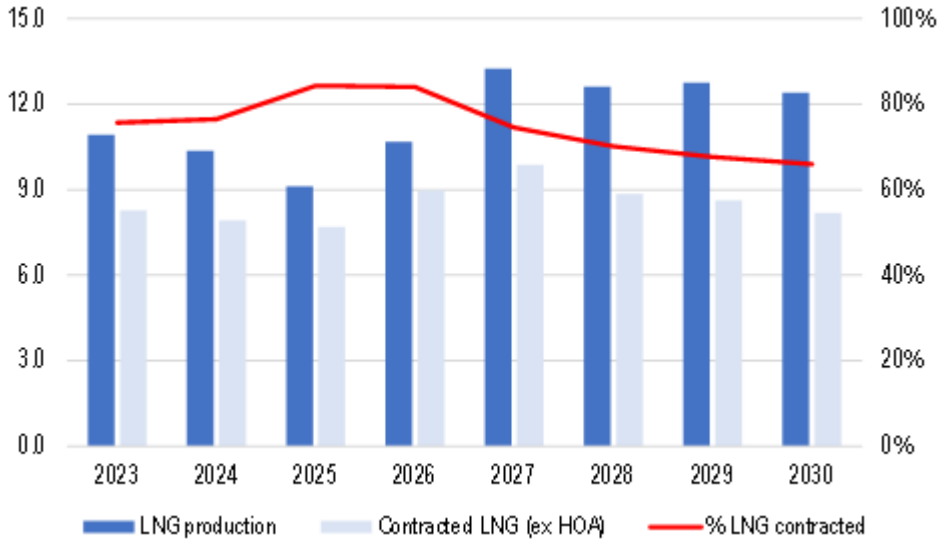
WDS LNG offtake, by duration



Source: Woodside presentation.

Finally, we have also depicted the data to show what % of WDS's total LNG production is contracted (below). Over the next 2-3yrs ~80% of LNG is sold under long-term contracts but then this starts to fade towards ~60% by the end of the decade. This chart highlights there is actually a fair amount of resilience over the mid-term which can help mitigate external factors (price, demand risk etc), affording the company some strategic optionality to look to contract out more of the LNG book towards the back-end of the decade, especially as Scarborough ramps-up.

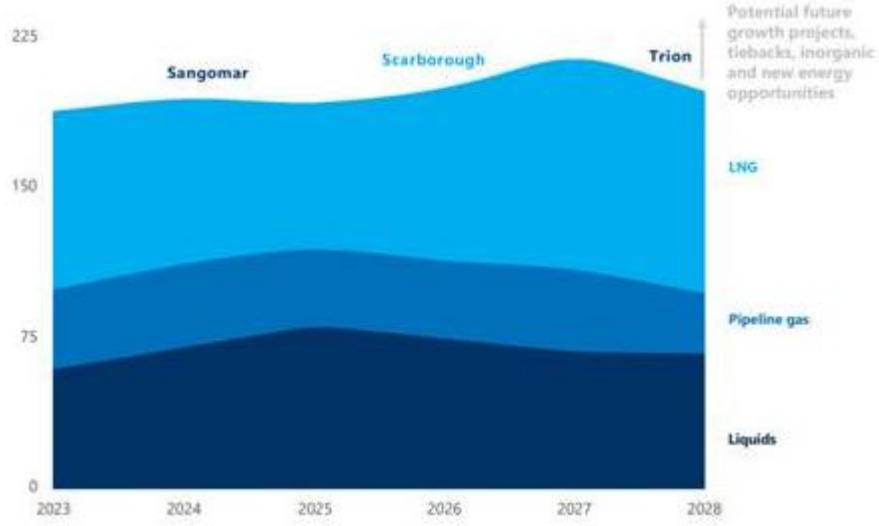
% LNG production contracted as offtake



Source: WaveStone, Broker estimates.

For context we also include WDS long-term guidance as per last years Investor Day, reflecting LNG growing to ~50% share from ~43% this year, highlighting 1) the increasing importance of LNG as a product for WDS, and 2) the requirement over time to contract out more of the supply growth.

WDS production profile (santioned projects only), MMboe



Source: Woodside presentation.

Carbon Emission and Intensity Tracker:

WaveStone – Australian Share Fund (WASF)	Carbon Emissions		
	Portfolio	Benchmark	Difference
Carbon Emissions Scope 1+2 (tonnes CO2e/USD M invested)	59.4	108.2	-45.1%
Carbon Intensity Scope 1+2 (tonnes CO2e/USD sales)	153.2	228.4	-32.9%

Source: MSCI ESG (as at 31/03/2024)
Benchmark is the S&P ASX 300 Accumulation Index

Engagement

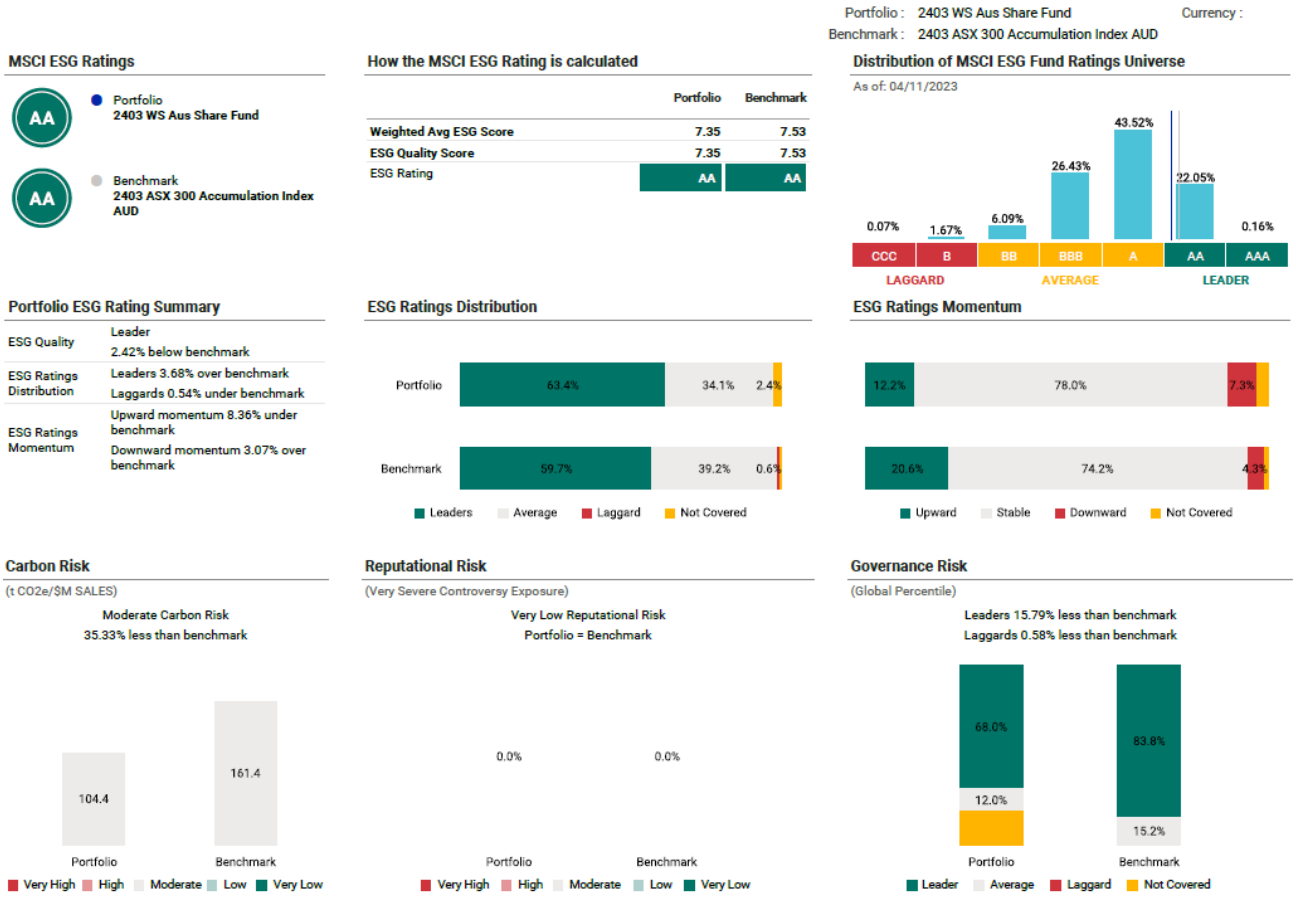
ESG-related Engagements during the Quarter

Company	ESG Category	Topics
CKF	Governance	Management succession
TWE	Governance	Capital allocation, Board renewal, China reopening strategy, acquisitions, company history
STO	Environment Governance	Leadership transition, remuneration, lessons learned from Barossa, decarbonisation
WDS	Environment Governance	Experience in energy transition, skills Ashok can bring to the BOD, thoughts on WDS decarbonisation strategy (updated following release of CTAP, project updates, regulatory challenges)
SIG	Governance	Governance, CPA8, 60 day dispensing, community pharmacy industry structure
EDV	Social Governance	Responsible gaming, cashless gaming trial, employee turnover
ORA	Environment	Saverglass acquisition, ESG capex, O2 furnace staging on local glass business
ALL	Social Governance	Responsible gaming, cashless gaming trial, employee turnover, remuneration and management succession
VEA	Environment Social	Petrol site remediation, store rollout pipeline, EV strategy and transition
CHC	Environment Governance	New CFO, environmental credentials on office buildings
XRO	Social Governance	XRO investor day – AI/Cyber security protecting SME data and employee turnover/morale
PXA	Governance	Results meeting, overpaying for acquisitions in UK, governance
RIO	Environment Social Governance	Ownership from Chalco (Chinese SOE), mitigating ESG risks with Simandou development, decarbonising PacAI portfolio
NEC	Social Governance	Poor acquisitions/capital allocation & regulatory reform and impact to business (gambling ad bans)
LYC	Social Governance	Financial results, strategy, managing geopolitical risk with operations in Malaysia
STO	Environment Social Governance	Lessons learnt from Barossa court case, environmental and social risks for future developments, leadership programs for KMPs
PWH	Environment Social Governance	Hiring practices and cultural preservation becoming a more global company. Emissions standards on 2026 F1 vehicles. New BOD members and CEO succession
LIC	Governance	Results meeting and profit warning/equity raising, governance and capital allocation
GMG	Environment Governance	KPIs on CEO and employee remuneration. Data Centre ESG strategy
COH	Governance	Management succession, Capital management, Reinvestment, Regulatory settings and maintenance of product quality and patient outcomes
CWY	Social Governance	Underlying vs reported earnings and placement of ideas below the line – implications for CF forecasting. Accounting for IT investment. Engagement with Government on waste solutions - NSW landfill capacity. Gender issues in recruitment.
NWL	Social	AI impact on social productivity, especially in routine coding. Fostering company culture
CBA	Social	Result meeting, Cyber security and fraud
CSL	Governance	Vifor Goodwill, the quantum within Behring segment, and the potential for a write down of value. Reflections on capital management given Vifor

		experience. Management team turnover and depth of talent. Managing culture of risk taking/R&D and key learnings, in the context of the CSL112 Ph3 trial failure.
CAR	Social Governance	Result meeting, AI/Cyber security and management strucutre
TCL	Social Governance	Bedding down of management change and implications for KMP, Engagement process for the NSW tolling review incl. project lead, responsibilities desired outcomes and the balance of various stakeholder expectations. Plans for the loyalty program. Capital management and distribution policy. Corporate cost management.
IGO	Social Governance	Strategy under new CEO Ivan Vella, lessons learned on M&A (WSA), closure of Cosmos project & social impact

Source: WaveStone

MSCI ESG Ratings*



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Memberships and initiatives

- Principles of Responsible Investment (PRI)
- Climate Action 100+
- 40:40 Vision

Links to WaveStone Policies

- ESG Policy: **WaveStone ESG Policy**
- ESG Activity Report: **WaveStone ESG Activity Reports**
- Proxy Voting Policy: **WaveStone Proxy Voting Policy**
- Proxy Voting Records: **WaveStone Proxy Voting Records**
- Engagement Policy: **WaveStone Engagement Policy**
- **WaveStone PRI Summary Scorecard 2023**
- **WaveStone PRI Public Transparency Report 2023**

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