THRIVING THROUGH THE ENERGY TRANSITION

Climate Transition Action Plan
and 2023 Progress Report
Climate Transition Action Plan
and 2023 Progress Report

ACKNOWLEDGING COUNTRY
Woodside recognises Aboriginal and Torres Strait Islander peoples as Australia’s First Peoples. We acknowledge their connection to land, waters and the environment and pay our respects to ancestors and Elders, past and present. We extend this recognition and respect to First Nations peoples and communities around the world.

ABOUT THIS REPORT
This Climate Transition Action Plan and 2023 Progress Report summarises Woodside’s climate-related plans, activities, progress and climate-related data for the period 1 January 2023 to 31 December 2023. It aims to provide a balance of disclosures that meet the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), while avoiding overwhelming readers with information. Woodside considers that this report contains disclosures consistent with TCFD’s four recommendations and 11 recommended disclosures, noting its Guidance for all Sectors and Guidance for Non-Financial Groups.1 Woodside notes that following the completion of its 2023 status report, the TCFD has fulfilled its remit and disbanded. The Financial Security Board of the International Settlements has asked the International Financial Reporting Standards (IFRS) Foundation to take over the monitoring of companies’ climate-related disclosures.

This report has also been prepared with reference to selected relevant metrics from the Sustainable Accounting Standards Board (SASB) Oil and Gas Exploration and Production Standard.2 See page 80 for an index which cross-references content in this report to these recommendations.

Given the focus of this Climate Transition Action Plan, it is necessarily oriented towards future events and contains forward looking information regarding the plans, strategies, objectives, targets, aspirations and the like of Woodside in relation to climate change. Neither our plan to help us achieve our strategic aim, nor the content of this report more generally, is a statement, guarantee or prediction that future events will or are likely to occur.

Further detail regarding the scope of this report including a disclaimer, risks, emissions data and other important information is contained on pages 81-82. All dollar figures are expressed in US currency, Woodside share, unless otherwise stated. Emissions refers to greenhouse gas emissions unless otherwise stated.

Woodside Energy Group Ltd (ABN 55 004 898 962) is the ultimate holding company of the Woodside group of companies. In this report, unless otherwise stated, references to “Woodside”, “our”, “us” or “we” refer to Woodside Energy Group Ltd and its controlled entities.

ANNUAL REPORT 2023
Our Annual Report 2023 provides a summary of Woodside’s operations and activities for the 12 month period ended 31 December 2023 and Woodside’s financial position as at 31 December 2023. It also provides a summary of Woodside’s sustainability approach, health and safety performance and other information for the 12 month period ended 31 December 2023. The Annual Report 2023 and this Climate Transition Action Plan and 2023 Progress Report together provide a complementary review of Woodside’s business.

The reports are available on our website at woodside.com.

REPORT FEEDBACK
We welcome feedback on this Climate Transition Action Plan and 2023 Progress Report via companyinfo@woodside.com.

EXTERNAL ASSURANCE
Limited assurance has been undertaken in respect of selected greenhouse gas emissions data by GHD Pty Ltd. Please refer to page 83 for more information on the scope of assurance.

ON THE COVER
The cover features Tokyo Tower Cityscape, Japan. Image credit: Draycat Photo. Japan is a key customer market for Woodside.

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1 Financial Stability Board, 2017. “Recommendations of the Task Force on Climate-related Financial Disclosures. Final Report.” Figure 4, p. 14. Some elements of the TCFD’s four recommendations and 11 recommended disclosure have been presented in different order to enhance readability. A cross reference between the TCFD and this report is provided on p. 80.


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Listening and responding

Woodside’s response to climate change is integrated throughout our company strategy to thrive through the energy transition.

During 2023, I listened carefully to our investors, who told me they want more detailed information about our climate action plans. So this Climate Transition Action Plan is an evolution of our previous disclosures. Updates also reflect the progress and refinement of our plans to reduce our net equity Scope 1 and 2 emissions and invest in products and services for the energy transition.

DEMAND FOR OUR PRODUCTS

A key request from investors has been to explain more about future demand for our products through the transition, and why we believe that Woodside’s projects will be competitive. This is key to successfully and profitably converting global demand for energy into realised sales of our products. As a result, we have included additional information in this report including:

- Analysis of how global energy markets might evolve, including in scenarios that could limit warming to 1.5°C,
- The potential role of natural gas in the energy transition,
- How we assess our investments for their resilience to key aspects of the energy transition,
- How we collaborate with customers to strengthen our trading relationships and understand policies in our key markets.

The sale of 10% of the Scarborough Joint Venture to LNG Japan and of 15.1% to JERA, is an example of mutual confidence in demand. These strategic relationships also include potential LNG offtake and collaboration on opportunities in new energy.

SCOPE 1 AND 2 EMISSIONS

We have also provided important updates on our progress on Scope 1 and 2 emissions reductions, and our plans for the future.

- In 2023 we achieved a reduction in our net equity Scope 1 and 2 emissions of 12.5% below the starting base. This compares to 11% in 2022.
- We used 13% fewer carbon credits as offsets than last year due to the underlying emissions performance at our facilities.
- We completed decarbonisation planning across our merged portfolio of operated assets, identifying multiple technical options to reduce gross Scope 1 and 2 emissions from our current portfolio. The technologies in these plans are also available to design out emissions from our growth opportunities.
- We have continued to develop our portfolio of carbon credits. We have included additional information about its size and composition, and the due diligence process we use to assess its integrity.
**SCOPE 3 EMISSIONS**

Our Scope 3 approach includes the introduction of new products and services into our portfolio, like hydrogen and carbon capture utilisation and storage (CCUS). These products and services can help our customers avoid or reduce their Scope 1 or 2 emissions and therefore reduce the life cycle (Scopes 1, 2 and 3) emissions intensity of our portfolio.

In 2023, we continued to review our approach to Scope 3 targets in response to investor feedback and have decided to supplement our existing investment target with a new complementary emissions abatement target. This target is to take final investment decisions on new energy products and lower carbon services by 2030, with total abatement capacity of 5 Mtpa CO$_2$-e.$^3$

- The investment target tracks our work to develop these projects and bring them to market. The emissions abatement target will track their impact on customer emissions.
- Spending on carbon capture and storage (CCS) and hydrogen opportunities was more than $235 million in 2023, up over 135% compared to 2022, building towards our target to invest $5 billion in new energy products and lower carbon services by 2030.\textsuperscript{3,4} We have included additional information in this report about the progress of our CCS and hydrogen projects, the risks to achieving our targets – such as securing profitable customer offtake – and what we are doing to address these risks.

**GOVERNANCE**

The Board of Directors, led by our Chair Richard Goyder, oversees our climate work so that our governance of climate change reflects its strategic importance to our company.

- As part of our continuous review of Board skills and composition, changes were made to enhance our Board and Committees in 2023, with the intention that they are best placed to support our global operations, as well as our strategic growth opportunities through the energy transition.
- The Board has also decided to amend our executive remuneration framework, so that targets for gross Scope 1 and 2 emissions performance and new energy projects progress will impact the outcomes of performance based remuneration for the Executive Leadership Team.
- As well as disclosing our policy advocacy activities, we have reviewed our industry association memberships, including an assessment of whether industry association activities support the goals of the Paris Agreement. We have published the results of the review on our website.

This Climate Transition Action Plan will be put to an advisory shareholder vote at our Annual General Meeting (AGM) in April 2024. I believe it deserves the firm support of our shareholders – it is a thorough review of our plans, our progress and our challenges. But it is not intended to be the last word. Our strategy and our performance has and will continue to evolve in the years ahead. Feedback from our shareholders will continue to be actively sought. Progress reports will be published in future years, with a further vote on an updated plan intended in three years’ time, or sooner if exceptional circumstances require.

Meg O’Neill  
Chief Executive Officer and Managing Director  
February 2024
**Highlights**

**REDUCING NET EQUITY SCOPE 1 AND 2 GREENHOUSE GAS EMISSIONS**

**2023 PERFORMANCE**

<table>
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<tr>
<th>Scope 1 and 2 equity greenhouse gas emissions (Mt CO₂-e)</th>
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<td>2022</td>
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**2024-2030**

- Net emissions 12.5% below starting base, advancing from 11% in 2022²
- 13% fewer carbon credits utilised as offsets than last year due to the underlying emissions performance at our facilities.
- On course for net equity Scope 1 and 2 emissions reduction targets:
  - 15% by 2025
  - 30% by 2030.
- Gross emissions intensity lower (better) than benchmark of a comparable energy portfolio – and improved further in 2023.³

**2050 NET ZERO ASPIRATION**

**Potential pathway to net zero (equity Scope 1 and 2 emissions annual average Mtpa CO₂-e) at portfolio of producing assets and sanctioned projects⁴**

<table>
<thead>
<tr>
<th>2023</th>
<th>2024-2030</th>
<th>2031-2040</th>
<th>2041-2050</th>
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**Asset decarbonisation planning completed across merged portfolio of operated assets⁴**

- Multiple options identified to avoid or reduce emissions are in progress:
  - 16 Mt CO₂-e in savings (cumulative to 2050) has been incorporated in design of Scarborough, Pluto Train 2 and Trion projects
  - 12 Mt CO₂-e (cumulative to 2050) in further reduction initiatives at existing assets, targeted for implementation by 2030
  - 35 Mt CO₂-e (cumulative to 2050) further opportunities (large scale but expensive to retrofit) in plan to mature technology and reduce cost as future selection options.
- Portfolio of carbon credits: 20 Mt CO₂-e under management, acquired at an average cost <$20/t and subject to integrity due diligence.⁵

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1. Quantification of avoided emissions is inherently uncertain. However, it is possible to provide an estimate by comparison to benchmarks of a comparable portfolio of LNG, conventional shelf and deepwater assets producing 187.2 Mboe per year (Woodside equity production 2023) with a similar product mix to Woodside. There are a number of potential benchmarks providing estimates of the 2023 global average emissions intensity of oil and gas operations. Based on Wood Mackenzie’s Emissions Benchmarking Tool, an estimate of avoided emissions is around 33 kt CO₂-e, whereas based on the industry average emissions reported in Table 3.1 of IEA’s “The Oil and Gas Industry in Net Zero Transitions” (November 2023), an estimate of avoided emissions is around 70 kt CO₂-e. The Estimated Avoided Emissions shown in this Graph represents the range between the two estimates. Woodside does not independently verify the data behind these estimates.

2. Targets and aspiration are for net equity Scope 1 and 2 greenhouse gas emissions relative to a starting base of 6.32 Mt CO₂-e which is representative of the gross annual average equity Scope 1 and 2 greenhouse gas emissions over 2016–2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021. Net equity emissions include the utilisation of carbon credits as offsets.

3. Woodside analysis, based on Woodside Scope 1 and 2 emissions data for 2022 and 2023 relative to a comparable portfolio of LNG, conventional shelf and deepwater assets, calculated from the 2023 emissions intensity of these primary resource themes reported in Wood Mackenzie’s Emissions Benchmarking Tool.

4. 15.1% Scarborough interest to JERA® (23 February 2024) at woodside.com. Greenhouse gas emissions data including charts and estimates of future abatement plans in this Climate Transition Action Plan have not been updated to reflect changes in Woodside’s equity share of the Scarborough Joint Venture as a consequence of the sale of 15.1% interest to JERA.

5. Woodside’s approach to utilising carbon credits as offsets in the context of our pathway to net zero is discussed in Section 3.4.
INVESTING IN PRODUCTS AND SERVICES FOR THE ENERGY TRANSITION

RESILIENCE OF NATURAL GAS

Potential global use of gas in pathways that limit warming

Natural gas expected to have a sustained role in energy transition

- Anticipated uses include:
  - Supporting renewables in power grids,
  - In hard to abate sectors such as for high process temperature heat,
  - As a chemical feedstock.
- Chart shows range of global gas use in 1.5°C and also 1.5°C-2°C pathways from the Intergovernmental Panel on Climate Change Sixth Assessment Report, compared to gas supply estimates from the International Energy Agency in the absence of investment in new fields.
- Converting global demand into realised sales for Woodside requires:
  - Careful analysis of climate- and energy-related scenarios,
  - Disciplined capital allocation,
  - Assessment of project resilience to the energy transition, and
  - Strong customer relationships.

SCOPE 3 TARGETS

INVESTMENT TARGET

Investment in new energy products and lower carbon services by 2030.

EMISSIONS ABATEMENT TARGET

Take FID on new energy products and lower carbon services by 2030, with total abatement capacity of

2023 PROGRESS UPDATE

Cumulative total spend on new energy products and lower carbon services.

$5 billion

5 Mtpa CO₂-e

$335 million

New Scope 3 Emissions Abatement Target established to complement the existing Scope 3 Investment Target

- New energy products (e.g. hydrogen) and lower carbon services (e.g. CCS) can help our customers avoid or reduce their Scope 1 or 2 emissions – and therefore reduce the life cycle (Scope 1, 2 and 3) emissions intensity of our portfolio.
- The investment target tracks our work to develop these projects and bring them to market. The emissions abatement target will track their impact on customer emissions.

1 IPCC and IEA data sources along with other important notes included on page 45.
2 Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside’s investment targets. Not guidance.
3 Potentially includes both organic and inorganic investment.
4 Includes pre-RFSU spend on new energy products and lower carbon services that can help our customers decarbonise by using these products and services. It is not used to fund reductions of Woodside’s net equity Scope 1 and 2 emissions which are managed separately through asset decarbonisation plans.
5 Includes binding and non-binding opportunities in the portfolio, subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside’s investment targets. Not guidance.
How to read this report

Future of reporting
This report contains disclosures consistent with TCFD’s four recommendations and eleven recommended disclosures, noting its Guidance for all Sectors and Guidance for Non-Financial Groups. A table cross-referencing the content in this document to the TCFD recommendations is provided on page 80.

Woodside supports the harmonisation of climate and sustainability reporting standards intended by the International Sustainability Standards Board (ISSB), and encourages other standard-setting and benchmarking organisations to also align. The Australian Government has confirmed that it intends to mandate climate reporting standards from 1 July 2024. Woodside and industry associations such as the Business Council of Australia are engaging with the government and the Australian Accounting Standards Board about detailed design issues. We intend to undertake analysis of any changes required in our reporting during the course of 2024, and note the high level alignment of the proposed standards with the recommendations of the TCFD.
Response to investor feedback

Updated content in this Climate Transition Action Plan relative to the Woodside Climate Report 2022 includes:

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Gas is used in the generation of electricity to power our homes.
Board oversight

The Board of Woodside is responsible for the approval and oversight of our climate change strategy.

Climate change is a standing agenda item at each regular meeting of the Sustainability Committee, or the Board when the Sustainability Committee does not meet, with information presented by management, external advisers or third party specialists where appropriate.

The Board oversees our climate strategy and receives regular performance updates from management. During 2023, the Board and its Committees were informed about and considered climate-related issues on multiple occasions, including when reviewing and guiding strategy, risk management, annual budgets and business plans, and overseeing major capital expenditure, as well as when setting the Group’s performance objectives and monitoring implementation and performance.

The Board continuously reviews progress towards our climate-related targets and our 2050 aspiration by receiving regular updates from the Executive Leadership Team and reports from other management involved in implementing the Group’s climate strategy.

The Chair undertakes an annual Governance Roadshow with key institutional investors and investor organisations, including members of Climate Action 100+, to discuss Woodside’s approach to climate change and also listen to any concerns raised by investors. In 2023 the Chair held 43 such meetings. This engagement is supported by our Investor Relations function which had 70 meetings specifically on climate change.

The Sustainability Committee’s responsibilities include reviewing, and making recommendations to the Board on, the Company’s policy and performance in relation to sustainability-related matters, including climate change.

The Audit & Risk Committee assists the Board to meet its oversight responsibilities in relation to the company’s financial reporting, compliance with legal and regulatory requirements, internal control structure, risk management and insurance procedures and the internal and external audit functions.

Given the importance of climate change as a strategic risk to Woodside, and potential implications relating to financial reporting, it is one of the key risks considered by the Audit & Risk Committee during the review of the company’s risk management framework. The Committee also considers the inclusion of climate-related risks within Woodside’s internal audit program and the appropriateness of disclosures on climate-related risk within the consolidated financial statements.

The Nominations & Governance Committee assists the Board with reviewing Board composition, performance and succession planning. This includes identifying, evaluating and recommending candidates for the Board, taking into account the factors set out in the Board skills matrix in section 4.1 of the Annual Report 2023, including energy transition and climate change.

The Human Resources & Compensation Committee assists the Board with establishing human resources and compensation policies and practices. Performance based remuneration for the CEO, senior leadership team and all other permanent employees include metrics related to achieving our climate change strategy. Further details are provided in the 2023 Remuneration Report in section 4.3 of the Annual Report 2023.

BOARD SKILLS AND COMPOSITION

The non-executive directors contribute diverse operational and international experience, an understanding of the industry in which Woodside operates, knowledge of financial markets and an understanding of the health, safety, environmental, community and other sustainability matters that are important to Woodside. The Board supplements its climate change awareness by seeking the input of executives and external advisers and specialists to further inform its decisions.

The competencies and skills of the directors are set out in the skills matrix described in the Annual Report 2023, in section 4.1. In 2021, the Board skills matrix was updated to include energy transition and climate-related components to reflect the increasing importance of these issues to Woodside’s operations. The Board uses this skills matrix to assess the skills and experience of each director and the combined capabilities of the Board, to identify potential areas of focus for director recruitment and to identify any professional development opportunities that may benefit directors.

In 2023 and early 2024, Woodside announced changes to the membership of its Board of Directors, as part of its continuous review of Board skills and composition. These changes were intended to enhance Woodside’s Board and Committees so that they are best placed to support Woodside’s global operations and strategic growth opportunities through the energy transition. Further information on Board skills and composition is included in the Corporate Governance Statement in section 4.1 of the Annual Report 2023.

BOARD COMMITTEES

The Board has four standing committees to assist in the discharge of its responsibilities, including on climate change risk.

The Nominations & Governance Committee assists the Board with reviewing Board composition, performance and succession planning. This includes identifying, evaluating and recommending candidates for the Board, taking into account the factors set out in the Board skills matrix in section 4.1 of the Annual Report 2023, including energy transition and climate change.

The Human Resources & Compensation Committee assists the Board with establishing human resources and compensation policies and practices. Performance based remuneration for the CEO, senior leadership team and all other permanent employees include metrics related to achieving our climate change strategy. Further details are provided in the 2023 Remuneration Report in section 4.3 of the Annual Report 2023.
CEO AND EXECUTIVE REMUNERATION

In 2023, the Board determined that climate metrics will be a distinct component of Executive Remuneration impacting Variable Annual Reward from 2024. Climate metrics will make up 15% of the total scorecard, with 70% based on gross Scope 1 and 2 emissions performance and 30% based on new energy project progress.1,2 Individual Key Performance Indicators (KPIs) may also be added to Executive Performance Agreements in accordance with their roles and responsibilities.

MANAGEMENT

The Chief Executive Officer and Managing Director (CEO), is responsible for the implementation of strategy, including climate change strategy, and reports directly to the Board. The CEO is supported by the Executive Leadership Team. The position of Executive Vice President Strategy and Climate reports directly to the CEO and is a member of the Executive Leadership Team.

The Executive Leadership Team is informed about and monitors progress on climate-related issues by senior leaders through channels such as presentations and papers to the Executive Leadership Team, and by distribution of board papers and other periodic updates on climate-related topics.

Responsibility for executing the strategy is embedded in the appropriate Business Group. Because of the strategic nature of climate change, many groups have accountability for delivering elements of the strategy, summarised in the table.

### Board and Executive Relationship

#### CEO

- Develop strategy for approval by the Board, including recommending targets.
- Design company-wide processes to assist business delivery, providing subject matter expertise where required e.g. integrated emissions accounting and forecasting, company wide decarbonisation prioritisation.
- Monitor and update the Board on progress against targets and other climate-related internal and external developments.
- Prepare climate-related disclosures for approval by the Board.
- Government engagement and policy advocacy.

#### Strategy & Climate

- Set a capital allocation framework.
- Liaise with debt and equity investors to communicate and receive feedback on climate-related matters.

#### Exploration, Development and Projects

- Identify ‘design out’ opportunities and implement selected plans in project design.
- Prepare a transition case (see pages 50-51) for Executive and Board consideration in investment stage gate decisions.

#### Australian and International Operations

- Prepare Asset Decarbonisation Plans.
- Implement technically viable opportunities to decarbonise costing <$80/t CO₂-e.
- Implement selected opportunities costing >$80/t CO₂-e (subject to Executive oversight).

#### New Energy

- Progress CCS, Hydrogen and other new energy opportunities.
- Build a portfolio of carbon credits subject to integrity due diligence.

#### Technical Services

- Progress technology opportunities through initial assessment in order for operations to consider them for selection.

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1 Gross equity emissions are calculated prior to retirement of carbon credits as offsets, focusing the organisational priorities on avoiding and reducing emissions.
2 New energy project progress (which includes new energy products and lower carbon services) is subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside’s investment targets. Not guidance. Potentially includes both organic and inorganic investment.
Gas is used in a variety of high temperature industrial processes, such as glass production.
Woodside’s climate strategy is integrated throughout our company strategy; our aspiration to thrive through the energy transition with a low cost, lower carbon, profitable, resilient and diversified portfolio. Our climate strategy contains two key elements:

- reducing our net equity Scope 1 and 2 greenhouse gas emissions; and
- investing in products and services for the energy transition.

Reducing our net equity Scope 1 and 2 greenhouse gas emissions is supported by three levers: avoiding emissions in design, reducing emissions in operations, and offsetting the remainder with carbon credits.

Investing in products and services is also supported by three levers: assessing investments for their resilience to the energy transition; diversifying our products and services; and supporting our customers and suppliers to reduce their emissions.

These levers are supported by our work to promote global measurement and reporting – including our own publication of transparent disclosures.

Each element of our strategy is supported by the detail in our Climate Transition Action Plan (CTAP) (this report). The detail of this plan is expected to continue to evolve over time, and will be updated in future disclosures.

1 For Woodside, a lower carbon portfolio is one from which the net equity Scope 1 and 2 greenhouse gas emissions, which includes the use of offsets, are being reduced towards targets, and into which new energy products and lower carbon services are planned to be introduced as a complement to existing and new investments in oil and gas. Our Climate Policy sets out the principles that we believe will assist us achieve this aim.

2 The graphic on page 15 represents selected key examples from our climate plans, progress and opportunities, representative at the point of publication on 27 February 2024. It is intended to summarise but not be a complete representation of Woodside’s plans and opportunities and is indicative only and not guidance. Plans are dynamic and should be expected to evolve, including but not limited to the identification of additional opportunities, the progress or completion of existing opportunities, and/or delay in or removal of current opportunities which are not guaranteed to proceed.

3 See announcement titled “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com. Greenhouse gas emissions data including charts and estimates of future abatement plans in this Climate Transition Action Plan have not been updated to reflect changes in Woodside’s equity share of the Scarborough Joint Venture as a consequence of the sale of 15.1% interest to JERA.
Methane Guiding Principles

The Silica Alliance, lower carbon marine fuels industry collaboration

set plans

2022

Delivered 10% net equity scope 1 and 2 emissions reduction (includes LNG technology selection, zero-emission gas turbines and waste heat recovery)

2022

Delivered 9% net equity scope 1 and 2 emissions reduction (includes ESR CO2 + carbon credits retired)

2021

Delivered 12% net equity scope 1 and 2 emissions reduction (includes ESR CO2 + carbon credits retired)

2021

On track for 2030 target of 30% reduction in net equity Scope 1 and 2 Pathways identified to meet net zero aspiration by 2050 or sooner

2021-2020

Extended 5% energy efficiency improvement target

2021

publication of 5°C TCFD aligned Climate Report and 2021 AGM vote

2024

Publication of Climate Transition Action Plan and 2024 AGM vote

2025+

Expected transition to mandatory climate reporting standards

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See pages 49-53 for more

See pages 36-40, 48-49 for more

See pages 23, 40-41, 54-55, 67 for more

See page 20 for more

See page 21 for more

See pages 28-31, 74 for more

See pages 49-53 for more

See pages 36-40, 48-49 for more

See pages 23, 40-41, 54-55, 67 for more

See page 20 for more

See page 21 for more

See pages 28-31, 74 for more

See pages 49-53 for more

See pages 36-40, 48-49 for more

See pages 23, 40-41, 54-55, 67 for more
Woodside is targeting a reduction of net equity Scope 1 and 2 greenhouse gas emissions of 15% by 2025 and 30% by 2030, with an aspiration of net zero by 2050 or sooner.

The net equity Scope 1 and 2 emissions reduction targets are relative to a starting base of 6.32 million tonnes of CO$_2$-e, which is representative of the gross annual average equity Scope 1 and 2 greenhouse gas emissions over 2016-2020. This starting base may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021.

The targets mean that net equity Scope 1 and 2 emissions for the 12-month period ending 31 December 2025 are targeted to be 15% lower than the starting base, and that net equity Scope 1 and 2 emissions for the 12-month period ending 31 December 2030 are targeted to be 30% lower than the starting base.

**OUR PROGRESS TO DATE**

Woodside has a long standing focus on energy efficiency. Our first formal climate-related target was a 5% energy efficiency target over the period 2016-20. We exceeded it, achieving 8%.

Quantification of avoided emissions is inherently uncertain. However, it is possible to provide an estimate by comparison to benchmarks of a comparable portfolio of LNG, conventional shelf and deepwater assets producing 187.2 MMboe (Woodside equity production 2023) with a similar product mix to Woodside. There are a number of potential benchmarks providing estimates of the 2023 global average emissions intensity of oil and gas operations. Two examples are Wood Mackenzie’s Emissions Benchmarking Tool, and the industry average emissions reported in Table 3.1 of IEA’s “The Oil and Gas Industry in Net Zero Transitions” (November 2023).

Comparing Woodside’s Scope 1 and 2 emissions to their average intensity data indicates avoided emissions of 391 kt CO$_2$-e and 1,705 kt CO$_2$-e respectively. Woodside does not independently verify the data behind these estimates.

Contributions to this were made by the intrinsic characteristics of our oil and gas resources, the design of our facilities, the 2016-2020 energy efficiency target, and the implementation of asset decarbonisation plans from 2021 onwards.

**OUR 2023 PERFORMANCE**

2023 was a strong emissions performance year for our facilities. Despite higher production due to a full year of our merger with BHP’s petroleum business, we advanced our net equity Scope 1 and 2 emissions reduction to 12.5% (compared to 11% in 2022), relative to an adjusted post merger base.

We also utilised 13% fewer carbon credits than last year, offsetting 96 kt CO$_2$-e fewer emissions because of the emissions avoidance and reduction we have achieved.

A further indication of the underlying emissions performance at our facilities is that our Scope 1 and 2 gross emissions intensity (a measure of emissions, per unit of production) improved by 3% year on year, and is better than a comparable benchmark.

We do not expect improvement of gross emissions like this every year: for example, from 2024 the start-up of the Sangomar facility in Senegal (including one-off commissioning emissions) is expected to increase gross emissions for a period.

This is why our utilisation of carbon credits as offsets is an important stabiliser, so we are able to reduce our net emissions consistently, notwithstanding operational fluctuations and while our asset decarbonisation plans build momentum.

For more information on the use of carbon credits please see section 3.4.
Woodside’s net equity Scope 1 and 2 greenhouse gas emissions totalled 5,532 kt CO₂-e in 2023, which was 12.5% below the starting base.²

Gross equity Scope 1 and 2 emissions were 6,190 kt CO₂-e. To achieve the net result, 658 kt CO₂-e of carbon credits have been retired.

In 2023, 70% of Woodside’s gross equity Scope 1 greenhouse gas emissions were from fuel combustion to power our assets, 22% came from venting of which the majority is associated with removal of reservoir CO₂, as part of the LNG process, and 8% from flaring.

In the chart above, an allowance for emissions from the BHP petroleum portfolio for the five months of 2022 prior to the merger has been added for full year comparability with 2023. Our 2023 gross equity Scope 1 and 2 emissions were lower than comparable benchmarks. It is possible to provide an estimate of avoided emissions by comparison to benchmarks of a comparable portfolio and production volume to Woodside. See page 16 for information on estimates.¹

Gross Scope 1 and 2 emissions intensity is a measure of the efficiency of our production, before the application of offsets. It is one way to demonstrate that Woodside is appropriately prioritising avoiding and reducing emissions at our facilities. Woodside has a lower (better) gross emissions intensity than the global average of a comparable portfolio of LNG, conventional shelf and deepwater assets demonstrating the impact of actions taken to avoid and reduce emissions from our operations as well as the intrinsic characteristics of our oil and gas resources.¹

Our gross Scope 1 and 2 emissions intensity improved in 2023 due to factors including reduced flaring at Pluto due to strong reliability performance.

Woodside has a lower (better) methane emissions intensity than industry (OGCI) targets and has an action plan to further improve and strive for near-zero methane emissions.⁵

Woodside’s methane emissions performance and reduction plan is described on page 23. Methane emissions contribute to Woodside’s Scope 1 emissions, but receive specific focus because of their near-term importance to achieving global climate goals.

Our methane intensity improved in 2023 due to factors including reduced flaring at Pluto and lower floating production storage and offloading (FPSO) facility emissions.

¹ Quantification of avoided emissions is inherently uncertain. However, it is possible to provide an estimate by comparison to benchmarks of a comparable portfolio of LNG, conventional shelf and deepwater assets producing 187.2 MMboe (Woodside equity production 2023) with a similar product mix to Woodside. There are a number of potential benchmarks providing estimates of the 2023 global average emissions intensity of oil and gas operations. Based on Wood Mackenzie’s Emissions Benchmarking Tool, an estimate of avoided emissions is around 391 kt CO₂-e, whereas based on the industry average emissions reported in Table 31 of IEA’s “The Oil and Gas Industry in Net Zero Transitions” (November 2023), an estimate of avoided emissions is around 1,705 kt CO₂-e. The Estimated Avoided Emissions shown in this Graph represents the range between the two estimates. Woodside does not independently verify the data behind these estimates.

² Targets and aspiration are for net equity Scope 1 and 2 greenhouse gas emissions relative to a starting base of 6.32 Mt CO₂-e which is representative of the gross annual average equity Scope 1 and 2 greenhouse gas emissions over 2016-2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021. Net equity emissions include the utilisation of carbon credits as offsets.

³ Woodside analysis, based on Woodside’s Scope 1 and 2 emissions data for 2022 and 2023 relative to a comparable portfolio of LNG, conventional shelf and deepwater assets, calculated from the 2023 emissions intensity of these primary resource themes reported in Wood Mackenzie’s Emissions Benchmarking Tool.


Net equity Scope 1 and 2: net zero action plan

In 2023, we completed the development of decarbonisation plans across our merged portfolio of operated assets including identifying potential large scale opportunities to reduce emissions beyond 2030.

**DECARBONISATION PLANNING**

We have three ways to achieve our net equity Scope 1 and 2 emissions reduction targets:

- avoiding emissions in the way we design facilities;
- reducing emissions in the way we operate; and
- both buying and originating carbon credits to utilise as offsets for the remainder.

Our priority is to avoid and reduce emissions. All Woodside operated assets and projects must draw up decarbonisation plans to identify the technical opportunities to reduce emissions at the facility, so that the opportunities can be further assessed for engineering and commercial viability.

Opportunities that are estimated to cost less than our internal long-term cost of carbon of $80/t CO$_2$-e (real terms 2022) are incorporated into asset or project level business plans. These opportunities are at varying levels of maturity. To date:

- Opportunities that we estimate could avoid approximately 16 million tonnes CO$_2$-e (cumulatively to 2050) have been incorporated into the design of the Scarborough, Pluto Train 2 and Trion projects.\(^1\)\(^2\)\(^3\)

Completed the development of asset decarbonisation plans across full portfolio of operated assets.

Opportunities costing <$80/t CO$_2$-e have been incorporated into asset level business plans for implementation. Examples of initiatives implemented in 2023 are given on page 22.

Multiple large scale (but more expensive) abatement opportunities have been identified using existing technology, with the ability to drive emissions to residual levels, subject to engineering and commercial viability.

Opportunities estimated to cost <$80/t CO$_2$-e:

- Targeting implementation of opportunities by end 2025 that could deliver 50% of the identified potential emissions reductions.

Large scale opportunities estimated to cost >$80/t CO$_2$-e:

- Attention is focused on the assets with the longest remaining lifespan – primarily the Pluto and Scarborough facilities.
- The 2024 scope of work at these facilities is to conclude engineering assessment of the technology options in order to select the preferred technology for application.

Opportunities that we estimate could avoid approximately 12 million tonnes CO$_2$-e (cumulatively to 2050) have been incorporated into the design of the Scarborough, Pluto Train 2 and Trion projects.\(^1\)\(^2\)\(^3\)

We estimate that the opportunities still to be implemented at our existing operating facilities could have a combined capital cost of around $200 million.\(^1\)\(^2\)\(^3\)

This does not include the cost of potential projects which we estimate to cost more than $80/t CO$_2$-e. Some of these may also be pursued following review by the Executive Leadership Team such as the proposed Woodside Solar project. Other opportunities are pursued in an enterprise large scale abatement plan in order to reduce costs and/or improve maturity, so that they too can be considered for inclusion in asset level business plans. This large scale abatement plan is explained on the next pages.

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1. Woodside’s assumptions on carbon cost pricing include a long-term carbon price of US$80/tonne of emissions (real terms 2022). Woodside continues to monitor the uncertainty around climate change risks and will revise carbon pricing assumptions accordingly.
2. Indicative only, not guidance. Potential impact of opportunities identified in asset decarbonisation plans assuming all opportunities identified progress to execution, which is not certain and remains subject to further maturity of cost and engineering definition. Greenhouse gas quantities are estimated using engineering judgement by Woodside engineers. Please refer to section 7.6 “Disclaimer, risks, emissions data and other important information” for important cautionary information relating to forward looking statements.
3. See announcement titled “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com. Greenhouse gas emissions data including charts and estimates of future abatement plans in this Climate Transition Action Plan have not been updated to reflect changes in Woodside’s equity share of the Scarborough Joint Venture as a consequence of the sale of 15.1% interest to JERA.
Woodside’s Scope 1 and 2 targets are set on an equity basis. This means they apply to our share of the emissions from all projects that we participate in, irrespective of whether we operate the project, and in proportion to our economic interest.

We share examples of emissions reduction initiatives being implemented on our assets with the Operator of non-operated assets at governance forums and joint venture technical committee meetings. Examples have included sharing knowledge about methane measurement (such as drone observation surveys) and reduction opportunities such as thermal oxidisers at the Wheatstone asset. We also discuss our approach to workforce engagement on decarbonisation and identification of opportunities.

A list of our non-operated JVs is provided in the table (below) along with their Operator and a link to their website for further information about their approach.

### NON OPERATED ASSETS

<table>
<thead>
<tr>
<th>Non-operated Asset</th>
<th>Woodside Interest</th>
<th>Operator (for further information)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gippsland Basin Joint Venture</td>
<td>50%</td>
<td>ExxonMobil (ExxonMobil.com)</td>
</tr>
<tr>
<td>Kipper Unit Joint Venture</td>
<td>32.5%</td>
<td>BP (BP.com)</td>
</tr>
<tr>
<td>Mad Dog</td>
<td>23.9%</td>
<td>BP (BP.com)</td>
</tr>
<tr>
<td>Atlantis</td>
<td>44%</td>
<td>BP (BP.com)</td>
</tr>
<tr>
<td>Wheatstone Project</td>
<td>13%</td>
<td>Chevron (Chevron.com)</td>
</tr>
</tbody>
</table>

1 Indicative only, not guidance. Potential impact of opportunities identified in asset decarbonisation plans assuming all opportunities identified progress to execution, which is not certain and remains subject to further maturity of cost and engineering definition. Greenhouse gas quantities are estimated using engineering judgement by Woodside engineers. Please refer to section 7.6 ‘Disclaimer, risks, emissions information relating to forward looking statements. See page 20 for further information about potential project opportunities that have not yet been sanctioned.

2 See announcement titled “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com. Greenhouse gas emissions data including charts and estimates of future abatement plans in this Climate Transition Action Plan have not been updated to reflect changes in Woodside’s equity share of the Scarborough Joint Venture as a consequence of the sale of 15.1% interest to JERA.

3 Woodside’s approach to utilising carbon credits as offsets in the context of our pathway to net zero is discussed in Section 3.4.

4 The starting base has been calculated as 6.32 Mt CO₂-e which is representative of the gross average annual equity emissions over the period 2016-2020 for both heritage Woodside and heritage BHP’s assets, and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021.

5 During 2023, Woodside completed a transaction whereby Calgary-based Paramount Resources Ltd (Paramount) took a 50% equity interest in, and operatorship of, 28 leases of the Liard field in Canada. Woodside retains a 50% equity interest in the leases.

7 The Kipper field lies in Australian offshore permits Vic/L9 and Vic/L25.
8 The Mad Dog field lies in the US Gulf of Mexico, within lease blocks GC689, GC742, GC743, and GC744.
9 The Atlantis field lies in the US Gulf of Mexico, within lease blocks GC689, GC742, GC743, and GC744.
10 Woodside’s 13% non-operated interest in the Wheatstone Project, which is offshore north western Australia, includes the offshore platform, the pipeline to shore and the onshore plant, but excludes the Wheatstone and Iago fields and associated subsea infrastructure. Woodside is Operator of the Julimar & Brunello fields which is a subsea development tie-back to the Wheatstone offshore platform and has a 65% interest in these fields.
LARGE SCALE ABATEMENT

Emissions reduction opportunities that are estimated to cost more than $80/t CO\textsubscript{2}-e are reviewed by our Executive Leadership Team. They are subject to more engineering, cost reduction or technology maturation in a company-wide large scale abatement plan, as depicted in the chart below. If they can be matured to an appropriate level, they will be reassessed by the Executive Leadership Team and progressed where appropriate. The proposed Woodside Solar project is an example of a project likely costing more than $80/t CO\textsubscript{2}-e that is progressing.

Multiple opportunities have been identified that could reduce the Scope 1 and 2 emissions from our current portfolio. LNG facilities are the source of the majority of our emissions. They arise from reservoir CO\textsubscript{2}, power generation, mechanical turbines and our flaring system.

Electrification (using renewable or lower carbon power), CCS and hydrogen fuelling of turbines are all options that could reduce these emissions, creating choices in the optimal mix. We estimate these large scale opportunities could potentially deliver approximately 35 million tonnes of additional cumulative Scope 1 and 2 emissions reductions through to 2050.\textsuperscript{1,2}

These large scale abatement opportunities utilise existing technology but require substantial engineering to retrofit onto existing facilities. Because of this, they are currently estimated to cost significantly more than our internal long-term cost of carbon of $80/t CO\textsubscript{2}-e (real terms 2022).\textsuperscript{1} This means that we target where they can have the highest impact, in particular at our Pluto and Scarborough facilities, which have the longest future life and therefore emissions profile in our current portfolio.

The next stage of our planning process is to determine which of the multiple abatement options should be selected. These technologies are not certain to mature to a level of cost at which they could be implemented on the full scale depicted in the chart on page 19. Because of this and in order to pursue a cost effective approach to decarbonisation, they will also be compared with alternatives, such as new emerging technologies, or the use of carbon credits as offsets.

If all current abatement efforts and future abatement pipeline opportunities are realised, residual emissions from our current portfolio could be approximately 0.3 Mtpa CO\textsubscript{2}-e in 2050, an approximately 95% reduction from our 2016-2020 starting base.\textsuperscript{2,3}

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**Abatement option for typical LNG emissions sources\textsuperscript{2}**

<table>
<thead>
<tr>
<th>2023</th>
<th>2030</th>
<th>2040</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
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<td>25</td>
<td>25</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

- Non LNG %
- LNG Emissions %

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**Marginal abatement cost curve\textsuperscript{2}**

- Large scale abatement: Multiple technology options >$80/t
  - Priority is to reduce cost and mature engineering in order to make available for selection at facilities with the longest future operating life and greatest emissions reduction potential.

- Opportunities costing <$80/t | in progress
  - Flaring minimisation
  - Energy efficiency
  - Reliability improvement
  - Methane reduction

---

All footnotes related to this page are displayed on the next page.
DECARBONISATION AT FUTURE PROJECTS
The same technologies and methods that are used in our asset decarbonisation plans and large scale abatement plan can also be incorporated into the planning for new projects. Because they do not need to be retrofitted onto existing facilities, these technologies are expected to be less expensive to deploy at new projects.

The approach to decarbonisation is incorporated through the development planning cycle. For example, the proposed Browse development has CCS included in its reference case, and measures to reduce flaring have been incorporated in the design of Trion. Emissions data is not incorporated into our reporting until the project is sufficiently mature for its financial information and production forecasting to be included in our business plan.

RISKS TO ACHIEVING THE TARGETS
Whilst we have identified a technical pathway to residual levels of emissions and have started implementation via our asset decarbonisation plans, there are risks to delivery. These include:

• Securing approvals, for example from regulators or joint venture partners.
• Ability to reduce costs.
• Proof of technology in the specific application at our facilities.
• Integration of new designs into existing brownfield facilities.

These risks are mitigated by the ability to meet our targets through the additional use of carbon credits. Our use of carbon credits, including the steps we take to manage associated risks, is further described in section 3.4.

FOCUS ON ACTION
The following pages provide case studies about aspects of how we avoid and reduce emissions at our facilities:

- Asset decarbonisation in practice 22
- Methane emissions management 23
- Large scale abatement: vision for Pluto 24-25
- Decarbonisation technology development 6-27
Asset decarbonisation in practice

**DESIGN OUT / AVOID**

**Lower Carbon Power: Pluto**
We modified the Pluto LNG plant to receive power from the proposed Woodside Solar project. The modifications are substantially complete, ready for grid connection from 2024. We expect to import 50 MW of solar power from 2026, subject to FID.

**Estimated emissions reduction:**
150 ktpa CO₂-e

**Flaring minimisation: Trion**
We installed gas recovery systems associated with tanks and flare to minimise flaring.

**Estimated emissions reduction:**
52.4 ktpa CO₂-e

**Energy efficiency: Trion**
We modified the redundancy for power generation to keep back up generators on standby.

**Estimated emissions reduction:**
31.6 ktpa CO₂-e

**OPERATE OUT / REDUCE**

**Operating Practices**

**Reliability improvement: Pluto**
We addressed extreme ambient temperature impacts on equipment reliability, for example installing shading and evaporative misting sprays. These and other actions contributed to us avoiding significant extreme heat related reliability events in 2023.

**Estimated emissions reduction:**
129 ktpa CO₂-e

**Flaring minimisation: Angostura**
We updated and implemented 12 standing operational procedures to minimise gas flaring during facility startup.

**Estimated emissions reduction:**
26.5 ktpa CO₂-e

**Methane: Pluto**
We tested the regenerative thermal oxidizer (RTO) at various temperatures to investigate methane destruction efficiency. Work is now ongoing to amend the operating parameters to achieve the optimal temperature and deliver the emissions reduction potential.

**Estimated emissions reduction:**
6.0 ktpa CO₂-e

**Plant Modifications**

**Energy Efficiency: Karratha Gas Plant**
We increased the utilisation of the highest efficiency generators on site by modifying power cable operating envelopes.

**Estimated emissions reduction:**
43 ktpa CO₂-e

**Flaring minimisation: Shenzi**
We installed a low emission flare tip to reduce low and high pressure flare purge rates.

**Estimated emissions reduction:**
2.4 ktpa CO₂-e

**Flaring minimisation: Ngujima-Yin**
We installed a parallel strainer and are now able to clean blockages online and eliminate the associated flaring. Suction strainer blockages previously required 10 hours of flaring while the strainers were cleaned.

**Estimated emissions reduction:**
49 ktpa CO₂-e

**Flaring minimisation: Angostura**
We updated and implemented 12 standing operational procedures to minimise gas flaring during facility startup.

**Estimated emissions reduction:**
26.5 ktpa CO₂-e

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1. The Scope 1 and 2 emissions reductions are estimated using engineering judgment by appropriately skilled and experienced Woodside engineers. All examples are for gross emission reductions, not equity share.
2. Implementation is subject to commercial arrangements, regulatory & JV approvals and third party activities (which may or may not proceed).
3. Trion’s emissions reduction has been estimated as an average over a 27-year design life. Carbon intensity of the field will not be uniform across each year of expected field life.
4. Emissions reduction reflects comparison to ambient temperature reliability events in 2022 before implementation of extreme heat readiness protocols and may not be realised every year.
Methane emissions management

In January 2024, Woodside joined the UN Environment Programme’s (UNEP) flagship reporting and mitigation program, the Oil and Gas Methane Partnership (OGMP 2.0).

Methane management plan: 2023 progress

Methane emissions management is an important part of global efforts to limit climate change because it has a higher global warming potential than carbon dioxide, especially in the near term, and is estimated to have made the second largest contribution to human-induced climate change after carbon dioxide.

Woodside’s reported methane emissions are around 0.1% of production by volume. This calculation is supported by our improving ability to directly monitor and measure methane at our facilities. It is lower than the Oil and Gas Climate Initiative (OGCI) 2025 target of below 0.2%. It reflects our long standing focus on reducing methane leaks, which if they occur at sufficient volume would be a loss to our production and a potential safety hazard.

We continue to strive for further reductions through our methane plan (2023 progress against four pillars of the plan is shown on the right). When we assess emissions reduction opportunities, we multiply our internal long-term cost of carbon of $80/t CO₂-e (real terms 2022) by 84 (an effective price for methane of $6,720/t) to align with the higher global warming potential of methane in the near term.

MEASURE

We are improving our ability to measure methane emissions. In 2023 we:

• Built and maintained a database of methane emissions sources, confirmed with selected site measurements across all operated assets.
• Trialled a spectrometric aerial methane measurement technique at onshore facilities.
• Conducted methane point source detection and quantification trials from two satellite vendors to test capability.
• Completed strategic drone surveys trialling the use of CO₂/CH₄ ratios for combustion assessment.
• Piloted several fugitive detection tools including quantified optical gas imaging.
• Partnered with the University of Western Australia to prototype novel methane sensors.

REDUCE

We are taking action to reduce methane emissions to near-zero at our operated assets by prioritising the mitigation of our most material sources. In 2023 we took action to reduce methane emissions by 2.0 ktpa including:

• Performance optimisation of wet gas seals on two boil off gas (BOG) compressors, estimated saving of 1.5 ktpa of methane.
• Rectification of a trunkline fugitive leak at the Karratha Gas Plant onshore terminal, estimated saving of 0.3 ktpa of methane.
• Automation of a manual venting procedure on three acid gas removal units, estimated saving of 0.2 ktpa of methane.

REPORT

We aim to report our methane emissions data accurately and transparently. In 2023 we:

• Conducted surveys which support our calculation that our methane emissions are around 0.1% (of production by volume), consistent with historical aerial (top down) and point source (bottom up) site measurements.
• Engaged with Australia’s Climate Change Authority to support improvement of methane reporting regulations.

In 2024, we joined the Oil and Gas Methane Partnership (OGMP) 2.0 to support transparent methane emissions reporting.

LEAD

We support the adoption of methane best practice across industry through leadership, advocacy and collaboration. In 2023 we:

• Led the Methane Guiding Principles “Global Midstream Initiative”.
• Joined the ASEAN Methane Leadership Program to share methane reduction learnings.
• Sponsored the first technical workshop of the Australian Energy Producers methane taskforce.
• Collaborated with researchers conducting science studies as part of UNEP’s International Methane Emissions Observatory’s efforts to fill knowledge gaps in methane emissions.
• Shared knowledge on methane management through a presentation and journal article publication at the 2023 Australian Energy Producers conference.
• Presented and participated in panels at the Global Methane Summit and International Gas Union conference.

3 The methane emissions reductions are estimated using engineering judgment by appropriately skilled and experienced Woodside engineers. All examples are for gross emission reductions, not equity share.
Large scale abatement: vision for Pluto net zero

Pluto LNG’s long future life means the potential for emissions savings make it a priority for the development of large scale abatement.

**ABATEMENT OPPORTUNITIES: DELIVERED**

**Energy Efficiency:**
- High efficiency air filters installed on gas turbines
- Optimised power generation operating strategy
- Increased operating pressure of Pluto Train 1
- Pluto water handling reduced minimum turndown rates
- Improved air cooler fin fan blades

**Flaring:**
- Focus on high reliability operations to reduce flaring
- Operation of dual boil off gas compressors to reduce flaring associated with ship loading

**Methane:**
- Compressor seal gas vents routed to flare system
- Multi-modal site surveys and remediation for fugitive methane

**ABATEMENT OPPORTUNITIES: IN PROGRESS**

**Energy Efficiency:**
- Aero-derivative turbine driven Optimised Cascade® process for Train 2
- Turbine compressor drivers with inlet air chilling and low NOx technology for Train 2
- Electric drive selected for smaller compressors in Train 2
- Integrated Train 2 power supply with existing Train 1 system
- Waste heat recovery on gas turbines
- Flow coated trunkline to reduce roughness
- Battery energy storage system

**Flaring:**
- Flare tip replacement and combustion system upgrades
- Nitrogen flare purge

**Methane:**
- Thermal oxidizer installed to remove methane from waste streams

**FUTURE POTENTIAL**

In the longer term, firmed lower carbon power and CCUS could underpin large scale abatement.

Mechanical drives (gas turbines) and power generation account for the majority of emissions at Pluto. Integration of technologies including hydrogen fuelling and / or post combustion carbon capture could materially reduce these emissions.

Installation of tie-ins during the 2023 turnaround has also made Pluto ‘CCU-ready’, creating the potential to add value by turning CO\textsubscript{2} into saleable products.

These options are not technically or economically certain to proceed. With a focus on cost-effectiveness, they will also be compared with alternatives, such as new emerging technologies, or the use of carbon credits as offsets.

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1 Vision for Pluto net zero is a range of future potential decarbonisation abatement options currently being considered to potentially reduce net emissions from the onshore Pluto LNG facility. Options are conceptual only and subject to change. Images are not to scale, implementation is subject to technology maturity, technical and commercial feasibility, commercial arrangements, regulatory & JV approvals and third party activities (which may or may not proceed).

2 For more information about the Conoco Phillips Optimised Cascade® process see https://lnglicensing.conocophillips.com/what-we-do/lng-technology/optimized-cascade-process/.

3 Please see glossary for the definition of how Woodside uses the term lower carbon.
Delivered
Energy efficiency improvements and flaring and methane reduction across existing infrastructure. We continue to focus on further improvement in these areas.

In Progress
Preparation for excellence in commissioning and startup of Scarborough and Pluto Train 2 facilities, including delivering design out abatement opportunities.

Future Potential
Renewable power import
Grid connection enabling import of renewable power or export of lower carbon power when generating above site needs.

Lower carbon power generation
Oxyfuel thermal power generation, connected to CCS gathering system.

Energy storage system
Renewable power firming.

Electric motor assist
LNG compressor helper motors maximising use of lower carbon power.

Hydrogen blending into turbine fuel
Gas reforming with CCS.

Carbon Capture and Utilisation (CCU)
Turning CO$_2$ into saleable products e.g. ethanol or protein.

Post combustion carbon capture
Capture and treatment of CO$_2$ from gas turbine exhaust for export to CCS gathering system.

Vision for Pluto net zero is a range of future potential decarbonisation abatement options currently being considered to potentially reduce net emissions from the onshore Pluto LNG facility. Options are conceptual only and subject to change. Images are not to scale, implementation is subject to technology maturity, technical and commercial feasibility, commercial arrangements, regulatory & JV approvals and third party activities (which may or may not proceed).
Decarbonisation technology development

Woodside sees a potential pathway to achieving our net zero aspiration by 2050 or sooner by leveraging existing mature technologies that have been successfully deployed elsewhere. They are however expensive to retrofit on existing facilities, and our engineering focus is to reduce cost.

New technologies are also emerging, and they have the potential to supersed opportunities in our current plans over varying timeframes. Woodside is working to mature technologies and drive a step change in their costs to make them viable options that can be targeted for deployment at different time horizons.

**Alternative Power**

**Concentrated Solar Energy**
Technology development collaboration with Heliogen to advance longer duration renewable power. This includes Project Capella, a commercial scale demonstration plant in California.

**Mixed Fuel H2 Combustion**
We are working with Baker Hughes aiming to qualify a technology and pathway for using hydrogen in a gas turbine without expensive infrastructure replacement.

**Oxy-Combustion Technology**
We are working with several companies to review and develop power generation technology that enables over 90% capture efficiency of CO₂ by combusting natural gas with nearly pure oxygen to achieve high-concentration CO₂ capture.

**Monitoring**

**Methane Monitoring**
We are working with suppliers to test a range of technologies to accurately measure methane emissions from various sources such as flaring, venting, and fugitive emissions. Our goal is to detect and reduce these emissions using top-down and bottom-up methodologies, including drones, robots, fixed installations, handhelds, and satellite imagery.
Carbon Capture, Utilisation and storage (CCUS)

Carbon Capture
We are evaluating options to retrofit carbon capture technologies to LNG plants, so we can select high-efficiency, low-operational cost, and small-footprint options.

Post Combustion Capture
We are investigating technologies from companies that use novel solvent chemistries and other process intensification methods to enable the point source capture of CO\(_2\) from the combustion of natural gas and other fuels. These novel solvents aim to improve the efficiency of CO\(_2\) capture from flue gases with low CO\(_2\) concentrations, and reduce both the equipment size and energy input, making it potentially feasible to retrofit existing plants with carbon capture.

Decarbonisation Accelerator
We are creating a new Decarbonisation Accelerator in partnership with Rice University to increase the utilisation pathways of CO\(_2\) using plasma chemistry.

Carbon Capture and Utilisation
Our collaboration with companies, such as LanzaTech, NovoNutrients, and StringBio, aims to accelerate the development or carbon capture and utilisation technologies, ahead of potential deployment on a larger scale.

Carbon Sequestration Monitoring and Modelling
We are working with the SEG Advanced Modeling Corporation’s CO\(_2\) Sequestration Project to model injection risk, plume migration, and induced seismicity of CO\(_2\) injection into a reservoir. By comparing this modelling to real-time monitoring using fibre optic and in wellbore seismic measurement, we hope to ultimately reduce the long-term operational cost and improve safety aspects of CCS projects.

Direct Air Capture
We are the largest industrial partner in the Australian Research Council (ARC) Research Hub for carbon utilisation and recycling.

Systems integration and commercialisation

Trailblazer
We are developing a research commercialisation hub with Curtin University, the University of Queensland and James Cook University, and 30 company partners. The Trailblazer program is focused on turning academic research into breakthrough services, products and businesses, particularly in critical minerals and hydrogen.

Climatetech Incubator
We are a Founding Partner for the Houston expansion of Greentown Labs, the largest climatetech startup incubator in North America. We are participating with the intent of adopting emerging startup technologies into our operations.

Energy Partnership
We have renewed our strategic partnership with Monash University. It has three pillars: affordable bulk clean energy; carbon abatement; and thought leadership.
Investing in carbon credits contributes to preserving the world’s carbon budget, by accelerating emissions reduction, avoidance and removal activities that would not otherwise have taken place.

**ROLE OF CARBON CREDITS IN OUR DECARBONISATION PLANS**

Woodside utilises certified carbon credits to offset equity Scope 1 and 2 emissions that are above our targets in a given year after design out and operate out measures have been taken. The availability of carbon credits to offset emissions is important because:

- gross emissions can fluctuate, for example, due to portfolio change or for operational reasons,
- asset decarbonisation plans can take time to implement, especially where they are large scale or complex engineering projects, and
- some decarbonisation technologies may prove too expensive to implement efficiently.

The ability to utilise carbon credits means that we can maintain our target trajectory and continue to reduce our net equity Scope 1 and 2 greenhouse gas emissions, despite these variable factors.

Like our asset decarbonisation plans, our portfolio of carbon credits enables our base business to manage the price risk associated with regulations and our corporate net equity Scope 1 and 2 emissions targets. Carbon credits are available now and can be used in the short and medium term for emissions that are otherwise not technically or economically viable to avoid or reduce.¹

**OUR PORTFOLIO APPROACH**

We established a Carbon Business in 2018 in order to develop a portfolio of carbon credits and our skills and expertise in managing carbon credit integrity. Since then we have invested more than $150 million, with approximately one third of that spend focused on the origination of our own projects, and the remainder on purchase of credits.²³⁴⁻¹ Today, Woodside manages a portfolio of more than 20 million carbon credits, which it has acquired with an average cost of supply of less than $20/t.³⁵

Over time we are increasing our focus on project origination as this enables us to better manage the cost and integrity of our carbon credits. In 2023, Woodside planted approximately 2.7 million mixed biodiverse seedlings in Western Australia as part of our Native Reforestation Project across approximately 4,700 ha of land at Woodside owned properties.⁶ In Senegal, Woodside is funding the restoration of up to 7,000 hectares of mangroves in the Sine Saloum and Casamance regions. Woodside is expected to receive up to 1.4 million carbon credits from this project over 30 years.

A wide range of activities can generate carbon credits. These activities can be categorised into avoidance/reduction (e.g. landfill gas capture or renewable energy) or removal (e.g. reforestation) activities.

¹ All footnotes related to this page are displayed on the next page.
While avoidance and reduction credits will remain a large share of the portfolio in the near to medium term, we plan to increase the proportion of removal credits over time in support of our net zero aspiration. We currently have and will target to maintain a portfolio made up of 50% nature based removal credits (e.g. biosequestration). We also recognise that long term storage will become increasingly important.

We recognise that the use of carbon credits as offsets has been criticised by some groups, and that if unanswered these criticisms may constitute a risk to their ongoing acceptability. We believe these risks can be mitigated by the way we plan to assess integrity and manage a diverse portfolio of credits. Woodside subscribes to emerging independent carbon credit rating platforms that assess carbon credit integrity. We also monitor the evolution of integrity assessment frameworks and standards developed by independent organisations when rating platforms that assess carbon credit integrity. We also recognise that long term storage will become increasingly important.

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PRIORITYING EMISSION AVOIDANCE AND REDUCTIONS AT OUR FACILITIES

Our priority is avoiding and reducing emissions. For example we pursue opportunities to reduce emissions in the design and operation of our assets that are economically viable when assessed using an internal long-term cost of carbon, currently US$80/tonne CO₂-e (real terms 2022). This exceeds the current market price of carbon credits. The generic spot price for Australian Carbon Credit Units (ACCUs) was around A$31.25 (approximately US$21) in the Quarterly Market Report published in December 2023 by the Clean Energy Regulator. A second way that we prioritise avoidance and reduction is to set executive remuneration targets on gross Scope 1 and 2 emissions performance, which does not include the use of offsets. Whilst we prioritise avoidance and reduction of emissions at our facilities, carbon credits remain an important option to meet our corporate targets and regulatory needs through to 2030 if required. To date we have secured greater than 90% of expected ACCU requirements to 2030 and have a plan for the remainder.¹⁻¹²

¹ By ‘otherwise not technically or economically viable to avoid or reduce’, we are referring to the utilisation of carbon credits for emissions that remain above our targets after ‘design out’ and ‘operate out’ activities in a given year and our internal carbon price of $80/tonne CO₂-e (real terms 2022).
² Invested amount is pre-tax expenditure incurred prior to 31 December 2023 on market purchased carbon credits and Woodside developed carbon origination projects. Investment in carbon credits allocated to Scope 1 and 2 emissions do not contribute to our Scope 3 investment target. The $150 million quoted investment in carbon credits in this report has not been attributed to the $335 million Scope 3 investment target update in this report.
³ Portfolio volume excludes carbon credits (held and expected to be received) from Woodside Pluto Carbon Offset Project Stages 1-4 held by Woodside Burrup Pty Ltd.
⁴ Origination refers to carbon offset projects developed by Woodside or third-party project developers, characterised by (i) the provision by Woodside of up-front investment or funding; (ii) Woodside either being a majority participant in the project or a recipient of carbon credits from the project (or both); and (iii) the acceptance of risk by Woodside in relation to carbon credit delivery.
⁵ The carbon portfolio is dynamic. Volumes, methods and geography are subject to change. Portfolio volume includes Australian Carbon Credit Units and voluntary carbon market credits held, and expected to be delivered or generated up to 2050 under or in relation to: (i) third party contracts entered into prior to 31 December 2023; or (ii) Woodside originated projects for which land has been purchased prior to 31 December 2023. Volumes reported on an unrisked basis. Unrisked volumes do not include an adjustment to such volumes to reflect any risk of non-delivery. Portfolio volume excludes retired units. Woodside does not make any claims in relation to the mitigation impact of carbon credits within the portfolio unless, and until, a credit is retired or surrendered (taken out of circulation and can no longer be sold). Cost of supply is calculated pre-tax and is based on portfolio volumes and a calculation of 2023 present value unit costs.
⁶ The project has a potential to sequester approximately 2,000 kt CO₂-e over 25 years.
¹¹ Volume includes Woodside equity interest in carbon credits (held and expected to be received) from Woodside Pluto Carbon Offset Project Stages 1-4 held by Woodside Burrup Pty Ltd.
¹² See announcement titled “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com. Greenhouse gas emissions data including charts and estimates of future abatement plans in this Climate Transition Action Plan-published in December 2023. Volumes reported on an unrisked basis. Unrisked volumes do not include an adjustment to such volumes to reflect any risk of non-delivery. Portfolio volume excludes retired units. Woodside does not make any claims in relation to the mitigation impact of carbon credits within the portfolio unless, and until, a credit is retired or surrendered (taken out of circulation and can no longer be sold). Cost of supply is calculated pre-tax and is based on portfolio volumes and a calculation of 2023 present value unit costs.
¹³ The project has a potential to sequester approximately 2,000 kt CO₂-e over 25 years.
¹⁸ Volume includes Woodside equity interest in carbon credits (held and expected to be received) from Woodside Pluto Carbon Offset Project Stages 1-4 held by Woodside Burrup Pty Ltd.
¹⁹ See announcement titled “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com. Greenhouse gas emissions data including charts and estimates of future abatement plans in this Climate Transition Action Plan have not been updated to reflect changes in Woodside’s equity share of the Scarborough Joint Venture as a consequence of the sale of 15.1% interest to JERA.
One carbon credit is intended to represent a tonne of emissions avoided, reduced or removed outside of our facilities.\(^1\)

Because of the importance of carbon credit integrity, Woodside applies our own additional assessment to our carbon credits portfolio. This is summarised in the table below.

---

### Integrity assessment for carbon credits\(^2\)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abatement demonstrably additional</td>
<td>We examine whether the credit represents emissions reductions or removals that would not have occurred in the absence of a carbon market, for example, by scrutinising the ‘additionality approach’ applied by the project.</td>
</tr>
<tr>
<td>High likelihood of permanence</td>
<td>We assess the permanence of abatement that a credit represents including consideration of permanence periods, risk of reversal and adequacy of buffer pools.</td>
</tr>
<tr>
<td>Accurate quantification of abatement</td>
<td>We form an independent view of the risk of over-crediting by evaluating factors such as baseline conservatism, monitoring requirements and calculation values.</td>
</tr>
<tr>
<td>Recognised standards body(^1)</td>
<td>We source credits issued by established standards bodies that independently verify and issue credits. Our current portfolio is sourced from the Australian Carbon Credit Scheme, Verra and Gold Standard.</td>
</tr>
<tr>
<td>Mitigation against leakage</td>
<td>We evaluate whether the carbon project could result in increased emissions outside of the project boundary, for example, by analysing common land usage within the broader geographic region.</td>
</tr>
<tr>
<td>Vintage</td>
<td>We aim to retire credits with a vintage with a maximum of five years between the abatement activity and emissions.</td>
</tr>
<tr>
<td>Environmental and social performance</td>
<td>Woodside assesses the overall environmental and social performance of a carbon project and prioritises projects that have benefits such as land restoration and employment opportunities for local communities.</td>
</tr>
<tr>
<td>Location and methodology</td>
<td>We take a portfolio approach to managing regulatory risk and carbon credit acceptability, aiming for carbon credit methodology and geographical diversification.</td>
</tr>
</tbody>
</table>

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1. The measurement, verification and reporting of the abatement is prescribed and administered by independently managed Standards (such as Verra or Gold Standard), or by Regulators through legislation (such as the Australian Clean Energy Regulator through the Carbon Farming Initiative Act).

**WOODSIDE’S PORTFOLIO OF CARBON CREDITS**

PORTFOLIO OF UNEARTHED CARBON CREDITS

- **~20MT CO₂-E IN TOTAL**
- **<$20/TONNE AVERAGE COST OF SUPPLY**

**Woodside portfolio**

- **~25% Origination**
- **~75% Market**

**Woodside’s portfolio by registry**

- **~58% ACCU**
- **~40% Verra - Verified Carbon Units (VCUs)**
- **~2% Gold Standard - Verified Emissions Reductions (VER)**

**Woodside’s portfolio by method**

- **~30% Renewables, energy efficiency and waste management**
- **~50% Biosequestration**
- **~20% Fire management and forest protection**

**Woodside’s portfolio by geography**

- **~58% Australia**
- **~18% SE Asia and Pacific**
- **~13% Africa**
- **~6% South America**
- **~5% India, China, and Middle East**

---

1. The carbon portfolio is dynamic. Volumes, methods and geography are subject to change.
2. Portfolio volume includes Australian Carbon Credit Units and voluntary carbon market credits held, and expected to be delivered or generated up to approximately 2050 under or in relation to: (i) third party contracts entered into prior to 31 December 2023; or (ii) Woodside originated projects for which land has been purchased prior to 31 December 2023. Volumes reported on an unrisked basis. Unrisked volumes do not include an adjustment to such volumes to reflect any risk of non-delivery. Portfolio volume excludes carbon credits (held and expected to be received) from Woodside Pluto Carbon Offset Project Stages 1-4 held by Woodside Burrup Pty Ltd. Portfolio volume excludes retired units. Woodside does not make any claims in relation to the mitigation impact of carbon credits within the portfolio unless, and until, a credit is retired or surrendered (taken out of circulation and can no longer be sold).
3. Cost of supply is calculated pre-tax and is based on portfolio volumes and a calculation of 2023 present value unit costs.
4. Origination refers to carbon offset projects developed by Woodside or third-party project developers, characterised by (i) the provision by Woodside of up-front investment or funding; (ii) Woodside either being a majority participant in the project or a recipient of carbon credits from the project (or both); and (iii) the acceptance of risk by Woodside in relation to carbon credit delivery.
5. Biosequestration includes human induced regeneration (HIR), afforestation, reforestation and revegetation (ARR) and environmental planting methods.
6. Fire management and forest protection includes savannah burning and reducing emissions from deforestation and forest degradation (REDD+) methods.
Scope 3 emissions

Scope 3 emissions matter to Woodside because they are the Scope 1 and 2 emissions of our customers and suppliers.

Scope 3 emissions occur inside our value chain but outside our operations. For example, the emissions from a supplier’s activities when providing us with goods and services, or from a customer’s activities when they are using our products.

As our customers decarbonise there is a risk that they may no longer be able to use our products (and suppliers may not be able to deliver to us) in the same way or at the same cost. As a result, Scope 3 emissions are a guide to how our customer’s and supplier’s decarbonisation may impact our business.

A measure of our exposure to Scope 3 emissions is the life cycle intensity of our portfolio (Scope 1, 2 and 3 emissions, per unit (megajoule) of energy that we produce and sell).

Woodside’s intensity is lower than the oil and gas sector average due to the weighting of our portfolio to natural gas.

Woodside plans to manage its exposure to Scope 3 emissions by:

• **Assessing** our investments for their resilience to the energy transition. Our approach is described more fully in the capital allocation section starting on page 42.

• **Diversifying** our portfolio by investing in new energy products and lower carbon services that can avoid or reduce customer emissions.

• **Supporting** our customers and suppliers to reduce their emissions and reach their Scope 1 or 2 targets.

• **Promoting** consistent global measurement and reporting of emissions.

**Scope 1, 2, 3 life cycle intensity**

Woodside’s intensity increased in 2023 due to the effect of a full year of the merger with BHP’s petroleum business, which has relatively more oil, but remains lower (better) than the sector average.

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*Woodside analysis, based on Woodside Scope 1, 2 and 3 emissions data for 2023 relative to the Transition Pathway Initiative oil and gas sector mean assessment date 30 June 2023. [https://www.transitionpathwayinitiative.org](https://www.transitionpathwayinitiative.org).*
The graphic above illustrates Woodside Scope 1, 2 and 3 emissions. See data table on pages 72-73 for more information.

**SCOPE 3 EMISSIONS IN WOODSIDE’S VALUE CHAIN**

**UPSTREAM SCOPE 3 EMISSIONS**
Emissions created when suppliers provide us goods and services

- Employee commuting
- Business travel
- Waste generated from operations
- Purchased goods and services (Other than traded hydrocarbons)
- Purchased goods and services (Traded hydrocarbons)

**WOODSIDE OPERATIONS**

- Shipping (Transport and distribution) 1,728 ktCO₂-e
- Use of sold products (Woodside production) 64,612 ktCO₂-e
- Use of sold products (Third party production) 5,041 ktCO₂-e

**DOWNSTREAM SCOPE 3 EMISSIONS**
Emissions created from shipping our products to customers and when they use them.

This graphic displays Woodside’s 2023 Scope 3 emissions, itemised by category. Over 95% of Woodside’s Scope 3 emissions are categorised as “use of sold product”.

These emissions do not include emissions from Woodside’s direct operations which are classified Scope 1 emissions, or emissions associated with the use of imported power which are classified Scope 2 emissions.

In 2023:
- Gross equity Scope 1 emissions were 6,172 ktCO₂-e.
- Gross equity Scope 2 emissions were 18 ktCO₂-e.

All data given on equity share basis.
Scope 3 targets

In 2023, we continued to review our approach to Scope 3 targets in response to investor feedback and have decided to supplement our existing investment target with a new complementary emissions abatement target.

Our Scope 3 approach includes the introduction of new products and services into our portfolio, like hydrogen and CCUS. These products and services can help our customers avoid or reduce their Scope 1 or 2 emissions and therefore reduce the life cycle (Scopes 1, 2 and 3) emissions intensity of our portfolio.

For example, products like hydrogen have the potential to increase our sales of energy, without materially adding to the Scope 3 emissions from their use. Customers of CCUS have the potential to reduce their Scope 1 emissions, adding negative emissions to our value chain.

The investment target tracks our work to develop these projects and bring them to market. The emissions abatement target will track the potential impact of these projects on customer emissions.

SCOPE 3 INVESTMENT TARGET

In 2021, Woodside set a Scope 3 investment target – aiming to invest $5 billion in new energy products and lower carbon services by 2030.

At the end of 2023, we have cumulatively spent more than $335 million towards this target. 2023 expenditure increased over 135% compared to 2022. We expect expenditure to continue to ramp up towards the back end of the target period, subject to markets developing, because most project expenditure occurs in the construction phase.

SCOPE 3 EMISSIONS ABATEMENT TARGET

Woodside has now also set a related Scope 3 emissions abatement target, to indicate the potential abatement impact of these products and services upon customer Scope 1 or 2 emissions.

This target is to take final investment decisions on new energy products and lower carbon services by 2030, with total abatement capacity of 5 Mtpa CO$_2$-e.

The customers for these products and services may be the same as the customers of our oil and gas business, directly substituting their energy for new products or directly abating the associated emissions. They may also be customers of the new products and services, without also being customers of oil and gas. Our methodology for reporting emissions in these different circumstances is described on page 75-76.

SCOPE 3 EMISSIONS

Investment target

Investment in new energy products and lower carbon services by 2030

$5 BILLION

Emissions abatement target

Take FID on new energy products and lower carbon services by 2030, with total abatement capacity of 5 Mtpa CO$_2$-e

1. Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside’s investment targets. Not guidance. Potentially includes both organic and inorganic investment.

2. Includes pre-RFSU spend on new energy products and lower carbon services that can help our customers decarbonise by using these products and services. It is not used to fund reductions of Woodside’s net equity Scope 1 and 2 emissions which are managed separately through asset decarbonisation plans.

3. Includes binding and non-binding opportunities in the portfolio, subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside’s investment targets. Not guidance.
Gas is a feedstock for ammonia which is used for fertilizers in agriculture.
New energy products

Woodside is developing new energy products that can supply energy to customers with lower carbon emissions at the point of use than oil and gas products.

HYDROGEN

New energy products such as hydrogen (and hydrogen derivatives such as ammonia) can help customers to avoid emissions at the point of use by switching from unabated fossil-fuels.

The expected uses of hydrogen include:

- **Heavy duty road transportation**: diesel substitution where hydrogen can offer operational benefits compared to battery electric trucks;
- **Power**: decarbonising coal-fired power (e.g. ammonia blends) and firming renewables in the grid;
- **Shipping and aviation fuels**: substitution for marine diesel and aviation fuel;
- **Industrials and chemicals**: producing heat for high temperature processes and as a chemical feedstock.

We estimate that a tonne of hydrogen when used instead of diesel in trucking would avoid 11.2 tCO\(_2\)-e. Ammonia is heavier than liquid hydrogen and is less energy dense on a mass basis. A tonne of ammonia used instead of marine fuel oil would avoid 1.5 tCO\(_2\)-e, and a tonne of ammonia displacing coal in power generation would avoid 2.0 tCO\(_2\)-e.\(^1\)

Progress in securing hydrogen offtake has been slower than originally anticipated. However, our confidence in the growth of its role in the energy transition remains. Woodside is evaluating the recent hydrogen Production Tax Credit guidance provided by the United States Internal Revenue Service (IRS).\(^2\)

As currently drafted, the proposed rules will make it more challenging for companies to develop electrolysis-based hydrogen projects. Woodside intends to propose revisions to the proposed rules.

Engineering progress is being made on a number of proposed opportunities as shown in the table on the next page.

Woodside will not proceed beyond ‘FID-ready’ until we have sufficient confidence (e.g. in offtake) that an opportunity is compatible with our capital allocation framework.\(^3\) Woodside’s capital allocation framework is described on page 49.

RENEWABLES

Woodside is working to mature a range of renewable opportunities. These include the proposed Woodside Solar project which in Phase 1 is targeting the reduction of Woodside Scope 1 emissions from the Pluto LNG facility, and could expand to include third party sales. Woodside has a technology development collaboration with Heliogen to advance longer duration renewable power. The collaboration includes delivery of a commercial scale demonstration plant in California known as Project Capella. Woodside is also evaluating early-stage onshore wind opportunities in Western Australia and Queensland to support our new energy plans.

1. Hydrogen can be produced from fossil fuels (e.g. natural gas reforming) with emissions potentially abated (e.g. through CCUS) or by electrolysis including but not necessarily with renewable electricity. Emissions from the production of hydrogen that are not abated would be Scope 1 or 2 emissions for the hydrogen producer. In Woodside’s case they would therefore be subject to Woodside’s net equity Scope 1 and 2 emissions targets. Scope 3 emissions displacement reductions are estimated using engineering judgment by appropriately skilled and experienced Woodside engineers.


3. A project is considered FID-ready if it has completed all the necessary studies, permits and designs so that a final investment decision can be made. This decision is made based on a range of financial, technical and strategic factors, and is a requirement for construction and implementation of a project to commence.

## Opportunity updates: new energy

<table>
<thead>
<tr>
<th>Proposed opportunity</th>
<th>Hydrogen and Ammonia</th>
<th>US Gulf Coast Opportunity</th>
<th>H2Perth</th>
<th>Hydrogen Refueller @ H2Perth</th>
<th>H2TAS</th>
<th>Southern Green Hydrogen</th>
<th>Capella</th>
<th>Renewables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Commercial scale. Renewable hydrogen (from electrolysis).²</td>
<td>Commercial scale. Ammonia production from gas reforming (with CCS) and/or electrolysis.</td>
<td>Commercial scale. Hydrogen and ammonia production from gas reforming (with CCS) and/or electrolysis.²</td>
<td>Self contained hydrogen production, storage and refuelling station. Renewable hydrogen (from electrolysis).²</td>
<td>Commercial scale. Renewable hydrogen and ammonia (from electrolysis).²</td>
<td>Commercial scale. Renewable hydrogen and ammonia (from electrolysis).²</td>
<td>Commercial scale demonstration project with Heliogen, AI-enabled concentrated solar energy project.</td>
<td></td>
</tr>
<tr>
<td><strong>Target Market</strong></td>
<td>Domestic heavy duty transport</td>
<td>Export</td>
<td>Domestic market and export</td>
<td>Domestic heavy duty transport</td>
<td>Domestic market and export</td>
<td>Domestic market and export</td>
<td>Demonstration project</td>
<td></td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Ardmore, Oklahoma, USA</td>
<td>Gulf Coast, USA</td>
<td>Perth, Western Australia</td>
<td>Bell Bay area of Tasmania</td>
<td>Southland, New Zealand</td>
<td>California, USA</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Land</strong></td>
<td>✓ (Purchased)</td>
<td>In progress</td>
<td>✓ (Option to lease)</td>
<td>In progress</td>
<td>✓ (Option to lease)</td>
<td>In progress</td>
<td>✓ (Option to purchase)</td>
<td></td>
</tr>
<tr>
<td><strong>Power and water</strong></td>
<td>✓¹</td>
<td>In progress</td>
<td>In progress</td>
<td>In progress</td>
<td>In progress</td>
<td>In progress</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td><strong>Pre-front end engineering design (Pre-FEED)</strong></td>
<td>✓</td>
<td>In progress</td>
<td>Concept definition commenced June 2022</td>
<td>✓</td>
<td>Concept definition commenced Dec 2021</td>
<td>Concept definition commenced Nov 2022</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td><strong>Front end engineering design (FEED)</strong></td>
<td>✓</td>
<td>✓²</td>
<td>✓³</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td><strong>Regulatory approvals¹</strong></td>
<td>In progress</td>
<td>In progress</td>
<td>In progress</td>
<td>In progress</td>
<td>In progress</td>
<td>In progress</td>
<td>N/A - demonstration project</td>
<td></td>
</tr>
<tr>
<td><strong>Technical readiness to support FID²</strong></td>
<td>✓</td>
<td>✓³</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Commercial readiness to support FID²</strong></td>
<td>In progress</td>
<td>FID taken May 2023</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5 MW of concentrated solar thermal power.</td>
<td></td>
</tr>
<tr>
<td><strong>Potential scale³</strong></td>
<td>Up to 60 tpd of hydrogen. 230 ktpa CO₂-e Scope 3 emissions avoidance.</td>
<td>Up to 4,000 tpd of ammonia. 2,020 ktpa CO₂-e Scope 3 emissions avoidance.</td>
<td>Up to 2,700 tpd of ammonia (Phase I). 1,360 ktpa CO₂-e Scope 3 emissions avoidance.</td>
<td>Initial production of 0.2 tpd of hydrogen, with the potential to scale up to 1 tpd. 1.1ktpa CO₂-e Scope 3 emissions avoidance.</td>
<td>Up to 550 tpd of ammonia. 270 ktpa CO₂-e Scope 3 emissions avoidance.</td>
<td>Up to 1,400 tpd of ammonia (100% share).³</td>
<td>700 ktpa CO₂-e Scope 3 emissions avoidance (100% share).³</td>
<td></td>
</tr>
</tbody>
</table>

This table provides information about proposed new energy opportunities currently in our portfolio. They are at different stages of maturity and may not all proceed to final investment decisions. We are also working to develop additional opportunities not shown here. The purpose of this table is to demonstrate that we are pursuing multiple opportunities as part of our approach to managing the risks to achieving our Scope 3 targets.

¹ Proposed opportunities are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside’s investment targets. Not guidance.
² Opportunity proposes to use electricity sourced from the grid from renewable sources and to procure renewable energy certificates to abate remaining emissions.
³ For the electrolysis component of H2Perth, H2Perth proposes to use a target of 80% renewable electricity from start-up for Phase 1, stepping up to 100% renewable electricity for the entire facility by 2040.
4 Woodside agreed initial terms for power but subject to further review given a recent draft FRA guidance.
5 Regulatory approvals are In progress if the application documentation is being developed or has been submitted to the regulator for approval but a final decision has not yet been made.
6 A project is considered FID-ready if it has completed and/or obtained the necessary studies, permits and designs so that a final investment decision can be made. This decision is made based on a range of financial, technical and strategic factors, and is a requirement for construction and implementation of a project to commence.
7 Item was sufficiently progressed to support the FID taken in May 2023, however technical work is progressing with ongoing design optimisation.
8 Project capacity subject to further engineering. Potential scale of Scope 3 emissions avoidance is estimated using engineering judgement by appropriately skilled and experienced engineers. Woodside has made the assumption to estimate the avoided emissions of each project through the displacement of diesels for domestic heavy-duty transport market and through the displacement of marine fuel oil (Low Sulphur Fuel Oil) for all other markets. Actual displaced emissions may differ based on actual use case.
9 Woodside’s equity in Southern Green Hydrogen is subject to finalising commercial agreements.
Lower carbon services

Woodside is developing lower carbon services that can reduce customer emissions.

CARBON CAPTURE AND STORAGE
CCS is a mature technology which represents a proven solution to abate large-scale industrial emissions. Services like CCS can help customers reduce the emissions that they would otherwise generate when using Woodside products (or similar products sourced from others). Because CCS is also a solution for reducing Woodside’s Scope 1 emissions at our assets, we have the potential to underpin the development of CCS projects for our own use whilst customer demand develops.

We believe CCS will play an increasing role in the energy transition, and also that Woodside has competitive advantages including its knowledge of geoscience, subsurface engineering and bulk-gas handling.

CARBON CREDIT PORTFOLIO
Our carbon credit portfolio, which is being developed primarily to address Woodside’s Scope 1 and 2 emissions (see pages 28-31) could also be offered for sale to offset customer emissions. We are currently exploring opportunities to offer carbon credits to customers bundled with our hydrocarbon products, such as LNG cargoes from Scarborough. In the past we have offered carbon credits with cargoes for the associated Scope 1 and 2 emissions.

CARBON CAPTURE AND UTILISATION
In the longer term, Carbon Capture and Utilisation (CCU, also referred to as Carbon-to-Products) has the potential to utilise third party sources of CO₂ at scale.

In 2023, Woodside completed a number of engineering studies with CCU technology developers LanzaTech, NovoNutrients, StringBio and several engineering firms. These studies have helped inform how their technologies may be integrated and optimised to convert greenhouse gases into a variety of useful products.

Woodside is a founding partner in the RECARB ARC Hub based at Monash University which is exploring Direct Air Capture of CO₂ for use in products.

ROLE OF CCS IN SCIENTIFIC PATHWAYS
“CO₂ capture and subsurface injection is a mature technology for gas processing and enhanced oil recovery. In contrast to the oil and gas sector, CCS is less mature in the power sector, as well as in cement and chemicals production, where it is a critical mitigation option. The technical geological CO₂ storage capacity is estimated to be in the order of 1,000 gigatonnes of CO₂, which is more than the CO₂ storage requirements through 2100 to limit global warming to 1.5°C, although the regional availability of geological storage could be a limiting factor. If the geological storage site is appropriately selected and managed, it is estimated that the CO₂ can be permanently isolated from the atmosphere.

Implementation of CCS currently faces technological, economic, institutional ecological-environmental and socio-cultural barriers. Currently, global rates of CCS deployment are far below those in modelled pathways limiting global warming to 1.5°C or 2°C. Enabling conditions such as policy instruments, greater public support and technological innovation could reduce these barriers.”

IPCC Sixth Assessment Report

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## Opportunity updates: CCS

<table>
<thead>
<tr>
<th>Proposed opportunity¹</th>
<th>Angel CCS OPERATED</th>
<th>Bonaparte CCS NON-OPERATED</th>
<th>South East Australia (SEA) CCS NON-OPERATED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Proposed large-scale multi-user CCS hub with the potential to help Australian and international customers decarbonise.</td>
<td>Proposed multi-user CCS hub with the potential to help Australian and international customers decarbonise.</td>
<td>Proposed multi-phased CCS project with the potential to help Australian and international customers decarbonise.</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Offshore, North West Australia</td>
<td>Offshore, Northern Australia</td>
<td>Offshore, South East Australia</td>
</tr>
<tr>
<td><strong>Greenhouse Gas permits secured²</strong></td>
<td>✓</td>
<td>✓</td>
<td>In progress (submitted Nov 2023, outcome pending)</td>
</tr>
<tr>
<td><strong>Facilities land access³</strong></td>
<td>In progress</td>
<td>In progress</td>
<td>In progress (Phase 1)</td>
</tr>
<tr>
<td><strong>Pre-front end engineering design (Pre-FEED)</strong></td>
<td>Concept definition commenced Nov 2023</td>
<td>Concept select commenced Aug 2023</td>
<td>✓ (Phase 1)</td>
</tr>
<tr>
<td><strong>Front end engineering design (FEED)</strong></td>
<td>In progress</td>
<td>In progress</td>
<td>Phase 1 FEED commenced April 2023</td>
</tr>
<tr>
<td><strong>Regulatory approvals⁴</strong></td>
<td>In progress</td>
<td>In progress</td>
<td>In progress</td>
</tr>
<tr>
<td><strong>Technical readiness to support FID⁵</strong></td>
<td>Foundation project: up to 5 Mtpa CO₂-e emissions reduction. Potential to address Scope 1 and 3 emissions. Woodside equity 20%. Woodside equity Scope 3 estimate is 0.6 Mtpa CO₂-e emissions reduction.</td>
<td>Foundation project: up to 5 Mtpa CO₂-e emissions reduction. Potential to address Scope 3 emissions. Woodside equity 21%. Woodside equity Scope 3 estimate is 1.05 Mtpa CO₂-e emissions reduction.</td>
<td>Foundation project: Phase 1 -0.5 Mtpa CO₂-e emissions reduction (Scope 1 only). Phase 2 expansion, up to 1.5 Mtpa CO₂-e emissions (potential Scope 3). Woodside equity 50%. Woodside equity Scope 3 estimate is 0.75 Mtpa CO₂-e emissions reduction (Phase 2 only).</td>
</tr>
<tr>
<td><strong>Commercial readiness to support FID⁶</strong></td>
<td>In progress</td>
<td>In progress</td>
<td>In progress</td>
</tr>
</tbody>
</table>

This table provides information about proposed CCS opportunities currently in our portfolio. They are at different stages of maturity and may not all proceed to final investment decisions. We are also working to develop additional opportunities not shown here. The purpose of this table is to demonstrate that we are pursuing multiple opportunities as part of our approach to managing the risks to achieving our Scope 3 targets.

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1. Proposed opportunities are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside’s investment targets. Not guidance.
3. Land access is the right to install surface infrastructure including transportation infrastructure.
4. Regulatory approvals are ‘in progress’ if the application documentation is being developed or has been submitted to the regulator for approval, but a final decision has not yet been made.
5. A project is considered FID-ready if it has completed and/or obtained the necessary studies, permits and designs so that a final investment decision can be made. This decision is made based on a range of financial, technical and strategic factors, and is a requirement for construction and implementation of a project to commence.
6. Project capacity subject to further engineering. Potential scale of Scope 1 and Scope 3 emissions is based on best technical estimate using engineering judgement by appropriately skilled and experienced engineers including potential allocation of capacity to meet Woodside Scope 1 emissions requirements.
RISKS TO ACHIEVING THE SCOPE 3 INVESTMENT AND EMISSIONS ABATEMENT TARGETS

Whilst demand for new energy products and lower carbon services is expected to grow significantly during the energy transition, the timing and pace of such growth is not certain. Risks to achieving the targets include that technology and markets for these products and services are developing rapidly. Because of this, Woodside actively reviews its strategy and its portfolio of opportunities and they should be expected to evolve as a matter of normal practice.

Woodside has targets for the economic viability of its product streams contained in its capital allocation framework. See page 49. Achieving these returns may depend on the development of government policy, such as grants and subsidies. Whilst indicated by the intent of high level government policy, these measures are not currently implemented to the extent required.

Because markets for these products and services are relatively immature (compared to oil and gas markets), confidence in offtake may not be secured at the same pace as engineering maturity. This means that some projects might achieve technical ‘FID-ready’ status and then effectively be paused until such time as acceptable offtake is achieved.1

Woodside is actively seeking to address these risks including by pursuing multiple opportunities to achieve our targets.

ADDRESSING THE RISK TO SECURING OFFTAKE

Markets for lower carbon services and new energy products are still developing. We recognise that for a customer to switch to buying hydrogen or hydrogen derivatives such as ammonia, they need to make a significant decision to convert their equipment (for example, a trucking fleet), and for this they need to have confidence in the price and reliability of supply. The same is true of the investment needed for a customer to commit to a CCS project at their business.

To build this confidence, Woodside has established a dedicated team targeting potential customers in the domestic heavy-duty transport, industrials and chemicals sectors, and the international export and marine fuels sectors.

We are also communicating with potential customers with the objective of developing orderbooks in priority international markets of the United States, Europe (Germany and Netherlands) and Asia-Pacific (Singapore, Korea and Japan). Business development teams in the United States, Europe and APAC coordinate and work alongside country offices and central marketing teams to further develop these relationships.

Customer collaborations include:2

• studies relating to the capture of CO₂ by industry in the Chubu region of Japan and its transportation and storage in Australia, with Sumitomo Corporation, Toho Gas Co Ltd and Kawasaki Kisen Kaisha Ltd;
• studies relating to the capture of CO₂ by industry in the Setouchi and Shikoku regions of Japan and its transportation and storage in Australia, with Sumitomo Corporation, JFE Steel Corporation, Sumitomo Osaka Cement Co Ltd and Kawasaki Kisen Kaisha Ltd;
• studies relating to the capture of CO₂ by from power generation in the Kansai region of Japan and its transportation and storage in Australia, with Kansai Electric Power Co.;
• evaluating the potential of the supply of liquid hydrogen to Keppel Data Centres’ data centre facilities, including its planned Datapark+, which is envisioned to be an energy-efficient data centre park development in Singapore;
• opportunities relating to long term hydrogen and ammonia offtake arrangements and participation in production projects, with South Korea’s SK E&S Co Ltd.

Woodside has also entered into non-binding agreements to collaborate individually with Sumitomo Corporation and Sojitz Corporation on global opportunities in new energy which could include ammonia, hydrogen, carbon capture and storage (CCS) and carbon management technology. These are part of a strategic relationship with LNG Japan, a 50:50 joint venture between Sumitomo Corporation and Sojitz Corporation. The strategic relationship also includes equity in the Scarborough Joint Venture and potential LNG offtake.

Woodside and JERA have also entered into a non-binding agreement for new energy collaboration including potential opportunities in ammonia, hydrogen, carbon management technology and carbon capture and storage to support common decarbonisation ambitions.3

1 A project is considered FID-ready if it has completed and/or obtained the necessary studies, permits and designs so that a final investment decision can be made. This decision is made based on a range of financial, technical and strategic factors, and is a requirement for construction and implementation of a project to commence.
2 Customer collaborations are non-binding.
3 See announcement titled “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com.
Supporting our value chain

In addition to our plans to invest in new energy products and lower carbon services, Woodside plans to support our customers and suppliers to help them reduce emissions; and promote global measurement and reporting.

SUPPORTING CUSTOMERS AND SUPPLIERS

• Woodside has been implementing climate-related requirements into new tenders and contracts throughout 2023, which includes evaluating tenders based on climate criteria and reporting carbon emissions during contract execution. To support our suppliers, we have been engaging them via existing forums and also encouraging them to bring forward emissions reduction opportunities.

• We joined the ASEAN Methane Leadership Programme in 2023 and initiated an Australian methane programme through the Australian Climate Leaders Coalition. These programmes allow Woodside to share expertise with other companies in the natural gas value chain to help them reduce emissions of methane to near-zero. Any such reductions at facilities using natural gas purchased from Woodside could be a reduction in our Scope 3 emissions.

• We extended our membership of the Qantas Sustainable Aviation Fuels Coalition (SAF Coalition) which we joined in 2022. The SAF Coalition supports the purchase by Qantas of SAF, reducing Qantas Scope 1 emissions and also business air travel Scope 3 emissions by around 0.9 kt CO₂-e for each member.

• We joined The Silk Alliance in 2024. Silk Alliance is a concept of a Green Corridor Cluster where the technological, economic, and regulatory feasibility of zero emissions shipping is observed on a ‘cluster’ of ships operating within a specific catchment region, extending to the Indian and Pacific Ocean region.

• In 2023, Woodside, HD Korea Shipbuilding & Offshore Engineering (HD KSOE), and Hyundai Glovis achieved a key milestone with the completion of a detailed study into the design of a large-scale, purpose-built liquid hydrogen carrier. The study focused on refining the flexible ship design to achieve improvements in safety, constructability, and cost-effectiveness. In 2024, Mitsui O.S.K. Lines, one of the world’s largest global shipping companies is welcomed to the collaboration to work on delivering an integrated marine transportation system for liquid hydrogen.

PROMOTING GLOBAL MEASUREMENT AND REPORTING

The ability to address Scope 3 emissions would be enhanced by consistent global reporting systems that enable common calculation methodologies and the tracking of emissions between companies and across national boundaries.

• We participated in the Ipieca Scope 3 Emissions Taskforce which provides members the opportunity to convene and disseminate knowledge and good practice in the area of Scope 3 emissions, including categorisation, value chain emission analysis, Scope 3 measurement (incl. technology requirements) and reporting and engagement along the value chain.

• We reviewed and supported the creation of the International Association of Oil and Gas Producers (IOGP), Oil and Gas Climate Initiative (OGCI) and Ipieca joint report on “Recommended practices for methane emissions detection and quantification technologies” as a committee member of the Ipieca methane taskforce.

When used to generate electricity gas typically produces half the emissions of coal.
Capital alignment

Our capital alignment approach explains how we consider the climate-related risks and opportunities of new material investments including analysis of their alignment with 1.5°C pathways.

The use of fossil fuels for energy accounts for around three quarters of total anthropogenic greenhouse gas emissions. This means that efforts to meet climate change goals must include changes to the way that the world produces and consumes energy. These changes are referred to as the ‘energy transition’.

The precise shape and pace of the energy transition is uncertain. It is expected to vary across countries because they have different starting points, development requirements, resources and capabilities. However, the scale of the transition is clearer, as it will take many trillions of dollars, invested over decades. The International Renewable Energy Agency (IRENA) estimates it will require $150 trillion of cumulative investment by 2050.

Whilst the scale of the investment required for the energy transition creates opportunity for Woodside, its inherent uncertainty and potential volatility creates risks. We believe that acknowledging the uncertainty and building resilience to it is a better response than picking a single future scenario and acting as if it were certain.

This approach requires us:
- to carefully analyse a wide range of energy market and climate-related scenarios,
- diversify our portfolio to meet changing customer demand,
- have a disciplined capital allocation framework to focus our investments where we believe we will be most competitive,
- work diligently with our customers to understand and meet their needs so that ultimately we secure their purchase of our products and services.

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Global demand for oil and gas

Woodside’s strategy to thrive through the energy transition starts with acknowledging the uncertainty in its precise future course, and building resilience in our portfolio. We believe this is a better response than picking a single future scenario and acting as if it were certain.

GLOBAL OIL AND GAS USE

According to the United Nation’s Intergovernmental Panel on Climate Change (IPCC), there are multiple feasible and effective options available to reduce greenhouse gas emissions and adapt to human-caused climate change.1

In 2023, the IPCC concluded its Sixth Assessment Report.2 It found that there are many pathways that can limit warming to within the goals of the Paris Agreement. These include 97 pathways that can limit warming to 1.5°C with no or limited overshoot (modelled global emissions pathways Category C1, the most ambitious subset assessed by the IPCC).3

The report also includes pathways with a 50% or greater probability of returning warming to 1.5°C after a high overshoot (C2), a 67% or greater probability of limiting warming to 2°C (C3) and other higher temperature outcomes up to those exceeding 4°C (C8).

Demand for oil and gas remains through the remainder of this century in all of these pathways, but to varying degrees. Different variables contribute to the temperature outcomes in these pathways. For example, CI pathways with higher gas use typically also have higher uses of CCUS.4

The range of oil and gas use in each of the particular temperature outcome pathways arises because choices in one sector can be compensated for by choices in another while being consistent with the same assessed level of global warming.4 The level of global oil and gas use is an important but not sole determinant of temperature outcomes. Other influential factors include coal use, total primary energy use, emissions from outside the energy sector and levels of abatement and carbon dioxide removals.

Moreover, it is expected that different options will be pursued by different countries consistent with what the Paris Agreement calls “the principle of equity and common but differentiated responsibilities and respective capabilities, in the light of different national circumstances”.5

IN KEEPING WITH THE SCIENCE

At the COP28 global climate summit, world governments agreed to “transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science”.6 In this section we explore the implications for oil and gas demand of transitioning “in keeping with the science”. Further information about the proceedings of COP28 is provided on page 65.

The charts (next page) plot the ranges for gas and oil use respectively in the IPCC’s C1 and C1–C3 categories.7 They also show the IEA’s cases for gas and oil supply respectively, both in the absence of any further investment, and in the case where investment is limited to existing and approved projects.8 In these cases, supply falls due to the depletion of existing fields. The charts show that whilst there are some pathways in the IPCC C1 category which have levels of oil and gas use consistent with those that do not require additional investment, there are other pathways with higher levels of oil and gas use that have the same probability of this temperature outcome.

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3 In this section we explore the implications for oil and gas demand of transitioning “in keeping with the science”. Further information about the proceedings of COP28 is provided on page 65.
Potential global use of gas in pathways that limit warming

Potential global use of oil in pathways that limit warming

USE OF SCENARIOS

There are many different scenarios and methodologies for producing them. Typically they are not forecasts, but they can provide a view of different potential futures - if used in the right application with an awareness of their underlying approach, assumptions, limitations and inputs.

IPCC Sixth Assessment Report

In its Sixth Assessment Report, the IPCC assessed a wide range of modelled global emission pathways and scenarios from the literature. The IPCC’s approach enables consideration of the potential range for global use of oil and gas in pathways that could limit warming to a number of given temperature outcomes, including 1.5°C. The IPCC’s reports are also used to inform the development of global and national policies, for example at the recent COP28 climate summit in the UAE.

IEA scenarios

Woodside also utilises IEA scenarios, for example in the financial analysis on pages 52-53 of this report. This is because (unlike the IPCC’s reports) they assess the supply of energy as well as the demand for it, and therefore are able to publish price assumptions which are required for financial analysis. The three IEA scenarios from the World Energy Outlook are not forecasts and they are one pathway to each of three distinct temperature assessments. However, they cover a wide range of potential global temperature outcomes, which makes them appropriate for scenario analysis that is intended to test resilience.

In addition to the three scenarios in its World Energy Outlook, the IEA also provides cases which show the potential future supply of oil and gas, both with investment in existing and approved projects and without. These cases attempt to show the impact of companies investing in their current sources of supply and the potential need to invest in supplies in order to replenish those that are depleted. These cases have been used alongside IPCC temperature pathways in the charts (left).

Woodside considers the IPCC and IEA approaches to be suitable for these purposes because they are independent global sources which publish information about their scenarios so that users can independently assess their assumptions and application. Woodside does not assign likelihood or probability to the eventuation of these scenarios, ranges or part thereof.

Woodside planning assumptions

By contrast, the assumptions used for Woodside’s internal business planning, such as for investment decisions and asset valuation, require a broader range of inputs. These inputs include consideration of climate-related factors, including both Paris-aligned and non-Paris-aligned outcomes. They must also include other factors such as economic growth, inflation, exchange rates, interest rates and geopolitics. They consider the specific role of LNG (as opposed to aggregate gas use) and regional differentiations (as opposed to globalised data). Together these factors can inform a broad based consideration of risks, opportunities, competitiveness and resilience. They contribute to understanding the potential impact of climate-related risks alongside other risks on our strategy, business and financial planning.
Current uses of gas include power generation, heating, and chemical feedstock. According to a global gas demand analysis in 2022, the power sector accounted for 34% of global demand, while the industrial sector accounted for 27%. Residential use accounted for 15%.\(^1\)

Electricity generation fuelled with natural gas typically releases about half the lifecycle amount of greenhouse gases compared to electricity generation fuelled with coal.\(^2\) Additionally, natural gas-fired electricity generation offers a flexible means of providing support to batteries and help stabilise the power grid during periods of decreased renewable energy production (e.g. at night, and when the wind is calm).

Industrial uses of gas centre around its role as:

- A feedstock for ammonia and methanol production, which are used for fertilizer and consumer goods manufacturing, among other processes that fuel economic growth and an increasing population.
- A source of hydrogen production for the refining and chemical industries.
- A source of heat for high-temperature industrial processes, such as producing aluminium, ceramics, cement, glass, and steel. Due to its high energy density and controllable combustion characteristics, gas is particularly suitable for generating high temperature heat which may not be achievable through direct electrification.\(^3\)

Woodside expects that natural gas will continue to have such a transitional role, sustaining demand for the period which is relevant to our current portfolio of producing assets and sanctioned projects as well as for further growth opportunities.

The evolving role of natural gas

Natural gas is a versatile energy source that plays a significant role in various industries.

The use of gas in power grids that are decarbonising

Australia’s National Electricity Market serves as an example of how a gas-renewables mix can generate power at lower emissions intensity than a coal-dominated mix. Power generation in South Australia is mainly from renewables with nearly one third from gas, and has only a third of the emissions intensity of power generation in Victoria which relies mainly on brown coal.

Emissions intensities and fuel mixes in the national electricity market\(^4,5\)

<table>
<thead>
<tr>
<th>State</th>
<th>Emissions intensity of electricity generation</th>
<th>Fuel mix of electricity generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>0.79 kg CO₂-e /kWh</td>
<td>Total 47,240 GWh</td>
</tr>
<tr>
<td>New South Wales</td>
<td>0.68 kg CO₂-e /kWh</td>
<td>Total 58,688 GWh</td>
</tr>
<tr>
<td>Queensland</td>
<td>0.73 kg CO₂-e /kWh</td>
<td>Total 57,615 GWh</td>
</tr>
<tr>
<td>South Australia</td>
<td>0.25 kg CO₂-e /kWh</td>
<td>Total 10,302 GWh</td>
</tr>
</tbody>
</table>

Note: Percentages may not total 100% due to rounding.

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3. IEA, 2019. “The Role of Gas in Today’s Energy Transition”, p. 4. All rights reserved.
Regional focus — LNG in Asia

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 utilise LNG already but also relies heavily on coal for power generation, creating the opportunity for a further shift towards gas to support decarbonisation.

The chart (top right) shows that the Asia region (including China, North East Asia and South East Asia) is already the predominant global buyer of LNG. This has remained the case even after the increase of LNG use in Europe driven by the disruption to gas supplies following the Russian invasion of Ukraine.

The chart (bottom right) highlights that LNG contracts continue to be signed with long durations – around half of the contracts signed in the past three years have a duration of 20 years or more. This signifies the confidence of both buyers and sellers in long term LNG demand – as does the 2023 purchase by LNG Japan of 10% equity and the 2024 purchase by JERA of 15.1% equity in the Scarborough Joint Venture.¹

Woodside does not take this demand for granted and recognises that to convert aggregate demand into realised sales of our production, we need to carefully assess the competitiveness of our investment opportunities and work closely with customers to understand and support their needs. Our approach to this work is described in the next pages.

¹ See announcements titled “Woodside to sell 10% Scarborough interest to LNG Japan” (8 August 2023) and “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com. Greenhouse gas emissions data including charts and estimates of future abatement plans in this Climate Transition Action Plan have not been updated to reflect changes in Woodside’s equity share of the Scarborough Joint Venture as a consequence of the sale of 15.1% interest to JERA.

² Wood Mackenzie, 2023. “LNG contract trends”. Dataset includes global contracts by many producers, including Woodside. Only includes sale and purchase agreements. End-user contracts only. Rest of World refers to South America, Middle East & Africa and North America.
Managing uncertainty through diversification

Woodside’s strategy is to diversify and adapt, rather than choosing a single course in advance and acting as if the energy transition were more certain than it is.

Woodside is working to diversify its portfolio by adding new products and services alongside our existing products, where we believe we have a competitive advantage to supply them successfully through the energy transition. They each bring different qualities to the portfolio.

Natural gas

Asia has more than half of the world’s people and is growing. Across Asia many countries are still heavily reliant on coal which accounts for approximately 50% of total energy supply in the Asia Pacific. Woodside’s LNG is located close to demand centres which enables lower shipping emissions. LNG typically offers longer-term cash flows and lower Scope 3 intensity (but higher Scope 1 intensity) than the oil projects in Woodside’s portfolio.

Oil

Oil demand is expected to decline as its use in light passenger transport is substituted by vehicle electrification. Demand in petrochemicals and heavy transport is likely to be resilient for longer. The range of oil use in 2050 in the IPCC’s C1 to C3 (1.5°C to 2°C) range is 15 to more than 230 EJ per year. In 2022 oil consumption was 168 EJ.

Oil projects tend to provide higher cash and higher returns, lower Scope 1 and 2 emissions (though higher Scope 3) and shorter term paybacks than the LNG projects in Woodside’s portfolio. The global oil market is commoditised and as a result changes in demand are likely to be reflected in oil prices. This, in turn, affects investment in supply, which should moderate accordingly.

The case for continued exploration

Further greenfield exploration for oil and gas resources has the potential to highgrade our portfolio and improve our ability to thrive through the energy transition. New resources that are more competitive – for example, lower cost, lower carbon, or closer to infrastructure – than other existing global discovered resources are more likely to attract investment to meet the available demand for oil and gas.

This is not new in the oil and gas industry. Within the Woodside portfolio, the Pluto gas field was not discovered until 2006 but has been developed ahead of resources that had already been discovered at that time, in some cases for decades.

CCS

CCS is a mature technology which represents a proven solution to abate large-scale industrial emissions. Globally, CCS has been successfully used for decades, in particular in support of enhanced oil recovery (EOR) but is now being utilised for permanent emissions storage. The skills and capabilities required to store carbon dioxide in geological formations are similar to those needed to find and produce oil and gas.

New energy

New fuel types such as hydrogen and ammonia have the potential to decarbonise hard to abate sectors which are difficult to electrify (such as in heavy transport, chemical feedstocks, or in steel and alumina). They also have the potential to firm renewables as a substitute to natural gas where batteries lack scale and longevity. Transporting and containing these fuels in bulk requires similar expertise to that which Woodside already applies in the LNG industry.

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3 Shorter journeys are associated with lower shipping related emissions.
4 IEA 2023. “World Energy Outlook 2023.” All rights reserved.
Capital Allocation Framework

We expect all of these products and services to be in strong demand in the decades ahead. However, we can only supply them profitably where we have customers who want to buy them and find them affordable. Whilst oil and gas markets are strong today, demand for new energy and CCS is still emerging. Therefore, we need to invest with discipline, testing our opportunities against our capital allocation framework.

Woodside’s disciplined capital allocation approach includes robust assessment of opportunities, portfolio outcomes and shareholder returns while maintaining focus on safe, reliable and efficient operations.

Our capital allocation framework sets target investment criteria for oil, gas and new energy opportunities. We use this capital allocation framework to create a diversified and flexible portfolio, which allows us to respond to changes in demand and supply for our products.

For example, they are informed by energy market analysis including supply, demand and price outlooks. We test the robustness of potential investments against a range of scenarios to support our investment decisions with the goal of remaining profitable and resilient through various commodity cycles and climate outcomes. The assessment of an investment’s resilience to the energy transition is described on the following two pages.

When assessing opportunities, we consider a broad range of portfolio evaluation and opportunity evaluation factors relevant to the opportunity. These assessments can apply to acquisitions or divestments, and for evaluating the impact of a new project on the portfolio.

1. CCUS refers to carbon capture utilisation and storage.
2. Payback refers to RFSU + X years.
3. Targets and aspiration are for net equity Scope 1 and 2 greenhouse gas emissions relative to a starting base of 6.32 Mt CO₂-e which is representative of the gross annual average equity Scope 1 and 2 greenhouse gas emissions over 2016-2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021. Net equity emissions include the utilisation of carbon credits as offsets.
4. Illustrative of the considerations. Not an exhaustive list.
Assessing investment decisions for transition resilience

As demand changes through the energy transition, Woodside will carefully assess the competitiveness of new projects prior to investment decision.

We have developed a ‘transition case’ methodology which, like a business case and a safety case, helps us to manage risk by assessing investment opportunities across a range of climate-related factors. There are currently six elements to our transition case methodology, which was first applied to the final investment decision for the Trion development in the Mexican segment of the Gulf of Mexico in 2023.

It is not expected that an individual project can be judged against a single ‘pass or fail’ test on any of these attributes. In fact, some of them may be in opposition: an oil project may have lower Scope 1 emissions but higher Scope 3 emissions than a gas project, and vice versa. What matters is whether the overall resilience of the Woodside portfolio remains within our risk appetite, after the investment decision is taken.

This transition case methodology continues to be developed, and was retrospectively applied to the Scarborough development, for information purposes in the table on page 51.

<table>
<thead>
<tr>
<th>Transition case for oil and gas investments.</th>
</tr>
</thead>
<tbody>
<tr>
<td>We consider:</td>
</tr>
<tr>
<td>1. Investment attractiveness utilising a range of economic assumptions informed by climate scenarios as well as other factors such as geopolitics and macroeconomics.</td>
</tr>
<tr>
<td>2. Cash flow scenario analysis impact by comparing the impact ‘with and without opportunity’ on future cash flows using scenarios, including a 1.5°C case.</td>
</tr>
<tr>
<td>3. Potential demand resilience analysis considering the competitiveness of the project’s cost of supply relative to the range of demand in IPCC scenarios, including 1.5°C cases.</td>
</tr>
<tr>
<td>4. Climate-related risks and opportunities by comparing the impact ‘with and without opportunity’ on our portfolio aggregate climate risk exposure.</td>
</tr>
<tr>
<td>5. Scope 1 and 2 portfolio emissions assessing the impact of ‘design out’ work on project emissions, and of residual emissions upon portfolio emissions abatement demand, and portfolio emissions intensity.</td>
</tr>
<tr>
<td>6. Scope 1, 2 and 3 portfolio emissions intensity by comparing the impact ‘with and without opportunity’ on our portfolio.</td>
</tr>
</tbody>
</table>
Trion oil development and Scarborough gas development

To illustrate the application of the transition case methodology in assessing the resilience of an investment decision to the energy transition, this table summarises the outcome of the Trion transition case considered during its final investment decision. We have also retrospectively applied the methodology to the Scarborough project.

<table>
<thead>
<tr>
<th>Transition case</th>
<th>Trion (at FID)</th>
<th>Scarborough Project (retrospective)</th>
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</thead>
</table>
| 1. Investment attractiveness | • Expected >16% IRR and <four-year payback period, exceeding capital allocation framework targets<sup>1</sup>  
• Expected all-in breakeven of <US$50/bbl (<US$43/bbl excluding capital carry) | • Expected >13.5% IRR and approximately six-year payback period, exceeding capital allocation framework targets<sup>2</sup>  
• Expected all-in cost of supply of approximately US$5.80/MMBtu<sup>7</sup>  
• Woodside’s economic assumptions include our view of credible future scenarios<sup>3</sup> |
| 2. Cash flow scenario analysis | • Forecast portfolio cash flow resilience is tested against IEA NZE pricing<sup>5</sup> | • Forecast portfolio cash flow resilience is tested against IEA NZE pricing<sup>5</sup> |
| 3. Demand resilience | • Continued demand for oil expected across a range of pathways through the energy transition<sup>6</sup>  
• Two-thirds of resource is expected to be produced within the first 10 years after start-up | • Approximately 60% of Woodside interest in Scarborough volumes (PSO) contracted at FID<sup>8</sup>  
• Subsequent to FID 10% equity was sold to LNG Japan and 15.1% to JERA demonstrating mutual confidence in demand.<sup>9</sup> |
| 4. Climate-related risks and opportunities | • No material changes to Woodside’s exposure under TCFD framework due to a Trion investment | • Risk assessment undertaken covering climate-related issues such as regulatory and legal factors and informed by published scenarios |
| 5. Emissions profile – Scope 1 and 2<sup>1</sup> | • Expected carbon intensity of 11.8 kg CO₂-e/boe average over life of field  
• Benchmarks below the industry average (15 kg CO₂-e/boe) for deepwater oil developments<sup>3</sup> | • Scarborough gas field contains less than 0.1% reservoir CO₂, low compared to other Australian projects<sup>0</sup>  
• Train 2 design will have lower GHG intensity (approximately 0.26 tCO₂-e/tLNG) compared to international average and Australian average<sup>7</sup>  
• Will be one of the lowest carbon intensity projects for LNG delivered to customers in north Asia<sup>2</sup> |
| 6. Emissions profile – Scope 1, 2 and 3<sup>1</sup> | • Woodside portfolio remains less carbon intense than current industry average<sup>4</sup> | • Woodside portfolio remains less carbon intense than current industry average<sup>6</sup> |

---

1. The forecast Trion IRR and payback period take into account the capital cost of approximately US$450m of capital expenditure for PEMEX (at Woodside’s final investment decision). IRR and the payback period are a look forward from June 2023 and assume US$70/bbl (real terms 2022) Brent oil price. Payback period is calculated from undiscounted cash flows, RFSU + approximately 4 years.
2. For information about Woodside’s planning assumptions please see page 45.
3. For information about Woodside’s scenario analysis testing of portfolio cash flow resilience please see pages 52-53.
5. Woodside analysis, based on Woodside Scope 1, 2 and 3 emissions data for 2023 relative to the Transition Pathway Initiative oil and gas sector mean assessment date 30 June 2023. https://www.transitionpathwayinitiative.org.
7. The Scarborough IRR, cost of supply and payback period assume Woodside equity of 73.5% in Scarborough, 51% in Pluto Train 2 and 90% in Pluto LNG; includes GP’s additional funding of ~$850m of capital expenditure from the sell-down of Pluto Train 2 and payments due on FID to ExxonMobil and BHP. IRR and payback period are a look forward from January 2021 and assume US$65/bbl (real terms 2022) Brent oil price. The integrated Woodside cost of supply (real terms 2022) is based on a 10% rate of return (both upstream and downstream), includes shipping to north Asia and is a look forward from January 2020. Payback period is calculated from undiscounted cash flows, RFSU + approximately 4 years.
8. Woodside upstream equity interest at FID of 73.5%.
9. See announcements titled “Woodside to sell 10% Scarborough interest to LNG Japan” (8 August 2023) and “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com. Greenhouse gas emissions data including charts and estimates of future abatement plans in this Climate Transition Action Plan have not been updated to reflect changes in Woodside’s equity share of the Scarborough Joint Venture as a consequence of the sale of 15.1% interest to JERA.
10. Scarborough Offshore Project Proposal. Dataset includes Barossa, Browse, Gorgon, Ichthys and Prelude. Where a range for reservoir CO₂ was disclosed for other reserves, midpoint value taken.
11. Scarborough gas processed through Pluto Train 2 (Scarborough Development Approved; investor presentation 22 November 2021).
Scenario analysis of Woodside’s portfolio

Woodside’s current portfolio is financially robust to a range of climate-related scenarios.¹

Summary of insights

Woodside uses a range of climate scenarios to test the financial resilience of our portfolio of producing assets and sanctioned projects.

The analysis described here concludes that:

• The Woodside portfolio is free cash flow (FCF) positive for all relevant periods showing the resilience of the business including in the NZE scenario and the IEA Announced Pledges Scenario (APS) that are aligned with the Paris Agreement temperature goals.

• FCF from 2024-2027 is lower than 2028-2032 (under all three scenarios) due to high capital expenditure during this period for Scarborough, Pluto Train 2 and the Trion development.

• FCF peaks under all three scenarios in 2028-2032 as Scarborough and Trion are operating, and then declines consistent with the natural field decline of older assets within our portfolio and because the analysis assumes no new greenfield oil and gas investments by Woodside.

• Oil and gas prices are the key value drivers and have a greater impact on FCF through to 2040 than carbon pricing.

Scenario analysis methodology

In the analysis in this section, we use three scenarios from the IEA’s 2023 World Energy Outlook (WEO) because they are publicly available and widely understood.¹ They cover a broad range of temperature outcomes, including a 1.5°C outcome as well as above 2°C outcomes. More information about different types of scenarios and how we use them is provided on page 45.

We use annual average FCF generation as the assessed metric because it is a measure of our ability to fund future capital investment and shareholder returns and is unaffected by accounting treatment.

Our analysis uses the most recent pricing assumptions from the IEA (in their World Energy Outlook 2023), and has included the Trion oil development in Mexico for the first time, following its final investment decision during the year.²,³

The analysis applies a price on carbon for all emissions that exceed the profile created by our regulatory obligations, our net equity Scope 1 and 2 greenhouse gas emissions reduction targets of 15% by 2025 and 30% by 2030, and our aspiration for net zero equity Scope 1 and 2 greenhouse gas emissions by 2050 or sooner.⁴ The analysis is relatively insensitive to the carbon price impact upon Woodside’s Scope 1 and 2 emissions.

The impact of carbon pricing upon Scope 3 emissions is accounted for in the demand (and therefore commodity price calculated) in each scenario by the IEA World Energy Model.⁵ This commodity price impact is the cause of 95% of the variation between the scenarios.

We will continue to review the best form of scenario analysis to meet the requirements of climate-related disclosure standards.

¹ See announcement titled “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com. Greenhouse gas emissions data including charts and estimates of future abatement plans in this Climate Action Transition Plan have not been updated to reflect changes in Woodside’s equity share of the Scarborough Joint Venture as a consequence of the sale of 15.1% interest to JERA.
³ Modeled based on current equity assumptions within portfolio: Scarborough 90%, Pluto Train 2 51%, Trion 60%.
⁴ Targets and aspiration are for net equity Scope 1 and 2 greenhouse gas emissions relative to a starting base of 6.32 Mt CO₂-e which is representative of the gross annual average equity Scope 1 and 2 greenhouse gas emissions over 2016-2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021. Net equity emissions include the utilisation of carbon credits as offsets.
The IEA’s WEO explores three main scenarios. These scenarios are not predictions. The IEA does not have a single view on the future of the energy system. Woodside does not assign a likelihood or probability to any of these scenarios eventuating.

A summary of the scenarios is as follows:

- **The Net Zero Emissions by 2050 (NZE) Scenario** depicts a narrow but achievable pathway for the global energy sector to achieve net zero energy-related CO₂ emissions by 2050, by deploying a wide portfolio of clean energy technologies and without offsets from land-use measures. It is consistent with limiting the global temperature rise to 1.5°C (with at least a 50% probability) with limited overshoot.

- **The Announced Pledges Scenario (APS)** assumes that governments will meet, in full and on time the climate commitments they have made, including their Nationally Determined Contributions and longer-term net zero emissions targets. In this scenario, the temperature rise in 2100 is 1.7°C (with a 50% probability).

- **The Stated Policies Scenario (STEPS)** is designed to provide a sense of the prevailing direction of energy system progression, based on a detailed review of the current policy landscape. This scenario is associated with a temperature rise of 2.4°C in 2100 (with a 50% probability).

Further information on Woodside’s use of scenarios for different purposes is available in section 4.2.
Customer relationships

The existence of strong demand for our products and the disciplined approach we take to capital allocation and climate-screening are pre-requisites to converting demand into sales. We also foster strong customer relationships based on reliable competitive supply.

PROJECT COMPETITIVENESS

Woodside’s existing portfolio of assets has key strengths in the competition to supply our traditional markets. These include:

Location

The proximity of Woodside’s Australian LNG operations to Asia is a competitive advantage for our business. We have four large LNG customer markets on our doorstep. Japan and South Korea are approximately 25% reliant on coal for their energy needs today. China and India’s reliance on coal is significantly higher at 61% and 43% respectively. Closer to home, in Australia the National Electricity Market fuel mix in 2023 was 63% coal, and just 5% gas. This indicates growth potential for gas as the National Electricity Market (NEM) transitions from coal towards an 82% renewables target (from today’s 23%) and expands in size to meet growing demand from vehicle electrification.

Scale and flexibility

Woodside has a diverse and flexible marketing portfolio of supply and delivery points across both the Asia Pacific and Atlantic basins. We are actively looking for opportunities to grow our global supply portfolio and to build scale through cost competitive equity and third-party LNG.

Shipping

Our sales strategy is underpinned by ex-ship sales and strong logistical capability. Woodside is advantaged through our long shipping position, which enables Woodside to create upside value through short-term trading and portfolio optimisation activities.

Lower carbon

Woodside continues to monitor the market on its appetite to pay a premium for lower carbon production. For example, regulatory frameworks such as the European Union’s Carbon Border Adjustment Mechanism maybe an indication that policy will increasingly reward lower carbon production in the future. The CLEAN (Coalition for LNG Emission Abatement toward Net Zero) initiative announced by the United States of America, the Republic of Korea, Australia, the European Commission, and Japan at the LNG Producer-Consumer Conference 2023 is another example.

CONTRACTING STRATEGY

We have taken the approach of layering contracts throughout market cycles to enable a balanced approach to revenue certainty with the opportunity for upside pricing, making strategic choices about the proportion of contracts to enter into relative to spot sales, and which benchmarks to link pricing to. Woodside’s revenue is predominantly exposed to the oil price, with the remainder being fixed price or other low-volatility constructs, all linked to gas hub prices such as JKM or TTF. The strategic capability that has been established through decades of experience as a LNG marketer is the same capability that can navigate demand fluctuation in the energy transition.

The sale of 10% of the Scarborough Joint Venture to LNG Japan and of 15.1% to JERA was a clear expression of confidence in the importance of that project to Japan’s energy security and decarbonisation goals.

MARKETING

In addition to the intrinsic competitiveness of our products and our approach to contracting, Woodside maintains active representation in key markets in order to maintain relationships with buyers that are rooted in decades of trust, and a deep understanding of their needs.

In 2023, Woodside’s climate and sustainability executives conducted a specific climate-related engagement roadshow to discuss the energy transition with sustainability executives in Tokyo and Osaka.

4 See announcements titled “Woodside to sell 10% Scarborough interest to LNG Japan” (8 August 2023) and “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com. Greenhouse gas emissions data including charts and estimates of future abatement plans in this Climate Transition Action Plan have not been updated to reflect changes in Woodside’s equity share of the Scarborough Joint Venture as a consequence of the sale of 15.1% interest to JERA.
Evidence from the market

Woodside monitors policy, regulatory and market developments for signposts to future demand for its products.

Australia-Japan Ministerial Economic Dialogue Joint Ministerial Statement, 8 October 2023

“Ministers recognised that Australia and Japan’s Special Strategic Partnership was stronger and more important than ever, underpinned by common values, deep economic complementarity, and enduring people-to-people links.”

“Australia has committed to remaining a reliable supplier of resources and energy to Japan and the region now and into the future. This applies to traditional energy commodities such as coal and liquefied natural gas (LNG), as well as new energy supply, hydrogen and ammonia, as countries decarbonise their economies to meet their net-zero and Paris Agreement commitments. Ministers agreed to ensure the stable energy supply and to provide investment certainty in the transition period based on mutual trust.”

“Ministers acknowledged the importance of following various pathways for energy transition while achieving economic growth, ensuring energy security, and addressing decarbonisation. They noted the importance of LNG along with renewables and energy storage technologies in the energy transition. Ministers recognised the importance of Australia’s and Japan’s energy relationship to both countries’ economic, security and decarbonisation agendas.”

LNG Japan’s acquisition of 10% participating interest in the Scarborough Joint Venture in Australia

Woodside has established a strategic relationship with LNG Japan which involves three elements: equity in the Scarborough Joint Venture, potential LNG offtake and collaboration on opportunities in new energy.

Woodside has entered into a sale and purchase agreement with LJ Scarborough Pty Ltd (LNG Japan) for the sale of a 10% non-operating participating interest in the Scarborough Joint Venture.

LNG Japan CEO Mr Kyo Onojima said he was excited to form the strategic relationship between LNG Japan and Woodside. “We are very pleased to join the Scarborough Joint Venture and are looking forward to finalising the LNG offtake agreement and exploring business opportunities in the new energy sector,” he said.

National Policies

Japan – Sixth Strategic Energy Plan

“We will pursue the shift to natural gas on demand side and decarbonisation of gas through methanation and other means, which play a significant role in decarbonising heat demand. We will also work to further strengthen the resilience of gas.”

Korea – First NDC

“The Republic of Korea is seeking to dramatically phase down coal-fired power generation while ramping up renewable power. Aged coal power plants will be shut down or shift their fuels from coal to Liquefied Natural Gas (LNG). The uptake of solar and wind power will be scaled up as well.”

“The Republic of Korea has markedly raised its 2030 target on the deployment of zero-emission vehicles such as the ones powered by electricity and hydrogen.”

China – Updated First NDC

“China will stringently curb coal-powered projects, set strict limitation on the increase in coal consumption over the 14 period and to phase it down in the 15th FYP period. The large scale development of wind and solar power will be accelerated, hydro power in accordance with local condition will be developed, nuclear power will be advanced in an ordered manner with the premise of ensured safety, and peaking power including energy storage and gas-powered electricity will be stepped up rapidly.”

“China will push forward technological breakthroughs in various fields to support the green and low-carbon transition, such as renewable energy, hydrogen energy, smart grid and energy storage, CCUS, circular economy, low-carbon transportation and smart cities, climate change impact and risk assessment.”

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3 Please note the sale of 15.1% of the Scarborough Joint Venture to JERA is also an example of mutual confidence in demand. See announcement titled “Woodside to sell 15.1% Scarborough interest to JERA” (23 February 2024) at woodside.com.
Gas can be used in the production of construction materials such as steel and concrete.
Risk management framework

Woodside is committed to managing all risks including climate-related risks in a proactive and effective manner. We apply a structured and comprehensive approach to the identification, assessment and treatment of current risks and in response to emerging risks.

Woodside recognises that risk is inherent in our business and the effective management of risk is vital to deliver our strategic objectives, continued growth and success. Our approach to risk management aims to enable us to take risk in return for reward, protect us against negative impacts and improve our resilience to emerging risks.

Our framework is aligned with the overarching principles of the International Standard ISO31000 for risk management, providing line of sight of risk at appropriate levels of the organisation, including the Executive Leadership Team and the Board, based on defined materiality thresholds.

Woodside’s risk management process is presented as an iterative sequence that we undertake in a coordinated manner. The process helps us implement risk management to effectively identify, assess, and control risks, thereby enhancing the likelihood of achieving our objectives. The process involves:

- communication and consultation with key stakeholders
- define risk scope, context and criteria
- risk assessment
- risk treatment

Woodside’s climate risks are managed in accordance with our risk appetite statement. As part of the iterative risk management process described above, materiality is determined using a range of factors, including the potential impact of the risk (in both financial and non-financial terms) and the likelihood of the risk occurring over various time horizons.

For more information on consideration of materiality for risk, please refer to section 3.10 of the Annual Report 2023.

A key objective of our approach is to provide a single consolidated enterprise-wide view of risk to quantify our exposure, and prioritise management and governance practices. Our assessment of risk considers both financial and non-financial exposures, including health and safety; environment; finance; reputation and brand; legal and compliance; social and culture.

Climate change is one of the seven strategic risks within Woodside’s strategic risk profile, which is described in our Annual Report 2023.

The Board and Executive Leadership Team review the strategic risk profile twice a year, including management of current risk and resilience to emerging risks. This means that the risk management framework described in this section is specifically applied to consideration of climate-related risks and opportunities. This includes the evaluation of climate-related risk, and communication of this evaluation to senior management, Executive Leadership Team and the Board.

The identified potential key climate-related risks and opportunities are described on pages 59-61 and a focus on physical risks is on pages 62-63.

The risk management framework helps to provide an integrated and coordinated approach to the management of climate change across the business and that the risks posed by the transition to a lower carbon economy are recognised, including changes in policy, regulation or social expectations in current or future markets. This enables the prioritisation of risk, ensuring that the relative significance of climate-related risks alongside other risks is clear and addressed objectively.

Refer to Annual Report 2023 section 3.9 for information.
RISK APPETITE
Woodside’s Risk Appetite Statement is a set of principles-based, qualitative statements that present a collective and aligned view of the Board’s appetite to take risk in pursuit of our strategic objectives. It provides guidance to the executive and senior management team on the type and amount of risk that is acceptable and is intended to encourage conscious engagement and informed decision making, consistent with other company policies, including our Climate Policy.

OUR RISK AND COMPLIANCE BEHAVIOURS
Woodside recognises that when faced with challenge and uncertainty, it is the actions, behaviours and responses of our leaders at all levels that shapes our culture. In 2023, Woodside updated ‘Our Risk and Compliance Behaviours’ framework to provide guidance on the positive behaviours that promote a strong risk and compliance culture.

These behaviours recognise that the world we live and work in is constantly changing and we need to adapt in order to thrive as a business. They recognise the need to confront and embrace risk, challenge our conventional ways of working and make courageous decisions, while keeping each other safe, complying with the law and maintaining our social licence to operate.

RISK REGISTER
Woodside prioritises risk management actions and governance through use of risk register tools. The functionality within the register provides transparency and enhances the ability of senior leaders to effectively manage and govern climate-related risks, including checking that identified actions to address or manage risk have been closed out.

RISKS AND OPPORTUNITIES
The table (next 3 pages) describes the potential for climate-related risks and opportunities to impact Woodside’s business, strategy, and financial planning, including potential impacts on both financial position and performance and potential mitigations. This does not necessarily mean that the risks have materialised in practice or that the mitigations are currently being pursued. The table is presented using the TCFD framework.

Gas is used in a variety of high temperature industrial processes, such as the production of bricks and ceramics.
## Key climate-related risks and opportunities

### Timeframe*

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<td>Short (now to 2025)</td>
<td>Medium (2026-2035)</td>
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#### Policy and legal risks

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- **Exposure to litigation**
- **Increased operating costs**
- **Deferred revenue from project startups due to delays to, or failure to obtain, regulatory approvals**
- **Asset valuation changes**
- **Legal costs and fines**
- **Increased decommissioning costs**
- **Shareholder divestment**
- **Access to capital**

- **Adopt and deliver targets for net equity emissions reduction**
- **Report in alignment with climate-related financial disclosure requirements in Australia and equivalent requirements in other jurisdictions we are active in and have a significant presence**
- **Build a diverse carbon credits portfolio**
- **Engage regulators and stakeholders**
- **Monitor global policy and legal developments**
- **Diversity of geographical footprint**
- **Selldown in equity share**

#### Technology

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- **Unsuccessful investment in new technologies**
- **Loss of research and development expenditure**
- **Increased operating costs**
- **Impact on revenue**

- **Technology collaboration and partnerships**
- **Opportunity management process**
- **Maintain internal capability with proven track record**
- **Jurisdictional diversity for leveraging legislative incentives**

#### Market

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- **Faster than expected substitution of hydrocarbon products**
- **Lower demand for hydrocarbon, new energy or lower carbon services relative to investment case**
- **Natural gas crowded out of carbon budget by coal and/or unable to achieve attractive pricing**
- **Under or over investment in product portfolio components**
- **Stranded assets and associated impact on asset valuations**

- **Implement strategy to be a low cost, lower carbon company**
- **Scope 3 emissions plan**
- **Capital allocation framework**
- **Customer and market engagement**
- **Scenario analysis**
- **Carbon border adjustment mechanisms or related policy**
- **Selldown in equity share**

#### Reputation

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- **Increased stakeholder concern**
- **Increased operating costs**
- **Increased capital costs**
- **Exacerbated policy and legal risks**
- **Impact on revenue**
- **Inhibited growth**
- **Shareholder divestment**

- **Adopt and deliver targets for net equity Scope 1 and 2 emissions reduction**
- **Scope 3 emissions plan**
- **Report in alignment with climate-related financial disclosure requirements in Australia and equivalent requirements in other jurisdictions we are active in and have a significant presence**
- **Engage regulators and stakeholders**
- **Sustainability planning and engagement**

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1. Woodside has selected these short, medium and long term timeframes reflecting the nature of its business. The short term period can impact its current producing assets and sanctioned projects; the medium term timeframe could impact on these current assets and sanctioned projects as well as opportunities under active evaluation but not yet subject to a final investment decision; and the long term timeframe could impact on both these categories of asset and project as well as opportunities beyond current consideration.
### Physical risks

<table>
<thead>
<tr>
<th>Timeframe*</th>
<th>Type of potential impact</th>
<th>Potential financial impacts</th>
<th>Potential mitigations</th>
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</thead>
<tbody>
<tr>
<td>S</td>
<td>Acute</td>
<td>• Damage to assets/reduced asset life&lt;br&gt;• Decreases in production&lt;br&gt;• Increases in emergency response-related costs&lt;br&gt;• Supply chain and logistics disruptions and/or cost increases&lt;br&gt;• Decreased workforce productivity&lt;br&gt;• Underperformance of tree planting</td>
<td>• Design of facilities to withstand harsh operating environments&lt;br&gt;• Equipment redundancy/sparing&lt;br&gt;• Maintenance of safety critical equipment and control systems&lt;br&gt;• Business and performance planning&lt;br&gt;• HSE culture and procedures&lt;br&gt;• Emergency response plans and procedures&lt;br&gt;• Supplier relationship frameworks and diversification&lt;br&gt;• Annual preventative bushfire maintenance and geographic diversity in carbon offset origination portfolio&lt;br&gt;• Selldown in equity share</td>
</tr>
<tr>
<td>M</td>
<td>Increase frequency, severity and/or duration of extreme weather events, such as tropical cyclones, hurricanes, rainfall, flooding, storm surge, lightning, squalls, bushfires and/or heat waves</td>
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<td>L</td>
<td>Chronic</td>
<td>• Decreased production&lt;br&gt;• Decreased workforce productivity&lt;br&gt;• Increased operating and capital cost required to maintain current performance&lt;br&gt;• Underperformance of tree planting</td>
<td>• Design of facilities to withstand harsh operating environments&lt;br&gt;• Equipment redundancy/sparing&lt;br&gt;• Maintenance of safety critical equipment and control systems&lt;br&gt;• HSE culture and procedures&lt;br&gt;• Geographic diversity in carbon offset origination portfolio&lt;br&gt;• Desalination as technology option for access to water</td>
</tr>
<tr>
<td></td>
<td>Longer-term shifts in climate patterns, such as warmer ambient temperatures, rising sea levels, coastal erosion, reduced water availability, and lower rainfall in tree planting areas</td>
<td></td>
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</tr>
</tbody>
</table>

More information on how Woodside manages physical risks, including in especially vulnerable locations (such as facilities located in harsh environments) can be found on pages 62-63.
<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Timeframe*</th>
<th>Type of potential impact</th>
<th>Potential financial impacts</th>
<th>Potential enablers</th>
</tr>
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<tbody>
<tr>
<td>Resource efficiency</td>
<td>S M L</td>
<td>Fuel gas savings diverted to sales gas</td>
<td>• Increased sales revenue</td>
<td>• Asset decarbonisation plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More efficient shipping fleet</td>
<td>• New revenue streams</td>
<td>• Optimisation reference plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More efficient building stock</td>
<td>• Reduced operating costs</td>
<td>• Scope 3 emissions plan influencing suppliers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recycling of decommissioned materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy source</td>
<td>S M L</td>
<td>Use of renewable energy generation</td>
<td>• Increased production</td>
<td>• Develop a new energy business</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use of efficient technologies</td>
<td>• Reduced operating costs</td>
<td>• Design out emissions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use of energy storage</td>
<td>• Reduced exposure to carbon costs</td>
<td>• Asset decarbonisation plans</td>
</tr>
<tr>
<td>Products and services</td>
<td>S M L</td>
<td>Diverse portfolio of products and services including natural gas in decarbonisation pathways</td>
<td>• Reduced demand side risk</td>
<td>• Capital allocation framework</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development of new business lines</td>
<td>• Ability to achieve attractive pricing</td>
<td>• Technology collaboration and partnerships</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New technologies for forecasting physical risk</td>
<td>• Lower operating costs</td>
<td>• Portfolio diversity</td>
</tr>
<tr>
<td>Markets</td>
<td>S M L</td>
<td>Use of public sector incentives</td>
<td>• Reduced development costs</td>
<td>• Customer and market engagement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collaborative partnership with customers, research institutions and broader industry organisations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access to new markets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resilience</td>
<td>S M L</td>
<td>Broader portfolio inclusive of oil, gas and new energy opportunities</td>
<td>• Diverse revenue streams</td>
<td>• Capital allocation framework</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access to sustainable finance</td>
<td>• Better competitive position to reflect shifting consumer preferences</td>
<td>• Adopt and deliver targets for net equity emissions reduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decrease climate risk in the supply chain</td>
<td></td>
<td>• Scope 3 emissions plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capital allocations strategy to flex between product streams</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Managing physical risk

Woodside’s assets are designed to withstand extreme weather events, we have specialised teams that support the safe and reliable design and operation of our facilities.

Physical risks can arise from both event driven (acute) and longer-term shifts (chronic) in climate patterns. These physical risks may have financial implications for organisations.

For example, in the oil and gas industry, this might include harsh weather or ocean conditions that can damage or disrupt the ability to safely operate offshore facilities, shipping and onshore processing plants. Woodside has decades of experience designing and operating facilities located in harsh environments.

Woodside’s facilities are subject to oceanic conditions and are located in regions that experience tropical cyclones, hurricanes and high ambient temperatures.

Physical risks could also impact emerging new businesses in new energy products and lower carbon services. For example, this could include bushfire or drought risk for nature-based carbon origination projects, or access to water for use in electrolysis for hydrogen.

DESIGN OF WOODSIDE’S FACILITIES

Each Woodside facility is built in accordance with a basis of design (BOD). This details, amongst other things, the climatic conditions that facilities need to withstand. Each BOD is reviewed against updates to climatic conditions and, where required, actions are taken to update procedures or replace/refurbish equipment to withstand the revised conditions.

For new facilities and refurbishments, the requirements for maximum air temperature and sea level in the BODs are aligned to IPCC Shared Socioeconomic Pathway 2-4.5 (the SSP 2-4.5) in which global temperatures rise by 2.7°C by the end of the century. Design sensitivities are also performed against SSP 5-8.5 pathway in which global temperatures rise by 4.4°C. (Note that the BOD is intended to describe harsh environmental conditions that a facility may need to withstand, hence the alignment with and sensitivities for higher temperature outcomes by 2100 rather than 2°C or 1.5°C global temperature rise outcomes).

Woodside designs its assets to withstand extreme weather events that occur in the range of 1 in 1,000 years to 1 in 10,000 years. This is also specified in each BOD. These time periods and the approach of using IPCC SSPs has historically been used at heritage Woodside assets and will be incorporated across the merged portfolio for new assets.

WOODSIDE’S CAPABILITY

Some relevant teams within the Woodside organisation include:

- **Meteorology and Oceanography (Metocean)**: Metocean specialists quantify the potential impact and effect of meteorological and oceanographic conditions on Woodside’s facilities. This includes waves, climate variability, tropical cyclones, hurricanes, air temperature and rainfall. This analysis is used to define technical requirements for existing and new facilities.

- **Health, Safety and Environment**: Health, safety and environment specialists support the business by providing guidelines on safe operating conditions. Examples include the wellbeing of people working in high ambient temperature environments and maintenance of safety critical systems and equipment.

- **Asset Management**: Asset management teams are responsible for managing asset specific risks, such as structural integrity risks from weather related events and risks to production forecasts from weather related outages. Regular risk governance meetings are held to review the management of these risks.

- **Emergency Management**: Emergency management specialists support the business in the development of emergency response plans and capabilities and with response to any emergency events. This includes preparation for and response to tropical cyclones and hurricanes.

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1. This is based on outputs from the Coupled Model Intercomparison Project (CMIP). CMIP coordinates climate model simulations worldwide under the World Climate Research Program (WCRP). CMIP supports the IPCC Shared Socioeconomic Pathways. These Shared Socioeconomic Pathways explore the implications of future socioeconomic development on climate change mitigation, adaptation and land use.

2. Acquired assets are not designed by Woodside and the historic asset owner may have specified different extreme weather events in the BOD. Ruby and Angostura were both designed to withstand extreme weather events that occur in the range of 1 in 100 years.
EXAMPLES OF PHYSICAL RISK MANAGEMENT

Cyclones or hurricanes

Climate change is expected to lead to more frequent and/or more severe cyclones or hurricanes. These have the potential to damage equipment, cause increased production outages and/or reduce asset life.

Woodside has assets that have operated in cyclone or hurricane affected regions for decades. These onshore and offshore assets are designed and maintained for safe operations in extreme conditions. Procedures are in place for pre-cyclone/hurricane season readiness, for preparations immediately prior to a tropical cyclone, and for disconnection and demobilisation to keep people and assets safe during cyclonic events.

The design and maintenance of assets and the emergency response procedures were tested during the severe Tropical Cyclone Damien in the North West of Australia in February 2020 and during Hurricane Ida in the Gulf of Mexico in August 2021. No major damage occurred and normal production levels was resumed following these events.

Production planning and forecasting includes assumptions for cyclones/hurricanes and severe swells. These assumptions are informed by data from previous seasons along with forecasts for upcoming El Niño and La Niña cycles.

Rainfall, flooding or drought

Climate change is expected to lead to changes in rainfall volume and intensity. This could cause flooding or drought, which might impact Woodside’s facilities and/or carbon origination projects.

Drainage systems on Woodside’s facilities are designed to meet relevant international and Australian standards. In regions impacted by cyclones, drainage and containment systems are also inspected prior to cyclone season, as there may be intense rainfall or flooding during this season.

Exposure to drought risk and flooding in our carbon origination projects is managed by holding a diverse geographic distribution of projects.

Bushfires

Climate change is expected to lead to increased frequency and/or severity of bushfires due to hotter and/or drier climates.

Where Woodside operates oil and gas producing assets located in bushfire-prone areas, it incorporates bushfire preparation as a standard part of emergency response planning. In addition, the geographical locations of many of our oil and gas producing assets have inherently lower exposure to bushfire risk, for example, because they are surrounded by shrubs/rock or are offshore.

Woodside’s carbon origination portfolio includes planting trees. Diversity in tree planting locations reduces the potential impacts of bushfire risk on the portfolio.

Warmer ambient temperatures

Climate change is increasing ambient temperatures. This could create hotter working conditions, impacting the wellbeing of our people and the operability of some equipment.

The health and wellbeing of our people is inherent in our culture and operational practices. For example, sun protection and hydration are regularly included as topics in site communications and safety briefings. Facilities in the North West of Australia experience high ambient temperatures. Major maintenance campaigns, where the number of people on site is significantly increased, are targeted for execution in the cooler months to minimise exposure to heat stress.

Production planning and forecasting includes assumptions for ambient temperature, recognising that higher ambient temperatures can reduce plant performance.

Rising sea levels and storm surge

Climate change is resulting in an increase in sea levels with the potential to impact offshore and coastal facilities.

Woodside’s facilities are designed in accordance with BODs, which include sea level assumptions where relevant for the facility. An allowance for sea level rise is included in the calculations of extreme total water level (the combination of sea level, tidal elevation, storm surge and wave crest elevation). The assumptions for sea level in the BOD documents are based on IPCC Shared Socioeconomic Pathways. Storm surges in the Karratha region in the North West of Australia are also included in cyclone preparation plans.

1 The IPCC Shared Socioeconomic Pathways explore the implications of future socioeconomic development on climate change mitigation, adaptation and land use.
2 The approach to using IPCC SSPs in this paragraph has historically been used at heritage Woodside assets, and will be incorporated across the merged portfolio over time.
6.0 ENGAGEMENT
Policy engagement

Woodside aligns its advocacy to support the goals of the Paris Agreement. We also review our membership of industry associations and encourage them to align their positions and advocacy activities with the goals of the Paris Agreement.

CONSTRUCTIVE DIALOGUE AND DIVERSE VIEWS

Woodside transparently discloses its advocacy, including the submissions that it makes to government. We also have periodically published a review of our industry association memberships and their activities. We acknowledge that not everyone shares our views, for example about the role of natural gas in the energy transition, just as some people will debate the desirability of nuclear power, wind farms, or carbon capture. We respect that some people will have policy preferences, but we do not accept the claim that advocating for natural gas is at odds with climate goals – instead we try to explain clearly, through our engagements with investors and public reports, the basis for our perspective. This is a key difference in our analysis of climate-related advocacy and that of groups such as InfluenceMap, who describe our support for the role of oil and gas in the energy mix as “at odds with the findings of the Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA)”. Woodside engages with InfluenceMap and has explained that we reject that opinion, for the reasons stated in this report.

INDUSTRY ASSOCIATIONS

Woodside engages in policy advocacy both as an individual organisation and via a range of industry association memberships. We aim to align both our own policy engagement and that of our associations (where possible) in support of the temperature goals of the Paris Agreement. Our detailed Industry Association Review was updated in 2023 and is available at woodside.com.

PARIS ALIGNMENT

The temperature goals of the Paris Agreement is to limit “the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C”,2 This goal was reaffirmed at the COP28 global climate summit in the United Arab Emirates in December 2023, which also underscored the importance of the 1.5°C goal and resolved to pursue it.3

We encourage readers to review the whole COP28 decision text at www.unfccc.int, as we can only provide an abridged version here to draw attention to the most critical links with our business. These links are provided in the table, right.

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2023 CLIMATE-RELATED ADVOCACY

Below is a list of speeches and submissions that contain climate-related content or positions. Further information is available at woodside.com.

Submissions about government policy

**Australia**
- Safeguard Mechanism Consultation Paper
- Consultation on setting, tracking and achieving Australia’s emissions reduction targets
- Future of Gas Strategy
- Climate related financial disclosure: second consultation round
- Carbon leakage review
- Inquiry into London Protocol
- ACCU Review implementation plan
- Review of the Singapore Australia Green Energy Agreement (GEA)
- A mandatory code of conduct to guide behaviour in the gas market
- Senate inquiry into the Gas Market Code of Conduct
- Consultation in the course of preparing an environment plan
- Inquiry into the WA Domestic Gas Policy
- National Electricity Amendment (Concessional Finance for Transmission Network Service Providers) rule

**United States**
- Department of Energy (DOE) Office of Clean Energy Demonstrations’ Notice of Intent to establish a Demand-side Support Mechanism
- Department of Energy (DOE) Clean Hydrogen Hub (confidential)
- Inflation Reduction Act Section 45V clean hydrogen production tax credit

**Parliamentary hearing appearances**
- Australian House of Representatives Inquiry into the London Protocol (relating to cross-border transport of CO₂ for CCS)
- Australian Senate inquiry into the Safeguard Mechanism

Keynotes and speeches delivered by Executives

**Australia**
- 2023 Australian Oil and Gas (AOG) Energy Conference: Maximising value and energy growth
- American Chamber of Commerce in Australia (AmCham): Business Luncheon with Meg O’Neill
- Australian Domestic Gas Outlook (ADGO) 2023 Conference: Keynote
- Australian Energy Producers (AEP) 2023 Conference & Exhibition: Opening Address
- Business News: Success and Leadership Breakfast
- Committee for Economic Development of Australia (CEDA) WA Energy Transition Summit: Infrastructure for a green transition
- Committee for Economic Development of Australia (CEDA) The Future of Gas in WA Event: Keynote Address
- National Press Club: Energy Security through the energy transition
- Society of Petroleum Engineers Western Australia Season Opening: What are the leadership skills needed in complex and difficult times
- WA Korea Economic Forum: Keynote
- World Energy Cities Partnership AGM Event

**International**
- 2023 Energy Intelligence Forum: Leadership Dialogue
- CERAWEEK 2023: Oil and Gas – Playing the Long Game
- CERAWEEK 2023: Navigating Volatile Energy Markets
- CERAWEEK 2023: Diversity in the Workforce: Creating Value
- Gastech Global Business Leadership CEO Panel discussion: Transforming global energy through collaborative business models and constructive partnerships
- LNG2023 Plenary 2: Challenges of a Turbulent Energy Transition
- Offshore Technology Conference 2023: Timor-Leste on the Rise with its Greater Sunrise Fields
- Society of Petroleum Engineers Annual Technical Conference and Exhibition: Expanding the Opportunities to Sustainably Fuel the World
- Trinidad and Tobago Energy Conference 2023: Navigating a Complex Energy Future
- Wood Mackenzie’s Global Energy Summit: Keynote

**Case Study: Safeguard Mechanism advocacy**

The Safeguard Mechanism is Australia’s principal regulation for the reduction of emissions from industrial facilities.

Woodside advocated for a fair, robust and transparent mechanism to lead to a reduction in Australia emissions, including by encouraging businesses to invest, innovate and adopt smarter practices and technologies in line with Australia’s emissions reduction targets.

Our advocacy on the reforms continues to include:
- Changes to important emissions reduction opportunities such as renewable electricity import and CCS are incentivised.
- Accelerating bilateral arrangements for international carbon crediting under Article 6 of the Paris Agreement.
- Tailoring the support for “energy intensive trade exposed” industries.
- Technical advice on the quantification of baselines including for new facilities.

**Focus on our work with Ipieca**

Ipieca is the global oil and gas association for advancing environmental and social performance across the energy transition, and was founded in 1974 at the request of the United Nations Environment Programme.

Woodside is an active participant:
- Woodside’s representative is a member of Ipieca’s global executive and designated their “climate champion”;
- Woodside’s representative chaired the taskforce that developed and published a fact sheet on the role of oil and gas in energy transitions;
- Woodside experts participated in taskforces to develop guidance on Scope 3 emissions accounting, the role of carbon-compensated products, and approaches to the Just Transition;
- A Woodside expert attended the IPCC’s conference to conclude the Sixth Assessment (AR6) Synthesis Report (Summary for Policymakers) on behalf of Ipieca.

Industry initiatives

Woodside has joined a range of industry initiatives to provide leadership and advocacy, learn from our peers, and check that our approach is consistent with appropriate global practice.

Oil & Gas Decarbonization Charter (OGDC)\(^1\)

In 2023, Woodside became the first Australian company to sign the Oil & Gas Decarbonization Charter (OGDC).

During COP28 the COP28 Presidency and the Kingdom of Saudi Arabia announced 50 oil and gas companies had joined the Oil and Gas Decarbonization Charter, a global industry Charter dedicated to high-scale impact, and to speed up climate action within the industry.

Task Force on Climate Related Financial Disclosures (TCFD)\(^2\)

Woodside became an official supporter of TCFD in 2021. The TCFD released climate-related financial disclosure recommendations designed to help companies provide better information to support informed capital allocation. The disclosure recommendations are structured around four thematic areas that represent core elements of how companies operate: governance, strategy, risk management, and metrics and targets.

Following the completion of its 2023 status report, the TCFD organization has been disbanded and its work will be taken forward by the International Financial Reporting Standards (IFRS) Foundation. The IFRS Foundation is hosting the work of the International Sustainability Standards Board (ISSB) whose reporting standards build upon the work of the TCFD. Woodside continues to utilise TCFD recommendations while awaiting the implementation of climate-related financial disclosure requirements in Australia and equivalent requirements in other jurisdictions we are active in and have a significant presence.

Oil and Gas Methane Partnership 2.0 (OGMP)\(^3\)

Woodside joined OGMP 2.0 in 2024. The OGMP 2.0 is the United Nations Environment Programme’s flagship oil and gas reporting and mitigation programme. OGMP 2.0 is the only comprehensive, measurement-based reporting framework for the oil and gas industry that improves the accuracy and transparency of methane emissions reporting. This is key to prioritising methane mitigation actions in the sector.

Methane Guiding Principles (MGP)\(^4\)

Woodside joined the MGP in 2018. The MGP focus on five priority areas for action to reduce methane emissions across the natural gas supply chain. They were developed collaboratively in 2017 by a coalition of industry and civil society organizations. The 5 priority areas are:

1. Continually reduce methane emissions
2. Advance strong performance across the gas supply chain
3. Improve accuracy of methane emissions data
4. Advocate sound policy and regulations on methane emissions
5. Increase transparency

Aiming for Zero Methane Emissions Initiative\(^5\)

In 2022, Woodside Energy became the first Australasian company to sign the Aiming for Zero Initiative. The initiative was launched by the Oil and Gas Climate Initiative (OGCI) to encourage the oil and gas industry to cut methane emissions to near-zero. It calls for an all-in approach that treats methane emissions as seriously as the oil and gas industry already treats safety; aiming for zero and striving to do what is needed to get there. Aiming for Zero acts as a complement for key initiatives such as MGP, OGMP 2.0 and the Global Methane Pledge.

Zero Routine Flaring by 2030 (ZRF) Initiative\(^6\)

Woodside joined ZRF in 2017. The Initiative was launched by the World Bank and is managed by the Global Flaring and Methane Reduction Partnership (GFMRP). It commits governments and companies to end routine flaring no later than 2030. The Initiative is designed to facilitate cooperation between all stakeholders so that solutions to ending routine gas flaring can be identified and implemented.

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A just transition

Woodside recognises the importance of a just transition to our customers, our employees, and the communities where we operate and who benefit from our operations.

The Paris Agreement emphasises “the intrinsic relationship that climate change actions, responses and impacts have with equitable access to sustainable development and eradication of poverty”. It also takes into account “the imperatives of a just transition of the workforce and the creation of decent work and quality jobs”.

Woodside acknowledges that the energy transition will change the way we conduct our business. In order for the transition to be a just one, the scale of this change will require commitment and collaboration between governments, industry, investors and communities.

At COP28 the Parties adopted a work programme on just transition pathways. The program will cover themes including “Just and equitable transition, which encompasses pathways that include energy, socio-economic, workforce and other dimensions all of which must be based on nationally defined development priorities and include social protection so as to mitigate potential impacts associated with the transition.”

COLLABORATION

Woodside participates in various international forums that encourage information sharing and collaboration across industry. Woodside recognises that a just transition is most likely to be effective when businesses, governments, workers, communities and other stakeholders work together.

Our approach is informed by our membership in Ipieca’s Just Transition Task Force. The task force aims to support collaboration and sharing of effective practices as companies develop their decarbonisation plans.

Woodside is also a member of the Climate Leaders Coalition (CLC). The CLC is a group of cross-sectoral Australian corporate CEOs supporting the Paris Agreement commitments and setting public decarbonisation targets. In 2023 the CLC published the “Credible Transition to Net Zero – Practical insights for getting started”, which incorporated guidance about considering a just transition.

WOODSIDE’S APPROACH

Access to energy
We consider our role in providing energy as core to our contribution to a just energy transition. United Nations Sustainable Development Goal 7 is to “ensure access to affordable, reliable, sustainable and modern energy for all”.

Decommissioning
Decommissioning oil and gas assets at the end of their productive life is an inherent part of the oil and gas industry lifecycle. In 2023, Woodside spent approximately $530 million executing decommissioning work across our portfolio. Planning for decommissioning starts well in advance of asset end of life, and includes stakeholder engagement to address environmental, regulatory and social outcomes for the communities we operate in.

Stakeholder engagement
Woodside is committed to engaging in a social dialogue with our workforce, the communities in which we operate, affected stakeholders and businesses with whom we have a relationship.

Social Impact Management
We build relationships to enable ongoing engagement across all phases of our activities. Understanding the impacts of our activities, both environmental and social including human rights, is embedded into our Project Management Framework. Our updated social impact assessment for our onshore gas operations near Karratha in Western Australia included engagement with the local community on a range of scenarios including growth and decline. Our Social Performance Framework guides our approach in sharing timely information about our activities and understanding the expectations of the communities where we are active and have a significant presence.

We work with our suppliers to embed this approach into our value chain and will continue to do so through the transition. We currently employ approximately 240 people across our new energy and lower carbon services teams, the majority of whom have been redeployed from our base business. Where possible, we will continue to look to retrain and reskill our current workforce so that they can transition into these opportunities. More information about our approach can be found on our website.

Just transition key stakeholders
Woodside has identified that our workforce, our suppliers, our host communities and our customers are the key stakeholders relevant to a just transition. We can help prepare for and manage the transition through our commitment to regular stakeholder engagement, local content in our projects and building capability and capacity through social investment and employee development all of which are well established across the organisation. More information about stakeholder engagement can be found on our website.

Workforce
We support an inclusive workplace which allows us to leverage the diversity of thought which can come from teams with different knowledge, experience, approaches and ways of thinking.

Suppliers
We work with suppliers that align with our vision and share our commitment to deliver better outcomes for our business, customers and communities.

Host Communities
Woodside supports host communities by helping to improve local capability and capacity. Updates on our social contribution available at woodside.com.

Customers
We collaborate with our customers on innovative lower carbon energy solutions. For example, services like CCS can help customers reduce the emissions they would otherwise generate when using Woodside products (or similar products sourced from others).
Woodside has an employee-led internal group on Climate Change. In late 2023, it organised a two-week forum during COP28 to encourage all employees to get informed, talk about, and take action on the company’s climate strategy. Over 1,000 Woodside employees, including members of the Executive Leadership Team, participated in the forum. The topics showcased included deep dives into current climate issues, an exploration of Woodside’s role in the energy transition, and practical discussions on asset decarbonisation.

During the forum, the International Energy Agency (IEA) presented their insights from their recent publications including the ‘World Energy Outlook 2023’ and the ‘Oil and Gas Industry in Net Zero Transitions’ report.1,2 This presentation gave Woodsiders the opportunity to hear directly from the IEA on their climate scenarios, the assumptions that underpin them, and the key role of energy producers in the transition. This session also emphasised the importance of having an open dialogue with key stakeholders in the energy industry.

The American Petroleum Institute (API) presented their insights into the United States’ policy landscape and their view on the role of the oil and gas industry in the energy transition. The API shared their insights on COP28 and the evolving global climate policy landscape with the participants.
Natural gas and liquefied petroleum gas (LPG) are both used as fuel for cooking, such as for outdoor BBQs.
Climate-related data\textsuperscript{1,2}

<table>
<thead>
<tr>
<th>Metric\textsuperscript{3}</th>
<th>Unit of measure</th>
<th>2023</th>
<th>2022</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hydrocarbon production</strong>\textsuperscript{4}</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total – equity</td>
<td>kt</td>
<td>22,215</td>
<td>18,752</td>
<td>10,522</td>
</tr>
<tr>
<td>Total – operated</td>
<td>kt</td>
<td>30,679</td>
<td>30,361</td>
<td>25,007</td>
</tr>
<tr>
<td>Sales (including Traded Hydrocarbons) – equity\textsuperscript{4}</td>
<td>kt</td>
<td>23,918</td>
<td>20,261</td>
<td>12,977</td>
</tr>
<tr>
<td><strong>Revenue</strong></td>
<td>US$m</td>
<td>13,994</td>
<td>16,817</td>
<td>6,962</td>
</tr>
<tr>
<td>Revenue – equity\textsuperscript{3}</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Global Scope 1 and 2 greenhouse gas emissions</strong>\textsuperscript{5}</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scope 1 and 2 emissions – equity (net)\textsuperscript{5}</td>
<td>kt CO₂-e</td>
<td>5,532</td>
<td>4,615</td>
<td>3,235</td>
</tr>
<tr>
<td>Scope 1 emissions – equity (gross) \textsuperscript{5}</td>
<td>kt CO₂-e</td>
<td>6,172</td>
<td>5,357</td>
<td>3,541</td>
</tr>
<tr>
<td>Scope 2 emissions – equity (gross) \textsuperscript{5}</td>
<td>kt CO₂-e</td>
<td>18</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Equity offsets retired in respect of annual emissions \textsuperscript{5}</td>
<td>kt CO₂-e</td>
<td>658</td>
<td>754</td>
<td>312</td>
</tr>
<tr>
<td>Scope 1 and 2 emissions – operated (gross)\textsuperscript{5}</td>
<td>kt CO₂-e</td>
<td>9,175</td>
<td>9,573</td>
<td>8,908</td>
</tr>
<tr>
<td>Scope 1 emissions – operated (gross) \textsuperscript{5}</td>
<td>kt CO₂-e</td>
<td>9,165</td>
<td>9,565</td>
<td>8,901</td>
</tr>
<tr>
<td>Scope 2 emissions – operated (gross) \textsuperscript{5}</td>
<td>kt CO₂-e</td>
<td>10</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Percentage of equity Scope 1 and 2 emissions covered under emissions limiting regulations\textsuperscript{6}</td>
<td>%</td>
<td>92</td>
<td>95</td>
<td>99.5</td>
</tr>
<tr>
<td><strong>Sources of equity Scope 1 greenhouse gas emissions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel combustion</td>
<td>kt CO₂-e</td>
<td>4,297</td>
<td>3,612</td>
<td>2,412</td>
</tr>
<tr>
<td>Flare</td>
<td>kt CO₂-e</td>
<td>522</td>
<td>688</td>
<td>461</td>
</tr>
<tr>
<td>Venting</td>
<td>kt CO₂-e</td>
<td>1,352</td>
<td>1,057</td>
<td>667</td>
</tr>
<tr>
<td>Other</td>
<td>kt CO₂-e</td>
<td>0</td>
<td>0</td>
<td>0\textsuperscript{**}</td>
</tr>
<tr>
<td><strong>Equity Scope 1 greenhouse gas emissions by country</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>kt CO₂-e</td>
<td>5,704</td>
<td>NPR</td>
<td>NPR</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>kt CO₂-e</td>
<td>185</td>
<td>NPR</td>
<td>NPR</td>
</tr>
<tr>
<td>United States of America</td>
<td>kt CO₂-e</td>
<td>263</td>
<td>NPR</td>
<td>NPR</td>
</tr>
<tr>
<td><strong>Methane</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methane emissions (greenhouse equivalent) - equity</td>
<td>kt CO₂-e</td>
<td>219</td>
<td>193</td>
<td>133</td>
</tr>
<tr>
<td>Percentage of equity gross Scope 1 and 2 emissions that are methane</td>
<td>%</td>
<td>4</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Methane intensity – equity</td>
<td>t CH₄ / kt total production</td>
<td>0.35</td>
<td>0.42</td>
<td>0.45</td>
</tr>
<tr>
<td>Methane intensity – equity (Sm³ / Sm³ marketed gas)\textsuperscript{9}</td>
<td>%</td>
<td>0.062</td>
<td>0.072</td>
<td>0.064</td>
</tr>
<tr>
<td>Methane emissions (greenhouse equivalent) – operated</td>
<td>kt CO₂-e</td>
<td>245</td>
<td>273</td>
<td>326</td>
</tr>
<tr>
<td>Methane intensity – operated</td>
<td>t CH₄ / kt total production</td>
<td>0.29</td>
<td>0.32</td>
<td>0.45</td>
</tr>
<tr>
<td>Methane intensity – operated (Sm³ / Sm³ marketed gas)\textsuperscript{9}</td>
<td>%</td>
<td>0.046</td>
<td>0.054</td>
<td>0.064</td>
</tr>
</tbody>
</table>

\textsuperscript{1} All footnotes related to this table are displayed on the next page.

Impact of merger with BHP’s petroleum business:
Data in this table is impacted by the merger with BHP’s petroleum business which took effect on 1 June 2022. 2021 data reflects Woodside’s portfolio before the merger. 2022 has five months of pre-merger data and seven months of post-merger data. 2023 reflects a full year of the merged entity.
<table>
<thead>
<tr>
<th>Metric*</th>
<th>Unit of measure</th>
<th>2023</th>
<th>2022</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flared gas**</td>
<td>t</td>
<td>132,862</td>
<td>232,299</td>
<td>154,546</td>
</tr>
<tr>
<td>Total flaring - equity</td>
<td>t</td>
<td>195,855</td>
<td>297,135</td>
<td>250,562</td>
</tr>
<tr>
<td>Flaring intensity - equity</td>
<td>t/kt</td>
<td>6.0</td>
<td>12.4</td>
<td>14.7</td>
</tr>
<tr>
<td>Flaring intensity - operated</td>
<td>t/kt</td>
<td>6.4</td>
<td>9.8</td>
<td>9.7</td>
</tr>
</tbody>
</table>

** Global Scope 3 greenhouse gas emissions estimates

<table>
<thead>
<tr>
<th>Metric</th>
<th>Unit of measure</th>
<th>2023</th>
<th>2022</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 3 emissions – equity, total</td>
<td>kt CO₂-e</td>
<td>72,825</td>
<td>60,699</td>
<td>37,186</td>
</tr>
<tr>
<td>Scope 3 emissions – purchased goods and services, related to Traded Hydrocarbon – equity</td>
<td>kt CO₂-e</td>
<td>1,225</td>
<td>1,011</td>
<td>1,375</td>
</tr>
<tr>
<td>Scope 3 emissions – selected other upstream – equity</td>
<td>kt CO₂-e</td>
<td>219</td>
<td>256</td>
<td>200</td>
</tr>
<tr>
<td>Scope 3 emissions – downstream transportation and distribution – equity</td>
<td>kt CO₂-e</td>
<td>1,728</td>
<td>1,477</td>
<td>819</td>
</tr>
<tr>
<td>Scope 3 emissions – use of sold product, related to Woodside production – equity</td>
<td>kt CO₂-e</td>
<td>64,612</td>
<td>53,186</td>
<td>27,906</td>
</tr>
<tr>
<td>Scope 3 emissions – use of sold product, related to Traded Hydrocarbon – equity</td>
<td>kt CO₂-e</td>
<td>5,041</td>
<td>4,768</td>
<td>6,886</td>
</tr>
</tbody>
</table>

---

* The amounts in this report have been rounded to the nearest unit of measure. Small differences are due to rounding.
** Other source of Scope 1 Greenhouse gas emissions category rounded to the nearest kilotonne. 2021 data previously reported as 0.2 kt CO₂-e.

The equity portion of greenhouse gas emissions, flared gas, fuel and production values include data from non-operated ventures where Woodside owns an equity portion. Where data has been provided by third parties it has been used. Where 2023 data is not available estimates have been used based on extrapolation of historic data or from the performance of analogue facilities where historical data is also not available.

Woodside operated facilities only.

Includes emissions associated with the downstream transport (GHG Protocol Category 9) of hydrocarbon sales. Where this information is not available 100% of transport emissions are conservatively reported. No adjustment has been made for combustion of solid product during transport (e.g. LNG combusted by LNG ships, pipeline gas used in transmission compressor stations) and therefore could be double counted.

Methane intensity is calculated as the volume of methane emissions divided by the volume of marketed gas inclusive of LNG, pipeline gas and natural gas liquids.

Flared emissions calculation methodology was updated in 2020 to align with NGER and include inert compounds which have a global warming potential of zero.

The equity portion of greenhouse gas emissions, flared gas, fuel and production values include data from non-operated ventures where historical data is also not available.

The amounts in this report have been rounded to the nearest unit of measure. Small differences are due to rounding.
# Sources of carbon credits retired in respect of 2023 Scope 1 and 2 emissions

<table>
<thead>
<tr>
<th>Project name</th>
<th>Project ID</th>
<th>Project developer / Project proponent</th>
<th>Project type</th>
<th>Method</th>
<th>Country</th>
<th>Vintage</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darling River Conservation Initiative Site #7</td>
<td>ACCU Scheme ERF131162</td>
<td>Terra Carbon Pty Limited</td>
<td>Human Induced Regeneration</td>
<td>Carbon Credits (Carbon Farming Initiative) (Human-Induced Regeneration of a Permanent Even-Aged Native Forest - 1.1) Methodology Determination 2013</td>
<td>Australia</td>
<td>2023</td>
<td>64</td>
</tr>
<tr>
<td>Colac Beltram Munberry Haredean (CBMH) Regeneration Project</td>
<td>ACCU Scheme ERF101800</td>
<td>Lanin Holdings Pty Ltd, Ninal Ventures Pty Ltd</td>
<td>Human Induced Regeneration</td>
<td>Carbon Credits (Carbon Farming Initiative) (Human-Induced Regeneration of a Permanent Even-Aged Native Forest - 1.1) Methodology Determination 2013</td>
<td>Australia</td>
<td>2021</td>
<td>810</td>
</tr>
<tr>
<td>Molendinar Landfill Gas Project</td>
<td>ACCU Scheme EOP100501</td>
<td>LMS Energy Pty Ltd</td>
<td>Landfill Gas</td>
<td>Carbon Credits (Carbon Farming Initiative - Landfill Gas) Methodology Determination 2015</td>
<td>Australia</td>
<td>2021</td>
<td>1,214</td>
</tr>
<tr>
<td>WithOneSeed Timor-Leste Community Forestry Program</td>
<td>Gold Standard GS 4210</td>
<td>xPand Foundation</td>
<td>Afforestation/Reforestation</td>
<td>Afforestation/Reforestation GHG Emissions Reduction &amp; Sequestration Methodology</td>
<td>Timor-Leste</td>
<td>2018</td>
<td>4,050</td>
</tr>
<tr>
<td>Katingan Peatland Restoration and Conservation Project</td>
<td>Verra VCS 1477</td>
<td>PT. Rimba Makmur Utama (PT. RMU)</td>
<td>Agriculture Forestry and Other Land Use</td>
<td>VM0007: REDD Methodology Modules</td>
<td>Indonesia</td>
<td>2018</td>
<td>431,956</td>
</tr>
</tbody>
</table>

The volume is the number of credits retired, each credit represents one tonne of CO$_2$-e.
**Scope 3 methodology**

Methodologies and practices to measure and account for Scope 3 emissions continue to develop.

Woodside’s approach is to align with the GHG Protocol where available, using an equity share approach to emissions calculations, and to disclose its methodology in areas where there is not a clear guideline.¹ Part of Woodside’s Scope 3 Plan is to promote global measurement and reporting, so we actively engage in addressing gaps in methodology where we can. We also monitor updates, and as standards develop we will review whether we need to revise our approach.

**BOUNDARY**

Woodside currently reports GHG emissions in the following categories of the GHG protocol:¹

- **Category 1: Purchased Goods and Services,** relating to the purchase of LNG from other upstream suppliers to supply our customers.
- A bundled estimate of smaller upstream emissions categories including categories 1: (purchased goods and services, other than Traded LNG), 5 (waste generated in operations), 6 (business travel) and 7 (employee commuting).
- **Category 9: Downstream transportation and distribution,** relating to the shipping of LNG to customers. For consistency all shipping is included in this category including Woodside-leased vessels.
- **Category 11 “use of sold product”,** relating to the combustion of our oil and gas products. We currently assume all products are combusted (a conservative assumption, due to the challenges of tracking precise end-use). If tracking methodologies improve or we otherwise are confident that a portion of our sales are not combusted (for example, used as feedstock for ammonia production) we may incorporate this in future.

We report these emissions on a gross equity basis. Our gross equity Scope 3 emissions may increase or decrease due to changes in production or through merger and acquisition activities.

**SCOPE 3 INVESTMENT TARGET**

Woodside has a target to invest $5 billion in new energy products and lower carbon services by 2030 (“Scope 3 investment target”).² This potentially includes both organic and inorganic expenditure. It is not used to fund reductions of Woodside’s net equity Scope 1 and 2 emissions which are managed separately through asset decarbonisation plans. Where a project abates both Woodside Scope 1 emissions as well as third party emissions, expenditure will be apportioned and attributed to the target accordingly.

**SCOPE 3 EMISSIONS ABATEMENT TARGET**

Woodside has a target to take FID on new energy products and lower carbon services by 2030, with total abatement capacity of 5 Mtpa CO₂-e (“Scope 3 emissions abatement target”). The relevant customers are the customers of the new energy or lower carbon services project, who may not necessarily also be customers of Woodside’s oil and gas business.

- For CCUS projects, Woodside will attribute to the target a volume of customer emissions reduced in proportion to our equity share of the CCUS project. The total volume of customer emissions reduced will be the volume of emissions stored or converted to saleable products.
- For hydrogen (including ammonia) projects, Woodside will attribute to the target a volume of estimated customer emissions avoided in proportion to our equity share of the hydrogen (including ammonia) project. The estimated volume of avoided emissions will be calculated in accordance with engineering judgment and practice, including but not limited to:

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² Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside’s investment targets. Not guidance. Potentially includes both organic and inorganic investment.
the equivalent diesel consumption based on energy density and converted to t CO\textsubscript{2}-e assuming the diesel is combusted, in the case sales to the heavy duty road transport sector;

the equivalent bunker fuel based on energy density and converted to t CO\textsubscript{2}-e assuming the bunker fuel is combusted, in the case of sales to the marine fuels sector;

the equivalent coal consumption based on energy density and converted to t CO\textsubscript{2}-e assuming the coal is combusted, in the case of sales to the power generation sector.

- For renewable power projects, Woodside will attribute to the target an estimated volume of avoided emissions in proportion to our equity share in the renewable power project. The estimated volume of avoided emissions will be calculated in accordance with engineering judgment and practice, including but not limited to comparison with the average emissions intensity of the power grid in the relevant location.

**REPORTING GROSS AND NET SCOPE 3 EMISSIONS**

When reporting Scope 3 emissions, Woodside will separately report its Scope 3 emissions (including those arising from its sales of oil and gas products) from its estimation of avoided or reduced customer emissions as a consequence of projects pursued in support of the targets.

**MERGERS AND ACQUISITIONS**

The Board may, in its sole discretion, change either of the Scope 3 targets to reflect changes due to mergers and acquisitions.
Glossary

*All footnotes related to this table are displayed at the end of the glossary.

<table>
<thead>
<tr>
<th>Abate / abatement</th>
<th>Avoidance, reduction or removal of an amount of carbon dioxide or equivalent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspiration</td>
<td>Woodside uses this term to describe an aspiration to seek the achievement of an outcome but where achievement of the outcome is subject to material uncertainties and contingencies such that Woodside considers there is not yet a suitable defined plan or pathway to achieve that outcome.</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.</td>
</tr>
<tr>
<td>Biosequestration</td>
<td>Biosequestration refers to the capture and storage of carbon in living organisms, including plants and trees, to mitigate greenhouse gas emissions.</td>
</tr>
<tr>
<td>Board</td>
<td>The Board of Directors of Woodside Energy Group Ltd.</td>
</tr>
<tr>
<td>Carbon credit</td>
<td>A tradable financial instrument that is issued by a carbon-crediting program. A carbon credit represents a greenhouse gas emission reduction to, or removal from, the atmosphere equivalent to 1 tCO₂-e; calculated as the difference in emissions from a baseline scenario to a project scenario. Carbon credits are uniquely serialised, issued, tracked and retired or administratively cancelled by means of an electronic registry operated by an administrative body, such as a carbon-crediting program.</td>
</tr>
<tr>
<td>Carbon credit integrity</td>
<td>Woodside assesses greenhouse gas integrity (abatement that is measurable, verifiable and has a low-risk of being inaccurate, non-additional or impermanent) and Environmental, Social and Governance integrity (guided by positive (or no negative) impacts on people and the environment; and appropriate governance measures to prevent adverse consequences and impacts).</td>
</tr>
<tr>
<td>Carbon sinks</td>
<td>Carbon sinks are forests and other ecosystems that absorb carbon, thereby removing it from the atmosphere and offsetting CO₂ emissions. (Definition taken from European Commission “Climate change: glossary of common terms and acronyms”, <a href="https://www.eea.europa.eu/help/glossary/eea-glossary/carbon-sink">https://www.eea.europa.eu/help/glossary/eea-glossary/carbon-sink</a>)</td>
</tr>
<tr>
<td>CCS</td>
<td>Carbon capture and storage</td>
</tr>
<tr>
<td>CCU</td>
<td>Carbon capture and utilisation, also referred to as carbon to products</td>
</tr>
<tr>
<td>CCUS</td>
<td>Carbon capture utilisation and storage</td>
</tr>
<tr>
<td>CH₄</td>
<td>Methane</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon dioxide</td>
</tr>
<tr>
<td>CO₂-e</td>
<td>CO₂ equivalent. The universal unit of measurement to indicate the global warming potential of each of the seven greenhouse gases, expressed in terms of the global warming potential of one unit of carbon dioxide. It is used to evaluate releasing (or avoiding releasing) any greenhouse gas against a common basis.</td>
</tr>
<tr>
<td>Condensate</td>
<td>Hydrocarbons that are gaseous in a reservoir but that condense to form liquids as they rise to the surface.</td>
</tr>
<tr>
<td>Decarbonisation</td>
<td>Woodside uses this term to describe activities or pathways that have the effect of moving towards a state that is lower carbon, as defined in this glossary.</td>
</tr>
<tr>
<td>Emissions</td>
<td>Emissions refers to emissions of greenhouse gases unless otherwise stated.</td>
</tr>
<tr>
<td>Equity greenhouse gas emissions</td>
<td>Woodside sets its Scope 1 and 2 greenhouse gas emissions reduction targets on an equity basis. This ensures that the scope of its emissions reduction targets is aligned with its economic interest in its investments. Equity emissions reflect the greenhouse gas emissions from operations according to Woodside’s share of equity in the operation. Its equity share of an operation reflects its economic interest in the operation, which is the extent of rights it has to the risks and rewards flowing from the operation.</td>
</tr>
<tr>
<td>FEED</td>
<td>Front end engineering design</td>
</tr>
<tr>
<td>FID</td>
<td>Final investment decision</td>
</tr>
<tr>
<td>FID-ready</td>
<td>A project is considered FID-ready if it has completed and/or obtained the necessary studies and designs so that a final investment decision can be made. This decision is made based on a range of financial, technical and strategic factors, and is a requirement for construction and implementation of a project to commence.</td>
</tr>
<tr>
<td>First Nations and Indigenous Peoples</td>
<td>First Nations people are the Indigenous people, or earliest known inhabitants, of a country. A First Nations person is a person of Indigenous decent, who identifies as a First Nations person and is accepted by their respective community.</td>
</tr>
<tr>
<td>NOTE: We acknowledge the diversity of the First Nations communities in the areas where we are present. When communicating with a wide audience, Woodside uses the term Indigenous and First Nations interchangeably. On a local level, Woodside will be guided by the community as to the appropriate terms of reference.</td>
<td></td>
</tr>
<tr>
<td>FCF</td>
<td>Free cash flow. Cash flow from operating activities and cash flow from investing activities.</td>
</tr>
</tbody>
</table>
The controlled burning of gas found in oil and gas reservoirs.

GHG or greenhouse gas
The seven greenhouse gases listed in the Kyoto Protocol are: carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); hydrofluorocarbons (HFCs); nitrogen trifluoride (NF₃); perfluorocarbons (PFCs); and sulphur hexafluoride (SF₆).²

Goal
Woodside uses this term to broadly encompass its targets and aspirations.

Gross greenhouse gas emissions
Also referred to as ‘absolute’ emissions, gross emissions are emissions before any eligible units and certificates have been accounted for.

HSE
Health, safety and environment

IFRS
International Financial Reporting Standards Foundation. For more information see www.ifrs.org

IRR
Internal rate of return

JV
Joint venture

LNG
Liquefied natural gas

Lower carbon
Woodside uses this term to describe the characteristic of having lower levels of associated potential GHG emissions when compared to historical and/or current conventions or analogues, for example relating to an otherwise similar resource, process, production facility, product or service, or activity. When applied to Woodside’s strategy, please see the definition of lower carbon portfolio.

Lower carbon economy
A lower carbon economy is an economy that produces lower levels of greenhouse gas emissions relative to today’s economy.

Lower carbon portfolio
For Woodside, a lower carbon portfolio is one from which the net equity Scope 1 and 2 greenhouse gas emissions, which includes the use of offsets, are being reduced towards targets, and into which new energy products and lower carbon services are planned to be introduced as a complement to existing and new investments in oil and gas. Our Climate Policy sets out the principles that we believe will assist us achieve this aim.

Lower carbon power
Lower carbon power comes from processes or technologies that produce electricity with a lower greenhouse gas emissions intensity relative to electricity produced from a higher emissions intensity source.

Lower carbon services
Woodside uses this term to describe technologies, such as CCUS or offsets that could be used by customers to reduce their net greenhouse gas emissions.

MOU
Memorandum Of Understanding. It is a non-binding agreement that outlines the intentions of two or more parties to work together towards a common goal or objective.

NDC
A Nationally Determined Contribution (NDC) is a voluntary climate action plan submitted by a country to the United Nations Framework Convention on Climate Change (UNFCCC), outlining their proposed actions and targets to reduce greenhouse gas emissions and support adaptation to climate change. It is a key element of the Paris Agreement, and each country is expected to regularly update and enhance their NDCs over time.

Net greenhouse gas emissions Woodside has set its Scope 1 and 2 greenhouse gas emissions reduction targets on a net basis, allowing for both direct emissions reductions from its operations and emissions reduction achieved from the utilisation of carbon credits as offsets (including credits relating to avoidance, reduction and/or removal activities). Net greenhouse gas emissions are equal to an entity’s gross greenhouse gas emissions reduced by the number of retired carbon credits.

Net zero
Net zero emissions are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period. Where multiple greenhouse gases are involved, the quantification of net zero emissions depends on the climate metric chosen to compare emissions of different gases (such as global warming potential, global temperature change potential, and others, as well as the chosen time horizon).

New energy
Woodside uses this term to describe energy technologies, such as hydrogen or ammonia, that are emerging in scale but which are expected to grow during the energy transition due to having lower greenhouse gas emissions at the point of use than conventional fossil fuels. May include new energy products that have been manufactured from fossil fuels.

NGL
Natural gas liquids

Offsets
The compensation for an entity’s greenhouse gas emissions within its scope by achieving an equivalent amount of emission reductions or removals outside the boundary or value chain of that entity.

Offtake
Offtake refers to the agreement between a seller and a buyer for the purchase and delivery of a product, typically a commodity or energy resource.

OGCI
Oil and Gas Climate Initiative. For more information see www.ogci.com.

Operator, Operated and non-operated
Oil and gas joint venture participants will typically appoint one company as the operator, which will hold the contractual authority to manage joint venture activities on behalf of the joint venture participants. Where Woodside is the operator of a joint venture in which it holds an equity share, this report refers to that joint venture as being operated. Where another company is the operator of a joint venture in which Woodside holds an equity share, this report refers to that joint venture as being non-operated.

Paris aligned scenarios
Consistent with limiting global warming to below 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C.⁷

Residual levels of emissions
Residual levels of emissions denotes the goal of reducing emissions as much as possible, taking into account both technological capabilities and commercial feasibility, towards a level that approaches but does not reach zero.

Retire, Retirement
The transfer of a carbon credit to a registry account that permanently removes the carbon credit from circulation. The term retirement applies to the use of the carbon credit by an entity to meet voluntary commitments or compliance obligations.

RFSU
Ready for start up.

Scope 1 GHG emissions
Direct GHG emissions. These occur from sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.; emissions from chemical production in owned or controlled process equipment. Woodside estimates greenhouse gas emissions, energy values and global warming potentials are estimated in accordance with the relevant reporting regulations in the jurisdiction where the emissions occur (e.g. Australian National Greenhouse and Energy Reporting (NGER), US EPA Greenhouse Gas Reporting Program (GHGRP)). Australian regulatory reporting principles have been used for emissions in jurisdictions where regulations do not yet exist.²
For its net equity Scope 1 and 2 emissions targets, Woodside uses a starting base of 6.32 Mt CO₂-e which is representative of the gross annual average equity Scope 1 and 2 greenhouse gas emissions over 2016-2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021.

Net equity emissions include the utilisation of carbon credits as offsets.

Starting base
For its net equity Scope 1 and 2 emissions targets, Woodside uses a starting base of 6.32 Mt CO₂-e which is representative of the gross annual average equity Scope 1 and 2 greenhouse gas emissions over 2016-2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021.

Stranded assets
Stranded assets can be broadly defined as assets which ‘suffer from unanticipated or premature write-offs, downward revaluations or conversion to liabilities’.

Sustainability (including sustainable and sustainably)
References to sustainability (including sustainable and sustainably) are used with reference to Woodside’s Sustainability Committee and sustainability related Board policies, as well as in the context of Woodside’s aim to ensure its business is sustainable from a long-term perspective, considering a range of factors including economic (including being able to sustain our business in the long term by being low cost and profitable), environmental (including considering our environmental impact and striving for a lower carbon portfolio), social (including supporting our license to operate), and regulatory (including ongoing compliance with relevant legal obligations). Use of the terms ‘sustainability’, ‘sustainable’ and ‘sustainably’ is not intended to imply that Woodside will have no adverse impact on the economy, environment, or society, or that Woodside will achieve any particular economic, environmental, or social outcomes.

Target
Woodside uses this term to describe an intention to seek the achievement of an outcome, where Woodside considers that it has developed a suitably defined plan or pathway to achieve that outcome.

TCFD
Taskforce on Climate-related Financial Disclosures. For more information see www.fsb-tcfd.org/about.

Transition case
Woodside uses this term to refer to the methodology Woodside applies to help us manage risk by assessing investment opportunities across a range of climate-related factors.

### UNITS OF MEASURE

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A$</td>
<td>Australian dollars</td>
</tr>
<tr>
<td>bbl</td>
<td>barrel</td>
</tr>
<tr>
<td>bcm</td>
<td>billion cubic metres</td>
</tr>
<tr>
<td>boe</td>
<td>barrels of oil equivalent</td>
</tr>
<tr>
<td>EJ</td>
<td>Exajoule</td>
</tr>
<tr>
<td>g / kg</td>
<td>Grams / Kilogram</td>
</tr>
<tr>
<td>GJ</td>
<td>Gigajoule</td>
</tr>
<tr>
<td>GW</td>
<td>Gigawatt</td>
</tr>
<tr>
<td>GWh</td>
<td>Gigawatt hour</td>
</tr>
<tr>
<td>ktpa</td>
<td>thousand tonnes per annum</td>
</tr>
<tr>
<td>kW</td>
<td>Kilowatt</td>
</tr>
<tr>
<td>MJ</td>
<td>Megajoule</td>
</tr>
<tr>
<td>MMBtu</td>
<td>Million British thermal units</td>
</tr>
<tr>
<td>Mt</td>
<td>Million tonnes</td>
</tr>
<tr>
<td>Mtpa</td>
<td>Million tonnes per annum</td>
</tr>
<tr>
<td>MW</td>
<td>Megawatt</td>
</tr>
<tr>
<td>MWh</td>
<td>Megawatt hour</td>
</tr>
<tr>
<td>Sm³</td>
<td>Standard cubic metre</td>
</tr>
<tr>
<td>Tonnes (t and kt)</td>
<td>In this report, “t” means tonne and “kt” means kilotonne, being one thousand tonnes.</td>
</tr>
<tr>
<td>tpd</td>
<td>Tonnes per day</td>
</tr>
<tr>
<td>US$</td>
<td>US dollars</td>
</tr>
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# Index

## TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD) AND SUSTAINABILITY ACCOUNTING STANDARDS BOARD (SASB)

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<td>Describe management’s role in assessing and managing climate-related risks and opportunities.</td>
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<td>Strategy: Disclose the actual and potential impacts of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning where such information is material.</td>
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<tr>
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<td>Describe the impact of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning.</td>
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<td>Describe the resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.</td>
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<tr>
<td>Risk Management: Disclose how the organization identifies, assesses, and manages climate-related risks.</td>
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<tr>
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<tr>
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<tr>
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</tr>
<tr>
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<td>14-31</td>
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Disclaimer, risks, emissions data and other important information

1. This report has been prepared to provide our investors and potential investors with information on our plan to help us achieve our strategic aim to thrive through the energy transition and how we are progressing against that strategic aim.

2. This report has been structured to address the Task Force on Climate-related Financial Disclosures (TCFD) recommendations framework. It aims to provide a balance of disclosures that meet the recommendations of the TCFD, while avoiding overwhelming readers with information. Woodside considers that it addresses TCFD’s four recommendations and eleven recommended disclosures, having had regard to the Guidance for All Sectors and Supplemental Guidance for Non-Financial Groups. Our approach to the disclosures included in this report differs from our approach to the disclosures we include in our mandatory regulatory reports, including our filings with the Australian Securities Exchange (ASX), the U.S. Securities and Exchange Commission (SEC) and the London Stock Exchange (LSE). This report is intended to provide information from a different perspective and in more detail than that required to be included in other regulatory reports, including our filings with the ASX and the SEC.

3. This report has not been prepared as financial or investment advice or to provide any guidance in relation to our future performance. It should be read in conjunction with our periodic reporting and other announcements made to the ASX, SEC and LSE.

4. This report is not intended to, and does not constitute, form part of, or contain an offer or invitation to sell to Woodside (or any other person) or a solicitation of an offer from Woodside (or any other person) in any jurisdiction.

5. Given the focus of this report, it is necessarily oriented towards future events and contains forward looking information regarding the plans, strategies, objectives, targets, aspirations and the like of Woodside in relation to climate change.

6. This report is designed to provide a level of insight into how we currently intend to direct the management of our assets and to deploy our capital, to help us achieve our strategic aim. The matters disclosed in this report are a ‘point in time’ disclosure and reflect management’s expectations, judgments, assessments, assumptions, estimates and other information available at the date of this report and/or the date of our planning processes. We operate in a dynamic and uncertain market and external environment. Plans and strategies can and must adapt in response to dynamic market conditions, joint venture decisions, new opportunities that might arise or other changing circumstances. Investors should not assume that any plan (including any pathway we have articulated to achieve a strategic aim) is locked in and will not evolve and be updated as time passes. Additionally, a number of aspects of our plans involve developments or strategies that are complex and may be delayed, more costly than anticipated or unsuccessful for many reasons, including reasons that are outside of Woodside’s control.

7. Actual performance against Woodside’s targets (including items that are described as a target) and aspirations or goals may be affected by various risks associated with the Woodside business, the uncertainty as to how the global energy transition to a lower carbon economy will evolve, and physical risks associated with climate change, many of which are beyond Woodside’s control. Further detail on certain of these risks can be found in the Risk Management section of this report and the Risk Factors section of our Annual Report 2023. These risks include, but are not limited to:
   › The risk that a transition to a lower carbon economy may impact demand (and pricing) for oil, gas, new energy products and lower carbon services and their substitutes, the policy and legal environment for their production, our reputation and our operating environment. Further, the imposition of further regulation and the availability and cost of emission allowances or carbon offsets could adversely impact costs of operations;
   › The potential for higher than expected costs of transition to new technologies, and poor efficacy of new technologies that could adversely impact the costs of operations and reduce demand for hydrocarbon products, new energy or lower carbon services; and
   › The decarbonisation plans of other countries.

8. Readers, including investors and prospective investors, should review and have regard to these risks and the other risks identified in this report when considering the information contained in this report. Readers should also note that the high degree of uncertainty around the nature, timing and magnitude of climate-related risks, and the uncertainty as to how the energy transition will evolve, makes it difficult to determine and disclose the risks and their potential impacts with precision.
9. There are inherent limitations with scenario analysis, including the limitations set out on pages 44-45 of this report, and it is difficult to predict which, if any, of the scenarios might eventuate. Scenario analysis relies on assumptions that may or may not be, or prove to be, correct and that may or may not eventuate and scenarios may also be impacted by additional factors to the assumptions disclosed. As part of its scenario analysis, Woodside has used climate scenarios published in the IEA’s 2023 World Energy Outlook (pages 52-53 of this report describes limitations and uncertainties associated with the use of the IEA scenarios).\footnote{The Task Force on Climate-related Financial Disclosures (2020). “Guidance on Scenario Analysis for Non-Financial Companies”.
}

10. The forward looking statements contained in this report are not guidance, forecasts, guarantees or predictions of future events or performance. No representation or warranty, express or implied, is given as to the accuracy, completeness or correctness, likelihood of achievement or reasonable basis of any forward-looking information contained in this report. Readers are cautioned not to place undue reliance on any forward looking statements contained in this report, particularly in light of the long time horizon which this report discusses and the inherent uncertainty in possible policy, market and technological developments in the future.

11. The forward looking information contained in this report may be affected by a variety of variables and changes in underlying assumptions which could cause actual results to differ materially from those expressed in the statements contained in this report. In addition to the risks referenced above, these include price fluctuations, actual demand, currency fluctuations, drilling and production results, reserve estimates, loss of market, industry competition, environmental risks, transition risks, physical risks, legislative, policy, fiscal and regulatory developments, changes in accounting standards, economic and financial market conditions in various countries and regions, political risks, abatement able to be delivered through engineering or operational changes, project delay or advancement, approvals and cost estimates. Some matters are subject to approval of joint venture participants. The targets, aspirations and opportunities described in this report may also change materially if Woodside changes its strategic aim set out in this report. For more information, see the Forward-Looking Statements section of our Annual Report 2023.

12. Woodside does not undertake to provide ongoing market updates on forward looking information, including its plans to achieve its strategic aim or targets, or on performance against its plans or targets, except to the extent it has a legal obligation to do so. Past performance cannot be relied on as a guide to future performance.

13. Subject to any terms implied by law which cannot be excluded, Woodside accepts no responsibility for any loss, damage, cost or expense (whether direct or indirect) incurred by you as a result of any error, omission or misrepresentation in information in this report.

14. This report does not include any express or implied prices at which Woodside will buy or sell financial products.

15. This report may contain industry, market and competitive position data that is based on industry publications and studies conducted by third parties as well as Woodside’s internal estimates and research. While Woodside believes that each of these publications and third party studies is reliable and has been prepared by a reputable source, Woodside has not independently verified the market and industry data obtained from these third party sources and cannot guarantee the completeness or accuracy of such data. Undue reliance should not be placed on any of the industry, market or competitive position data contained in this report.

16. Certain other information contained in this report may be based on information prepared by third parties. Woodside does not make any representation or guarantee that this third party material is accurate, complete or up-to-date.

17. All greenhouse gas emissions data in this report are estimates, due to the inherent uncertainty and limitations in measuring or quantifying greenhouse gas emissions, including those uncertainties set out in the GHD Assurance Statement on page 83 of this report.

18. Further information regarding the calculation of Woodside’s greenhouse gas emissions is contained in the supporting table of climate-related data provided on page 73 of this report.

19. There may be differences in the way third parties calculate or report greenhouse gas emissions compared to Woodside, which means third party data may not be comparable to Woodside’s data.
GHD assurance statement

Level 10, 999 Hay Street
Perth, WA 6000
Australia
www.ghd.com

Independent Limited Assurance Statement to the Directors and Management of Woodside Energy Group Limited – Climate-related data

What we found: Our Limited Assurance Conclusion

GHD Pty Ltd (GHD or we) has undertaken a limited assurance engagement in respect of the following selected Climate-related data for the calendar year ending 31 December 2023: presented in the Woodside Climate Transition Action Plan and 2023 Progress Report:

- Equitable Scope 1 greenhouse gas emissions by country
- Source of equity Scope 1 greenhouse gas emissions
- Total flaring (kt CO₂-e)
- Methane intensity – (Sm³/Sm³ marketed gas) (%)
- Total - Scope 3 emissions
- Total Scope 1, 2 and 3 emissions intensity - operated (gross) (kt CO₂-e)
- Total - Scope 3 emissions - use of sold product, related to Traded Hydrocarbons (kt CO₂-e)
- Total - Scope 3 greenhouse gas emissions estimates
- Methane emissions (greenhouse equivalent) – (t CH₄)
- Percentage of equity gross Scope 1 and 2 emissions that are methane (%)
- scope 1 greenhouse gas emissions – (t CH₄)
- Global Scope 3 greenhouse gas emissions
- Total Scope 1 emissions – (t CH₄)
- Hydropower Production

What we found: Our Limited Assurance Conclusion

This limited assurance statement has been prepared for a specific purpose agreed with Woodside. Whilst we accept that Woodside is responsible for preparing the 2023 Climate-related data to be published within the Climate Transition Action Plan and 2023 Progress Report and Woodside website including the preparation of the selected matters in accordance with the Reporting Criteria, we are not responsible for any assessment of Woodside’s internal control relevant to the preparation of the 2023 Climate-related data that is free from material misstatement, whether due to fraud or error. GHG quantification is subject to inherent uncertainty because of incomplete scientific knowledge used to determine emissions factors and the values needed to combine emissions of different gases.

Our responsibility

Our responsibility is to express a limited assurance conclusion on the 2023 Climate-related data in the Climate Transition Action Plan and 2023 Progress Report and Woodside website based on the procedures we have performed and the evidence we have obtained. As part of our responsibilities in this limited assurance engagement to obtain limited assurance about whether the matter subject to assurance is free from material misstatement, we have performed procedures to obtain limited assurance about the basis of our conclusion and the selected matters.

Inherent limitations

Our assurance conclusion is not designed to detect all misstatements, as an assurance engagement is not performed continuously throughout a financial year. Inherent limitations mean that it is not possible to provide a conclusion that is absolute in terms of the reliability of all the data.

The basis of our conclusion: standards-based limited assurance

We conducted our limited assurance engagement in accordance with the Australian Standard on Assurance Engagements ASAE 3404:2014 Assurance Engagements on Greenhouse Gas Emissions data (ASAE 3404). We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

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