

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Woodside led the development of the LNG industry in Australia and is applying this same pioneering spirit to solving future energy challenges. We have a focused portfolio and are recognised for our world-class capabilities as an integrated upstream supplier of energy. As Australia’s leading LNG operator, we operated 6% of global LNG supply in 2019. In Western Australia, we are creating an integrated LNG production hub on the Burrup Peninsula. Building on more than 30 years of operations, we are progressing development of the Burrup Hub to bring the offshore Scarborough and Browse gas resources through our existing assets, the Woodside-operated Pluto LNG and North West Shelf (NWS) Project. We also operate two floating production storage and offloading (FPSO) facilities, the Okha FPSO and Ngujima-Yin FPSO. Our operated assets are renowned for their safety, reliability and efficiency and we have a strong track record in project development. We have a participating interest in Wheatstone, which started production in 2017. Internationally, we are progressing the Sangomar Field Development in Senegal and the A-6 Development in Myanmar. And we have equity interests in Canada (Kitimat LNG) and Timor-Leste/Australia (Sunrise). Technology and innovation are essential to our long-term sustainability. We are working to improve our energy efficiency, offset our emissions, reduce our emissions intensity and explore options for lower-carbon energy. We support the use of LNG as a lower-emissions and economically viable fuel. Today we are pioneering remote support and the application of artificial intelligence, embedding advanced analytics across our operations while recognising digital security issues. We continue to expand our capabilities in marketing, trading and shipping and have enduring relationships that span 30 years with customers throughout the Asia-Pacific region and beyond. Woodside demonstrates strong safety and environmental performance in all its operations. We are committed to upholding our values of integrity, respect, discipline, excellence, working sustainably and working together. Our success is driven by our people, and we aim to attract, develop and retain a diverse, high performing workforce. We recognise that enduring, meaningful relationships with communities are fundamental to maintaining our licence to operate. We actively seek to build relationships with stakeholders who are interested in and affected by our activities. We help create stronger communities through programs that improve knowledge, build resilience and create shared opportunities. Our proven track record and distinctive capabilities are underpinned by 65 years of experience, making us a partner of choice.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1 2019	December 31 2019	Yes	1 year

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

- Australia
- Canada

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

- USD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

- Equity share

C-OG0.7

(C-OG0.7) Which part of the oil and gas value chain and other areas does your organization operate in?

Row 1

- Oil and gas value chain**
 - Upstream
- Other divisions**
 - Please select

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board-level committee	Governance responsibility for climate change issues within Woodside rests with the Board, supported by two Board subcommittees, and Woodside's Managing Director and Chief Executive Officer. The duties of the Sustainability Committee include assisting the Board in meeting its responsibilities for oversight of the Group's sustainability-related policies and practices. The duties of the Sustainability Committee include reviewing the Group's policy and performance in relation to climate change, monitoring climate change policy developments and reviewing Woodside's initiatives to reduce greenhouse gas emissions. The Board's Audit and Risk Committee assists the Board in meeting its oversight responsibilities in relation to risk management procedures, including Woodside's climate change strategic risk, and considers this risk at least twice per year. Copies of the Board Committees' charters are available on Woodside's website.
Chief Executive Officer (CEO)	Responsibility for managing climate change and related issues for Woodside rests with Woodside's Chief Executive Officer and Managing Director. The Executive Committee (Excom) consisting of the CEO/MD, seven senior Woodside executives, including the Senior Vice President Climate (appointed August 2020), the Chief Operations Officer and the Chief Financial Officer, oversees climate-related issues.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – all meetings	<ul style="list-style-type: none"> Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues Other, please specify (Woodside's Climate Change Policy) 	<Not Applicable>	The Sustainability Committee receives an update at each meeting on material changes in climate-related performance, risks and opportunities. This includes: details of environmental performance (including emissions and emissions intensity), and progress against planned energy efficiency improvements. The Sustainability Committee conducts a review of climate-related issues and Woodside's Climate Change Policy at least annually. The Sustainability Committee oversees external communication on key climate-change related risks and opportunities and monitors external policy developments. Woodside manages climate change risk using Woodside's business risk management process. The Audit and Risk Committee considers climate change risk at least twice per year. The Board discusses strategic matters relating to climate change through the corporate strategy review process and as important matters arise.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Other committee, please specify (Excom)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	As important matters arise

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

The organisation is governed through the Board, the CEO/MD and the Excom, which is a committee consisting of the CEO/MD and the CEO/MD's direct Executive reports including the Senior Vice President, Climate who was appointed in 2020. The Board and CEO/MD are responsible for setting values, Corporate Policies and expectations, the mission, vision, strategy and planning parameters.

Climate related issues are monitored in a variety of ways by the Board, the CEO/MD and ExCom, including strategy reviews and planning and performance updates.

In 2019, the Chief Operations Officer was the executive with responsibility for Woodside's response to climate change risk, including being the executive owner of the Climate Change Strategic Risk. As of August 2020 this sits with the Senior Vice President, Climate as a member of Excom.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
All employees	Monetary reward	Please select	Our material sustainability topics are outlined in our Sustainable Development (SD) report and reflect the results of a materiality assessment that is conducted annually as part of development of the SD report. The topics are validated by our Executive Committee and the Board's Sustainability Committee (p10). Each material topic has annual targets which inform the corporate scorecard, Executive dashboard and divisional and functional performance agreements. Woodside's Corporate Scorecard was designed after feedback from shareholders. This Corporate Scorecard informs all employees award outcomes. The 2019 Corporate Scorecard was chosen by the Board as the four equally weighted measures that strongly impact short- and long-term shareholder value. For 2019, Woodside achieved a score of 9 with regards to 'Material Sustainability Issues'. One of the key activities that drove this score includes 167 ktCO2-e in sustainable emissions reduction improvements.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	1	5	• Lower capital intensity developments • New revenue streams • Preparing for Horizon II (medium-term) growth • New growth platforms through exploration and acquisitions • Expanding the LNG market
Medium-term	5	10	• Developments leveraging existing infrastructure • Growth funded by base business and Horizon I (short-term) growth • Monetise exploration and acquisition success • Increase supply to new and traditional markets
Long-term	10	100	• Capital efficient developments • Unlock new major hubs • Grow and evolve business

From (years)	To (years)	Comment
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C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Not defined

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

Our Risk Management Framework is designed to provide a consistent approach to the identification, assessment and management of risks that have the potential to materially impact Woodside's short and longer term objectives. The Framework is aligned with the intent of the International Standard ISO31000 for risk management and assesses potential risk in areas such as health and safety, environment, finance, reputation and brand, legal and compliance, social and compliance consequences. Consistent with recognised industry practice, the Framework requires a biannual review by the Audit & Risk Committee of risks to Woodside's strategic objectives and material (financial and non-financial) operational risks. This process provides a risk profile of the most significant risks at a whole of-entity level that, if not managed effectively, could adversely impact Woodside's ability to deliver superior shareholder returns. As a hydrocarbon producer we are exposed to risks associated with the global development of climate change policies and the transition to a lower-carbon economy. We are taking an integrated approach to this multi-faceted risk. Woodside faces climate change related risks including changes in product demand, carbon pricing, uncertainty surrounding future regulatory frameworks and increased stakeholder expectations. Demand for oil and gas may subside as lower-carbon substitutes take market share. Global climate change policy remains uncertain and has the potential to constrain Woodside's ability to create and deliver stakeholder value from the commercialisation of our hydrocarbons. We are focusing on ensuring our portfolio is robust in a carbon constrained market, improving our energy efficiency, and maintaining engagement with key industry and government stakeholders. We are implementing strategies to diversify our product mix, diversify use of our products, broaden our customer base and increase our portfolio resilience.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	The organisation identifies regulatory obligations and develops plans to comply.
Emerging regulation	Relevant, always included	Emerging regulation is monitored through engagement with Government and regulator representatives, participation in relevant industry and interest groups, and through regulatory subscription services.
Technology	Relevant, always included	Controls include embedding low emission technology to improve the company's carbon performance and incorporating potential impacts of low carbon energy sources in our product price assumptions.
Legal	Relevant, always included	This includes regulatory compliance.
Market	Relevant, always included	We consider how climate change regulations and low emissions technology could impact product demand and incorporate these in our technology scanning work and product price assumptions.
Reputation	Relevant, always included	We consider how stakeholder expectations and our reputation impact our business, in particular with access to new developments and customers.
Acute physical	Relevant, always included	We have business resilience processes to manage acute physical risks, such as cyclones.
Chronic physical	Relevant, sometimes included	Long term physical climate change risk is considered in our facility design and regularly reviewed.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation	Other, please specify (Uncertainty surrounding domestic regulation)
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Primary potential financial impact

Increased indirect (operating) costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Australian climate policy has changed significantly in recent years and remains a partisan political issue. This introduces risk of rapid changes in future compliance costs. Increasing uncertainty complicates decision making processes.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Please select

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

We do not disclose the quantification of our risks.

Cost of response to risk

Description of response and explanation of cost calculation

Our climate change policy commits us to setting emission targets and embedding a culture of energy efficiency in existing operations and new developments, which reduces our exposure to carbon prices. We engage in climate policy discussions publicly, directly to politicians and through our industry associations. We test relevant decisions against a range of plausible future outcomes, including carbon prices. The cost is largely staff time, which is embedded in existing business activities. Despite carbon pricing placing direct costs on our business, we support them as an effective way to meet emission reduction targets. We understand that the net impact on our business is likely to be positive, when considering that carbon pricing is likely to support gas demand as explained in the opportunities disclosed below.

Comment

The cost of managing this risk is integrated into day-to-day business activities, so cannot be readily quantified.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Market	Changing customer behavior
--------	----------------------------

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Most analysts forecast gas and particularly LNG demand to grow in Asian markets until at least 2040, even in low carbon scenarios such as the International Energy Association's Sustainable Development Scenario. Global efforts to mitigate climate change and reduce greenhouse gas emissions, are however likely to reduce LNG growth rates compared to a future where efforts are not made to constrain emissions.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Please select

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

We do not disclose the quantification of our risks.

Cost of response to risk

Description of response and explanation of cost calculation

We are working to create and expand markets where LNG substantially reduces emissions and lower emissions alternatives are unlikely to displace LNG. This includes use of LNG to displace diesel in remote mine sites through the Pilbara, Western Australia. We test investment decisions against a range of plausible future outcomes.

Comment

The cost of managing this risk is integrated into day-to-day business activities, so cannot be readily quantified.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Chronic physical	Rising mean temperatures
------------------	--------------------------

Primary potential financial impact

Decreased revenues due to reduced production capacity

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

The process of liquefying natural gas requires it to be chilled to below -160°C and increasing ambient temperature will reduce maximum throughput. Increases in extreme temperature events may require additional controls to protect the health and safety of our staff.

Time horizon

Long-term

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Please select

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

We do not disclose the quantification of our risks.

Cost of response to risk

Description of response and explanation of cost calculation

Woodside processes exist to define and mitigate operational constraints. If temperature constraints become more severe, they would gain increased attention through these processes, potentially resulting in targeted operational changes or capital investment. Woodside is contributing to the development of an IOGP Recommended Practice Guide for the assessment of the physical risks of climate change for the oil and gas industry as a whole.

Comment

The cost of managing this risk is integrated into day-to-day business activities, so cannot be readily quantified.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical	Increased severity and frequency of extreme weather events such as cyclones and floods
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Primary potential financial impact

Decreased revenues due to reduced production capacity

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Many of our assets are located in the north-west of Australia, which is exposed to tropical storm activity. An increase in the number or severity of storms could impact the run time of our operations as well as the cost of building new facilities.

Time horizon

Long-term

Likelihood

Unlikely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Please select

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

We do not disclose the quantification of our risks.

Cost of response to risk

Description of response and explanation of cost calculation

Woodside commissioned the North West Australian Climate Change Study (NWACCS) to investigate the potential physical impacts of climate change. The conclusions are broadly consistent with subsequent IPCC findings. Conclusions from the NWACCS are considered when making design decisions for our facilities. Our metocean engineers remain abreast of emerging science (eg through industry forums) and reflect any improvements in our understanding of the impacts of climate change in relevant documentation for each facility. Where necessary changes to these documents are risk assessed. Woodside has business resilience processes in place to manage events such as severe weather. Woodside is contributing to the development of an IOGP Recommended Practice Guide for the assessment of the physical risks of climate change for the oil and gas industry as a whole. Woodside also considers the impacts of climate change in our Basis of Design.

Comment

The cost of managing this risk is integrated into day-to-day business activities, so cannot be readily quantified.

Identifier

Risk 5

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Chronic physical	Rising sea levels
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Primary potential financial impact

Increased capital expenditures

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Many of our assets are located in offshore or coastal environments. A significant increase in sea level could impact on infrastructure such as offshore platforms and loading jetties. Woodside includes contingency in the design of these facilities which provides additional protection for our infrastructure.

Time horizon

Long-term

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Please select

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

We do not disclose the quantification of our risks.

Cost of response to risk

Description of response and explanation of cost calculation

Woodside commissioned the North West Australian Climate Change Study (NWACCS) to investigate the potential physical impacts of climate change. The conclusions are broadly consistent with subsequent IPCC findings. Conclusions from the NWACCS are considered when making design decisions for our facilities. Our metocean engineers remain abreast of emerging science (eg through industry forums) and reflect any improvements in our understanding of the impacts of climate change in relevant documentation for each facility. Where necessary changes to these documents are risk assessed. Woodside has business resilience processes in place to manage events such as severe weather. Woodside is contributing to the development of an IOGP Recommended Practice Guide for the assessment of the physical risks of climate change for the oil and gas industry as a whole. Woodside also considers the impacts of climate change in our Basis of Design.

Comment

The cost of managing this risk is integrated into day-to-day business activities, so cannot be readily quantified.

Identifier

Risk 6

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Technology	Substitution of existing products and services with lower emissions options
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Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

New technologies could lead to changes in energy demand, especially due to efforts to decarbonise the energy system and mitigate climate change. Most analysts forecast continued natural gas and LNG growth in low carbon scenarios, though this may be slower than in forecasts that are not emission constrained.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Please select

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

We do not disclose the quantification of our risks.

Cost of response to risk

Description of response and explanation of cost calculation

We monitor progress, and in some areas fund research, in renewable energy, carbon capture and storage, energy storage, nuclear and other technologies, to provide advanced warning of impacts on Company business. In 2019 we established a Sustainability Division, which includes responsibility for carbon offsets and hydrogen business development. These emerging areas have been allocated capital, in accordance with existing business processes.

Comment

The cost of managing this risk is integrated into day-to-day business activities, so cannot be readily quantified.

Identifier

Risk 7

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Reputation	Increased stakeholder concern or negative stakeholder feedback
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Primary potential financial impact

Other, please specify (This could have various and diffuse impacts.)

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

As scientific predictions on the negative impacts of climate change become clearer and alternative fuels become more cost effective, stakeholder expectations are increasing. This may lead to challenges to our project approvals, which may result in project delays or onerous development conditions.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Please select

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

We do not disclose the quantification of our risks.

Cost of response to risk

Description of response and explanation of cost calculation

We maintain strategic relationships with regulators and other stakeholders and engage when appropriate for specific development applications. We have published a Climate Change Policy that includes our acknowledgement of the science, support for carbon pricing and commitment to use emission targets to encourage innovation. Our Climate Change Policy is available here: https://files.woodside/docs/default-source/about-us-documents/corporate-governance/woodside-policies-and-code-of-conduct/climate-change-policy.pdf?sfvrsn=898084f9_10

Comment

The cost of managing this risk is integrated into day-to-day business activities, so cannot be readily quantified.

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Please select

Opportunity type

Markets

Primary climate-related opportunity driver

Access to new markets

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

Demand for lower carbon fuels will increase, especially in sectors that have few zero-carbon alternatives, such as international shipping. This is likely to favour gas consumption over other fossil fuels, since gas is the lowest emitting fossil fuel available. Woodside is well-positioned to support the predicted changing energy demand profile.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Please select

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Woodside does not disclose internal financial analysis.

Cost to realize opportunity**Strategy to realize opportunity and explanation of cost calculation**

Woodside continues to invest in and promote technologies that reduce emissions, partner with renewables and develop new markets. Woodside's portfolio is significantly weighted towards gas, meaning that we expect to remain competitive in regards to life-cycle emissions intensity of our assets. Woodside's LNG truck loading facility at our Pluto LNG project in Western Australia completed construction in March 2019 and commenced commissioning activities in July 2019. Pluto LNG Trucking will draw LNG directly from our existing world class Pluto LNG production and storage facilities, replacing diesel, for distribution by truck to the Pilbara, Kimberley and elsewhere in Western Australia. The facility is a pioneering, end-to-end integrated project and the facility remains one component of Woodside's strategy to develop domestic LNG use in remote power generation and road and marine transport in the Pilbara region. We are in discussions with several mining companies to deliver LNG energy solutions for their operations, including solutions to integrate LNG with renewable power.

Comment

Woodside makes estimates of future market conditions for internal decision making but does not specifically generate analysis of opportunities which may be attributable to climate change.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Please select

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of supportive policy incentives

Primary potential financial impact

Returns on investment in low-emission technology

Company-specific description

Climate change and air-quality policies encourage coal to gas substitution in the power sector and also oil to gas substitution across multiple sectors such as transport and power.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

This opportunity is too intertwined in Woodside's business strategy to develop a meaningful stand-alone analysis of the financial impact.

Cost to realize opportunity**Strategy to realize opportunity and explanation of cost calculation**

To support a transition to cleaner, lower carbon products such as LNG, Woodside will continue to support global and national carbon pricing as a means to achieve low-cost emissions reductions. We remain supportive of market-based mechanisms in the absence of global action but note that national competitiveness issues need to be considered when implementing carbon policies before international trading competitor. We are also making significant reductions in the costs for our opportunities to ensure we remain competitively placed to supply this expanding market.

Comment

Woodside makes estimates of future market conditions for internal decision making, but does not specifically generate analysis of opportunities which may be attributable to climate change.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Please select

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of supportive policy incentives

Primary potential financial impact

Returns on investment in low-emission technology

Company-specific description

Natural gas is complementary to the growth of renewable energy, as gas is a reliable and flexible fuel to ensure power supply stability and security.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Please select

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

This opportunity is too intertwined in Woodside's business strategy to develop a meaningful stand-alone analysis of the financial impact.

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

We have established a specific Power and New Markets team to explore new uses of LNG, new markets and new ways to deliver power to them. This includes opportunities for LNG to partner with renewables to provide integrated energy solutions. The models we are developing for integrated energy solutions in the Pilbara can also offer a reliable and sustainable source of power in non-OECD countries. In 2019 we established a Sustainability Division, which includes responsibility for carbon offsets and hydrogen business development. These emerging areas have been allocated capital, in accordance with existing business processes.

Comment

Woodside makes estimates of future market conditions for internal decision making, but does not specifically generate analysis of opportunities which may be attributable to climate change.

Identifier

Opp4

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Primary potential financial impact

Please select

Company-specific description

Efforts to improve our energy efficiency allow us to convert more of our reserves to saleable product.

Time horizon

Please select

Likelihood

Virtually certain

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Please select

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Although we do not disclose internal financial analysis, we have provided an indicative value of the additional LNG produced through the energy efficiency measures detailed in section C4.

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

Woodside consistently seeks to improve the energy efficiency (and hence the carbon performance) of our facilities and developments and will continue to invest in and promote technologies and opportunities that reduce emissions and improve efficiency. In 2016, we set a target to improve energy efficiency by 5% by 2020. This is a challenging target that requires workforce-led optimisation opportunities in our operations. These bottom-up innovations reflect and encourage a growing awareness and focus on energy efficiency, and complement step-change improvements being considered as part of new investment opportunities and life extension works.

Comment

Woodside makes estimates of future market conditions for internal decision making, but does not specifically generate analysis of opportunities which may be attributable to climate change.

Identifier

Opp5

Where in the value chain does the opportunity occur?

Please select

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Please select

Company-specific description

Woodside has identified a hydrogen business as an opportunity given our experience in manufacturing and transporting gases, and in 2019 we established a Sustainability Division, which includes responsibility for hydrogen business development. In the near term, we expect "blue" hydrogen - hydrogen manufactured from natural gas - and with the carbon emissions from that process offset, to be the means of developing a market and underpinning the infrastructure required. In the longer term, we expect "green" hydrogen - hydrogen manufactured completely carbon free from electrolysis of water using renewable energy - to be a major export opportunity for Australia and Woodside due to the renewable energy resources within WA and our expertise and experience in gas. These emerging areas have been allocated capital, in accordance with existing business processes.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure - minimum (currency)

<Not Applicable>

Potential financial impact figure - maximum (currency)

<Not Applicable>

Explanation of financial impact figure

The development of a hydrogen business is similar to the early days of the LNG business. It is important we invest time with prospective domestic and international customers to understand their needs, while building our capabilities.

Cost to realize opportunity**Strategy to realize opportunity and explanation of cost calculation**

In 2019 we focused on establishing collaborative partnerships to share and improve knowledge and facilitate problem-solving across the hydrogen value chain. We have signed a MoU with Pusan National University in South Korea to jointly explore technology application across the hydrogen value chain. We have signed a MoU with Korea Gas Corporation (KOGAS) to conduct a feasibility study to explore a green hydrogen export project. This study will jointly evaluate the technical and commercial feasibility of various existing and new methods, process and technologies across the entire production value chain. We have invested in HyNet (a 13 party consortium led by KOGAS and Hyundai Motor Co.) which aims to deliver 100 hydrogen refuelling stations over the next four years in Korea. We are collaborating with world-class research institutions, adjacent leading industries and universities. With Monash University, we are investing more than AU\$40 million over seven years in the Woodside Monash Energy Partnership. The Partnership focuses on materials, electro-chemical and thermal chemical research relating to hydrogen and carbon abatement.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.1b

(C3.1b) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
IEA Sustainable development scenario BNEF NEO Other, please specify (Various industry scenarios including IHS, Woodmac, etc)	In testing the resilience of our portfolio, we consider sensitivities across a range of variables, including commodity prices, carbon prices, exchange rates and interest rates. The values of these sensitivities are based on several internal and external scenarios, including the International Energy Agency sustainable development scenario, which aligns with the "Paris Agreement ambition to hold global temperature rises below 2 degrees Celsius this century". The IEA scenarios provide outputs to 2040, which is sufficiently long to inform key Woodside decisions.
Other, please specify (Internal, reference case)	Woodside has also developed a long-term integrated energy-economics model to quantify the impacts of potential change in energy markets, with a particular focus on the outlooks for oil and LNG demand. This provides a differentiated focus on key areas of interest to Woodside's business, including LNG, Asian markets and the interplay of gas and renewables. Woodside defines scenarios using macroeconomics, energy supply and demand, policy, oil price and carbon price. These scenarios are modelled until at least 2040 to provide relevance to the long-term nature of Woodside's investment decisions. This supports a robust analysis and discussion of key uncertainties around technology, energy policies, consumer behaviour and economic growth that will most strongly influence the future of energy. The robustness of our business is assessed against various business environment assumptions including oil price and operating costs. Analysis to date indicates that cost of supply and operating cash flow are key factors to enable and maintain long-term business sustainability which puts Woodside in a strong position to take advantage of the upcoming global LNG supply gap.
Other, please specify (Internal, low emissions case)	Woodside's Low Emissions Case is built using the same model as the Energy Global Outlook, but adjusts the energy mix such that climate change is constrained to 2°C of global warming.

C3.1d

(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	We are pursuing the development of a hydrogen business in alignment with climate-related opportunities for industries to decarbonise. We are also exploring opportunities for LNG to partner with renewables to provide integrated energy solutions. Renewables are well suited to providing off-grid power but they need a reliable and flexible backup, which LNG can provide. The models we are developing for integrated remote power generation in the Pilbara can also offer a reliable and sustainable source of power in non-OECD countries.
Supply chain and/or value chain	Yes	In 2019 we focused on establishing collaborative partnerships to share and improve knowledge and facilitate problem-solving across the hydrogen value chain. We have signed a MoU with Pusan National University in South Korea to jointly explore technology application across the hydrogen value chain, and another MoU with Korea Gas Corporation (KOGAS) to conduct a feasibility study to explore a green hydrogen export project. This study will jointly evaluate the technical and commercial feasibility of various existing and new methods, process and technologies across the entire production value chain. We have invested in HyNet (a 13 party consortium led by KOGAS and Hyundai Motor Co.) which aims to deliver 100 hydrogen refuelling stations over the next four years in Korea. We are collaborating with world-class research institutions, adjacent leading industries and universities. With Monash University, we are investing more than A\$40 million over seven years in the Woodside Monash Energy Partnership. The Partnership focuses on materials, electro-chemical and thermal chemical research relating to hydrogen and carbon abatement. To accelerate development of the LNG fuels market in the north-west of Australia, we have constructed an LNG truck-loading facility at the Pluto LNG plant. This allows Woodside's LNG to be distributed by truck to customers throughout the Pilbara. The Pilbara location also gives us access to one of the largest shipping routes in the world, transporting iron ore from Western Australia to Asia. The ships on this route use five billion litres of heavy fuel oil each year. Use of heavy fuel oil will be restricted from 2020 with the introduction of International Maritime Organisation limits on sulfur emissions, forcing shippers to install emissions control systems, use low-sulfur fuels, or use LNG. To catalyse the use of LNG on this route, we are a founding participant in the "Green Corridor" Joint Industry Project. This partnership includes mining and shipping industry participants.
Investment in R&D	Yes	In line with our Climate Change Policy principle of partnering with research organisations, we are a member of the CO2CRC (formerly the CO2 Cooperative Research Council) and are represented on the group's board. The CO2CRC conducts world-class research into carbon capture and storage (CCS) technology using pilot scale projects in Victoria. The CO2CRC is developing technology and expertise to support the long-term commercialisation of CCS. Woodside Energy and Monash University have joined forces to develop a state-of-the-art 'living laboratory' and long-term research partnership to support Australia's low-carbon energy transition. In 2019, Woodside announced \$16.5 million to the construction of the Woodside Building for Technology and Design, located in the Monash Technology Precinct. The Precinct houses Australia's largest concentration of research institutions and leading engineering companies. It will be one of the world's most efficient and innovative teaching facilities, and through the partnership, Monash and Woodside will explore the possibilities of hydrogen and carbon abatement, with a focus on materials, electro-chemical and thermal chemical research. Woodside and Monash will also jointly invest more than A\$40 million into the ongoing research partnership over the next seven years. The Woodside Building for Technology and Design and Woodside Monash Energy Partnership will build on the foundation FutureLab collaboration, established by Woodside at Monash in 2015. Woodside is also a participant in The Australian Industry Energy Transitions Initiative (Australian Industry ETI), which aims to support Australian industry to develop pathways and actions to support net zero emissions across critical supply chains of the Australian economy. The participating 'hard-to-abate' sectors form part of a broader energy system that must be rapidly transformed if planetary warming is to remain below 1.5°C or even 2°C in line with the Paris Agreement. The Australian Industry ETI is focused on creating a platform for industry learning and experimentation in pursuit of net zero emissions in these hard-to-abate sectors and the supply chains linking them to the global economy.
Operations	Yes	We remain committed to our 2020 energy efficiency target and will focus on maintaining high reliability of our facilities and continuing to implement efficiency improvement projects. We delivered a total of 17 energy efficiency improvements across our operated asset portfolio in 2019, including the commissioning of a lithium-ion battery energy storage system on the Goodwyn-A offshore platform. We have reduced fuel gas usage at Karratha Gas Plant by allowing plant operators to optimise power generation. This will reduce the number of generators in use, with estimates indicating a reduction of 48,000 tonnes Co2-e per year. In addition, we maintain an Optimisation Reference Plan (ORP) which has a pipeline of emissions reductions activities that have been identified for implementation. This includes methane reduction opportunities. The ORP contains a list of projects that have the potential to deliver value to the business through improving production and/or energy efficiency. In 2019 we continued to develop our offset business. We have invested more than A\$100 million across Australia through native tree planting over the past 10 years. In 2019 we signed a Heads of Agreement with Greening Australia which will see Woodside plant up to 5000 hectares in WA during 2020/2021 to generate offsets as part of our Woodside Native Reforestation Project, this project is estimated to sequester about 700,000 tonnes of CO2 equivalent (CO2-e) over 25 years. In addition to our own projects, Woodside purchased offsets produced by three renewable energy projects operating in India in 2019. These projects meet the integrity and verification standards of the Clean Development Mechanism and Verified Carbon Standard Program.

C3.1e

(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Please select	

C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Intensity target

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2016

Target coverage

Please select

Scope(s) (or Scope 3 category)

Scope 1

Intensity metric

Other, please specify (Greenhouse gas emissions from fuel and flare per unit of production, normalised for production rates and product mix.)

Base year

2015

Intensity figure in base year (metric tons CO2e per unit of activity)

0.32

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

80

Target year

2020

Targeted reduction from base year (%)

5

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]

0.304

% change anticipated in absolute Scope 1+2 emissions

% change anticipated in absolute Scope 3 emissions

Intensity figure in reporting year (metric tons CO2e per unit of activity)

0.32

% of target achieved [auto-calculated]

0

Target status in reporting year

Underway

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

Please explain (including target coverage)

Woodside has three key performance indicators that support a reduction in GHG emissions. These are: 1. Absolute flared gas targets across all operated production facilities (~10% coverage of operated emissions). 2. Fuel intensity targets across all operated assets (~70% coverage of operated emissions). 3. A commitment to improve Woodside's operated energy efficiency by 5% over 5 years (completion end 2020).

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

No other climate-related targets

C-OG4.2c

(C-OG4.2c) Indicate which targets reported in C4.1a/b incorporate methane emissions, or if you do not have a methane-specific emissions reduction target for your oil and gas activities, please explain why not and forecast how your methane emissions will change over the next five years.

Whilst Woodside doesn't have a specific methane target, our fuel and flare intensity targets, which comprise over 80% of our operated emission sources, contribute to the monitoring and reduction of methane emissions annually. Woodside actively pursues projects that either directly improve emissions or improve energy efficiency to achieve the target of 5% improvement in energy efficiency over 5 years (2016 - 2020).

A combination of a decrease in production, and improved accounting methodology resulted in a decrease in methane emissions from 2018-19.

In addition, there has been an increased focus on methane emissions and this will lead to further decreases moving forward. Refer C-OG4.6.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	18	
To be implemented*	1	6
Implementation commenced*		
Implemented*	12	170.7
Not to be implemented	5	31

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

48400

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

Investment required (unit currency – as specified in C0.4)

Payback period

<1 year

Estimated lifetime of the initiative

Please select

Comment

Reduction of fuel gas consumption by reducing KGPs power generation spinning reserve to a N+1-10 philosophy. This can be achieved by biasing loading from the F5s to the more efficient LM6000s while turning of F5s where possible to ensure that they operate at the most efficient point possible.

Initiative category & Initiative type

Energy efficiency in production processes	Cooling technology
---	--------------------

Estimated annual CO2e savings (metric tonnes CO2e)

28200

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

Investment required (unit currency – as specified in C0.4)

Payback period

<1 year

Estimated lifetime of the initiative

Please select

Comment

Improved heat transfer of fin fans on KGP LNG trains by cleaning to reduce PR loop turbine power consumptions. Power savings can then be consumed to increase production. Trial cleaning campaign in LNG4+5 is showing 10% duty improvement in all fin fans cleaned.

Initiative category & Initiative type

Fugitive emissions reductions	Other, please specify (Flare reduction)
-------------------------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

20400

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)**Investment required (unit currency – as specified in C0.4)****Payback period**

<1 year

Estimated lifetime of the initiative

Please select

Comment

Two valves that have been passing to flare for over 5 years at Karratha Gas Plant were repaired resulting in reduced ongoing baseload flaring.

Initiative category & Initiative type

Energy efficiency in production processes	Product or service design
---	---------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

4700

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)**Investment required (unit currency – as specified in C0.4)****Payback period**

<1 year

Estimated lifetime of the initiative

Please select

Comment

Upgrade of the inlet air filters on the gas turbines at Karratha Gas Plant for LNG trains 1, 2 and 3. Advances in filter technology have produced air filters that have a higher efficiency rating, significantly reducing the contaminants in the inlet air. The result of cleaner inlet air is reduced turbine compressor fouling, resulting in increased power output over time and increased air compressor efficiency.

Initiative category & Initiative type

Energy efficiency in production processes	Product or service design
---	---------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

7000

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)**Investment required (unit currency – as specified in C0.4)****Payback period**

1-3 years

Estimated lifetime of the initiative

Please select

Comment

The project involved the rewheel of the Goodwyn A (GWA) export compressor from a 4-stage to a 5-stage bundle. This opportunity will look to increase deliverability from GWA wells lined up fill ullage and accelerate post-2040 tail volumes.

Initiative category & Initiative type

Energy efficiency in production processes	Smart control system
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

9200

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

Investment required (unit currency – as specified in C0.4)

Payback period

4-10 years

Estimated lifetime of the initiative

Please select

Comment

Goodwyn offshore platform has had a 1MWh battery energy storage system to reduce spinning reserve, allowing the decommissioning of one gas turbine generator. The project delivers emissions through fuel gas saving and reduced maintenance on the existing generators.

Initiative category & Initiative type

Fugitive emissions reductions	Other, please specify (Flare reduction)
-------------------------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

4000

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

Investment required (unit currency – as specified in C0.4)

Payback period

Please select

Estimated lifetime of the initiative

Please select

Comment

Rebundling a fuel gas compressor on Okha FPSO which was able to reduce baseload flaring.

Initiative category & Initiative type

Fugitive emissions reductions	Other, please specify (Flare reduction)
-------------------------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

5300

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

Investment required (unit currency – as specified in C0.4)

Payback period

<1 year

Estimated lifetime of the initiative

Please select

Comment

Rectification two long term passing valves (114PV013/141) passing to flare at Pluto in 2019.

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

15500

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

Investment required (unit currency – as specified in C0.4)

Payback period

Please select

Estimated lifetime of the initiative

Please select

Comment

During the 2019 turnaround at Pluto several opportunities were included in the scope which reduced flaring and increased throughput, having a net benefit of improved emission intensity for the facility.

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

9600

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)**Investment required (unit currency – as specified in C0.4)****Payback period**

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

Modification of operational dispatch of the gas turbines on the OKHA FPSO Power Generators to minimise spinning reserve resulting in improved efficiency of the gas turbine generator and reduced fuel gas consumption per MWh generated.

Initiative category & Initiative type

Energy efficiency in production processes	Product or service design
---	---------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

2400

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)**Investment required (unit currency – as specified in C0.4)****Payback period**

16-20 years

Estimated lifetime of the initiative

Please select

Comment

The opportunity involves the installation of a new filter house for Goodywn A platform RB211 air inlet filters. This will improve air quality and thereby limit degradation of the turbines due to compressor fouling.

Initiative category & Initiative type

Fugitive emissions reductions	Other, please specify (Flare reduction)
-------------------------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

16000

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)**Investment required (unit currency – as specified in C0.4)****Payback period**

Please select

Estimated lifetime of the initiative

6-10 years

Comment

During a major refurbishment the LP Compressor on NY was reinstated leading to a reduction in flaring as additional gas that was previously sent to flare could now be recovered.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Financial optimization calculations	Most of the energy consumed by Woodside operations is from feed gas. There is a significant economic driver to reduce fuel gas consumption, as this reduces waste and increases production of LNG, domestic gas, and in some cases, oil products.
Internal price on carbon	Woodside includes a carbon price in its major investments based on expectations of current and future prices. We also apply these where appropriate when making other financial and operational decisions. We consider a range of scenarios in major decisions and in some of these scenarios, regulatory carbon prices are not expected to be implemented, so do not affect the decision.
Employee engagement	Woodside sets targets regarding fuel and flare use, which drive emission reductions, and form part of regular governance reporting. Woodside has set a 5% emissions target by 2020 which forms part of the Corporate Scorecard.
Dedicated budget for low-carbon product R&D	The technology function are tasked with identifying and screening innovative technologies, including those that use carbon dioxide at scale, covering bio-sequestration, methanation, reforming and mineralisation. In 2019 we joined Global CCS, an international organisation developing collective knowledge and expertise in carbon capture and storage (CCS) technologies.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Product

Description of product/Group of products

Gas is well placed as a reliable and clean technology that is available at scale to replace coal powered electricity generation today. Use of LNG and gas to generate electricity, instead of coal, will reduce lifecycle greenhouse gas emissions by approximately 50%. These assumptions are based on the Life Cycle Analysis of an LNG project with typical LNG feedstock. The transport sector presents an additional growth opportunity for natural gas. Although electric vehicles are emerging as a low carbon alternative for passenger vehicles, this only represents a fraction of total oil demand. The energy density of fossil fuels is still likely to be required in other sectors such as industrial freight, which are more difficult to decarbonise. A lot of work is being done to develop the technology and infrastructure for LNG fuels, and we are partnering with industry to progress this work. Woodside is looking at opportunities to better integrate gas with renewables by investing in technologies (e.g. power in a box, LNG fuels).

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Please select

% revenue from low carbon product(s) in the reporting year

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

C-OG4.6

(C-OG4.6) Describe your organization's efforts to reduce methane emissions from your activities.

Woodside is the first Australian signatory to the Methane Guiding Principles. One of the five guiding principles is to "continually reduce methane emissions". In order to drive this, improvement opportunities to existing plant and processes with methane impact have been identified and are tagged in the Optimisation Reference Plan (ORP) to raise visibility and inform decision-making. This includes applying a carbon price to methane emissions.

Woodside have participated in and facilitated the Oil and Gas Climate Initiative (OGCI) and the UK's National Physical Laboratory methane flux study at our Karratha and Pluto Gas Plants. This data will be used to identify and implement improvement initiatives.

We worked with our shipping partner and undertook a methane slip study on one of our LNG-fuelled supply vessels to better understand this and inform future decision-making.

Through Woodside's Management System, methane leaks are actively identified, prioritised and repaired. Leak detection and repair (LDAR) is described in C-OG4.7a. Options to reduce venting and fugitive leaks processes are assessed through the Optimisation Reference Plan (ORP), which helps deliver on the commitment to improve energy efficiency by 5% against baseline by 2020.

In 2019 Woodside hosted the Sustainable Gas Institute (SGI) and held the world's first Methane Guiding Principle's masterclass. This was attended by attendees from the value chain (other operators, gas distribution companies, etc) as well as Woodside personnel in roles that can influence and drive outcomes.

C-OG4.7

(C-OG4.7) Does your organization conduct leak detection and repair (LDAR) or use other methods to find and fix fugitive methane emissions from oil and gas production activities?

Yes

C-OG4.7a

(C-OG4.7a) Describe the protocol through which methane leak detection and repair or other leak detection methods, are conducted for oil and gas production activities, including predominant frequency of inspections, estimates of assets covered, and methodologies employed.

In 2019 Woodside developed a Methane Management Guideline which provides a framework for implementing a leak detection and repair (LDAR) program to improve methane leakage detection. This guideline applies to all our operated assets and requires baseline surveys to be undertaken every five years.

Integrity related performance standards outline mandatory maintenance to prevent leaks. Active detection controls are in place during maintenance activities and inspection campaigns are commissioned on a risk basis to detect fugitive emissions through Forward Looking Infrared (FLIR) surveys. Assurance activities for routine inspections and equipment maintenance are used to detect emissions. Frequency for maintenance and assurance is risk-based.

C-OG4.8

(C-OG4.8) If flaring is relevant to your oil and gas production activities, describe your organization's efforts to reduce flaring, including any flaring reduction targets.

Woodside has a process that tracks flaring at a point-source level, including total flaring and flaring per kilo tonne of production. Targets are set annually and progress tracked on a monthly basis. Flaring performance is governed at asset level and affects Woodside Performance Based Pay via its inclusion in Woodside's target to improve energy efficiency performance by 5% against baseline by 2020.

In 2017 Woodside became the first Australian-based company to sign the World Bank Zero Routine Flaring Initiative and reports total and routine flaring to the World Bank. Woodside have developed a framework to guide the assessment of options and decision-making to document an "as low as reasonably practicable" approach to flaring, with decision taken at Executive level where targets are significantly impacted.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1 2016

Base year end

December 31 2016

Base year emissions (metric tons CO2e)

3494000

Comment

Emissions estimates have been developed in accordance with the Australian National Greenhouse and Energy Reporting (NGER) Measurement Determination 2008, except for minor exceptions that increase completeness and accuracy. Applied Global Warming Potentials are consistent with NGER Regulations. The equity portion of greenhouse gas emissions, flare, fuel and production values includes data from non-operated ventures where Woodside owns an equity portion, where data has been made available.

Scope 2 (location-based)

Base year start

January 1 2016

Base year end

December 31 2016

Base year emissions (metric tons CO2e)

14000

Comment

Location based factors come from NGER Measurement Determination 2008.

Scope 2 (market-based)

Base year start

January 1 2016

Base year end

December 31 2016

Base year emissions (metric tons CO2e)

0

Comment

We only have location-based Scope 2 emissions

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

Australia - National Greenhouse and Energy Reporting Act

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)
3302000

Start date
January 1 2019

End date
December 31 2019

Comment
Scope 1 emissions represent equity emissions, including non-operated ventures where available. Woodside operates more than it owns by equity. Reporting equity share of Scope 1 emissions provides an accurate representation of our emissions portfolio.

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)
3535000

Start date
January 1 2018

End date
December 31 2018

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based
We are reporting a Scope 2, location-based figure

Scope 2, market-based
We have no operations where we are able to access electricity supplier emission factors or residual emissions factors and are unable to report a Scope 2, market-based figure

Comment
Woodside collects grid-connected electricity data via invoices for operated offices and assets where this data is accessible. Location based factors, based on National Greenhouse and Energy Reporting values are used.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based
7000

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
January 1 2019

End date
December 31 2019

Comment
Since our scope 2 emissions are a small fraction of our scope 1, we do not distinguish between operated and equity. This number is reported on an operated basis.

Past year 1

Scope 2, location-based
8000

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
January 1 2018

End date
December 31 2018

Comment

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

Electricity for small international offices, refrigerant leaks.

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

No emissions excluded

Explain why this source is excluded

Some minor grid connected electricity from overseas offices is excluded due to availability of data. These values are expected to be immaterial. Refrigerant leaks from air conditioning units are not required to be reported under Australian emissions reporting regulations. We do however report refrigerant leaks on a CFC-11 equivalent basis in our Sustainable Development Report data tables.

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

230000

Emissions calculation methodology

This includes contracted supply vessels based on contractor fuel consumption and drilling rigs diesel and flaring emissions based on 2018 response. Note that this source is reported on an operated basis due to data availability.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

20

Please explain

Capital goods

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Feedback from Life Cycle Analysis experts is that embodied emissions in capital goods are not a material component of our lifecycle emissions.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

All fuel and energy related activities that are not scope 1, scope 2 have been reported as sold product or downstream transportation.

Upstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

As a primary energy producer, upstream activities are not material to Woodside's operations.

Waste generated in operations

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

3000

Emissions calculation methodology

Total waste multiplied by National Greenhouse Accounts scope 3 waste factors for commercial and industrial waste.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Even though it's immaterial, this source can be reasonably estimated, so has been included to improve transparency. Note that this source is reported on an operated basis due to data availability. This is based on a 2019 response.

Business travel

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

35000

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

15

Please explain

Even though it's immaterial, this source can be reasonably estimated, so has been included to improve transparency. Note that this source is reported on an operated basis due to data availability.

Employee commuting

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

This source is immaterial and cannot be reasonably estimated.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

None have been identified.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

700000

Emissions calculation methodology

Multiply fuel use for a selection of the LNG fleet by emission factors; remaining LNG vessels have been extrapolated. This is based on a 2019 response.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

This is reported on an operated basis due to data availability.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

The 'use of sold product' value assumes that all product is combusted, so already includes emissions from processing of sold product.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

28000000

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Please explain

Product sales have been multiplied by emission factors from the National Greenhouse and Energy Reporting rules. This assumes that all sold product is combusted, either in shipping or product use. In reality fractions of Woodside's products will be turned into other products (resulting in an emissions overestimate) or vented (resulting in an emissions underestimate).

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

All downstream emissions are included in use of sold products.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

None have been identified.

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

None have been identified.

Investments

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Emissions are reported on an equity basis, so non-operated facilities are included as scope 1 and 2 totals.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

None have been identified.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

All downstream emissions are included in use of sold products.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.00068

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

3309000

Metric denominator

unit total revenue

Metric denominator: Unit total

4873000000

Scope 2 figure used

Location-based

% change from previous year

1

Direction of change

Increased

Reason for change

Similar to 2018 response. Decrease in revenue due to commodity prices.

C-OG6.12

(C-OG6.12) Provide the intensity figures for Scope 1 emissions (metric tons CO2e) per unit of hydrocarbon category.

Unit of hydrocarbon category (denominator)

Other, please specify (Metric ton of product)

Metric tons CO2e from hydrocarbon category per unit specified

0.32

% change from previous year

6

Direction of change

Decreased

Reason for change

Wheatstone full year of production and ceasing commissioning activities as well as improved emissions intensity due to energy efficiency portfolio.

Comment

C-OG6.13

(C-OG6.13) Report your methane emissions as percentages of natural gas and hydrocarbon production or throughput.

Oil and gas business division

Upstream

Estimated total methane emitted expressed as % of natural gas production or throughput at given division

1.15

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division

0.94

Comment

Note units tCH4/TJ product. Previous years submission was in tCH4/t product.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	3177241	IPCC Fourth Assessment Report (AR4 - 50 year)
CH4	4856	IPCC Fourth Assessment Report (AR4 - 50 year)
N2O	119903	IPCC Fourth Assessment Report (AR4 - 50 year)

C-OG7.1b

(C-OG7.1b) Break down your total gross global Scope 1 emissions from oil and gas value chain production activities by greenhouse gas type.

Emissions category

Combustion (excluding flaring)

Value chain

Upstream

Product

Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)

Gross Scope 1 methane emissions (metric tons CH4)

Total gross Scope 1 emissions (metric tons CO2e)

2299000

Comment

Emissions category

Flaring

Value chain

Upstream

Product

Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)

Gross Scope 1 methane emissions (metric tons CH4)

Total gross Scope 1 emissions (metric tons CO2e)

339000

Comment

Emissions category

Venting

Value chain

Upstream

Product

Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)

Gross Scope 1 methane emissions (metric tons CH4)

Total gross Scope 1 emissions (metric tons CO2e)

664000

Comment

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Australia	3295794
Canada	6206

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By facility

C7.3b

(C7.3b) Break down your total gross global Scope 1 emissions by business facility.

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
North West Shelf	1097144	-20.602	116.774
Enfield		-21.481	114.008
Vincent	143648	-21.434	114.033
Pluto LNG	1434752	-20.605	116.759
Non-operated Kitimat Venture	6206	53.939	-128.752
Non-operated Wheatstone Venture	586476	-21.617	115.002
Okha	33773		

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	3302000	<Not Applicable>	
Oil and gas production activities (midstream)		<Not Applicable>	
Oil and gas production activities (downstream)		<Not Applicable>	
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Australia	7000		7838	0.89

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By activity

C7.6c

(C7.6c) Break down your total gross global Scope 2 emissions by business activity.

Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Grid connected electricity	7000	

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	7000		
Oil and gas production activities (midstream)			
Oil and gas production activities (downstream)			
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Increased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption		<Not Applicable>		
Other emissions reduction activities		<Not Applicable>		
Divestment		<Not Applicable>		
Acquisitions		<Not Applicable>		
Mergers		<Not Applicable>		
Change in output		<Not Applicable>		
Change in methodology		<Not Applicable>		
Change in boundary		<Not Applicable>		
Change in physical operating conditions		<Not Applicable>		
Unidentified		<Not Applicable>		
Other		<Not Applicable>		

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)		110737.88	110737.88
Consumption of purchased or acquired electricity	<Not Applicable>		10313	10313
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>		<Not Applicable>	
Total energy consumption	<Not Applicable>			

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	Yes
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Please select

Heating value

Please select

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

Unit

Please select

Emissions factor source

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity				
Heat				
Steam				
Cooling				

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C-OG9.2a

(C-OG9.2a) Disclose your net liquid and gas hydrocarbon production (total of subsidiaries and equity-accounted entities).

	In-year net production	Comment
Crude oil and condensate, million barrels	15.3	
Natural gas liquids, million barrels		
Oil sands, million barrels (includes bitumen and synthetic crude)		
Natural gas, billion cubic feet	423.51	

C-OG9.2b

(C-OG9.2b) Explain which listing requirements or other methodologies you use to report reserves data. If your organization cannot provide data due to legal restrictions on reporting reserves figures in certain countries, please explain this.

Woodside, as an Australian company listed on the Australian Securities Exchange, reports its petroleum resource estimates using definitions and guidelines consistent with the 2018 Society of Petroleum Engineers (SPE)/World Petroleum Council (WPC)/American Association of Petroleum Geologists (AAPG)/Society of Petroleum Evaluation Engineers (SPEE) Petroleum Resources Management System (PRMS).

C-OG9.2c

(C-OG9.2c) Disclose your estimated total net reserves and resource base (million boe), including the total associated with subsidiaries and equity-accounted entities.

	Estimated total net proved + probable reserves (2P) (million BOE)	Estimated total net proved + probable + possible reserves (3P) (million BOE)	Estimated net total resource base (million BOE)	Comment
Row 1	1213		7192.3	'Total resource base' is being reported as 2P plus 2C.

C-OG9.2d

(C-OG9.2d) Provide an indicative percentage split for 2P, 3P reserves, and total resource base by hydrocarbon categories.

	Net proved + probable reserves (2P) (%)	Net proved + probable + possible reserves (3P) (%)	Net total resource base (%)	Comment
Crude oil/ condensate/ natural gas liquids	18		8	'Total resource base' is being reported as 2P plus 2C.
Natural gas	82		92	'Total resource base' is being reported as 2P plus 2C.
Oil sands (includes bitumen and synthetic crude)				

C-OG9.2e

(C-OG9.2e) Provide an indicative percentage split for production, 1P, 2P, 3P reserves, and total resource base by development types.

Development type

Shallow-water

In-year net production (%)

2

Net proved reserves (1P) (%)

1

Net proved + probable reserves (2P) (%)

1

Net proved + probable + possible reserves (3P) (%)

Net total resource base (%)

Comment

Net total resource base 0.33%

Development type

Deepwater

In-year net production (%)

4

Net proved reserves (1P) (%)

9

Net proved + probable reserves (2P) (%)

9

Net proved + probable + possible reserves (3P) (%)

Net total resource base (%)

4

Comment

Development type

Ultra-deepwater

In-year net production (%)

0

Net proved reserves (1P) (%)

0

Net proved + probable reserves (2P) (%)

0

Net proved + probable + possible reserves (3P) (%)

Net total resource base (%)

1

Comment

Development type

Tight/shale

In-year net production (%)

1

Net proved reserves (1P) (%)

0

Net proved + probable reserves (2P) (%)

0

Net proved + probable + possible reserves (3P) (%)

Net total resource base (%)

37

Comment

Development type

LNG

In-year net production (%)

93

Net proved reserves (1P) (%)

90

Net proved + probable reserves (2P) (%)

90

Net proved + probable + possible reserves (3P) (%)

Net total resource base (%)

57

Comment

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	Woodside Energy and Monash University have joined forces to develop a state-of-the-art 'living laboratory' and long-term research partnership to support Australia's low-carbon energy transition. In 2019, Woodside announced A\$16.5 million to the construction of the Woodside Building for Technology and Design, located in the Monash Technology Precinct. The Precinct houses Australia's largest concentration of research institutions and leading engineering companies. It will be one of the world's most efficient and innovative teaching facilities, and through the partnership, Monash and Woodside will explore the possibilities of hydrogen and carbon abatement, with a focus on materials, electro-chemical and thermal chemical research. Woodside and Monash will also jointly invest more than \$40 million into the ongoing research partnership over the next seven years. The Woodside Building for Technology and Design and Woodside Monash Energy Partnership will build on the foundation FutureLab collaboration, established by Woodside at Monash in 2015. Monash University President and Vice-Chancellor Professor Margaret Gardner AO said the new building and the growth of the Woodside-Monash Energy Partnership would greatly improve Australia's capacity to find new solutions in sustainable energy technology. Woodside is also exploring opportunities associated with producing and exporting hydrogen. Hydrogen is a versatile, reliable and a clean-burning source of power and fuel. It is already being produced from our LNG exports in some of our destination markets. Our experience in producing and exporting LNG positions us well for complementary opportunities in large-scale hydrogen for industrial use. Woodside is a participant in The Australian Industry Energy Transitions Initiative (Australian Industry ETI), which aims to support Australian industry to develop pathways and actions to support net zero emissions across critical supply chains of the Australian economy. The Australian Industry ETI supports Australian industry to develop pathways and take action towards net zero emissions across critical supply chains of the Australian economy. The Australian Industry ETI is focused on creating a platform for industry learning and experimentation in pursuit of net zero emissions in these hard-to-abate sectors and the supply chains linking them to the global economy.

C-CO9.6a/C-EU9.6a/C-OG9.6a

(C-CO9.6a/C-EU9.6a/C-OG9.6a) Provide details of your organization's investments in low-carbon R&D for your sector activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
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C-OG9.7

(C-OG9.7) Disclose the breakeven price (US\$/BOE) required for cash neutrality during the reporting year, i.e. where cash flow from operations covers CAPEX and dividends paid/ share buybacks.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Page/ section reference

[https://files.woodside/docs/default-source/investor-documents/major-reports-\(static-pdfs\)/2019-sd-report/assurance-statements.pdf?sfvrsn=c1897d9a_8](https://files.woodside/docs/default-source/investor-documents/major-reports-(static-pdfs)/2019-sd-report/assurance-statements.pdf?sfvrsn=c1897d9a_8)

Relevant standard

Other, please specify (Australian Standard on Assurance Engagements Other Than Audits or Reviews of Historical Financial Information ('ASAE 3000'))

Proportion of reported emissions verified (%)

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Please select

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

Australia ERF Safeguard Mechanism - ETS

BC carbon tax

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

Australia ERF Safeguard Mechanism

% of Scope 1 emissions covered by the ETS

100

% of Scope 2 emissions covered by the ETS

0

Period start date

July 1 2018

Period end date

June 30 2019

Allowances allocated

Allowances purchased

Verified Scope 1 emissions in metric tons CO2e

9218208

Verified Scope 2 emissions in metric tons CO2e

9602

Details of ownership

Other, please specify (Joint Venture Participant Arrangements – Facilities which Woodside operates but does not wholly own.)

Comment

Emissions provided are on an operated basis.

C11.1c

(C11.1c) Complete the following table for each of the tax systems you are regulated by.

BC carbon tax

Period start date

Period end date

% of total Scope 1 emissions covered by tax

Total cost of tax paid

Comment

Compliance with the British Columbian carbon price is managed by the Operator on our behalf. Woodside share of these emissions are 0.1% of our total equity emissions, so the carbon price is not material to our disclosure.

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

As operator of the Safeguard Mechanism facilities North West Shelf Project and Pluto LNG Facility, Woodside must actively manage compliance against the Australian Emissions Reduction Fund Safeguard Mechanism Rule.

Woodside does this by monitoring emissions in adherence to Australian National Greenhouse and Energy Reporting standards, implementing emission reduction opportunities through the Optimisation Reference Plan and purchasing Australian Carbon Credit Units if a subsequent offset obligation is identified. During the 2018-19 reporting period all of Woodside's operated and non-operated assets complied with the Safeguard Mechanism Rule.

Compliance for our participation in the British Columbia carbon tax is managed by the operator of our BC facility.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase

Credit origination

Project type

Other, please specify (Vegetation)

Project identification

Woodside Pluto Carbon Offset Project - Stage 1 EOP100203 Woodside Pluto Carbon Offset Project - Stage 2 EOP100654 Woodside Pluto Carbon Offset Project - Stage 3 EOP100818 Woodside Pluto Carbon Offset Project - Stage 4 ERF101451

Verified to which standard

Other, please specify (Carbon Farming Initiative)

Number of credits (metric tonnes CO2e)

140220

Number of credits (metric tonnes CO2e): Risk adjusted volume

140220

Credits cancelled

Not relevant

Purpose, e.g. compliance

Compliance

Credit origination or credit purchase

Credit purchase

Project type

Wind

Project identification

Tamilnadu Spinning Mills Association (TASMA II) CER-IN-4760

Verified to which standard

CDM (Clean Development Mechanism)

Number of credits (metric tonnes CO2e)

1383798

Number of credits (metric tonnes CO2e): Risk adjusted volume

1383798

Credits cancelled

Yes

Purpose, e.g. compliance

Compliance

Credit origination or credit purchase

Credit purchase

Project type

Wind

Project identification

Wind Power Project in Tirupur District VCS1163

Verified to which standard

VCS (Verified Carbon Standard)

Number of credits (metric tonnes CO2e)

306202

Number of credits (metric tonnes CO2e): Risk adjusted volume

306202

Credits cancelled

Yes

Purpose, e.g. compliance

Compliance

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Navigate GHG regulations
Drive energy efficiency
Drive low-carbon investment
Stress test investments
Identify and seize low-carbon opportunities

GHG Scope

Scope 1

Application

When applying the carbon price we consider how the price is likely to be implemented. For Australia's Safeguard Mechanism, this means that the carbon price is applied for emissions above each facilities baseline. This can result in zero cost in some instances.

Actual price(s) used (Currency /metric ton)

Variance of price(s) used

In 2019, we assumed a US\$40/tonne carbon price for Australian emissions that exceed facility-specific baselines in accordance with Australian regulations. In 2020, for the purpose of determining the carrying value of its assets, Woodside revised its long-term Australian carbon price assumption to US\$80/tonne (real terms 2020). We use carbon prices that reflect our expectations of future carbon prices. These vary over time and jurisdiction. We include high and low sensitivities to test major decisions, with the high sensitivity reflecting our understanding of a below 2°C scenario.

Type of internal carbon price

Implicit price

Impact & implication

By including carbon prices in our commercial and operational decisions, we ensure that the actual regulatory costs associated with these decisions are considered and results in more efficient design and operation than would be the case if we did not apply carbon prices.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our customers

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Collaboration & innovation

Details of engagement

Other, please specify

% of customers by number

5

% of customer - related Scope 3 emissions as reported in C6.5

Portfolio coverage (total or outstanding)

<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement

Impact of engagement, including measures of success

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Direct engagement with policy makers
Trade associations
Funding research organizations
Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Other, please specify (Safeguard Mechanism)	Support	Supported the proposed changes to bring baselines up to date and simplify the application process. We have had subsequent discussions with departmental staff about how to implement the changes.	Our full submission is available online: https://www.environment.gov.au/submissions/emissions-reduction/operation-erf-safeguard-mechanism/woodside.pdf
Other, please specify (State policy)	Support	We provided a detailed submission on the Government of Western Australia Climate Change Issues Paper and State Policy.	Our full submission is available online: https://files.woodside/docs/default-source/sustainability-documents/transparency-documents/2019-government-submissions-reports/woodside-submission-government-of-western-australia-climate-change-issues-paper-and-state-climate-policy.pdf?sfvrsn=bb85d6b2_2
Other, please specify (Paris Agreement)	Support	We provided a detailed submission on the Updating the Authority's Previous Advice on Meeting the Paris Agreement.	Our full submission is available online: https://files.woodside/docs/default-source/sustainability-documents/transparency-documents/2019-government-submissions-reports/updates-the-authority-s-previous-advice-on-meeting-the-paris-agreement--climate-change-authority-(october-2019).pdf?sfvrsn=97f20296_1
Other, please specify (Hydrogen)	Support	Engaged in the development of the Western Australian and national hydrogen strategies.	While Woodside's LNG exports are already being converted to hydrogen in Japan and South Korea for manufacturing industrial chemicals, power generation, and public and private transport, Woodside believes a domestic hydrogen industry in Australia could generate cheaper and cleaner energy, as well as improve Australia's liquid fuel security. We believe hydrogen has the potential to make a significant contribution to dispatchable renewable energy in Australia, which could help to support domestic manufacturing, deliver jobs and assist Australia in meeting its Paris Agreement emissions reduction targets. Our submission on the National Hydrogen Strategy issues papers: COAG Energy Council: https://files.woodside/docs/default-source/sustainability-documents/transparency-documents/2019-government-submissions-reports/national-hydrogen-strategy-issues-papers-(july-2019).pdf?sfvrsn=611b2743_3

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

Australian Petroleum Production and Exploration Association (APPEA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

APPEA supports a national climate change policy that delivers abatement at least cost. It recognises that reliable, secure and competitively priced energy is crucial to our everyday lives in Australia and recognises that oil and gas plays a key role in meeting many of our energy needs. APPEA considers that it is vital that Australia's national climate change policy approach reflects the enormous economic and greenhouse benefit that can flow from a prosperous, vibrant and growing upstream oil and gas industry. APPEA also recognises that the industry has a role to play in managing emissions from operations. APPEA's position is publicly available on the front page of its website, at www.appea.com.au

How have you influenced, or are you attempting to influence their position?

We participate as members in regular information and policy discussions and encourage APPEA to offer pragmatic solutions that see our industry make a fair contribution to Australia's emission reduction target under the Paris Agreement. Our EVP Development sits on APPEA's Board and chairs APPEA's Greenhouse and Energy Policy Committee, which progresses the association's policy development. A review in 2019 found APPEA was aligned.

Trade association

Chamber of Minerals and Energy Western Australia (CME)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

CME has consistently advocated for a measured transition to a low emissions global economy centred on the three key climate change policy pillars of global agreement, market-based mechanism, and substantial investment in low emission technology and abatement. A review in 2019 found CME was aligned.

How have you influenced, or are you attempting to influence their position?

We participate as members in regular information and policy discussions and encourage CME to offer pragmatic solutions that see our industry make a fair contribution to Australia's emission reduction target under the Paris Agreement. Our Senior Vice President Operations sits on the CME Management Committee and Woodside participates in several working groups.

Trade association

Business Council of Australia (BCA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Business Council of Australia supports action on climate change. The BCA supports the Paris Agreement and transitioning to net zero emissions by 2050. The BCA has consistently called for a bipartisan and national market-based carbon price to drive the transition and incentivise investment in low and no-emissions technology. The BCA's positioning on climate and energy policy is informed by the belief that technology needs to drive the transition, which will not only get us to a net-zero emissions future but will also create new jobs, opportunities and industries and maintain Australia's competitiveness. The BCA is actively engaging with its members on policy options to progress these goals. A review in 2019 found BCA was aligned.

How have you influenced, or are you attempting to influence their position?

We participate in policy discussions, both through our CEO at Board level and through engaging at an organisational level, to encourage the BCA's efforts to offer constructive solutions in support of Australia's emissions reduction target under the Paris Agreement and the goal of net zero by 2050.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

Yes

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

We published Our Energy Future in a Lower Carbon World as well as a position on climate change in our Sustainable Development Report 2019. These are available on our website.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Interactions with various levels of government and industry associations, are governed by our External Stakeholder Engagement Procedure and External Communications and Continuous Disclosure Procedure. For all material policy issues (including climate change) external messaging is prepared and agreed prior to external engagement, to ensure a consistent approach. This approach extends to engagements with key external stakeholders, submissions to government and input to industry submissions. It is worth noting that Woodside is involved in various industry associations (e.g. Australian Petroleum Production and Exploration Association, Australian Industry Greenhouse Network, Chamber for Minerals and Energy, Business Council of Australia and IPIECA), forums and committees in order to represent our position with regards to material policy issues.

Woodside's oversight and governance of industry associations include an approval process for new memberships, continuous monitoring of their positions and regular review of how they align with Woodside's objectives, policies and principles, including our Climate Change Policy. In joining an association, we consider whether the association's views are aligned with Woodside's policies and objectives, applying an approval framework that is outlined in the company's management processes. A regular review of memberships is overseen by an Executive Steering Group, made up of the most senior representatives from Corporate Affairs, Investor Relations, Legal and Environment. This Steering Group meets at least twice a year to monitor alignment, which involves considering the public statements made by each relevant association, relevant media reports and our own understanding of an association's positioning, and comparing this to Woodside's policies and objectives.

Where we work with research organisations our approach is governed by a belief that constructive conversation about climate change science and policy should be underpinned by a strong knowledge-base. We don't attempt to influence these organisations' (such as Australian Institute for Marine Science) position on climate change policy but let the science feed into the broader policy discussion.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In voluntary sustainability report

Status

Complete

Attach the document

sustainable-development-report-2019.pdf

Page/Section reference

Pages 11-13 for targets and performance, pages 26-30 on climate change management.

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

Publication

In mainstream reports, incorporating the TCFD recommendations

Status

Complete

Attach the document

annual-report-2019.pdf

Page/Section reference

Climate change risk management (TCFD aligned) pages 42-43.

Content elements

Governance
Strategy
Risks & opportunities

Comment

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Sherry Duhe, Executive Vice President and Chief Financial Officer	Chief Financial Officer (CFO)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission
I am submitting my response	Investors	Public

Please confirm below

I have read and accept the applicable Terms