

Woodside Petroleum - Climate Change 2018

C0. Introduction

C0.1

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

Woodside is Australia's largest independent Oil and Gas company with a global portfolio, recognised for our world-class capabilities – as an explorer, a developer, a producer and supplier of energy. We have a clear strategy to deliver superior shareholder returns across three distinct time horizons. These horizons are characterised by cash generation from 2017, unlocking value from 2022, and repeating our successes from 2027. Our global exploration portfolio is balanced across established, emerging and frontier provinces covering Australia and the Asia-Pacific region, the Atlantic margins and Sub-Saharan Africa. Currently, we are focused on drilling to grow our resource volumes. We have significant equity interests in high-quality development opportunities in Australia (Wheatstone, Scarborough and Browse), Senegal (SNE), Myanmar and North America (Kitimat), and are pursuing new concepts and technology to enable cost-effective commercialisation of these resources. Our producing assets include the landmark North West Shelf (NWS) Project, Pluto LNG and non-operated Wheatstone LNG. Our operated assets are renowned for their safety, reliability and efficiency. As Australia's leading LNG operator, we produce 7% of global LNG supply, and operate a fleet of floating production storage and offloading (FPSO) facilities. We continue to expand our capabilities in marketing, trading and shipping and have enduring relationships that span more than 25 years with foundation customers throughout the Asia-Pacific region. Woodside continues to promote the use of LNG as a low-emissions and economically viable alternative fuel. Technology and innovation are essential to our long-term sustainability. We are working to bring down costs and find solutions to our business challenges. Today, we are pioneering remote support and the application of artificial intelligence, embedding advanced analytics across our operations and making improvements in additive manufacturing. Woodside demonstrates strong safety and environmental performance in all operations. We are committed to upholding our values of integrity, respect, working sustainably, discipline, excellence 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 long-term meaningful relationships with communities are fundamental to maintaining our licence to operate. We help create stronger communities through programs that improve knowledge, build resilience and create shared opportunities. Our proven track record, distinctive capabilities and ability to manage risk and vo

latility are underpinned by more than 60 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
Row 1	January 1 2017	December 31 2017	No	<Not Applicable>
Row 2	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 3	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 4	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>

C0.3

(C0.3) Select the countries/regions 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 consolidation approach to your Scope 1 and Scope 2 greenhouse gas 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) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board/Executive board	Governance responsibility for climate change issues within Woodside rests with the Board, the Sustainability Committee, a sub-committee established by Woodside's Board in 2007, and Woodside's Managing Director and Chief Executive Officer. The Sustainability Committee is comprised of six independent, non-executive directors. The role of the Sustainability Committee is to assist the Board in meeting its respo

Position of individual(s)	Please explain
	nsibilities for oversight of the Group's sustainability policies and practices. The duties of the Sustainability Committee include reviewing, and making recommendations to the Board on the Group's policy and performance in relation to climate change. The Committee also monitors the Australian government's climate change policy developments and reviews Woodside's initiatives to reduce greenhouse gas emissions and to consider the emissions intensity of new projects. A copy of the Committee's charter is available on Woodside's website.
Chief Executive Officer (CEO)	Responsibility for managing climate change and related issues for Woodside rests ultimately with Woodside's Chief Executive Officer and Managing Director. The Executive Committee, comprised of seven senior Woodside's executives, including the COO and the CFO, oversees climate-related issues.
Please select	

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	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, 	<p>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. They oversee external communication on key climate-change related risks and opportunities and monitor 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 discuss strategic matters relating to climate change through the corporate strategy review process.</p>

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
	acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues Other, please specify (Review Woodside's Climate Change Policy)	

C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Other committee, please specify (Executive Committee)	Both assessing and managing climate-related risks and opportunities	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.

The Executive Committee (ExCom) is a committee consisting of the CEO/MD and direct Executive reports. ExCom resides within the Corporation, the Corporation is responsible for setting values, Corporate Policies and expectations, the mission, vision, strategy and planning parameters. It decides Woodside's equity participation in joint ventures and sustainably delivers acceptable returns and growth for s

shareholders whilst meeting the reasonable expectations of other stakeholders groups at acceptable levels of risk.

Climate-related issues are monitored in a variety of ways through this forum, including strategy reviews and planning and performance updates.

C1.3

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

Yes

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues.

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

Woodside's corporate scorecard is a key means of measuring our performance as a company. It sets the parameters that determine how our collective efforts are evaluated over the course of a year. The 2017 company scorecard included an emissions intensity target that cascaded through the bonus structure of the entire organisation.

Who is entitled to benefit from these incentives?

Corporate executive team

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

Woodside's corporate scorecard is a key means of measuring our performance as a company. It sets the parameters that determine how our collective efforts are evaluated over the course of a year. The 2017 company scorecard included an emissions intensity target that cascaded through the bonus structure of the entire organisation. The corporate scorecard is comprised of the corporate executive's KPIs that affect their personal remuneration.

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	1	5	• Lower capital intensity developments • New revenue streams • Preparing for Horizon II 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 growth • Monetise exploration and acquisition success • Increase supply to new and traditional markets
Long-term	10	100	• Capital efficient developments • Unlock major hubs • Grow and evolve business

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	Woodside operates under a company-wide risk management process which is overseen by a dedicated risk function. This function amalgamates all sufficiently material risks identified within individual facilities as well as risks applicable to the non-operating parts of the company. For climate change this includes the impact on product demand, carbon taxes and stakeholder expectations. Executive review of the corporate risk profile occurs every six months, followed by presentation to the Board.

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

The Risk and Compliance function has responsibility for the development and implementation of Woodside's risk management process, the generation and maintenance of the corporate risk profile and for facilitating the process by which risk is systematically identified and managed across Woodside and reported to management and to the Audit and Risk Committee. The process involves a review of Woodside's material risks, which are discussed with respective executive risk owners following extensive review and update of risk registers across the organisation. The process also informs the preparation and presentation of Woodside's corporate risk profile, which is reviewed and endorsed by the executive committee. The Risk and Compliance function prepares and presents risk management reports to the Audit and Risk Committee, outlining: Woodside's corporate risk profile, management's assessment of the extent to which these risks are satisfactorily controlled, and progress made against the annual group risk management plan. The report also incorporates changes to the risk profile over the reporting period identified at the business unit, asset and project levels. The Woodside Risk Management Process details the requirements for management of risk across Woodside, including assets and Business Units. Asset risk profiles are drawn from the key risks identified in each asset risk register.

At the last review of the climate change risk, subject matter experts from risk, strategy, economics, environment, government relations and metocean provided input. As per response to c2.3a examples of the risks identified include potential impacts on demand due to low carbon technology, or policies.

C2.2c

(C2.2c) Which of the following 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	A regulatory change screening process is being implemented for all active jurisdictions.
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 reviewed as required.
Upstream	Not relevant, explanation provided	We extract primary resources, so very little of our value chain is upstream of our operations.
Downstream	Relevant, always included	See technology and market risks above.

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

Risks: Our risk management process is designed to manage risks that have the potential to materially impact Woodside's business objectives. The process is aligned to International Standard ISO31000 for risk management and assesses potential risks against consequence categories of health and safety, environment, finance, reputation and brand, legal and compliance, and social and cultural impacts. Climate change is a material risk on the corporate risk register. Woodside implements controls to address climate change risks and the implementation of these controls are reviewed by subject matter experts and reported to the Audit and Risk Committee every six months.

Opportunities: Woodside uses a number of different processes for managing opportunities depending on the time horizon. In the short term, we use a process to identify, screen, prioritise and govern delivery of minor modifications and improvements to existing facilities and projects in development. In the medium term, we use a risk-based, scalable and gated investment decision framework to progress and support major capital investments. Through that gated process, decisions are evaluated against technical, commercial, and HSE criteria in order to reduce climate impact/risk to as low as reasonably practicable. In the long term, we conduct annual reviews of our company strategy and business plans to identify opportunities and ensure that the priorities, organisational capabilities and organisational structure are appropriate to realise these opportunities including those presented by climate change. We also have dedicated processes to develop innovative uses for technology in our business, with two key work streams being energy efficiency and low-carbon products.

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

Transition risk

Primary climate-related risk driver

Policy and legal: Increased pricing of GHG emissions

Type of financial impact driver

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

Uncertainty surrounding domestic regulation: Australian climate policy has changed significantly in recent years and remains a partisan political issue. This introduces risk of future compliance costs and complicates decision making processes by increasing uncertainty.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium

Potential financial impact

Explanation of financial impact

Although we do not disclose the quantification of our risks, an indicative impact can be inferred based on Australia's previous carbon pricing scheme. Both major political parties seem favourable to the use of significantly cheaper international permits for trade exposed industries which could reduce future costs.

Management method

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. 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 a

n effective way to meet emission reduction targets. We feel 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 disclosure below.

Cost of management

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?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Market: Changing customer behavior

Type of financial impact driver

Market: Reduced demand for goods and/or services due to shift in consumer preferences

Company- specific description

Most 2°C scenarios (such as the IEA Sustainable Development Scenario) forecast LNG growth until at least 2040, but efforts to reduce global emissions may reduce the rate of growth relative to an unconstrained case.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Potential financial impact

Explanation of financial impact

We do not disclose quantification of our risks, but we have used external estimates of LNG's long-term market price consistent with a 2°C budget.

Management method

We are working to create and expand markets where LNG substantially reduces emissions and lower emissions alternatives are unlikely to displace LNG. This i

ncludes use of LNG to displace diesel in remote mine sites. We test investment decisions against a range of plausible future outcomes.

Cost of management

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

Physical risk

Primary climate-related risk driver

Chronic: Rising mean temperatures

Type of financial impact driver

Reduced revenues from lower sales/output

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

Potential financial impact

Explanation of financial impact

The impact of a long term temperature increases has not been modelled in detail. The projected temperature increase during the lifetime of our facilities is however well within current seasonal temperature variation.

Management method

Woodside processes exist to define and mitigate operational constraints. If temperature constraints become more severe, they would gain increased attention.

n through these processes, potentially resulting in targeted operational changes or capital investment.

Cost of management

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

Physical risk

Primary climate-related risk driver

Acute: Increased severity of extreme weather events such as cyclones and floods

Type of financial impact driver

Increased capital costs (e.g., damage to facilities)

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 or safety of our operations as well as the cost of building new facilities.

Time horizon

Long-term

Likelihood

Unlikely

Magnitude of impact

Low

Potential financial impact

Explanation of financial impact

Our understanding of the impacts of climate change in the north-west of Australia is that there may be fewer, more intense storms. The net impact of this change does not however materially affect the design basis for our facilities, so the financial impact is minimal.

Management method

Woodside commissioned the North West Australian Climate Change Study (NW ACCS) 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 the understanding 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.

Cost of management

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

Physical risk

Primary climate-related risk driver

Chronic: Rising sea levels

Type of financial impact driver

Increased capital costs (e.g., damage to facilities)

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

Potential financial impact

Explanation of financial impact

The level of projected sea level rise over the life of our existing assets is small compared to the safety factors included in their design. As such, the additional cost of designing for sea level rise is minimal.

Management method

Woodside commissioned the North West Australian Climate Change Study (NW ACCS) 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 participate in industry forums) and reflect any improvements in the understanding the impacts of climate change in design documents. Where necessary changes to the design documents are risk assessed.

Cost of management

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?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Technology: Substitution of existing products and services with lower emissions options

Type of financial impact driver

Technology: Reduced demand for products and services

Company- specific description

As per risk 2, but the main drives of change is technology developments.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Potential financial impact

Explanation of financial impact

As per risk 2.

Management method

As per risk 2. We also monitor progress in renewable energy, carbon capture and storage, energy storage and nuclear technologies, in order to provide advanced warning of impacts on Company business.

Cost of management

0

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

Transition risk

Primary climate-related risk driver

Reputation: Increased stakeholder concern or negative stakeholder feedback

Type of financial impact driver

Reputation: Reduced revenue from decreased production capacity (e.g., delayed planning approvals, supply chain interruptions)

Company- specific description

As climate science becomes more certain 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

Potential financial impact**Explanation of financial impact**

We evaluate potential delays in receiving approvals, which would delay revenue streams and decrease project NPV.

Management method

We maintain strategic relationships with regulators 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.

Cost of management

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?

Customer

Opportunity type

Markets

Primary climate-related opportunity driver

Access to new markets

Type of financial impact driver

Increased revenues through access to new and emerging markets (e.g., partnerships with governments, development banks)

Company- specific description

Demand for lower carbon fuels will increase, especially in sectors that have few zero-carbon alternatives. 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

Potential financial impact

Explanation of financial impact

Although Woodside does not disclose internal financial analysis, the scale of the opportunity in the short term can be inferred based on the capacity of Pluto's LNG truck loading facility (100,000 tpa).

Strategy to realize opportunity

Woodside will continue 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. We expect to make significant reductions in the costs of our opportunities. By leveraging existing infrastructure, we have already achieved a 60% cost reduction for the Browse development concept, compared with the previous onshore Kimberley concept. We have also achieved a 30–40% cost reduction for Kitimat since acquisition through innovation and technology. We aim to ensure our projects are cost-competitive through further innovation, in order to remain robust during changing market demand.

Cost to realize opportunity

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?

Customer

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of supportive policy incentives

Type of financial impact driver

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.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Potential financial impact**Explanation of financial impact**

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

Strategy to realize opportunity

To support a transition to cleaner, lower carbon products such as LNG, Woodside will continue to support global 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 partners. We are also making significant reductions in the costs for our opportunities to ensure we remain competitively placed to supply this expanding market. By leveraging existing infrastructure, we have already achieved a 60% cost reduction for the Browse development concept, compared with the previous onshore Kimberley concept. We have also achieved a 30–40% cost reduction for Kitimat since acquisition through innovation and technology. We aim to ensure our projects have competitive break-even prices through further innovation to remain robust during changing market demand.

Cost to realize opportunity**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?

Customer

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of supportive policy incentives

Type of financial impact driver

Returns on investment in low-emission technology

Company- specific description

Growth in renewable electricity supports the longterm use of natural gas as a relatively low-carbon and flexible fuel

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Potential financial impact

Explanation of financial impact

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

Strategy to realize opportunity

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 remote power generation in the Pilbara can also offer a reliable and sustainable source of power in non-OECD countries, supporting SDG 7 Affordable and Clean Energy.

Cost to realize opportunity

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

Type of financial impact driver

Increased production capacity, resulting in increased revenues

Company- specific description

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

Time horizon

Current

Likelihood

Virtually certain

Magnitude of impact

Low

Potential financial impact**Explanation of financial impact**

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 C4.3b.

Strategy to realize opportunity

Woodside consistently seeks to improve the 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 work-force led optimisation opportunities in our operations. These bottom-up innovations reflect 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 (e.g. GWA platform use of batteries).

Cost to realize opportunity**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.

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	Impacted	We are 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, supporting SDG 7 Affordable and Clean Energy.
Supply chain and/or value chain	Impacted	To accelerate development of the LNG fuels market in the north-west of Australia, we are constructing a LNG truck-loading facility at the Pluto LNG plant. This will allow 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 Rio Tinto, BHP, FMG and shipping industry participants. One of its first activities has been to design and certify an LNG fuelled ship that can operate on this trade route. This milestone was achieved in October 2017 and supports SDG 9 Industry, Innovation and Infrastructure.
Adaptation and mitigation activities	Impacted	Adaptation: We have modelled the long-term impacts of climate change on our facilities. Our analysis shows that the main impact is sea level rise and this is accounted for in our basic design data (BDD). The BDD for each facility is formally reviewed every five years. If, upon revision, a significant change from the previous BDD is identified then a formal management-of-change process is initiated to inform stakeholders, understand the impact and if necessary, indicate remediation. The process can occur on a more frequent basis should a particular issue be identified. We participate in an industry forum led by the International Association of Oil and Gas Producers (IOGP) that is developing best practice recommendations on how to model and respond to the physical impacts of climate change. Mitigation: In 2016, we set a target to improve energy efficiency by 5% by 2020. This is a challenging target that requires work-force led optimisation opportunities in our operations. These bottom-up innovations reflect 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. To date we have implemented improvement projects that achieve 20% of this target and identified projects that deliver a further 70%. We will continue to identify and implement additional opportunities across each of our operating assets towards this target.
Investment in R&D	Impacted	In line with our Climate Change Policy principle of partnering with research organisations, we recently joined 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.

	Impact	Description
		y using pilot scale projects in Victoria. The CO2CRC is developing technology and expertise to support the long-term commercialisation of CCS.
Operations	Impacted	Our direct emissions principally come from fuel used to power our facilities, reservoir CO ₂ that we vent, and flaring. Over 95% of this is carbon dioxide, but methane, nitrous oxide and sulfur hexafluoride also contribute small quantities. The NWS Project, our largest facility, emitted approximately 1% more than its regulated baseline in the 2017 financial year due to increased production, major shutdowns falling outside the financial year and increased flaring. Our overall equity emissions decreased from 2016 to 2017 due to changes in our portfolio equity share. Our non-operated Wheatstone facility commenced production in 2017, contributing 49.6ktCO ₂ e to equity emissions. Equity emissions intensity increased slightly during the period due to a predicted increased share of LNG in our product mix as a result of a reduction in our domestic gas equity position in NWS. Producing LNG is typically more fuel-intensive than domestic gas. Woodside takes this into account given our long term strategy to deliver LNG as a logical long term partner to the rise of renewables. Operational flaring in 2017 was 280,517 tonnes of hydrocarbon, an increase from 2016 that exceeded our 2017 target by 50,000 tonnes. Defects in the main heat exchangers at Karratha Gas Plant (KGP), requiring refrigerant to be flared for continued efficient operation, were the main cause. Scheduled repairs in 2018 will reduce this source of flaring. Unplanned shutdowns due to electrical faults also contributed to flaring at our two operated LNG plants. The direct causes have been addressed and we are actively reviewing the facility to identify and mitigate any further reliability risks.
Other, please specify	Please select	

C2.6

(C2.6) Describe where and how the identified risks and opportunities have factored into your financial planning process.

	Relevance	Description
Revenues	Impacted	Strategy and planning is integrated with the financial planning process. Therefore the strategic and business plans in C2.4 is reflected in the financial outcomes including revenues, operating costs, capital investment, assets and liabilities.
Operating costs	Impacted	Strategy and planning is integrated with the financial planning process. Therefore the strategic and business plans in C2.4 is reflected in the financial outcomes including revenues, operating costs, capital investment, assets and liabilities.
Capital expenditures / capital allocation	Impacted	Strategy and planning is integrated with the financial planning process. Therefore the strategic and business plans in C2.4 is reflected in the financial outcomes including revenues, operating costs, capital investment, assets and liabilities.
Acquisitions and divestments	Impacted	Strategy and planning is integrated with the financial planning process. Therefore the strategic and business plans in C2.4 is reflected in the financial outcomes including revenues, operating costs, capital investment, assets and liabilities.

	Relevance	Description
		d in the financial outcomes including revenues, operating costs, capital investment, assets and liabilities.
Access to capital	Not impacted	Woodside continues to achieve strong support from equity and debt markets as well as financial institutions to fund its growth projects.
Assets	Impacted	Strategy and planning is integrated with the financial planning process. Therefore the strategic and business plans in C2.4 is reflected in the financial outcomes including revenues, operating costs, capital investment, assets and liabilities.
Liabilities	Impacted	Strategy and planning is integrated with the financial planning process. Therefore the strategic and business plans in C2.4 is reflected in the financial outcomes including revenues, operating costs, capital investment, assets and liabilities.
Other	Please select	

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

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

Yes, qualitative and quantitative

C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b

(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.

Yes

C3.1c

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

Woodside uses an integrated strategic planning process to assist the Board and Executive Committee to set the direction of the company, define the associated business and functional activities and measure achievement against targets. The process incorporates input from all business units and functions. Each year, dedicated time is set aside in the corporate calendar for the Board and Executive to review and refresh the corporate strategy. In 2018, this process included a dedicated set of analyses and conversations relating to the company's ongoing response to climate change. Woodside's strategic approach to climate change incorporates information on the risks and opportunities presented by each of the following climate change elements:

1. Ensuring that Woodside's portfolio remains responsive to feasible technology and regulatory changes,
2. Improving the carbon performance of Woodside's facilities and developments; and
3. Communicating the future role of gas.

To address the first element regarding our portfolio, we evaluate the resilience of our products in a decarbonising economy through scenario analysis and seek to expand the use of our products where they reduce our customers' emissions. Woodside has developed a long-term, integrated energy economics model to quantify the impacts of potential change in energy markets, with a particular focus on LNG. The resilience of our business is assessed for current assets and development projects on a periodic basis against various business environment assumptions, including scenarios consistent with a lower carbon economy. This scenario analysis allows us to test our overarching strategy, which is to continue to provide LNG as a low-carbon alternative to coal, and to support the continued growth of intermittent renewables. In order to support the use of our products in sectors that we can reduce our customers' emissions, we are constructing an LNG truck loading facility. This will allow us to access a fuel market that can currently only use diesel. Replacing diesel use with LNG can reduce greenhouse gas emissions by up to 30%. To address the second element regarding our emissions performance,

we've established a target to improve energy efficiency by 5% over the period 2016-2020, relative to business as usual levels. To address the third element, we engage through channels such as our Sustainable Development Report, external speeches, our CDP submission and through our industry associations to reinforce the message that gas, especially LNG, can support a low-carbon energy transition: both in the short term by displacing coal, and in the long-term, by supporting intermittent renewable energy.

C3.1d

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

Climate-related scenarios	Details
IEA Sustainable development scenario	Woodside qualitatively considers the impacts of the IEA SD Scenario to communicate the role of gas in a future energy mix that results in 2°C of global warming, whilst making major improvements in energy access and air quality. This scenario concludes that LNG demand will continue to grow until at least 2040, which is the end of the modelled period.
Other, please specify (Woodside Energy Global Outlook)	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 (Woodside Energy 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.

C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e

(C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF
Disclose details of your organization's low-carbon transition plan.

Based on our analysis, and consistent with analysis from organisations such as the International Energy Agency, the demand for LNG, our primary product, will continue to grow through a low-carbon transition. As such, our existing business model and strategy is consistent with a global low-carbon transition. In 2017 we published a Climate Change Policy to publicly state how we approach a global transition to a lower carbon economy.

Woodside recognises the scientific consensus on climate change and the challenge of providing safe, clean, affordable and reliable energy whilst reducing emissions. Woodside is committed to being part of the solution. We believe hydrocarbons will continue to be vital in meeting the world's energy needs and that the benefits of natural gas, in particular, will see it play an increasingly important role globally both in the energy mix and in reducing greenhouse gas emissions. Woodside will continue to meet the challenge of supplying clean, affordable and reliable energy whilst reducing emissions by:

- Promoting natural gas in the global energy mix as a means to reduce greenhouse gas emissions, support renewable energy and improve local air quality
- Promoting and pursuing a culture of energy efficiency and improved resource use in designs and operations
- Supporting our host countries in their endeavours to set emission reduction targets in accordance with internationally accepted science and to achieve these targets using efficient and stable policies
- Supporting lowest cost abatement through global carbon pricing
- Evaluating the resilience of our portfolio and investment decisions to potential changes in global Climate Policy
- Setting and publishing targets to encourage innovation and drive reductions in our carbon footprint and energy use
- Pursuing greenhouse gas emission reduction technologies with our peers and scientific institutions.

Climate change presents a range of opportunities and risks for our business. Key opportunities for Woodside relate to demand for lower carbon fuels, such as gas,

and energy efficiency. Risks for Woodside are primarily associated with our ability to adapt to different transition scenarios for gas and LNG usage. Other risks include the physical impacts of a changing climate. Lower demands for fossil fuels may make investment for new assets more challenging. This potential risk could disproportionately impact emissions-intensive assets with high cost of supply. With our portfolio heavily weighted to gas, the life-cycle emissions intensity of our assets is relatively low. Woodside continues to invest in and promote technologies that reduce emissions and promote energy efficiency. We are evolving to meet the challenges of a low carbon economy by offering our products in a way that meets the world's requirements for reliable and sustainable energy, including partnering with renewables and developing new markets. This aligns with the SDGs Affordable and Clean Energy (7), Industry, Innovation and Infrastructure (9) and Climate Action (13).

C4. Targets and performance

C4.1

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

Both absolute and intensity targets

C4.1 a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Scope

Scope 1

% emissions in Scope

10

% reduction from base year

29

Base year

2013

Start year

2013

Base year emissions covered by target (metric tons CO2e)

1153600

Target year

2017

Is this a science-based target?

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

% achieved (emissions)

71

Target status

Underway

Please explain

Flared gas contributes approximately 10% of GHG emissions across Woodside's operated assets. By establishing challenging, annual flared gas targets, Woodside can continue to drive emissions improvements across the assets. In 2017 the flare target was 682 ktCO₂-e, which represents a 40% reduction from 2013 levels. Whilst flared gas in 2017 wasn't able to achieve this target due to a number of operational issues that have since been fixed, flaring was still 29% below 2013 levels.

C4.1b

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

Target reference number

Int 1

Scope

Scope 1

% emissions in Scope

74

% reduction from baseline year

2

Metric

Other, please specify (GJ per tonne of production)

Base year

2015

Start year

2016

Normalized baseline year emissions covered by target (metric tons CO2e)

7171000

Target year

2017

Is this a science-based target?

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

% achieved (emissions)

47

Target status

Underway

Please explain

In 2016, we set a target to improve energy efficiency by 5% below business as usual energy levels by 2020. We continue to identify and implement emission and energy saving projects towards the 2020 target.

% change anticipated in absolute Scope 1+2 emissions

5

% change anticipated in absolute Scope 3 emissions

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

C-OG4.2a

(C-OG4.2a) Explain, for your oil and gas production activities, why you do not have a methane-specific emissions reduction target or do not incorporate methane into your targets reported in C4.2; and forecast how your methane emissions will change over the next five years.

Methane is incorporated consistently with other greenhouse gases in Woodside's greenhouse gas emissions and energy efficiency targets. Methane is converted to carbon dioxide equivalent using the global warming potentials specified in Australian National Greenhouse and Energy Reporting (NGER). Methane represents approximately 4% of operated production emissions on a CO₂ equivalent basis.

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 projects at each stage of development, and for those in the implementation stages, the estimated CO₂e savings.

	Number of projects	Total estimated annual CO ₂ e savings in metric tonnes CO ₂ e (only for rows marked *)
Under investigation	27	
To be implemented*	9	90000
Implementation commenced*	7	91000
Implemented*	4	61000
Not to be implemented	4	

C4.3b

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

Activity type

Energy efficiency: Processes

Description of activity

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)**Scope**

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

500000

Investment required (unit currency – as specified in CC0.4)

100000

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

This project involved improving the inlet air filters for gas turbines at the Pluto LNG facility. This allowed higher throughput, with no increase in emissions. The reported emissions benefits are based on the emissions that would have otherwise been associated with the increased throughput. The filters are more expensive than those that are previously used, but this is not material compared to the benefits and has not been included. This question is responded to on an operated basis. Woodside has a 90% equity share of Pluto, so responses would be 90% of those reported above if completed on an equity basis. Annual monetary savings are indicative, assuming that all avoided energy use could be converted into LNG at a nominal price.

Activity type

Energy efficiency: Processes

Description of activity

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)**Scope**

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

2000000

Investment required (unit currency – as specified in CC0.4)

100000

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

This project involved further debottlenecking of the Pluto LNG facility. This allowed higher throughput, with no increase in emissions. The reported emissions benefits are based on the emissions that would have otherwise been associated with the increased throughput. There was no capex, so costs are a nominal value to represent engineering assessments, etc. This question is responded to on an operated basis. Woodside has a 90% equity share of Pluto, so responses would be 90% of those reported above if completed on an equity basis. Annual monetary savings are indicative, assuming that all avoided energy use could be converted into LNG at a nominal price.

Activity type

Fugitive emissions reductions

Description of activity

Other, please specify (Flare reduction)

Estimated annual CO2e savings (metric tonnes CO2e)**Scope**

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

1400000

Investment required (unit currency – as specified in CC0.4)

100000

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

This project increased the capacity of the boil off gas compressors at Pluto. This meant that additional boil off gas could be recycled into the process instead of being flared. There was no capex associated with this opportunity, so the investment is a nominal amount to reflect engineering assessments, etc. This que

stion is responded to on an operated basis. Woodside has a 90% equity share of Pluto, so responses would be 90% of those reported above if completed on an equity basis. Annual monetary savings are indicative assuming that all avoided energy use could be converted into LNG at a nominal price.

Activity type

Energy efficiency: Processes

Description of activity

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

3000000

Investment required (unit currency – as specified in CC0.4)

100000

Payback period

<1 year

Estimated lifetime of the initiative

21-30 years

Comment

This project involved improving the inlet air filters for gas turbines at the Karratha Gas Plant. This allowed higher throughput, with no increase in emissions. The reported emissions benefits are based on the emissions that would have otherwise been associated with the increased throughput. The investment is listed as a nominal amount to reflect engineering assessments, etc. The filters are more expensive than those that are previously used, but this is not material compared to the benefits and has not been included. This question is responded to on an operated basis. Woodside has an approximately 17% equity share of the Karratha Gas Plant, so responses would be 17% of those reported above if completed on an equity basis. Annual monetary savings are indicative assuming that all avoided energy use could be converted into LNG at a nominal price.

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 all its major investments and where appropriate when making other financial and operational decisions.
Employee engagement	Woodside sets targets regarding fuel and flare use, which drive emission reductions, and form part of regular governance reporting.
Dedicated budget for low-carbon product R&D	The technology function are tasked with identifying and screening innovative technologies, many of which are related to energy efficiency.

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

Relative to coal, the use of LNG to produce electricity results in emissions reductions of up to 50%. Woodside estimates that 14 million tonnes CO₂e were avoided in 2017 as a result of our customer's use of LNG to produce electricity, in place of coal. This saving was calculated using an emission factor of 0.44 tCO₂e/MWh for LNG (assumes CCGT) and 0.72 for coal (assume supercritical coal generator). These emission factors were calculated by WorleyParsons.

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

Other, please specify (Life cycle analysis)

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

71

Comment

C-OG4.6

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

Reduction of methane emissions for subsea infrastructure commences at commissioning via hydro-testing, with pressure testing of subsea equipment during field life. During operations, Woodside has a multifaceted approach to minimise, identify and repair leaks through a documented management system, including mandatory processes addressing technical integrity. Subsea infrastructure is routinely inspected and anomalies investigated. Leak detection and repair (LDAR) is described in C-OG4.7a. Options to reduce venting are investigated as part of energy and production efficiency measures.

COG4.7

(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.

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 FLIR surveys. Assurance activities for routine inspections and equipment maintenance are used to detect emissions. Frequency for maintenance and assurance is risk based.

Woodside facilities are compact and contain a large number of gas detectors. If these gas detectors detect a leak, the source is identified and isolated on a case by case basis. Several FLIR and Snoop (bubble test) surveys have been conducted in recent years at our onshore facilities. The minor fugitive sources that were detected in the surveys were rectified.

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 on a facility level, including total flaring and flaring per kilotonne of production. Targets are set annually and progress towards target tracked on a monthly basis. Flaring performance against target is governed at Executive level and is included in bonuses via an energy efficiency metric. In 2017 Woodside became the first Australian based company to sign the World Bank Zero Routine Flaring Initiative and is documenting a systematic approach to implementing Zero Routine Flaring in 2018.

Research to identify engineered solutions are undertaken to systematically address routine flaring. When non-routine flaring occurs, assessment of options to manage is undertaken to document "as low as reasonably practicable" approach, with decision taken at Executive level where targets are significantly impacted.

The flaring intensity target in 2017 was not achieved due to lower than expected onshore gas plant reliability in 1H 2017. Direct causes have been addressed and further equipment repair is scheduled in 2018. Flaring intensity has reduced by 25% since 2013, with a 29% reduction in flare volume in the same time.

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 Scope 1 and Scope 2 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?

Row 1

Gross global Scope 1 emissions (metric tons CO2e)

3229000

End-year of reporting period

<Not Applicable>

Comment

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.

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. Some minor grid connected electricity from overseas offices is excluded due to availability of data. These values are expected to be immaterial. Location based factors, based on National Greenhouse and Energy Reporting values are employed.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?
Row 1**Scope 2, location-based**

8000

Scope 2, market-based (if applicable)

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

This value includes all our operated assets except for immaterial offices.

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

Refrigerant releases

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)

Emissions are not relevant

Explain why the source is excluded

Under the National Greenhouse and Energy Reporting (NGER) system, refrigerants are not reportable emissions for oil and gas facilities. Emissions from refrigerant releases are also immaterial to Woodside's operated inventory, representing approximately 0.02% of operated Scope 1 and 2 emissions. Refrigerant usage of ozone depleting substances are included as part of annual sustainability reporting.

Source

Scope 2 emissions from minor local offices - various locations

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)

Emissions are not relevant

Explain why the source is excluded

Woodside has a number of offices with fewer than 10 staff. Reliable consumption data from these offices can be difficult to source, but they are deemed immaterial. For context, the Scope 2 emissions of Woodside's head office (~2500 staff) represents only 0.2% of equity (scope 1 and 2) emissions.

C6.5

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

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

238000

Emissions calculation methodology

Woodside requests that third party operators (e.g. shipping and drilling) track and provide information for Scope 3 emissions estimates.

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

100

Explanation

Includes drilling and completions and logistics activities. Reported on operated basis.

Capital goods

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

Not relevant as all identified emissions included as purchased goods and services.

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

Explanation

Not relevant as all identified emissions included as purchased goods and services.

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

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology**Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

Not relevant as all identified emissions included as purchased goods and services.

Upstream transportation and distribution**Evaluation status**

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

Woodside extracts primary resources, so does not have material upstream transportation emissions.

Waste generated in operations**Evaluation status**

Relevant, calculated

Metric tonnes CO2e

3100

Emissions calculation methodology

Multiply landfill waste collected by contractors by National Greenhouse Account emission factor for commercial and industrial waste.

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

100

Explanation**Business travel****Evaluation status**

Relevant, calculated

Metric tonnes CO2e

34600

Emissions calculation methodology

Commercial air travel uses the emissions estimates provided by the travel agent. Helicopter travel converts the distance travelled, to a fuel quantity assuming a burn rate estimate for each helicopter model.

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

100

Explanation

This includes commercial air travel and chartered helicopter travel. Reported on an operated basis.

Employee commuting

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

Emissions calculation methodology

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

Explanation

Employee commuting emissions are immaterial.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

Emissions calculation methodology

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

Explanation

Not relevant as all identified emissions included as scope 1 or purchased goods and services.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

880000

Emissions calculation methodology

Provided by shipping contractors for part of the fleet and extrapolated to reflect the whole fleet.

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

100

Explanation

This includes LNG shipping only. Reported on an operated basis.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

These emissions are captured in "Use of sold products".

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

28230000

Emissions calculation methodology

Based on total production levels, with an estimate of equity share of shipping emission subtracted. Assumes all products are combusted, with emissions as per NGER factors.

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

0

Explanation

This assumes that all sold products are combusted.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

These emissions are captured in "Use of sold products".

Downstream leased assets**Evaluation status**

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology**

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

Explanation

Woodside does not lease any downstream assets

Franchises**Evaluation status**

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology**

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

Explanation

Woodside does not have any franchises.

Investments**Evaluation status**

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology**

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

Explanation

Woodside only reports emissions from facilities it operates.

Other (upstream)**Evaluation status**

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology**

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

Explanation

As a primary producer, Woodside does not have material upstream emissions.

Other (downstream)**Evaluation status**

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology**

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

Explanation

Independent lifecycle analysts have confirmed that downstream emissions beyond Use of sold product are not material.

C6.7

(C6.7) Are carbon dioxide emissions from biologically sequestered 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

0.0008282

Metric numerator (Gross global combined Scope 1 and 2 emissions)

3237000

Metric denominator

unit total revenue

Metric denominator: Unit total

3908000000

Scope 2 figure used

Location-based

% change from previous year

3.8

Direction of change

Decreased

Reason for change

Increased product prices meant that revenue remained relatively stable, despite lower emissions caused by lower production.

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 (kilo-tonne of hydrocarbon)

Metric tons CO2e from hydrocarbon category per unit specified

0.33

% change from previous year

2

Direction of change

Increased

Reason for change

Changes in contractual arrangements mean a greater proportion of our product slate is now LNG, which is more emissions intensive.

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

0.05

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

0.04

Comment

Production has been defined as saleable product and excludes fuel, flare, venting and reinjected reservoir fluids.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization have greenhouse gas emissions other than carbon dioxide?

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	3084400	

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
		IPCC Second Assessment Report (SAR - 100 year)
CH4	140000	IPCC Second Assessment Report (SAR - 100 year)
N2O	4000	Please select
SF6	400	IPCC Second Assessment Report (SAR - 100 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.

	Gross Scope 1 CO2 emissions (metric tons CO2)	Gross Scope 1 methane emissions (metric tons CH4)	Gross Scope 1 emissions (metric tons CO2e)	Comment
Fugitives (Oil: Total)	44400	600	59200	All flaring and venting from oil assets
Fugitives (Oil: Venting)				
Fugitives (Oil: Flaring)				
Fugitives (Oil: E&P, excluding venting and flaring)				
Fugitives (Oil: All Other)				
Fugitives (Gas: Total)	751000	3200	832800	All flaring and venting from gas assets
Fugitives (Gas: Venting)				
Fugitives (Gas: Flaring)				
Fugitives (Gas: E&P, excluding venting and flaring)				
Fugitives (Gas: Midstream)				
Fugitives (Gas: All other)				

	Gross Scope 1 CO2 emissions (metric tons CO2)	Gross Scope 1 methane emissions (metric tons CH4)	Gross Scope 1 emissions (metric tons CO2e)	Comment
Combustion (Oil: Upstream, excluding flaring)				
Combustion (Gas: Upstream, excluding flaring)				
Combustion (Refining)				
Combustion (Chemicals production)				
Combustion (Electricity generation)	817000	70	818800	Fuel gas consumption for power generation.
Combustion (Other)	20100	1	20200	Other associated combustion such as partial combustion of lubricants, diesel start-up consumption. etc.
Process emissions	1440000	130	1442000	Predominately fuel use from LNG process turbines
Emission not elsewhere classified			55500	Includes non-operated venturers where total emissions are provided to Woodside and are not able to be otherwise classified.

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	3225000
Canada	4300

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	1277400	-20.602	116.774
Enfield	125800	-21.481	114.008
Vincent	140700	-21.434	114.033
Pluto LNG	1631000	-20.605	116.759
Non-operated Kitimat Venture	4300	53.939	-128.752
Non-operated Wheatstone Venture	49600	-21.617	115.002

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-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 generation activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	3228800	<Not Applicable>	All of our operations are upstream
Oil and gas production activities (downstream)	0	<Not Applicable>	All of our operations are upstream
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions, metric tons CO2e	Comment
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 in market-based approach (MWh)
Australia	8000	0	11100	0

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 emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Grid connected electricity	8000	0

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)	8000	0	All of our operations are upstream
Oil and gas production activities (downstream)	0	0	All of our operations are upstream
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?

Decreased

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	0	No change	0	We have no renewable energy consumption
Other emissions reduction activities	38000	Decreased	1.3	Woodside implemented energy efficiency and direct abatement opportunities that equate to 38 kt CO2e of emissions reductions or avoided emissions in 2017. This represents approximately 1.3% of total equity emissions. Note CC4.3 is reported on operated basis, so does not align with this value.
Divestment	18000	Decreased	0.6	Woodside sold Northern Endeavour FPSO oil asset in Q3 2016. Gap ridge village was decommissioned in Q1 2017. In 2016-17 the total emissions from these sources represented 0.6% on an equity basis.
Acquisitions	0	No change	1.5	No acquisitions
Mergers		<Not Applicable>	0	No mergers
Change in output	170000	Decreased	5.3	Decrease in production of some assets, partially offset by start up of the Wheatstone LNG facility.
Change in methodology	0	No change	0	No change in methodology
Change in boundary	0	No change	0	No change in boundary
Change in physical operating conditions	0	No change	0	Accounted for in change in production
Unidentified	40000	Decreased	1.2	Calculated by difference
Other	0	Please select	0	

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 undertakes this energy-related activity
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 MWh
		0	68000	68000

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)			
Consumption of purchased or acquired electricity	<Not Applicable>	0	11000	11000
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>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	0	79000	79000

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 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)

Diesel

Heating value

Please select

Total fuel MWh consumed by the organization

67000

MWh fuel consumed for the self-generation of electricity

59000

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

<Not Applicable>

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

60

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

<Not Applicable>

Fuels (excluding feedstocks)

Lubricants

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

700

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

<Not Applicable>

C8.2d**(C8.2d) List the average emission factors of the fuels reported in C8.2c.****Diesel****Emission factor**

70.2

Unit

kg CO2e per GJ

Emission factor source

National Greenhouse and Energy Reporting (Measurement) Determination 2008

Comment**Liquefied Petroleum Gas (LPG)****Emission factor**

60.6

Unit

kg CO2e per GJ

Emission factor source

National Greenhouse and Energy Reporting (Measurement) Determination 2008

Comment

Lubricants

Emission factor

8.7

Unit

kg CO2e per GJ

Emission factor source

National Greenhouse and Energy Reporting (Measurement) Determination 2008

Comment

Average of Petroleum based oil and petroleum based grease for stationary purposes factors

C8.2e

(C8.2e) 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	4203000	4203000	0	0
Heat	56000	56000	0	0
Steam	0	0	0	0
Cooling	3040000	3040000	0	0

C8.2f

(C8.2f) Provide details on the electricity, heat, steam and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

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	14.4	Condensate and oil produced during the year and converted to 'MM boe' for the specific purpose of reserves reconciliation and the calculation of reserves replacement ratios. The 'Reserves and Resources Statement' annual production differs from production volumes reported in the company's annual and quarterly reports due to differences between the sales and reserves product definitions, reserves reported gross of downstream fuel and flare and the 'MMboe' conversion factors applied.
Natural gas liquids, million barrels	0	Included in Dry Gas production (i.e. C4 minus)
Oil sands, million barrels (includes bitumen and synthetic crude)	0	NA
Natural gas, billion cubic feet	422.2	Dry gas produced during the year for the specific purpose of reserves reconciliation and the calculation of reserves replacement ratios. The 'Reserves and Resources Statement' annual production differs from production volumes reported in the company's annual and quarterly reports due to differences between the sales and reserves product definitions, reserves reported gross of downstream fuel and flare and the 'MMboe' conversion factors applied.

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.

ASX Listing Rules. Society of Petroleum Engineers (SPE) Petroleum Resource Management System (PRMS) 2007

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)
Row 1	1334		6346

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 (%)
Crude oil / condensate / Natural gas liquids	14		10
Natural gas	86		90
Oil sands (includes bitumen and synthetic crude)	0		0

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 (%)**

0.3

Comment

Excludes offshore upstream assets with current or planned LNG processing on site or at a liquefaction facility associated with the asset

Development type

Deepwater

In-year net production (%)

6

Net proved reserves (1P) (%)

4

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

4

Net proved + probable + possible reserves (3P) (%)**Net total resource base (%)**

3

Comment

Excludes offshore upstream assets with current or planned LNG processing on site or at a liquefaction facility associated with the asset.

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 (%)**

3

Comment

Excludes offshore upstream assets with current or planned LNG processing on site or at a liquefaction facility associated with the asset

Development type

Tight/shale

In-year net production (%)

1

Net proved reserves (1P) (%)

1

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

1

Net proved + probable + possible reserves (3P) (%)**Net total resource base (%)**

42

Comment

Onshore shale resources with planned LNG processing

Development type

LNG

In-year net production (%)

91

Net proved reserves (1P) (%)

95

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

94

Net proved + probable + possible reserves (3P) (%)**Net total resource base (%)**

52

Comment

Includes offshore upstream assets with current or planned LNG processing on site or at a liquefaction facility associated with the asset

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

(C-CO9.6/C-EU9.6/C-OG9.6) Disclose your investments in low-carbon research and development (R&D), equipment, products, and services.

Investment start date

January 1 2018

Investment end date

December 31 2018

Investment area

Equipment

Technology area

Smart systems

Investment maturity

Small scale commercial deployment

Investment figure

Low-carbon investment percentage

100

Please explain

Li-ion batteries replaces spinning reserve on Goodwyn Alpha platform

Investment start date

January 31 2017

Investment end date

December 30 2017

Investment area

R&D

Technology area

Smart systems

Investment maturity

Applied research and development

Investment figure

Low-carbon investment percentage

100

Please explain

This is looking to broaden the use of batteries to displace spinning reserve at other Woodside facilities

Investment start date

January 31 2017

Investment end date

December 31 2017

Investment area

R&D

Technology area

Renewable energy

Investment maturity

Applied research and development

Investment figure**Low-carbon investment percentage**

100

Please explain

Renewable energy import opportunities for Burrup – solar CST, solar PV and wind.

Investment start date

January 31 2017

Investment end date

December 31 2017

Investment area

Equipment

Technology area

Energy efficiency in transport

Investment maturity

Pilot demonstration

Investment figure**Low-carbon investment percentage**

50

Please explain

LNG for transport fuel. Offshore support vessel fuelled by LNG. LNG loading facility to supply LNG fuel to market.

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 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Reasonable assurance

Attach the statement

[3135755-REP-2018 CDP Assurance Report.pdf](#)

Page/ section reference

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Reasonable assurance

Attach the statement[3135755-REP-2018 CDP Assurance Report.pdf](#)**Page/ section reference****Relevant standard**

ASAE3000

Proportion of reported emissions verified (%)

100

C10.1b

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

Scope

Scope 3- all relevant categories

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Attach the statement[3135755-REP-2018 CDP Assurance Report.pdf](#)**Page/section reference**

Relevant standard

ASAE3000

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?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C1. Governance	Other, please specify (All)	ASAE3000	Our disclosed scope 1, 2 and 3 emissions are subject to reasonable assurance. All other statements have been subject to limited assurance.

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
BC carbon tax

C11.1b

(C11.1b) Complete the following table for each of the emissions trading systems in which you participate.

Australia ERF Safeguard Mechanism

% of Scope 1 emissions covered by the ETS

100

Period start date

July 1 2016

Period end date

June 30 2017

Allowances allocated

0

Allowances purchased

0

Verified emissions in metric tons CO₂e

10160826

Details of ownership

Facilities we operate but do not own

Comment

Note, this question has been responded to on an operated basis to align with the Safeguard Mechanism rules.

C11.1c

(C11.1c) Complete the following table for each of the tax systems in which you participate.

BC carbon tax

Period start date

Period end date**% of 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 in which you participate or anticipate participating?

For the Australian Emissions Reduction Fund, our operated North West Shelf facility exceeded its baseline by approximately 1% in the 2016-17 reporting year. We applied for a multi-year monitoring period, which requires the facility to keep its average emissions under the baseline over a 3 year period. If average emissions exceed the baseline after the 3 year period, the facility will be required to purchase offsets to bring its net emissions number below its baseline. Emissions at all other facilities were below the baseline.

Woodside also has four reforestation projects generating Australian Carbon Credit Units, which can be used to comply with obligations under the Emissions Reduction Fund. Credits from these projects (see C11.2a) are currently being banked. These projects are managed by CO2 Australia on behalf of Woodside Burrup P/L. CO2 Australia has provided the number of credits noted in 11.2a which covers the 2017 calendar year.

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

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

Forests

Project identification

Verified to which standard

Other, please specify (Carbon Farming Initiative)

Number of credits (metric tonnes CO2e)

106684

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

106684

Credits cancelled

No

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
 Change internal behavior
 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 also consider how the price is likely to be implemented. For Australia's emissions reduction fund, 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

We use carbon prices that reflect our expectations of future carbon prices. These vary over time and jurisdiction. We also use include high and low sensitivities to test major decisions, with the high sensitivity reflecting our understanding of a 2°C scenario.

Type of internal carbon price

Implicit price
 Offsets

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

Run a campaign to encourage innovation to reduce climate change impacts

Size of engagement

5

% Scope 3 emissions as reported in C6.5

35

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

As a low emissions fossil fuel, LNG is suitable to displace more emissions intensive fuels in services with few technically feasible zero-emission options. We've identified islanded grids (e.g. remote mine sites) and marine shipping as opportunities. Our engagement to date has been to work with potential customers who operate islanded grids or out of ports near our LNG facilities. Since we have not yet finalised negotiations and commenced operations some assumptions have been made in the calculation of % of scope 3 emissions. This reflects the nominal capacity of the LNG truck loading facility that Woodside is currently constructing to provide LNG to the remote power market, as well as an indicative total fuel demand of the iron ore shipping fleet operating out of the Pilbara; this is then compared to Woodside's current LNG production.

Impact of engagement, including measures of success

We have engaged with miners to discuss the benefits of LNG as a fuel to displace diesel in industrial transport and remote grid applications. A sign of success of this engagement is that we are currently in commercial discussions with potential customers. To catalyse the use of LNG in marine shipping, we are a founding participant in the "Green Corridor" Joint Industry Project. The participants includes Rio Tinto, BHP, FMG and shipping industry participants. One of its first activities has been to design and certify an LNG-fuelled ship that can operate on the Australia to North Asia bulk trade route. This milestone was achieved in October 2017. A second phase of the project is currently underway with the participants continuing to demonstrate interest in adopting LNG as a fuel for this trade.

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 (Aus review of Climate Change Policy)	Support with minor exceptions	Published submission to a formal Government consultation process.	Our full response is available online: http://www.environment.gov.au/submissions/climate-change/review-climate-change-policies-2017/woodside.pdf . Key points include simplifying the emissions reduction fund, consider trade protection issues if baseline decline.

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 the 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 recognises the major challenge to the industry's continued growth is maintaining Australia's international competitiveness in the face of growing global competition. A high-cost local environment and the emergence of new LNG competitors has increased the level of competition Australia faces as it seeks to win market share and attract investment.

How have you, or are you attempting to, influence the 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.

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.

How have you, or are you attempting to, influence the 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.

Trade association

LNG Marine Fuels Institute (LNG-MFI)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

LNG-MFI works with and for industry and government partners to provide information, advocacy and expertise to secure the long term sustainability and impact of LNG as a marine fuel. It argues that reducing SOx, NOx, CO2 and particulates

e emissions from ships ensures positive environmental outcomes now and into the future.

How have you, or are you attempting to, influence the position?

We participate as members in regular information and policy discussions and encourage LNG-MFI to offer pragmatic solutions that enable LNG as a marine fuel to grow, and to explain its benefits.

Trade association

CO2CRC

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

CO2CRC is Australia's leading carbon capture and storage (CCS) research organisation. Its mission is develop carbon capture, utilisation and storage as a socially, technically and commercially viable option for net zero emissions

How have you, or are you attempting to, influence the position?

As a Partner and with a member on the Board of the CO2CRC, Woodside supports its work and engages in discussion about its strategic direction.

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 a detailed position on climate change in our Sustainable Development Report 2017 which is 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. 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 AIMS) 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 mainstream reports

Status

Complete

Attach the document

[14.02.2018+Annual+Report+2017.pdf](#)

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Other metrics

Publication

In voluntary sustainability report

Status

Complete

Attach the document

[Sustainable Development Report 2017.pdf](#)

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Other metrics

Publication

In voluntary communications

Status

Complete

Attach the document

[2017 Climate change policy review submission.pdf](#)

Content elements

Other, please specify (Advice on Government Policy)

Publication

Other, please specify (Woodside Sustainability website)

Status

Complete

Attach the document**Content elements**

Other, please specify (Various aspects of climate change)

C14. 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.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

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



Need help? [Contact us.](#)

© 2018 CDP Worldwide
 Registered Charity no. 1122330
 VAT registration no: 923257921

A company limited by guarantee registered in England no. 05013650

[Accredited solutions providers](#)

[Offices](#)

[Staff](#)

[Trustees, board and advisors](#)

[Cookies](#)

[Privacy](#)

[Terms & Conditions](#)

[Careers](#)
