Climate → Change Report 2019

Santos

This report contains forward looking statements that are subject to risk factors associated with the oil and gas industry. It is believed that the expectations reflected in these statements are reasonable, but they may be affected by a range of variables which could cause actual results or trends to differ materially, including but not limited to: price fluctuations, actual demand, currency fluctuations, geotechnical factors, drilling and production results, gas commercialisation, development progress, operating results, engineering estimates, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory developments, economic and financial markets conditions in various countries, approvals and cost estimates. The report does not purport to represent the views of Santos' joint venture partners across operated or non-operated assets. Information provided in this report does not include the Quadrant Energy assets acquired by Santos on 27 November 2018.

Contents

CEO statement

I am pleased to present Santos' 2019 Climate Change Report, our second annual publication, building on the landmark work of our inaugural report in 2018.

KEVIN GALLAGHER

For more than 60 years, Santos has been working in partnership with landholders and local communities to safely and sustainably develop Australia's natural gas, now more than ever, the fuel for the future.

As the International Energy Agency reports, between now and 2040 natural gas is expected to grow to a market share of approximately a quarter of all global energy demand at the end of that period.

Much of that growth is driven by the recognition of the key role natural gas will continue to play in a low carbon future.

In Australia, natural gas is the perfect clean energy partner for renewables, providing reliable power 24/7. While in Asia, demand for Australian natural gas is growing as more and more countries switch from coal to natural gas to reduce air pollution and greenhouse gas emissions.

Australian liquefied natural gas exports could reduce global emissions by approximately 300 million tonnes of CO2 equivalent per year, three times the size of Australia's annual emissions reduction target under the Paris Agreement.

With our strong liquefied natural gas growth position, Santos is poised to play a leading role in these significant emissions reductions, resulting in a meaningful contribution to the world's climate change response.

Australian liquefied natural gas exports could reduce global emissions by approximately 300 million tonnes of CO2 equivalent per year, three times the size of Australia's annual emissions reduction target under the Paris Agreement.

Santos' five core, long-life natural gas assets are economically resilient through different scenarios consistent with global efforts to reduce greenhouse gas emissions.

Our climate change policy fits with both our vision to be Australia's leading natural gas company by 2025, and with our purpose to provide sustainable returns for shareholders by supplying reliable, affordable, clean natural gas to improve the lives of people in Australia and Asia.

While the emissions benefits of natural gas over coal are well known, society expects us to deliver ever cleaner energy, reducing our emissions during the production process.

In our last report I introduced you to the new Energy Solutions team that is looking for opportunities to reduce Santos' carbon footprint and prepare our business for a lower-carbon future.

I am pleased to report this year that Energy Solutions is already producing real results in the Cooper Basin, converting pumps fuelled by oil to solar power, a project that will be scaled up to reduce our carbon footprint and free up more fuel to sell to our customers.

In this year's report we announce our medium-term (2025) carbon targets, which centre on the crucial role of natural gas in reducing global emissions. The three targets look to reduce emissions from our operated activities and work on step-change technologies with the potential to provide significant carbon offset opportunities.

We will continue to evaluate new project opportunities and technologies that if successful will further reduce our footprint, making our business stronger and ever more sustainable in the future.

I look forward to providing a further update on our progress next year.

Kevin Gallagher
Managing Director & CEO
February 2019

Executive summary

Santos' strategy, which focuses on long-life natural gas assets in Australia and Papua New Guinea, recognises the transition to a lower-carbon future. We are well positioned to take advantage of the critical role of natural gas in the future energy mix.

This report outlines Santos' approach to climate change, with a focus on Santos' emissions reporting process (including fugitive emissions), our medium-term emission targets and the progress of emissions reduction projects. This report should be read in conjunction with Santos' inaugural 2018 Climate Change Report, also available on our website.

This report is aligned with the recommendations of the G20's Task Force on Climate-Related Financial Disclosures (TCFD), addressing the company's strategy, metrics and targets, governance and risk management.

STRATEGY

Climate change considerations, reducing global greenhouse gas emissions and improving air quality continue to be significant inputs into our strategy.

+ Santos has a strong incentive to keep emissions below the designated baseline and continues to focus on emissions reduction.
+ Santos' natural gas-focused portfolio is economically resilient under all of the International Energy Agency's Energy Technology Perspectives 2017 scenarios.

METRICS AND TARGETS

Santos transparently reports its greenhouse gas emissions, including fugitive methane emissions.

+ Santos has commenced a scientific study led by CSIRO to obtain baseline ambient methane levels and sources in our Arcadia project area.
+ In addition to Santos' long-term aspiration of achieving net-zero emissions from our operations by 2050, medium-term targets have been set to reduce emissions across our operated assets.

GOVERNANCE AND RISK MANAGEMENT

Santos has a dedicated Environment, Health, Safety and Sustainability Committee, which is responsible for monitoring and reviewing climate change risks.

+ Climate change policy positions have been in place since 2008, supporting our management of emissions and climate change risks and opportunities.
+ Climate change is incorporated into Santos' enterprise risk management processes and practices.
+ The company actively monitors current and potential areas of climate change risk and takes action to mitigate the impacts on its objectives and activities.

Introduction

Santos' Climate Change Policy

OUR COMMITMENT

Santos recognises the science of climate change and supports the objective of limiting global temperature rise to less than 2 degrees Celsius.

Our strategy focuses on natural gas which we believe will continue to play a key role in a low carbon future.

We are committed to being part of the solution by supporting the twin objectives of limiting greenhouse gas emissions while providing access to reliable and affordable energy to domestic and global markets.

OUR ACTIONS

We will:

- Work with governments and stakeholders in the design of climate change regulation and policies
- Factor carbon pricing and greenhouse gas emissions into all business decision-making
- Set greenhouse gas emission targets consistent with the objective of limiting global temperature rise to less than 2 degrees Celsius
- Identify and pursue opportunities to reduce greenhouse gas emissions within our operations and through the supply chain
- Identify and pursue opportunities to offset greenhouse gas emissions where relevant in further support of achievement of emissions targets
- Identify, manage and mitigate climate change risks for our activities
- Report on the company's climate change governance, strategy, risk management and targets and metrics in a transparent manner.

GOVERNANCE

The Environment, Health, Safety and Sustainability Committee is responsible for reviewing the effectiveness of this policy.

Task Force on Climate-Related Financial Disclosures

This report outlines Santos' approach to climate change, addressing the themes recommended by the G20's Task Force on Climate-Related Financial Disclosures (TCFD).

This is our second year of reporting against the TCFD recommendations. Our 2018 Climate Change Report can be accessed via the Santos website.

STRATEGY

The actual and potential impacts of climate-related risks and opportunities on the organisation's businesses, strategy and financial planning.

METRICS AND TARGETS

The metrics and targets used to assess and manage relevant climate-related risks and opportunities.

GOVERNANCE

The organisation's governance around climate-related risks and opportunities.

RISK MANAGEMENT

The processes used by the organisation to identify, assess, and manage climate-related risks.

International Energy Agency scenarios

The International Energy Agency (IEA) is a global intergovernmental organisation that provides energy and climate policy advice, including scenarios for future global energy demand and climate change.

In our 2018 Climate Change Report, we used scenarios developed by the IEA for their Energy Technology Perspectives (ETP) 2017 Report, representing three global pathways for energy sector development and climate change outcomes to 2060.

As the International Energy Agency has not subsequently updated their Energy Technology Perspectives, our 2019 Climate Change Report will retain the IEA ETP 2017 scenarios.

Santos continues to review credible forecasts and update its scenario analysis for material changes. These will be detailed in future reports by the company.

Reference Technology Scenario (RTS)

Based on existing energy and climate commitments, including those made under the Paris Agreement.

Global climate mitigation objectives are not achieved, resulting in an average temperature increase of 2.7°C by 2100.

Total energy demand projected to grow by 20% by 2030 and almost 50% by 2060.

2°C Scenario (2DS)

Widespread deployment of energy efficiency initiatives.

50% chance of limiting average global temperature increase by 2100 to 2°C.

Annual energy-related CO2 emissions reduced by 70% from today's levels by 2060, reaching a carbon-neutral level by 2100.

Total energy demand projected to grow by 4% by 2030 and 17% by 2060.

Beyond 2°C Scenario (B2DS)

Deployment of known technology innovations including significant negative emissions through activities such as deployment of bioenergy with carbon capture and storage (CCS).

Consistent with the globally-agreed goal of limiting temperature rise to "well below" 2°C.

Energy demand projected to remain flat in the near to medium-term, and grow by 10% by 2060.

The role of natural gas in a lower-carbon future

The IEA expects natural gas to grow to supply a quarter of all global energy demand into the 2030s in all scenarios.

Natural gas produces 50% less greenhouse gas emissions than coal when used to generate electricity.

Natural gas can significantly improve air quality, particularly in Asia.

Natural gas has a key role to play in a lower-carbon future as it is the perfect partner for renewables, quietly powering Australia 24/7 when the wind doesn't blow or the sun doesn't shine.

Santos understands the need to limit emissions and make natural gas ever cleaner by reducing emissions associated with production. As global energy demand grows, the world must support the dual objectives of limiting climate change and providing competitively-priced energy to a growing and increasingly urbanised population, particularly in developing countries.

Natural gas: A fuel for the future

Natural gas has a key role in creating a lower-carbon future, helping to reduce greenhouse gas emissions by displacing coal and other higher-emitting sources.

When used in power generation, natural gas is 50% less carbon-intensive than coal.[1] If all of Australia's forecast 85 million tonnes of liquefied natural gas exports were to replace legacy coal-fired power generation in Asia, Australian natural gas would reduce global greenhouse gas emissions by 300 million tonnes per year. To put this in context, that is three times the size of Australia's annual emission reduction target under the Paris Agreement

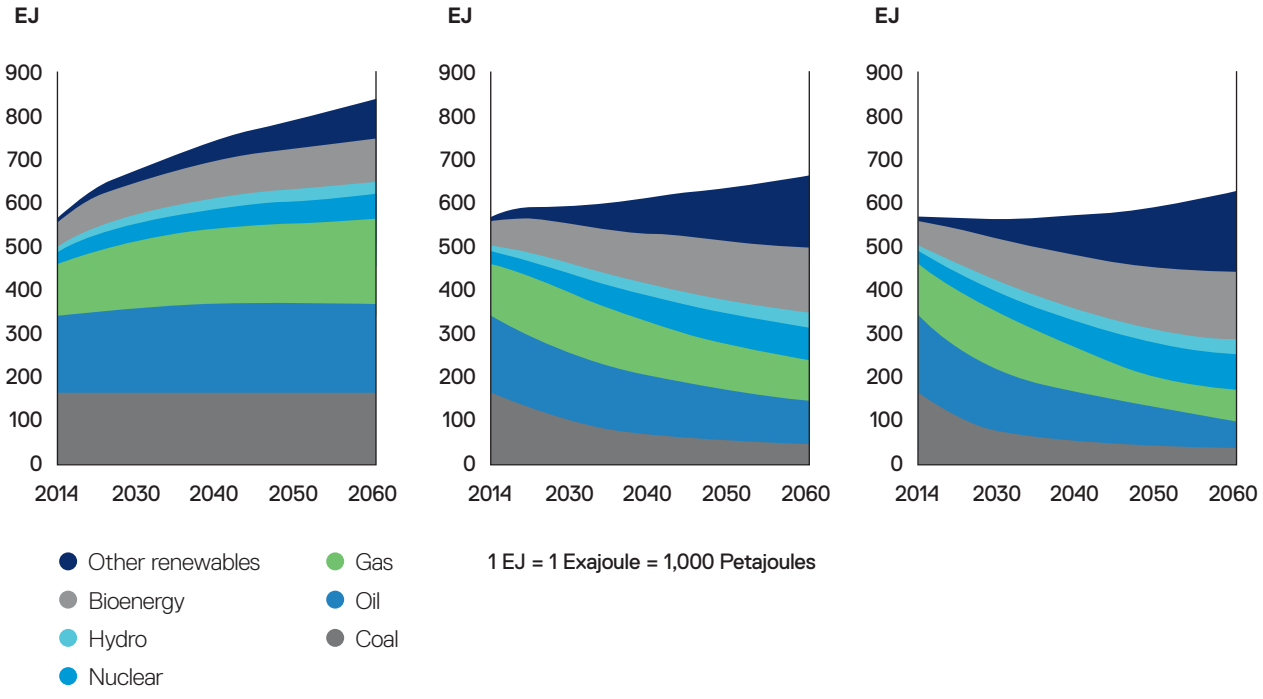
Going forward, natural gas also has an important role in supporting the integration of renewable power generation by providing flexible, scalable and reliable energy to manage the intermittencies inherent in solar and wind power.

The importance of natural gas in the global energy mix to 2060 is recognised in all three IEA scenarios with gas demand forecast to grow to 2030. Natural gas is required to displace coal and oil in the energy mix to reduce greenhouse gas emissions and improve air quality.

Under the IEA's Reference Technology Scenario, global gas demand is projected to grow by 30% by 2030 – faster than overall energy demand growth – and by almost 60% by 2060.

In the 2°C Scenario, gas demand grows by 9% by 2030 and in the Beyond 2°C Scenario, it increases by 6% by 2030.

Figure 1
Global energy demand under the RTS, 2DS and B2DS from the IEA.[2]



1 IPCC (2011), Summary for Policymakers. In: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation (available at srren.ipcc-wg3.de/report/IPCC_SRREN_SPM.pdf)
2 IEA, Energy Technology Perspectives, June 2017. Notes: source data has values for 2014, 2025, 2030, 2035, 2040, 2045, 2050, 2055, 2060

Reducing Asian emissions has a global impact

In Asia in particular, two socio-economic and policy trends are driving a major shift from coal to gas-fired power generation.

+ Continuing economic development and improvement in living standards increasing demand for competitively priced electricity.
+ Widespread concerns about air quality.

With Asia accounting for half of the world's 50 billion tonnes annual greenhouse gas emissions,[3] the shift to natural gas will have a significant impact on global greenhouse emissions.

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Shanghai, China

3 World Resources Institute, CAIT Climate Data Explorer

Air quality concerns are increasing global demand for natural gas

Natural gas can significantly improve air quality in urban centres due to its negligible particulate and Sulphur Oxides (SOX) emissions, and low Nitrogen Oxides (NOX) emissions.[4]

As a result, there is a policy shift across Asia to increase the use of natural gas as an economic and reliable alternative to coal.

Leading the way is China, which has increased natural gas consumption to combat pollution under its Blue Sky Defence policy[5] and previous action plans. Air pollution in 62 cities tracked by the World Health Organisation[6] dropped by an average of 30% between 2013 and 2016.

China's liquefied natural gas imports increased rapidly in 2017, and the Chinese government is aiming to increase the share of natural gas in the energy mix from approximately 5% in 2015 to 8-10% in 2020.[7]

China's Blue Sky Defence policy has since been expanded to cover 40 cities in northern China and coal-to-gas replacement will continue to drive natural gas demand through the 2020s.

Elsewhere in Asia:

+ South Korea has announced the closure of old coal-fired power stations between March and June each year
+ India and Taiwan have announced more aggressive targets for the share of natural gas in the energy mix
+ Delays in the restart of Japanese nuclear power plants is resulting in stronger liquefied natural gas demand.

Demand for energy will continue to grow as living standards increase in developing economies and more people expect access to electricity and mobility.

The IEA estimates there are still 1 billion people in the world who do not have access to electricity and 2.7 billion currently without access to clean cooking facilities.[8] Around half of these people are in developing Asia, where natural gas imports from countries including Australia and PNG, will help to increase the supply of reliable, competitively-priced, clean energy.

Santos is part of the solution

Santos is committed to limiting greenhouse gas emissions while providing access to reliable and affordable energy to domestic and global markets.

As an established exporter of liquefied natural gas, Santos is well positioned to support Asian markets in their pursuit of cleaner air through the use of natural gas.

Santos currently sells around 3 million tonnes per annum of liquefied natural gas to Asian customers, predominantly in China, South Korea, Japan and Malaysia.

Our aim is to increase liquefied natural gas production by another 50% by 2025 and our low-cost operating model, geographic proximity and cost-competitive brownfield expansion opportunities mean we are well-placed to satisfy increased Asian demand while also lowering emissions and improving air quality.

Similar emissions and air quality benefits are achieved in Australia when natural gas partners with renewables to provide reliable power 24/7.

4 IEA, World Energy Outlook Special Report 2016: Energy and Air Pollution
5 Three-Year Action Plan to Win the Blue Sky Defence War, China State Council, 2018
6 WHO Ambient Air Quality Database (Update 2018), World Health Organisation
7 Australian Government, Resources and Energy Quarterly, March 2018
8 IEA, World Energy Outlook 2018

Metrics and targets

Santos transparently reports its greenhouse gas emissions, including fugitive methane emissions.

Santos has commenced a scientific study led by CSIRO to obtain baseline ambient methane levels and sources in our Arcadia project area.

In addition to Santos' long-term aspiration of achieving net-zero emissions from our operations by 2050, medium-term targets have been set to reduce emissions across our operated assets.

Emissions targets

In our 2018 Climate Change Report we communicated our long-term aspiration to achieve net-zero emissions from our operations by 2050, in line with global ambitions to limit temperature rise to well below 2°C.

This represents a significant shift from business as usual and will require considerable effort to achieve.

In 2018 we developed medium-term targets that are aligned with our natural gas-focused corporate strategy and our commitment to limiting greenhouse gas emissions, while providing access to reliable and affordable energy to domestic and global markets.

There are three elements comprising our medium-term targets.

Target 1

Reduction of global emissions through liquefied natural gas export growth

If Australia's forecast 85 million tonnes of liquefied natural gas exports replace legacy coal-fired power generation in Asia, then Australian liquefied natural gas reduces 300 million tonnes of global greenhouse gas emissions every year. To put this in context, this emissions reduction is three times the size of Australia's annual emissions reduction target under the Paris Agreement. The greatest impact Santos can have in reducing global greenhouse emissions in a meaningful way will be to export more liquefied natural gas, replacing higher-emitting coal in household heating and cooking, industrial processes and power generation.

As such, our target is to grow liquefied natural gas exports to at least 4.5 million tonnes per annum (mtpa) by 2025 to contribute to global emissions reduction by supporting the growing demand for clean gas as an increasing part of the energy mix of developing economies.

By achieving this target, Santos' cumulative liquefied natural gas exports from 2020 to 2030 could displace the equivalent of 15% of Australia's total cumulative emission reduction target for this period.[9]

9 Australian emissions reduction from 2020 to 2030 of 868 MtCO2e is from Tracking Australia's Emissions Reduction Targets, December 2017, Department of Environment and Energy

Target 2

Economically reduce emissions from our base operations

In addition to our global emissions impact, we are committed to minimising the emissions footprint of our operations. Our target is to reduce emissions by more than 5% across existing operations in the Cooper Basin and Queensland by 2025. This equates to approximately 0.4 million tonnes CO2e per annum.

This 5% reduction target is backed by economically viable projects identified by Santos' Energy Solutions team. The projects are primarily energy efficiency and renewable integration projects and are based on current technology and policy. Through continual optimisation processes and energy efficiency projects over the past decade, the economic and technically simple projects have already been delivered, making it more challenging to achieve incremental reductions.

Target 3

Pursue step-change emissions reduction technology

Our third target is to assess the feasibility and, if feasible, invest in technology and innovation which can deliver a step-change in emissions such as:

+ Carbon capture, utilisation and storage (CCUS) to capture carbon dioxide that would otherwise be emitted and either safely store it underground or use it to increase the productivity of underground oil deposits

+ Solar thermal technology to harness solar energy for gas processing.

Santos' large acreage and infrastructure positions place the company in a strong position as it continues to monitor advances in carbon capture and storage technologies and opportunities.

Should government policies enabling a carbon market evolve in Australia, and as international linkages evolve, further low-emissions technologies and offset opportunities will become more economic.

Case study

MOOMBA, SOUTH AUSTRALIA CO2 SEPARATION FACILITIES

Case study

Reducing emissions with carbon capture, utilisation and storage (CCUS)

Santos is actively pursuing a project to capture CO2 emissions from the Moomba processing plant and inject it into Cooper Basin oil reservoirs to enhance oil production from these reservoirs.

In September 2018, Santos announced a dedicated appraisal program to test the potential for CO2 injection.

The work we are doing on this project could result in the development of Australia's first commercial-scale use of carbon capture, utilisation and storage for enhanced oil recovery and contribute to a significant reduction in Santos' CO2 emissions in the Cooper Basin.

When CO2 is injected into oil reservoirs to enhance oil recovery, some of the CO2 remains held within the reservoir whilst some returns to surface with the produced oil and is captured for re-injection.

During 2018, Santos completed studies indicating positive potential for carbon capture, utilisation and storage. These included miscibility testing, static reservoir modelling and concept studies.

Throughout 2019, we will spend approximately A$10 million to execute a defined appraisal program to assess incremental improvements in oil recovery from oil reservoirs in the Cooper Basin using captured CO2.

As a part of the ongoing appraisal program, Santos is partnering with experts in the field, such as the CSIRO, who have substantial scientific and practical expertise in CO2 injection.

The project involves centralised capture and compression of CO2 at the Moomba Gas Plant, enabling the development of multiple target reservoirs and development phases. The initial phase is estimated to capture approximately 0.3 MtCO2e from the Moomba Gas Plant through injection and recycling.

This project has the potential to be scaled up in future phases to capture all the CO2 generated in the Cooper Basin. In the longer term, the Cooper Basin could become a carbon storage hub for Eastern Australia.

Carbon capture... a global perspective

Globally there are currently 18 large-scale CCUS facilities in operation, including 14 that are used for enhanced oil recovery.[10]

In the United States, where the majority of these projects currently operate, CO2 captured through enhanced oil recovery methods are now being recognised for their contribution to the reduction in carbon emissions, with a new law passed in 2018 to grant credits for every tonne of CO2 permanently stored through the process.[11]

In the longer term, technology developments such as CCUS will be required to meet both emissions reduction targets and growing energy demand.

Under the IEA's Reference Technology Scenario, captured volumes of carbon dioxide (CO2) are projected to grow from approximately 30 MtCO2e today to 330 MtCO2e by 2030 and over 1,200 MtCO2e by 2060.[12]

Under the 2°C Scenario, the requirement for CCUS increases dramatically to over 1,100 MtCO2e by 2030 and over 6,700 MtCO2e by 2060. This requirement is doubled again under the Beyond 2°C Scenario.[13]

10, 11 Global CCS Institute, The Global Status of CCS, 2018
12, 13 IEA, Energy Technology Perspectives, 2017

Emissions measurement and reporting

Australia has a comprehensive greenhouse gas reporting scheme, established by the federal National Greenhouse and Energy Reporting Act 2007 (NGER). The NGER Act is supported by the National Greenhouse and Energy Reporting (Measurement) Determination 2008, which provides methods and criteria for calculating greenhouse gas emissions and energy data under the NGER Act. The NGER reporting scheme covers.[14]

+ Scope 1 and scope 2 emissions,[15] energy produced and consumed
+ Greenhouse gases including carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O)
+ Emission sources including the combustion of fuels for energy and fugitive emissions from the extraction of natural gas.

Santos has been reporting under the NGER scheme since its inception in 2008. In addition our scope 1 greenhouse gas emissions are independently audited annually. Please refer to Table 2 following for the latest 2017-18 data and comparison over the past 5 years.

Santos' operated scope 1 emissions sources consist of fuel combustion (58% in 2017/18); flare, vent, CO2 removal (41%); and fugitive leaks (<1%). Consistent with industry practice, Santos primarily adopts the default emission factor prescribed in the NGER Determination to calculate greenhouse gas emissions:

+ Fuel emissions – quantity of fuel is measured, then multiplied by the prescribed emissions factor from the NGER Determination
+ Flare, vent, CO2 removal emissions – quantity of gas flared or vented is measured, then multiplied by the prescribed emissions factor from the NGER Determination
+ Fugitive emissions – prescribed activity driver (throughput / equipment count / length of pipeline) multiplied by a prescribed emission factor under the NGER Determination.

Santos has been reporting under the NGER scheme since its inception in 2008. In addition our scope 1 greenhouse gas emissions are independently audited annually.

Santos' operated scope 2 emissions sources consist of electricity purchased for our operations in Fairview and Roma in Queensland, Port Bonython processing facility near Whyalla in South Australia and minor amounts for other activities including office buildings. Emissions are calculated from amounts of electricity purchased multiplied by prescribed state-based electricity emissions factors.

Santos' operated scope 3 emissions are reported as the emissions associated with the combustion of our products. The quantity of each individual product (as reported to the ASX) is multiplied by the prescribed emissions factor from the NGER Determination. The calculations are conservative as they assume that all products are combusted as a fuel, whereas a portion of Santos' products are used as a feedstock, for example ethane produced by Santos is used as a feedstock in the manufacture of polyethylene.

14 For further information, please refer to http://www.environment.gov.au/climate-change/climate-science-data/greenhouse-gas-measurement/nger and http://www.cleanenergyregulator.gov.au/NGER/About-the-National-Greenhouse-and-Energy-Reporting-scheme/Greenhouse-gases-and-energy

15 Scope 1 emissions occur from sources controlled by the company, for example emissions from fuel, flare and vent; Scope 2 emissions are indirect, mainly electricity consumption

Table 2
Greenhouse gas emissions data.[16]

Greenhouse gas (GHG) emissions and energy consumption (Santos gross operated, unless otherwise stated, financial years)						
	Units	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**
Direct energy consumption	PJ	32	34	48	65	65
Indirect energy consumption[17]	PJ	0.18	0.19	0.19	1.47	1.85
Scope 1 (direct GHG emissions)	MtCO2e	3.94	4.35	5.04	5.82	5.49
Scope 2 (purchased electricity)[18]	MtCO2e	0.03	0.03	0.03	0.31	0.39
Scope 3 (product use)	MtCO2e	18.0	15.5	18.8	20.4	19.1
Scope 1 (Santos equity share)	MtCO2e	3.36	3.63	3.79	3.79	3.57
Intensity (Santos equity share)	ktCO2e/mmboe	65	63	63	63	62
Scope 2 (Santos equity share)	MtCO2e				0.09	0.16
Scope 3 (Santos equity share)	MtCO2e				22.0	20.6
Further details of Scope 1 emissions and flared and vented hydrocarbon (Santos gross operated)						
Emissions of CO2	MtCO2e	3.49	3.86	4.51	5.09	4.99
Emissions of CH4	MtCO2e	0.45	0.48	0.53	0.72	0.49
Emissions of N2O	MtCO2e	0.00	0.01	0.01	0.01	0.01
Emissions from fuel	MtCO2e	1.70	1.67	2.38	3.19	3.18
Emissions from flare	MtCO2e	0.30	0.54	0.38	0.25	0.18
Emissions from vent	MtCO2e	0.30	0.30	0.30	0.31	0.24
Emissions from CO2 removal	MtCO2e	1.62	1.81	1.94	2.03	1.85
Emissions from fugitives	MtCO2e	0.02	0.02	0.03	0.04	0.04
Volume of flared hydrocarbon	Million m3	94.1	212.2	134.8	90.5	56.8
Volume of vented hydrocarbon	Million m3	35.4	38.0	45.0	38.7	33.0

16 Data includes Santos' Asian assets which were sold to Ophir Energy (ASX release – Santos completes sale of non-core Asian assets – 7 September 2018), but does not include assets from the acquisition of Quadrant Energy (ASX release - Santos completes acquisition of Quadrant Energy – 27 November 2018). Emissions and energy are reported on an Australian financial year basis in accordance with the National Greenhouse and Energy Report Act, 2007. Scope 1 emissions occur from sources controlled by the company, for example emissions from fuel, flare and vent; Scope 2 emissions are indirect, mainly electricity consumption; Scope 3 emissions represent indirect emissions when our products are combusted by our customers to produce energy

17 Increase in 2016-17 is primarily due to the purchase of electricity at Fairview and Roma Hub in Queensland

18 Increase in 2016-17 is primarily due to the purchase of electricity at Fairview and Roma Hub in Queensland

Santos' fugitive leak detection and repair practices

Fugitive emissions are minor losses from oil and gas equipment, for example, from valves on pipelines, associated water gathering systems and within gas plants. Essentially these are minute leaks that may be barely detectable.

While emissions associated with fugitive leaks comprise less than 1% of Santos' operated emissions, we consider it important to ensure that we have a plan to address all emissions sources.

We survey gas field infrastructure, including well heads, pipe joints and flanges, using gas leak detectors and infrared cameras. Santos has well integrity processes to ensure that hydrocarbons do not leak from wells. Each asset is required to develop a specific well integrity plan, which outlines the defined regulatory framework and accountability as required by legislation, as well as the frequency of well integrity assessments.

Santos complies with all relevant state and territory requirements in relation to fugitive emissions management. As an example, in Santos' Queensland operations, leak detection practices are undertaken in accordance with the Petroleum and Gas (Production and Safety) Regulation 2004 and the Queensland Government's Code of Practice for Leak Management, Detection and Reporting for Petroleum Facilities (Department of Natural Resources and Mines, 2017). These regulations and codes require operators to take all reasonable and necessary steps to avoid leakage from gas processing infrastructure and apply a risk-based approach to inspection frequencies with minimum timeframes and triggers.

Scientific study into background methane

To measure fugitive emissions from oil and gas operations, natural biological and geological sources (for example from soils, wetlands, rivers and agriculture) must be identified and understood. This is known as background methane.

Santos has commenced a program across its operated onshore assets to determine the quantity of any fugitive emissions over and above background levels.

Santos has engaged CSIRO to undertake field monitoring, including measuring background levels of methane, investigating fluxes and identifying sources of elevated methane levels.

This program builds on from previous work by CSIRO in New South Wales[19] and Queensland.[20] Santos participated in a CSIRO study in 2013 and 2014, which measured fugitive emission leakage in 43 coal seam gas wells and found it was very low.[21]

CSIRO also conducted monitoring on Santos areas in the Northern Territory's McArthur basin in 2018, in line with recommendations of the Final Report of the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory.[22] Further CSIRO monitoring has commenced on Santos' Arcadia field in Queensland.

19 Regional methane emissions in NSW CSG Basins, September 2017. CSIRO Australia
20 Characterisation of Regional Fluxes of Methane in the Surat Basin, Queensland. Report to the Gas Industry Social and Environmental Research Alliance (GISERA). Report No. EP185211, October 2018. CSIRO Australia
21 Refer http://www.environment.gov.au/climate-change/climate-science-data/greenhouse-gas-measurement/publications/csg-fugitive-emissions for further information
22 Refer https://www.csiro.au/en/News/News-releases/2018/New-partnership-to-deliver-methane-emission-science-for-the-NT for further information

Carbon offsets – Chinchilla White Gums

Over the last decade, Santos and joint venture partners have developed a 1250 hectare plantation of locally adapted native tree species, mainly Chinchilla White Gum, near Injune, Queensland.

In 2018 Santos and these partners received approximately 30,000 carbon units under the Federal Government's Emissions Reduction Fund, recognising the environmental benefit of the carbon stored in these trees.

The Emissions Reduction Fund provides incentives for Australian businesses, farmers, land holders and others to adopt new practices and technologies to reduce Australia's greenhouse gas emissions.

Santos' strategy and climate change

Climate change considerations, reducing global greenhouse gas emissions and improving air quality continue to be significant inputs into our strategy.

Santos has a strong incentive to keep emissions below the designated baseline and continues to focus on emissions reduction.

Santos' natural gas-focused portfolio is economically resilient under all of the International Energy Agency's Energy Technology Perspectives 2017 scenarios.

Our vision and portfolio

Santos' natural gas portfolio puts the company in a strong position to supply growing energy needs in Australia and Asia. Our vision is to be Australia's leading natural gas company by 2025 by growing our natural gas portfolio safely and sustainably, in partnership with the communities where we operate.

We aspire to reduce emissions and improve air quality across Asia and Australia by replacing coal with natural gas and supporting the economic development of combined gas and renewable energy solutions.

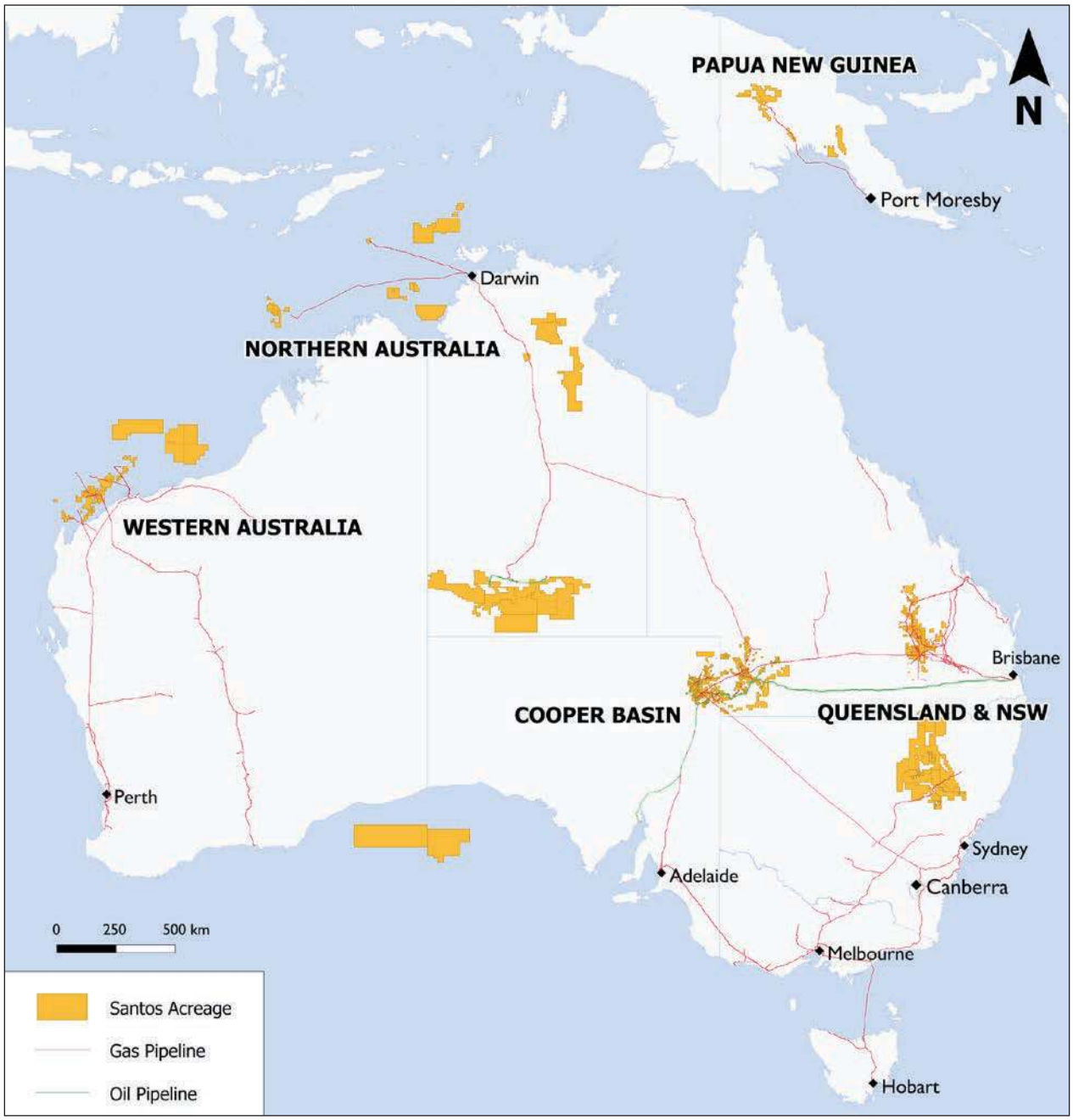
Figure 2
Santos' clear and consistent Transform, Build and Grow Strategy.

Since 2016, Santos has had a focused strategy to transform, build and grow the business based on five core, long-life natural gas assets in the Cooper Basin, Western Australia, Northern Australia, Queensland and Papua New Guinea, as shown in Figure 3.

It is a strategy which is delivering tangible results across the business, as demonstrated in the 2018 full-year results, including a return to dividends for shareholders.

We supply natural gas to every market in Australia, providing the energy to fuel the industries and companies that make our nation great. Through our recent Quadrant Energy acquisition, we are now the largest domestic gas supplier in Western Australia.

Figure 3
Santos' five core, long-life natural gas assets.



A strategic focus on resilience in a lower-carbon future

Santos has had a dedicated carbon team since the early 2000s and in 2018 the carbon and sustainability team was incorporated into the Risk, Audit and Sustainability group, recognising the strategic importance of managing climate change risk and opportunities.

We have been incorporating greenhouse gas emissions and carbon pricing into economic planning and decision making for over 10 years.

Santos tests existing and new projects against low, base and high carbon price assumptions, using a base price that is consistent with Australia's carbon policy, currently the Safeguard Mechanism.

These carbon price assumptions are refreshed annually along with other corporate economic assumptions. Santos' investment screening and decision making processes take into account the greenhouse gas emissions from particular projects and the economic impact that a carbon price would have on our business. Sensitivity analyses are performed using a range of carbon policy regimes including the Safeguard Mechanism and Emissions Trading Scheme.

The Santos corporate strategy team uses scenario analysis to consider a range of energy mix futures. These scenarios are used to understand the demand for Santos' products and how this changes under different climate change policies.

Santos supports a level playing field through a global carbon price across all sectors of the economy to efficiently and effectively meet greenhouse gas reduction targets. Broad coverage of emitting sectors and a price signal for consumers are important to achieve lowest cost of abatement.

Managing emissions under the Safeguard Mechanism

Santos assets are subject to the Australian carbon cost policy known as the Safeguard Mechanism, which places a cap (baseline) on cost-free emissions from Australian facilities emitting greater than 100 kilo-tonnes carbon dioxide equivalent. Under this policy, annual emissions for each facility are compared against the facility's baseline, and responsible entities must purchase and surrender carbon units in an amount equivalent to any exceedance for the year.

Nine operated facilities, comprising the vast majority of our operated emissions, are covered by this policy. Santos has a strong incentive to keep emissions for each facility below its designated baseline, or will effectively have to pay a carbon price which is trading at around A$15 per tonne CO2e (December 2018) for any emissions above the baseline.

We are constantly looking at ways to reduce emissions as part of standard operations.

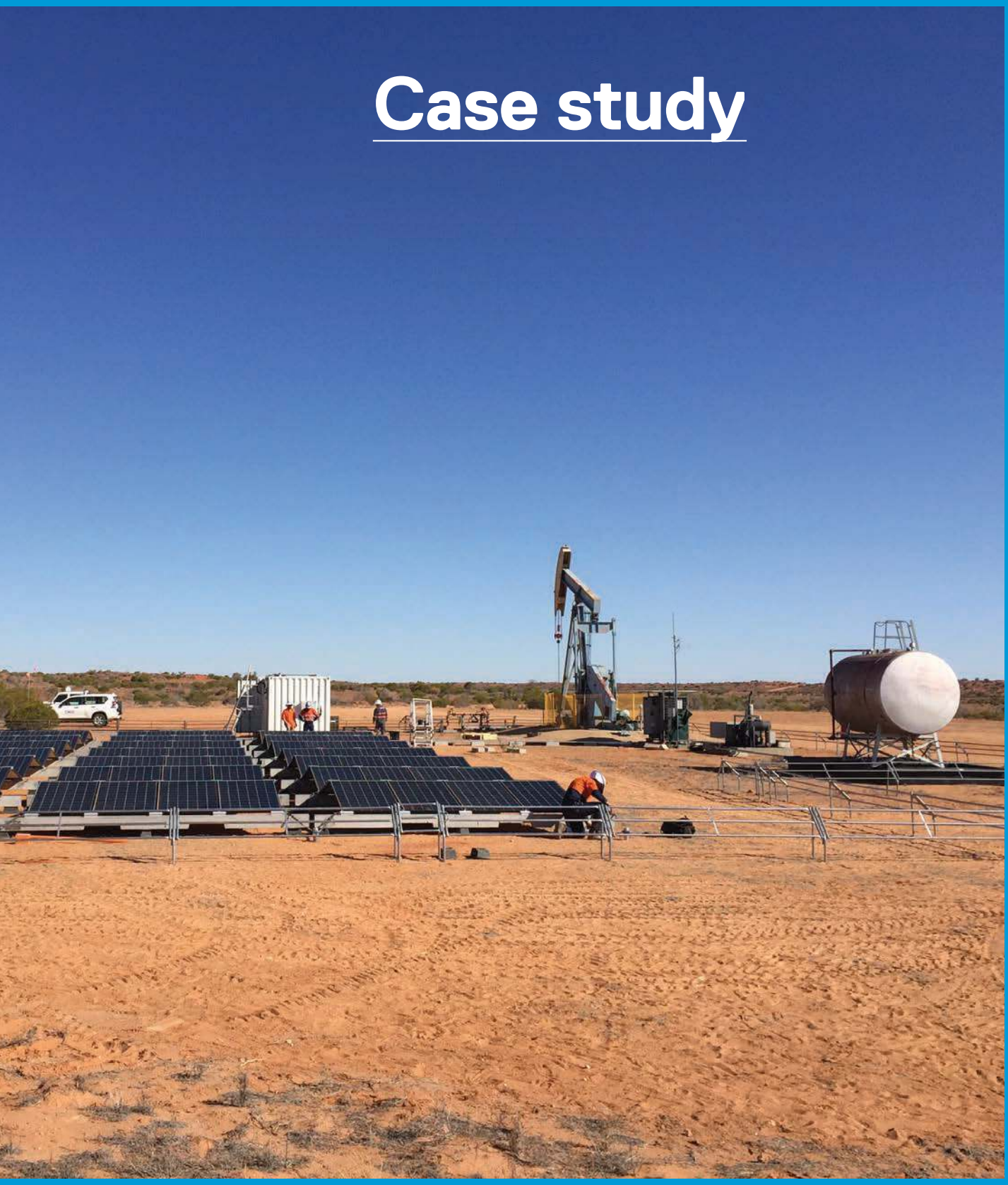
Focus on emissions reduction

Our greenhouse gas emissions sources include vehicle and equipment fuel combustion, venting, flaring and fugitive emissions.

We are constantly looking at ways to reduce emissions as part of standard operations. Every molecule of gas that is not consumed through fuel, flaring or venting can potentially be supplied to the market. Consistent with this approach, Santos established an Energy Solutions team in 2017 to focus on:

+ Reducing fuel gas, flaring and venting to release more sales gas
+ Reducing waste and emissions by pursuing economic uses for by-products such as carbon dioxide, produced water and salt
+ Growing natural gas demand by commercialising gas through new technologies and new market opportunities, including firming for intermittent renewable energy systems.

Case study



LIMESTONE CREEK, COOPER BASIN OIL WELL SOLAR AND BATTERY PILOT

Case study

Solar and battery powered oil wells in the Cooper Basin

The Santos Energy Solutions team has started work on a program to convert oil well pumps to run on solar power and batteries.

A pilot pump at the Hobbes-1 oil well has been operating on solar power and batteries since August 2018, proving that solar power and batteries can maintain reliability and availability in the harsh environment of the Cooper Basin.

Santos now plans to convert over 200 existing pumps to use solar power and ultimately, use solar power as the standard energy source for new oil wells.

At present, the pumps are powered by generators burning crude oil.

In December 2018, Santos received a grant under the Advancing Renewables Program to convert 56 wells in 2019 and 2020.

Using solar power will deliver environmental and commercial benefits by reducing crude oil consumption, long distance fuel haulage and emissions associated with burning crude oil.

Using solar power will deliver environmental and commercial benefits by reducing crude oil consumption, long distance fuel haulage and emissions associated with burning crude oil.

Scenario modelling under different climate scenarios

Scenario analysis is a standard part of Santos' strategic planning process, analysing the impact of changes in the future energy mix, market conditions, technology, consumer behaviour and policy settings.

While scenario analysis continues for standard business planning purposes including changes to asset mix and commodity pricing, climate change-related drivers have not materially changed since we published our 2018 Climate Change Report.

Updated scenarios using latest climate change science and incorporating assets acquired from Quadrant Energy will be developed for our 2020 Climate Change Report.

In 2018, Santos modelled the impact of changing climate policy on its portfolio of assets, consistent with the requirements of the TCFD. Santos used the IEA's scenarios from the ETP 2017 to understand the economic resilience of its portfolio under different climate change policies.

While the future may differ from forecast scenarios, modelling discrete scenarios provides us with relevant insights and understanding of potential trends and opportunities that enable Santos to create value for our communities, stakeholders and shareholders.

Santos' base oil and gas price assumptions take into account the impact of a changing energy mix over the longer term and are more conservative than the IEA's oil and gas price assumptions under the Reference Technology Scenario (RTS) and 2° Scenario (2DS). The IEA scenarios use higher carbon price assumptions to reflect the more stringent climate change policies required to limit global temperature rise.

Under the IEA scenarios, all emissions incur a carbon price, whereas the Santos base case reflects Australia's current carbon policy, the Safeguard Mechanism. Under the Safeguard Mechanism, only emissions above the agreed baseline for each facility incur a carbon offset cost. The Santos base case models the baselines for our facilities declining over time in line with Australia's emissions reduction targets.

As oil and gas demand continues to grow under the Reference Technology Scenario, oil and gas prices are projected to increase in real terms from today's levels to incentivise the development of new supply. Oil price is projected to return to above US$100/bbl in real terms by the middle of next decade. The price for gas delivered into Japan is projected to rise above US$12/MMBtu in real terms by 2030. The carbon price gradually increases in this scenario.

Under the 2° Scenario (2DS), oil prices decline after 2030 as energy efficiency and alternative fuels such as gas drive down demand. Although gas price decreases in the near term to 2020, gas markets are projected to tighten early next decade. This scenario limits cumulative emissions to around 1,170 GtCO2 between 2015 and 2100, with the world reaching net-zero emissions by 2100. Even under this carbon-constrained scenario, gas prices are projected to increase in real terms to greater than US$11/MMBtu delivered into Japan through to 2060. Carbon prices under the 2DS rise to over US$100/tCO2e beyond 2030.

The Beyond 2° Scenario (B2DS) limits cumulative emissions from the energy sector to around 750 GtCO2 between 2015 and 2100, with the world reaching net-zero emissions by 2060. This future is consistent with a 50% chance of limiting average future temperature increases to 1.75°C, in line with the Paris Agreement ambition of limiting global temperature rise to "well below 2°C".

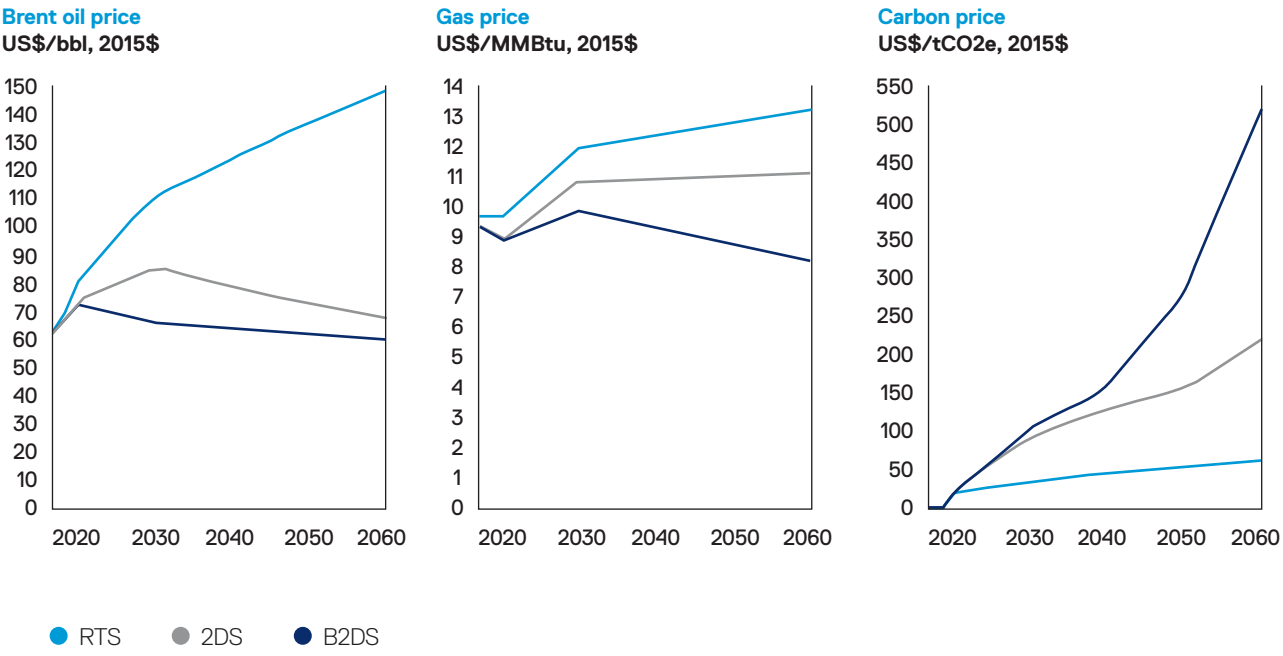
Delivering this future requires rapid improvement and deployment of technology in the innovation pipeline, including significant growth in bioenergy and the implementation of large-scale carbon capture and storage.

This is modelled through very high carbon price assumptions reaching greater than US$500/tCO2e by 2060. Under this scenario, oil prices decline in real terms from 2020 but continue to average around US$60/bbl through to 2060. Gas prices rise through to 2030 before slowly decreasing in real terms to around US$8/MMBtu delivered into Japan by 2060.

Figure 4 shows the oil, gas and carbon price assumptions under each of IEA's scenarios.

While the future may differ from forecast scenarios, modelling discrete scenarios provides us with relevant insights and understanding of potential trends and opportunities that enable Santos to create value for our communities, stakeholders and shareholders.

Figure 4
Brent oil, gas and carbon price assumptions under the RTS, 2DS and B2DS from the IEA.[23]



23 IEA, Energy Technology Perspectives, June 2017. Gas price assumptions represent the delivered price of gas into Japan, including regasification costs

Scenario analysis demonstrates strong NPV and EBITDAX outcomes

Value of our pre-growth portfolio

Santos' pre-growth portfolio as modelled for our 2018 Climate Change Report represents the portfolio of assets that are currently in production, largely represented by our published reserves position.

Our pre-growth portfolio also includes ongoing development in our existing acreage in the Cooper Basin and Queensland, but does not incorporate assets associated with the Quadrant acquisition that completed in November 2018.

Our pre-growth portfolio's NPV remains economically resilient under all three IEA scenarios, maintaining value in excess of, or close to Santos' current portfolio valuations. The Santos scenario shown for reference in this section of the report is consistent with the assumptions published in our 2017 Half-year Financial Report.

Although value is impacted by significant carbon costs under the 2º Scenario (2DS) and Beyond 2º Scenario (B2DS), this can potentially be offset by investment in emissions reduction across our portfolio and incorporating zero-emission products and services into our portfolio.

The company's portfolio value under each scenario is shown in Figure 5 following.

Santos is already pursuing activities that both lower our emissions and add value to our portfolio, including:

+ Conversion of existing operations to run partially or fully on renewable power to reduce fuel gas usage. This not only reduces the emissions from operations, it also helps to improve reliability, as there is less equipment to maintain. Any gas or liquids not consumed are then available to the market
+ Installation of heat recovery at our Moomba Plant to reduce fuel gas usage. This will reduce emissions from our operations and make more gas available for sale
+ Investigation of carbon capture, utilisation and storage (CCUS) feasibility which takes advantage of our core competencies and infrastructure position, and will be critical in meeting greenhouse gas emission targets in the longer-term
+ Pursuing economic uses for our by-products, such as carbon dioxide extracted from our product stream to convert a waste product into a new source of revenue.

Earnings of our growth portfolio

Santos' growth portfolio as modelled for our 2018 Climate Change Report includes the existing pre-growth portfolio plus liquefied natural gas backfill and expansion opportunities, backfill opportunities to our existing Australian infrastructure position and new onshore gas developments, but does not incorporate assets associated with the Quadrant Energy acquisition that completed in November 2018.

These opportunities take advantage of Santos' position as Australia's lowest-cost onshore operator and are consistent with the development of our contingent resource position.

Santos' growth portfolio continues to be economically resilient under all three IEA scenarios, maintaining earnings in 2030 in excess of Santos' current 2018 EBITDAX forecast. Figure 6 shows the earnings under each scenario.

Similar to the valuation impact, the earnings impact from high carbon costs under the 2DS and B2DS can potentially be offset by investment in emissions reduction across our portfolio and incorporating zero-emission products and services into our portfolio.

Santos' growth portfolio continues to be economically resilient under all three IEA scenarios.

Figure 5
Value of pre-growth portfolio under Santos and IEA assumptions.[24]

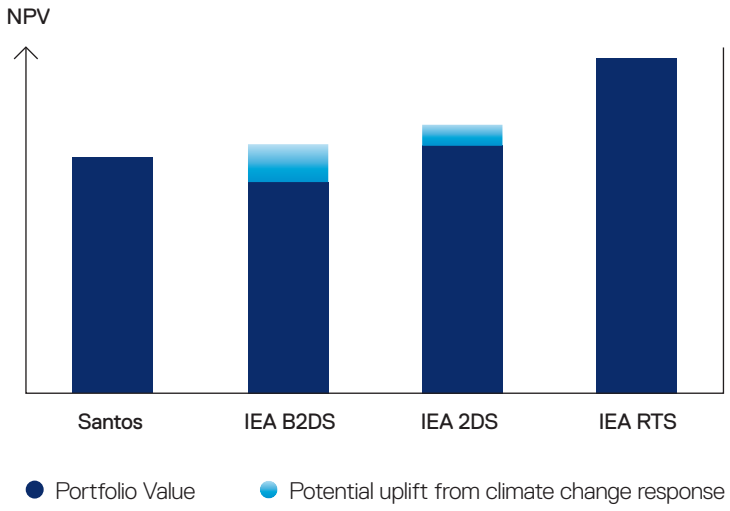
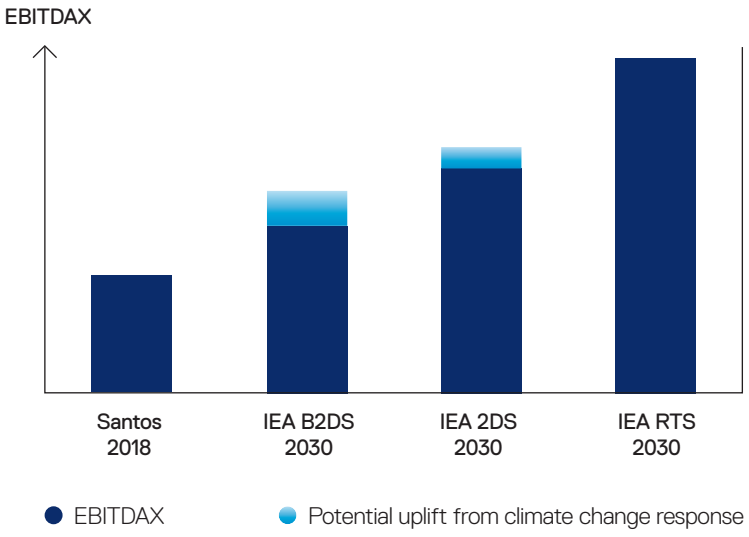


Figure 6
Earnings of growth portfolio (including existing pre-growth portfolio) under Santos and IEA assumptions.



24 No change in portfolio assumed between scenarios

Governance and risk

Santos has a dedicated Environment, Health, Safety and Sustainability Committee, which is responsible for monitoring and reviewing climate change risks.

Climate change policy positions have been in place since 2008, supporting our management of emissions and climate change risks and opportunities.

Climate change is incorporated into Santos' enterprise risk management processes and practices.

The company actively monitors current and potential areas of climate change risk and takes action to mitigate the impacts on its objectives and activities.

Company policy and Board oversight

The Santos Board has a dedicated Environment, Health, Safety and Sustainability (EHSS) Committee which regularly monitors and reviews the company's policy and approach to climate change including climate change risk and opportunities, and provides advice to the Santos Board of Directors.

We have maintained policy positions in relation to climate change for over 10 years. The Santos Board of Directors reviewed and updated the company's Climate Change Policy in 2017 and through the EHSS Committee continues to monitor and review this policy on a regular basis.

As outlined in this report, Santos has developed medium and long-term emissions targets in support of the company's Climate Change Policy commitment to support the twin objectives of limiting greenhouse gas emissions and providing access to reliable and affordable energy for domestic and global markets.

The EHSS Committee receives regular updates on external and internal climate change developments, opportunities and risks, including trends and changes in the global and domestic energy markets with a range of energy mix scenarios with different policy and technology drivers and strategy, portfolio and asset reviews which includes updates to climate and carbon policy, legislation and market practices and internal emissions management reporting, compliance and initiatives.

The EHSS Committee Charter and the 2018 Climate Change Report are both available on the Santos website.

Managing climate change risks and opportunities

An integrated and active risk management approach

The Santos risk management framework is based on an enterprise-wide risk management approach, aligned with the relevant International Standard (AS/NZS ISO 31000) and consistent with the ASX Corporate Governance Principles and Recommendations. The framework incorporates a Risk Management Policy, Risk Management Standard, Risk Matrix and risk assessment and management tools.

The Policy and Standard establish requirements for the consistent identification, assessment, escalation, management and monitoring of risks across the company. These risks include strategic, external, financial, operational, commercial, regulatory and technical risks across all corporate, strategic, operational and commercial activities. Risk reporting and assurance planning and outcomes are integrated in the company's management system and reporting processes.

Risks and opportunities relating to climate change are assessed and managed as part of the enterprise risk management framework, strategy and decision-making processes. Climate change risk has been, and continues to be, a matter of particular interest and oversight by the Audit and Risk and EHSS Committees of the Board.

The Board reviews the company's management enterprise risks at least twice a year and assesses the effectiveness of the company's risk management framework annually in line with ASX Corporate Governance Principles and Recommendations, Recommendation 7.

Santos has a dedicated Carbon and Sustainability team, with direct responsibility for managing the organisation's effective compliance with all carbon reporting requirements. This team works closely with the Risk and Audit, Strategy, Portfolio and Planning, Environment and Energy Solutions teams and the company's Executive management to ensure that external and internal climate change developments, opportunities and risks are identified and integrated into company strategy and activities.

In 2019, Santos' Executive management have climate-related key performance indicators, linked to remuneration outcomes. These include delivery of short and medium-term emissions reduction projects and initiatives.

Material climate risks

The company's material risks relating to climate change are physical, policy and legal, technological and market, and reputational. All of these risks have potential financial implications in relation to increases in cost, lost profitability and demand and revenue disruptions. There are also opportunities that arise from potential climate change impacts and these risks, key mitigations and controls are outlined in this section.

Physical (acute and chronic) risks

+ Onshore oil & gas production and processing facilities may be subject to increased flooding and high temperatures of increasing severity, as a result of extreme weather events.
+ Assets located in coastal regions may be affected by rising sea levels.
+ Tropical depressions (cyclones) can affect offshore production and drilling.

Each of these risks may potentially result in injuries, damage to facilities and infrastructure and disruption of activities.

Policy and legal risks

+ Carbon pricing policies - including a carbon tax, emissions trading scheme, or any other regulatory carbon pricing mechanism - may increase operating costs.
+ The lack of an international price on carbon has the potential to give rise to a difference in the cost of liquefied natural gas production by Santos, compared to international competitors. For example, a carbon impost on Australian liquefied natural gas producers that does not apply to other international liquefied natural gas producers could potentially impact competitiveness in regional and global markets.
+ Project approvals may not be granted due to associated greenhouse gas emissions, or the conditions of approval (or operation) may be too onerous to proceed, potentially impacting operating and development costs and opportunities.
+ Litigation against governments and companies - either seeking compensation for damages caused by climate change impacts or forcing greater action on climate change - could have reputational, development and operating cost impacts.

Technology and market risks

+ Innovation in oil and gas could occur at a slower pace than coal, while renewables or technology breakthroughs could allow coal to significantly decrease emissions or allow renewables to manage intermittency issues.
+ Development of hydrogen using renewable energy, potentially displacing gas as a feedstock.
+ Changing consumer behaviour that primarily focuses on renewable energy at the expense of reliability and affordability.

These risks could potentially impact the demand for natural gas and its position in the energy mix.

Reputational risks

Increased public focus on climate change and misunderstanding in relation to the role of natural gas in supporting a lower-carbon future present a risk to Santos' reputation, with the potential to impact project approvals and licence to operate.

Risk mitigation

Santos' key mitigations and controls across the risks and opportunities in relation to climate change include the following:

Strategic and commercial modelling

Santos models the impact of carbon price scenarios, integrates costs of carbon into business planning and decision making at portfolio, asset and project level and considers the potential impacts and opportunities resulting from current and future climate change policies in its commercial and strategic activities.

As modelling in this report demonstrates, Santos is resilient to each of the IEA's Reference Technology, 2°C and Beyond 2°C climate change scenarios.

Access to domestic and export markets

Santos continues to monitor carbon and energy policies in domestic and export markets, including Japan, Korea and China. Asian markets are highly supportive of natural gas, due to both lower greenhouse gas emissions and air quality benefits. Demand for natural gas is forecast to continue increasing, particularly in these markets as their carbon and energy policies evolve.

Operational and project risk management

Santos has a long history of managing risk across its operations in remote locations that have been subject to extreme weather events. It has strong experience in operational and project risk management across its activities from concept, through to design, execution and ongoing monitoring and response.

Advocacy

Santos engages directly with policy makers and industry associations to advocate for environmentally effective and economically-efficient carbon policy. Santos is proactive in supporting awareness of the availability, responsible extraction of, demand for, and advantages of natural gas to a lower-carbon future here in Australia and in our region. Consistent with our policy position, Santos seeks to work with governments and stakeholders in sharing information to support the design of climate change regulation and policy.

Demand for natural gas

While renewable energy sources may compete with natural gas for power generation, natural gas is used as a feedstock in many other applications, including plastics and petrochemicals, which currently have no other viable alternatives. Many published scenarios show natural gas consumption increasing until at least 2030 as it displaces higher-emissions fuels such as coal and oil. The IEA's New Policies Scenario[25] projects natural gas to have the largest absolute increase in primary energy source out to 2040, growing at a compound annual rate of 1.6%. In addition, natural gas also has an important role to play in supporting the incorporation of more renewables into the energy mix and as such, an absolute decrease in the use of gas in the foreseeable future is unlikely.

Technological initiatives

Santos' large acreage and infrastructure positions place the company in a strong position as it continues to monitor advances in carbon capture and storage technologies and opportunities. In addition, the company is developing a range of innovative initiatives, including optimisation and efficiencies as detailed in the case studies in this report.

Lowest-cost base

Santos is proudly the lowest-cost onshore operator in Australia. Through creating efficiencies across our asset lifecycle, Santos has been able to significantly reduce costs of development and production of natural gas over the past five years. This low cost base puts Santos in a stronger position to withstand greater variabilities in commodity price fluctuations and the introduction of carbon pricing or emissions penalty schemes than many other producers. Combined with our modelling of potential carbon prices against all investment decisions, the company is well positioned to manage and adapt to future policy developments.

Access to infrastructure and storage capability

Santos has access to significant storage facilities due to its acreage and infrastructure position, enabling the company to minimise disruption to customers in the event of physical events which may impact operations for a period of time. Santos includes climate-related risks, such as flooding and other extreme weather events in crisis and incident planning and training.

Significant experience in safe and sustainable operations

Santos has a long history of safe and sustainable operations, having planned for and successfully managed extreme weather events and changes in Australian carbon policy over past decades. With the company's approach to climate-related risk management from physical operations through to financial and strategic impacts, the company is well positioned to both remain resilient and support access to affordable and reliable energy in a lower-carbon future.

Opportunities

Santos' experience with flooding across some of its key onshore asset areas and extreme temperatures in remote locations has led the company to innovate and enhance the effectiveness of its operations. This has been demonstrated though the development of remote operations capabilities and facilities, access and transportation improvements and evolving work practices that enable personnel to conduct activities both more efficiently and during the least intense periods of weather. Two examples of the improvements and opportunities that have resulted from these experiences in relation to heat and flooding were included in the company's 2018 Climate Change Report on page 16, which can also be found on the Santos website www.santos.com, along with this report.

Additionally, with changes to policy and social dynamics in relation to climate change, also come opportunities in innovation, technological advances and the demand for and role of natural gas in the energy mix. More information in relation to the role of natural gas in a lower-carbon future can be found on pages 12-17 and case studies in relation to opportunities Santos' is actively pursuing in emissions reduction and operational efficiencies can be found on pages 23 and 35.

25 IEA, World Energy Outlook 2018

Carbon offsets – West Arnhem Land fire abatement (WALFA)

As a partner in the Darwin liquefied natural gas joint venture, Santos supports the West Arnhem Land Fire Abatement program in the Northern Territory.

Covering around 28,282-km2 of land, this program uses an innovative mix of Indigenous fire management techniques and contemporary technology to manage uncontrolled fires.

The WALFA program reduces greenhouse gas emissions from otherwise unchecked wildfires and since its commencement in 2007, it has reduced these emissions by over 2 million tonnes.

WALFA also protects local wildlife and rainforest vegetation and provides social, cultural and economic benefits for the local Aboriginal community through regular employment, recognising Indigenous land management techniques and bringing Traditional Owners back on country.

The program has resulted in the employment and fire management training of more than 200 Traditional Owners and rangers and Santos has made a long-term commitment to the project until 2022.

Resilience and opportunity in a lower-carbon future

Santos is committed to supporting the twin objectives of limiting greenhouse gas emissions while providing access to reliable and affordable energy to domestic and global markets. We have set medium-term targets that align with these objectives and have a long term aspiration target of net-zero emissions from our operations by 2050.

Our Energy Solutions team is actively pursuing projects to reduce fuel use and emissions across our business, as well as identifying step-change technology that will help achieve our long-term aspiration.

Our natural gas portfolio is economically resilient under different scenarios consistent with global efforts to reduce greenhouse gas emissions (refer to Figures 5 and 6 on page 39).

Santos recognises the risks that climate change poses for our business, from policy changes to the physical risks associated with more extreme weather events. These risks are managed through our enterprise-wide risk management process, and are overseen and monitored by Executive Management and the Board.

Transition to a lower-carbon future also creates opportunities. Natural gas has a critical role to play in providing energy in a lower-carbon future. This is because natural gas is a reliable and affordable source of energy that produces 50% less greenhouse gas emissions than coal when used to generate electricity and is much cleaner with regards to local air pollutants.

Through its disciplined, low-cost operating model, proximity to Asian markets and the scale of its Australian natural gas business, Santos is in a strong position to supply Australia and Asia's growing energy demands in a lower-carbon future.

Santos Limited
ABN 80 007 550 923

Registered and Head Office

Ground Floor Santos Centre
60 Flinders Street Adelaide, SA 5000

GPO Box 2455, Adelaide SA 5001

Telephone: +61 8 8116 5000
Facsimile: +61 8 8116 5050

Australian Securities Exchange Listing

STO

Santos Website

To view Annual Reports, shareholder and company information, news announcements and presentations, quarterly activities reports and historical information, please visit our website at www.santos.com

Annual Reports

You can view our Annual Report online at www.santos.com or request a printed copy from the Share Registrar either by email at santos@boardroomlimited.com.au or by telephone on 1300 096 259 (within Australia) or +61 2 8016 2832.

General Enquiries

Santos Limited
GPO Box 2455, Adelaide SA 5001

Telephone: +61 8 8116 5000
Email Santos via the Contact Us portal at our website www.santos.com

Shareholding Enquiries

Please direct all shareholding enquiries to:

Boardroom Pty Limited
GPO Box 3993, Sydney NSW 2001

Toll free: 1300 096 259
International: +61 2 8016 2832

Email: santos@boardroomlimited.com.au
Website: www.investorserve.com.au

Santos