



The economic contribution of Western Australia's oil and gas industry

Australian Petroleum Production &
Exploration Association

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EY

Building a better
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The oil and gas industry helps drive the Western Australian economy

Western Australia is a world-leading supplier of LNG – producing more than 55% of Australia's LNG exports and supplying around 12% of global LNG.

- ▶ As one of the largest suppliers of global LNG, Western Australia has a strong reputation as a reliable and low risk energy producer.
- ▶ For more than 30 years Western Australia has exported LNG from the \$34 billion North West Shelf (NWS) project. In addition to the longstanding NWS project, several other developments draw on Western Australia's conventional gas reserves in the Carnarvon and Browse basins:
 - ▶ Pluto (Woodside, Tokyo Gas and Kansai Electric)
 - ▶ Gorgon (Chevron, ExxonMobil, Shell, Osaka Gas, Tokyo Gas and JERA)
 - ▶ Wheatstone (Chevron, KUFPEC, Woodside, PE Wheatstone, Kyushu Electric)
 - ▶ Prelude (Shell, Inpex, KOGAS, CPC)
- ▶ Given Western Australia's close proximity to Asia, it is well positioned to service regional markets. Its major export markets include Japan and South Korea.
- ▶ Complementing its major export activities, Western Australia's gas projects also supply most of the State's gas, providing energy and industrial feedstock to local businesses.
- ▶ The industry helps support the Western Australian economy through boosting economic activity, creating jobs and increasing the tax base.

The industry's economic impact over the last 10 years...



\$220 billion

added to the Western Australian economy over the decade



7.7% per annum

average annual contribution to Western Australian economic output over the decade



\$53 billion

in taxes paid over the decade



57,000 workers

full time workers on average over the decade

*Includes direct and indirect effects.

There are strong investment opportunities for Western Australia's oil and gas industry

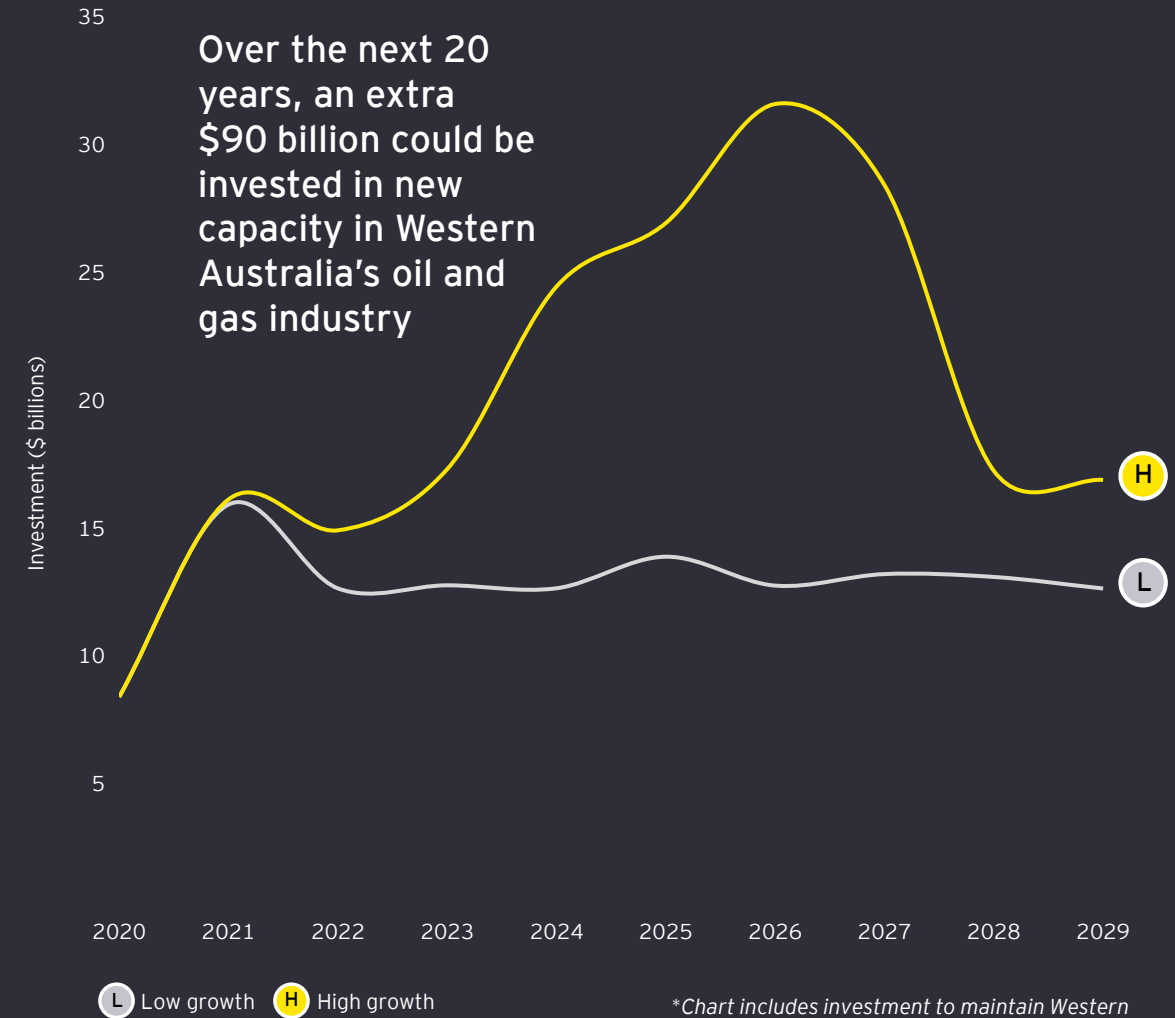
The potential economic impact from currently proposed oil and gas investments in Western Australia over the next two decades are examined under two growth scenarios

- L** **Low growth** – Includes investment and production for Western Australian oil and gas projects which are currently under development or have a high level of investor commitment.
- H** **High growth** – Building on the low growth pathway, this scenario captures investment and associated production yields for oil and gas projects in Western Australia that are prospective but have yet to secure firm commercial commitments.

Investment scenarios reflect known information about new gas projects. The analysis does not consider global or domestic demand for gas or any potential impacts of future climate change policy.

Some key oil and gas projects in the pipeline

- ▶ Browse to North West Shelf (Woodside, BP, PetroChina, Shell and Japan Australia LNG)
- ▶ Crux (Shell and SGH Energy and Osaka gas)



*Chart includes investment to maintain Western Australia's existing oil and gas capacity.

Source: EY analysis

New oil and gas investment supports Western Australia's economic prosperity

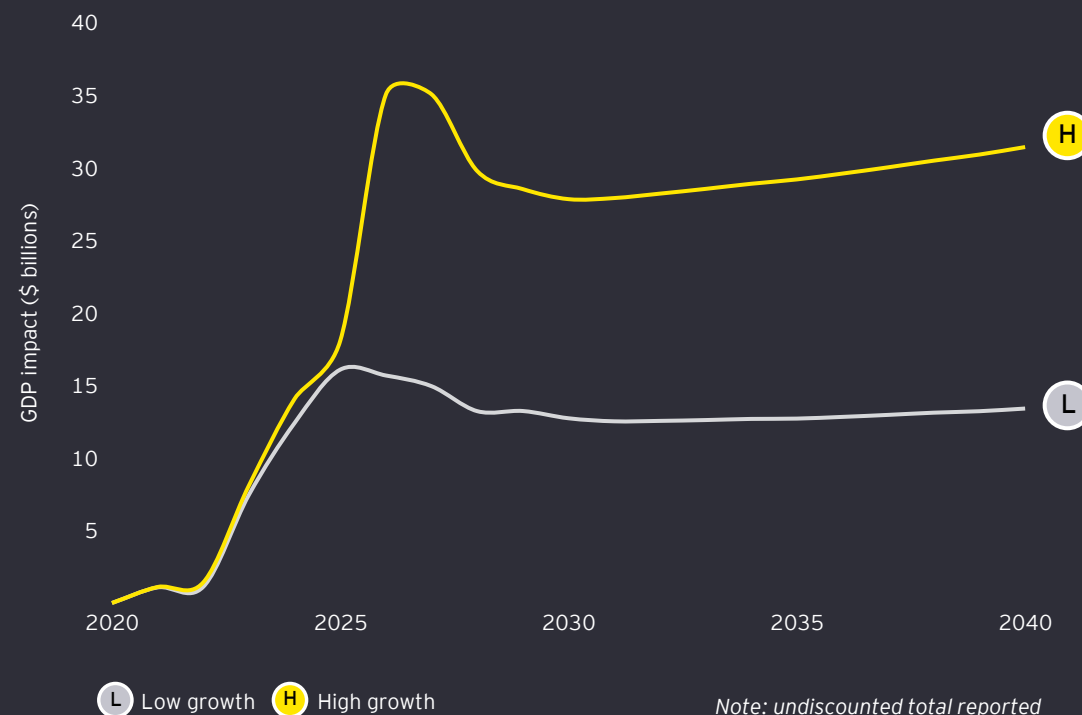
Investment in new oil and gas projects will help to grow the Western Australian economy

- ▶ There will be an immediate uplift in economic activity as prospective projects enter their construction phase.
 - ▶ During this capital installation period, economic activity could be up to \$35.0 billion higher in 2027 – this represents about 12% of the current Western Australian economy.
 - ▶ Under a low-growth pathway, economic activity is estimated to be \$16.1 billion higher in 2025.
- ▶ As projects move from construction and into production, there is a sustained boost in Western Australia's economic output.
 - ▶ Under a 'step-change' high-growth trajectory, economic activity more than double compared to a low investment scenario.
 - ▶ This reflects the ambitious nature of the investment, which looks to open up new basins and undertake exploratory activities that offer significant upside.
 - ▶ Businesses throughout the economy also benefit from a reduction in energy prices, leading to an increase in Western Australia's productive potential.

The 20-year economic impact ...

L Low growth \$236.6 billion

H High growth \$439.9 billion



Note: undiscounted total reported
Source: EY analysis

Industry investment creates employment opportunities throughout WA

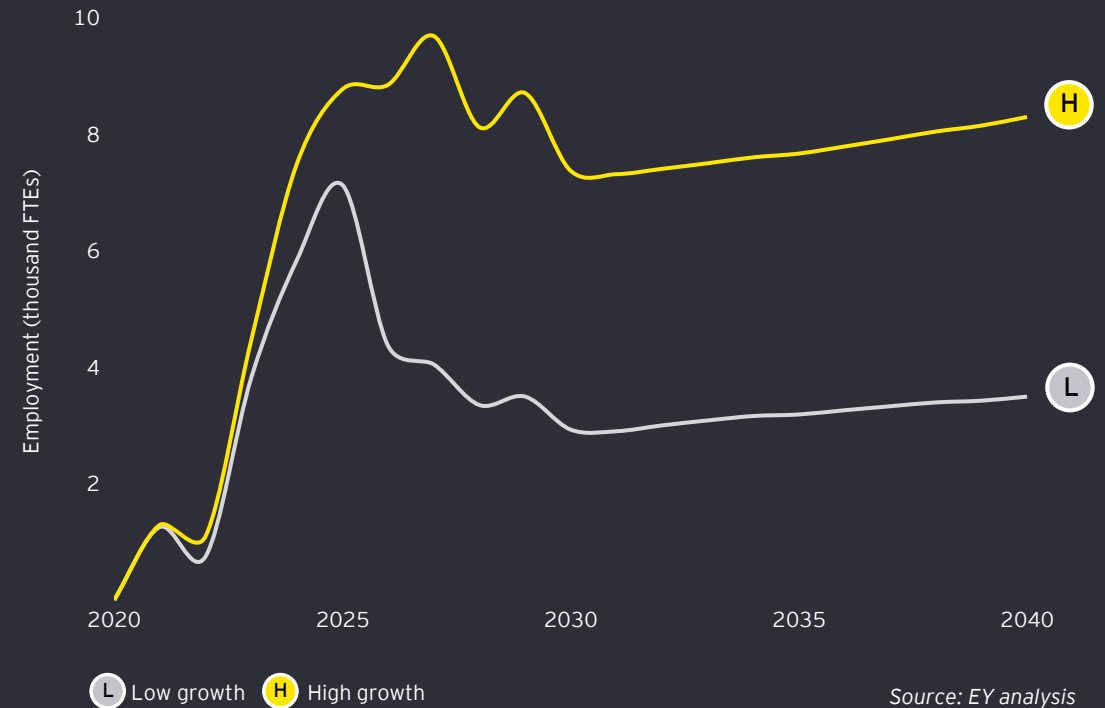
Prospective oil and gas investments could create thousands of jobs for Western Australians

- ▶ The demand for workers peaks in the near-term as potential projects enter their construction phase.
 - ▶ In 2025, around 7,100 new workers could be employed in Western Australia under a low-growth scenario.
 - ▶ Up to 9,700 full-time jobs could be created under a high-growth pathway in 2027.
- ▶ As projects enter their production phase, businesses throughout Western Australia benefit from lower gas prices and an increase in productivity.
 - ▶ While the employment impacts moderate slightly, there is an ongoing increase in jobs throughout the state.
 - ▶ By 2040, around 237% additional workers could be employed under a high-growth scenario compared to a low-growth investment trajectory.
 - ▶ Workers throughout Western Australia also benefit from a sustained increase in wages.

The number of jobs created in 2040 ...

L Low growth 3,500 FTEs

H High growth 8,300 FTEs



Source: EY analysis

Capital deepening can enhance the tax base and encourage consumer spending

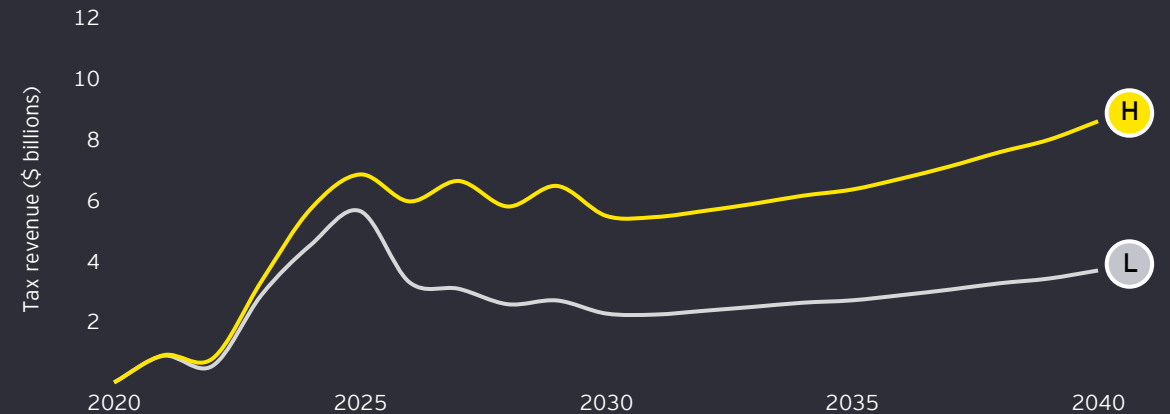
Increased investment in oil and gas can help build fiscal resources

- ▶ The industry makes valuable contributions to the State and Commonwealth tax base.
 - ▶ Taxes and charges paid by the oil and gas industry in Western Australia include the PRRT, royalties, excise duties, company tax, indirect taxes.
- ▶ Over 20 years, industry activity could generate \$115.2 billion in taxes under a high-growth scenario and \$56.9 billion under a low-growth investment pathway.
- ▶ The industry's fiscal contribution builds over time, particularly as projects begin paying the PRRT – in 2040, up to \$8.6 billion could be added to the tax base.

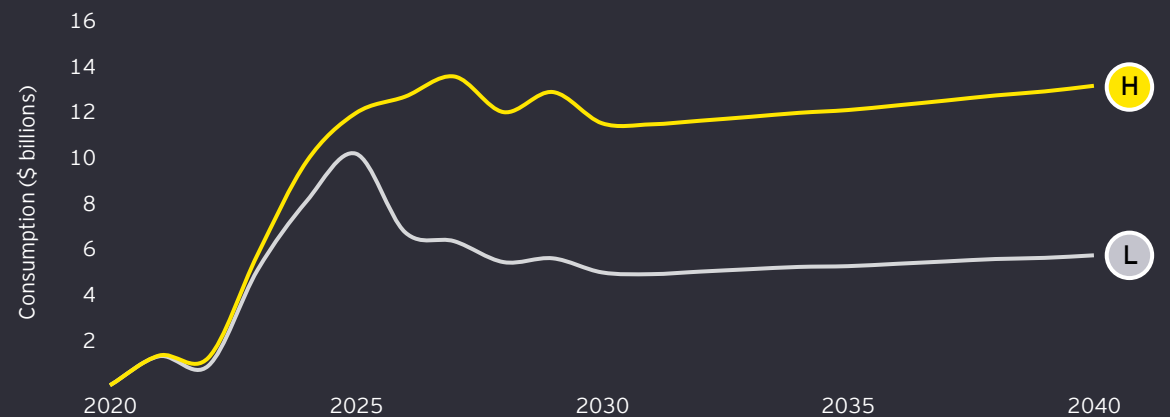
Additional capital formation could increase household consumption throughout Western Australia

- ▶ Higher employment and wages – as well as a decrease in energy costs – strengthens household income. This leads to additional consumption throughout the economy.
- ▶ By 2040, around \$214.6 billion could be spent by households under a high-growth pathway.
- ▶ Consumption could increase by \$107.2 billion over the 20 years under a low-growth scenario.

Government tax take over time



Consumption over time

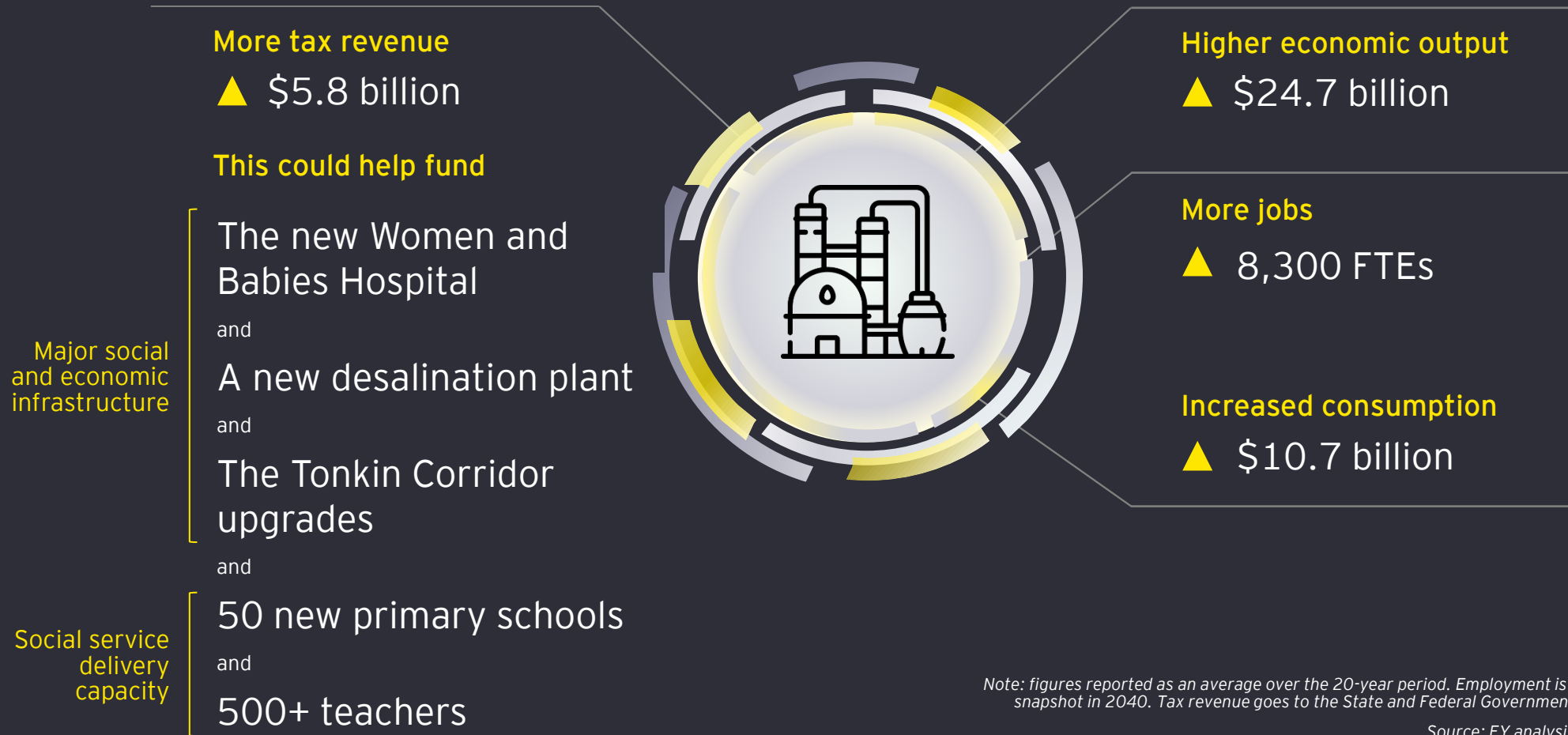


L Low growth H High growth

Note: undiscounted total reported
Source: EY analysis

A new wave of oil and gas investment will grow Western Australia's economy

Potential annual benefits under a high-growth investment pathway ...



Technical appendix

Methodology and approach

Our methodology – Estimating the industry’s historical contribution

Constructing the economic structure of Western Australia’s oil and gas industry

A structural economic profile was developed using:

- ▶ Historical investment profile based on data from the Department of Industry, Science, Energy and Resources’ ‘Resources and Energy Quarterly’ reports
- ▶ Historical production profile based on data from APPEA and EnergyQuest
- ▶ ABS Australian National Accounts Input-Output table
- ▶ Spatial disaggregation of the Western Australia economy

Input-output modelling estimated the flow-on effects of the industry to the state economy

- ▶ IO modelling estimates how the economic impacts of a market activity affect the broader Western Australia economy.
- ▶ Input-output (IO) multipliers were used to quantify the oil and gas industry’s total economic contribution in Western Australia (i.e. the direct and indirect impacts).

Key limitations of IO modelling

- ▶ IO modelling does not consider supply constraints, price changes or structural changes in the economy.
- ▶ The method also considers average economic effects rather than marginal effects – this means that IO models do not account for economies of scale, unused capacity or technological change.

Other limitations

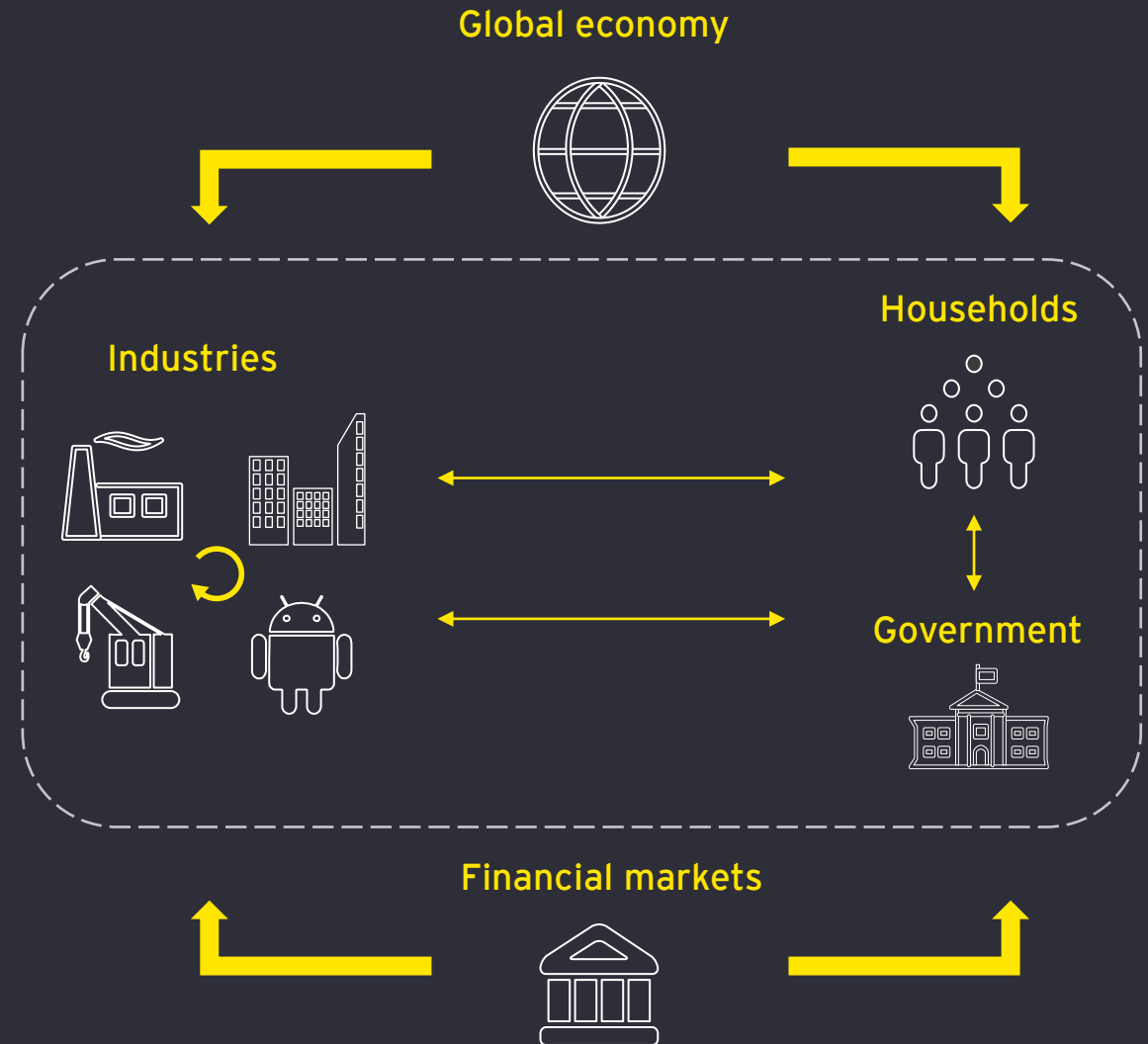
- ▶ The investment scenarios reflect known, publicly available information about new oil and gas projects in Western Australia.
- ▶ EY has not separately analysed the global or domestic demand for gas, or considered any potential impacts of future climate change policy.

Our whole-of-economy model to examine potential industry impacts

EYGEM is EY's in-house, state of the art Computable General Equilibrium (CGE) model. It is a large scale, dynamic, multi-region, multi-commodity model of the world economy.

The model provides a rich and realistic representation of how changes in one part of the economy flow through to other parts.

- ▶ **Comprehensive regional analysis** – The model contains 141 distinct regions, with the ability to disaggregate these into sub-national regions for highly granular economic analysis.
- ▶ **Rich sectoral detail** – All sectors of the economy are integrated into the model, with 65 discrete sectors. These can be further refined for specific industries.
- ▶ **Time dynamics** – Solving year-on-year over a flexible periods, the model can assess short term policy initiatives and decades-long reforms or investments.
- ▶ **Market tested and strong academic foundations** – A model has a lineage that has been applied globally across the public and private sector.



Sources

- ▶ APPEA (2021), *Statistics and Information*
- ▶ APPEA (2019), *APPEA Oil and Gas Industry Financial Survey: Results from 1987-88 to 2018-19*
- ▶ Australian Bureau of Statistics (2021), *Australian National Accounts: National Income, Expenditure and Product*
- ▶ Australian Bureau of Statistics (2021), *Australian National Accounts Input-Output Tables 2018-19*
- ▶ Australian Bureau of Statistics (2021), *Average Weekly Earnings Australia*
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- ▶ EY analysis (2020), *Australian oil and gas investment outlook database*
- ▶ Government of Western Australia (2021), *Strong surplus delivers for Western Australia's future*
- ▶ Government of Western Australia (2021), *Western Australia State Budget 2021-22, Budget Paper No. 1*
- ▶ Government of Western Australia, Department of Jobs, Tourism, Science and Innovation (2021), *Western Australia LNG Profile - April 2021*

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Ernst & Young was engaged on the instructions of the Australian Petroleum Production & Exploration Association (“APPEA”) to examine the economic contribution of the oil and gas industry and the investment pipeline in Western Australia, Queensland and the Northern Territory (“Project”), in accordance with the Engagement Agreement dated 25 May 2021.

The results of Ernst & Young’s work, including the assumptions and qualifications made in preparing the report, are set out in Ernst & Young’s report dated 13 October 2021 (“Report”). The Report should be read in its entirety including the transmittal letter, the applicable scope of the work and any limitations. A reference to the Report includes any part of the Report. No further work has been undertaken by Ernst & Young since the date of the Report to update it.

Our work commenced on 25 May 2021 and was completed on 13 October 2021. Therefore, our Report does not take account of events or circumstances arising after 13 October 2021 and we have no responsibility to update the Report for such events or circumstances.

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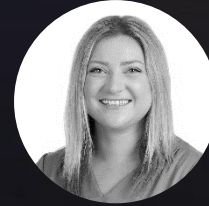
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