

# Queensland's Petroleum & Gas Industry Snapshot

May 2018



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## SCOPE OF THIS SNAPSHOT

One of the key functions of the GasFields Commission Queensland is to obtain and publish information that can assist in improving knowledge and understanding about the petroleum and gas industry, including its interactions with rural landholders and regional communities.

This snapshot reports on the current state of the petroleum and gas industry in Queensland, illustrating industry development trends, groundwater management and the economic contributions to regional communities and the state of Queensland.





# QUEENSLAND'S RURAL INDUSTRIES

## Agricultural industries

- Queensland has the highest proportion of land area in Australia dedicated to agriculture with about **144 million hectares, or 83%**.
- Queensland is Australia's largest producer and exporter of **beef** and one of the largest producers of **pork** in the country.
- The major vegetable crops grown in Queensland include **tomatoes, capsicums, beans, mushrooms, sweet potatoes and lettuce**.
- **Cotton** is a valuable part of Queensland's agriculture with major growing areas in the Darling Downs (60,000 ha), Macintyre Valley (55,000 ha), Central Highlands (19,000 ha), St George (13,000 ha) and Dirranbandi (3,000 ha).
- Agricultural industries contribute more than **\$10 billion** to the state's economy each year.
- In 2015/16, exports of primary products comprised **19% of the state's overseas commodity exports**.

(DAF 2017)

## Petroleum and gas industry

- Queensland's **first gas field** was discovered in Roma in **1900**.
- **Australia's first gas pipeline** was built in **1969**, connecting the Roma gas fields to Brisbane.
- Gas is a vital part of Queensland's energy mix and is used to **generate electricity as well as manufacture glass, steel, aluminium, nickel, fertiliser and plastics**.
- **Conventional gas** is produced from reservoirs with other petroleum products such as oil.
- **Coal seam gas (CSG)** is produced from coal seams and is primarily made up of methane.
- The rapid growth in CSG production over the past 15 years has been driven by the development of Queensland's **liquefied natural gas (LNG)** export industry.
- More than **\$70 billion** has been invested into Queensland's CSG to LNG industry (QRC 2018).



## Working together

- The surface footprint of Queensland's petroleum and gas industry covers **0.1% of the state's land mass** (QRC 2017).
- There has been an adjustment phase as regional communities adapt to petroleum and gas industry activity.
- The agricultural and petroleum and gas industries are an integral part of **Queensland's regional economy**.
- The continued success of these industries requires best practice **business-to-business relationships**.





# TENURE

Total land area in Queensland = **173 million hectares**

**27.4 million hectares** is under sub-surface petroleum and gas tenure

The petroleum and gas industry's **surface footprint** = 0.1% of Queensland's land mass

(QRC 2017)

**24.6 million hectares** is under Authority to Prospect

**2.8 million hectares** is under Petroleum Lease

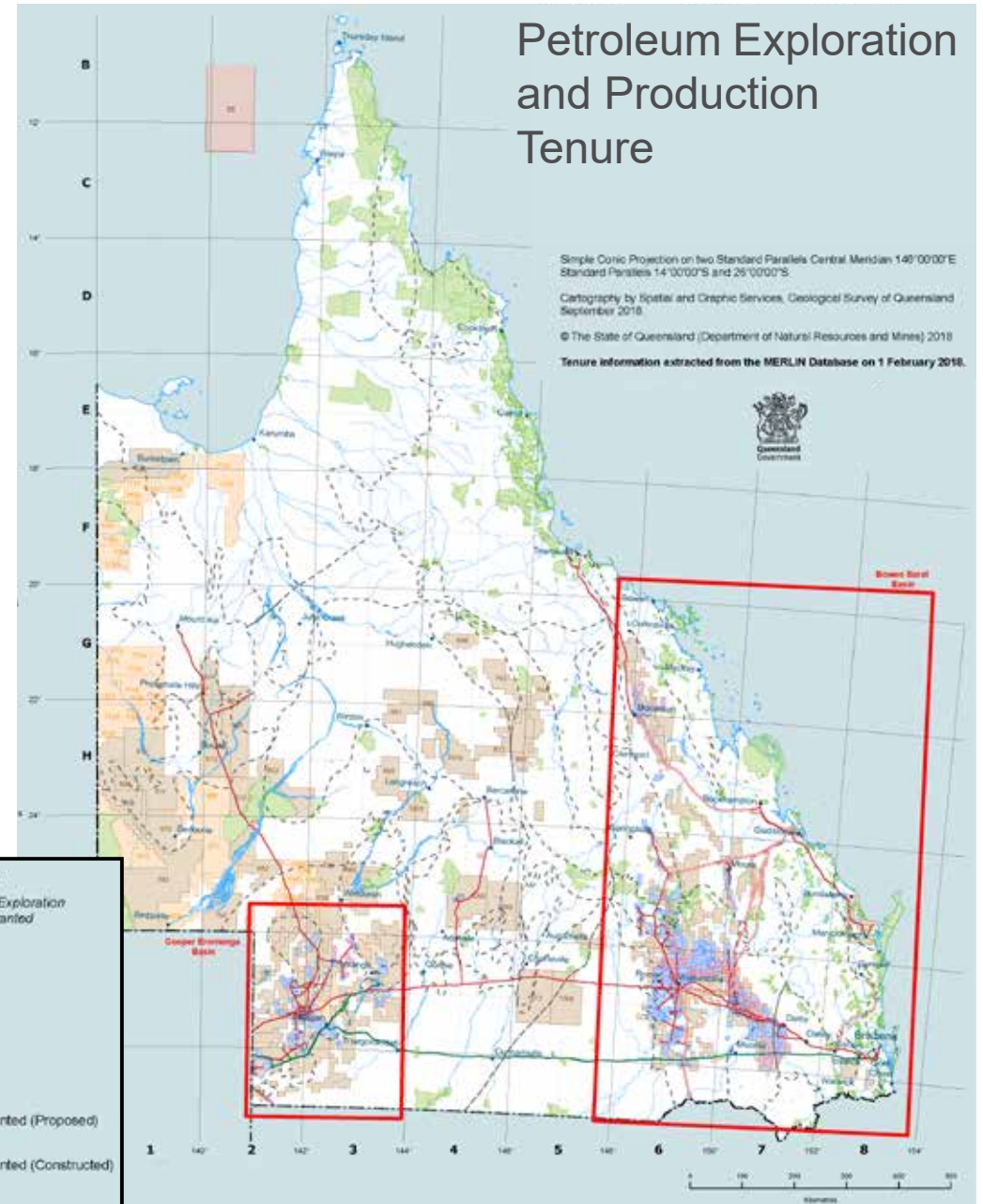
**12,803 km** of licensed pipelines

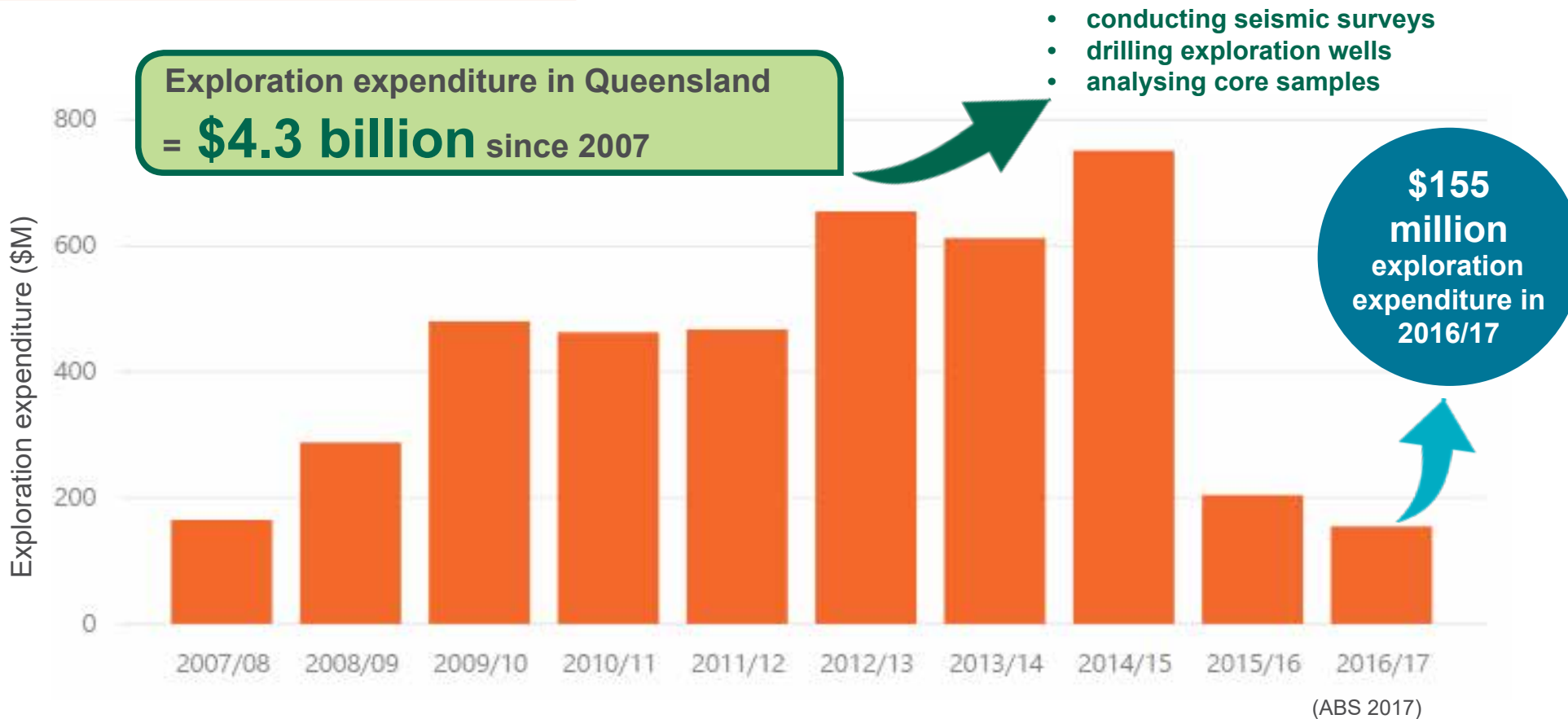


Authority to Prospect	Petroleum Lease	Offshore Exploration
Authority to Prospect Application	Petroleum Lease Application	Offshore Exploration Permit Granted
Authority to Prospect Granted	Petroleum Lease Granted	
Authority to Prospect Call for tender - Closed (Application received)		
Boundaries	Petroleum Pipeline Licence (Pipeline Stage)	
State Boundary	<b>Gas</b>	<b>Oil</b>
River	Granted (Proposed)	Granted (Proposed)
Road	Granted (Constructed)	Granted (Constructed)
Unavailable Land	Processed Water	
	Granted (Proposed)	
	Granted (Constructed)	

...as at 31 March 2018

(QSpatial 2018)





**Future petroleum and gas exploration and development**

- **454 km<sup>2</sup>** of tenure has been awarded in the Surat and Bowen basins for the **domestic gas market** only.
- **15,195 km<sup>2</sup>** of land has been released for tender in the Eromanga and Adavale basins to explore conventional oil and gas reserves.
- **2,236 km<sup>2</sup>** of land has been released for tender in the Surat and Bowen basins to explore conventional oil and gas reserves.

(DNRM 2017)



# LANDHOLDERS

**5,711**  
Conduct and  
Compensation  
Agreements have been  
entered into as at  
30 June 2017

Numerous agreements  
can be signed by a single  
landholder

**\$387**  
million in  
compensation has been  
paid to landholders as  
at  
30 June 2017

A landholder and gas company may enter into a Conduct and Compensation Agreement (CCA), which is a legal document negotiated and agreed upon by both parties. It generally details:

1. how authorised activities will be conducted on the property by the gas company
2. the compensation payable to the landholder for the effects of the authorised activities (compensatable effects).

### Examples of compensatable effects:



decrease in land value due to areas being taken up by infrastructure such as wells, aboveground pipelines, vents and access roads



severed land that has depreciated in value or can no longer be used due to its division or separation by the location of new infrastructure or activities



decrease in land value caused by authorised activities carried out on the property



cost, damage or loss caused by:

- noise, dust and light from the construction of infrastructure
- relocation of livestock or personal property



decrease in land value due to restrictions to land use, for example, resulting from buried pipelines



indirect losses such as loss of profits, soil erosion, damages to fences or gates, biosecurity outbreaks

Compensation may be monetary or non-monetary. Examples of non-monetary compensation might include the building or repair of fences or the installation of new gates and grids.

(Land Court 2018)

(APPEA 2017)

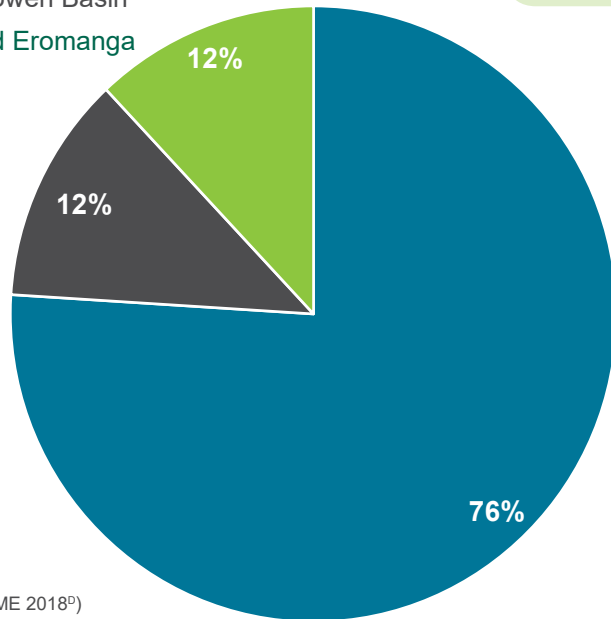
# WELLS

There have been approximately **11,000 CSG wells** and **3,450 conventional wells** drilled in Queensland to date (DNRME 2018<sup>9</sup>)

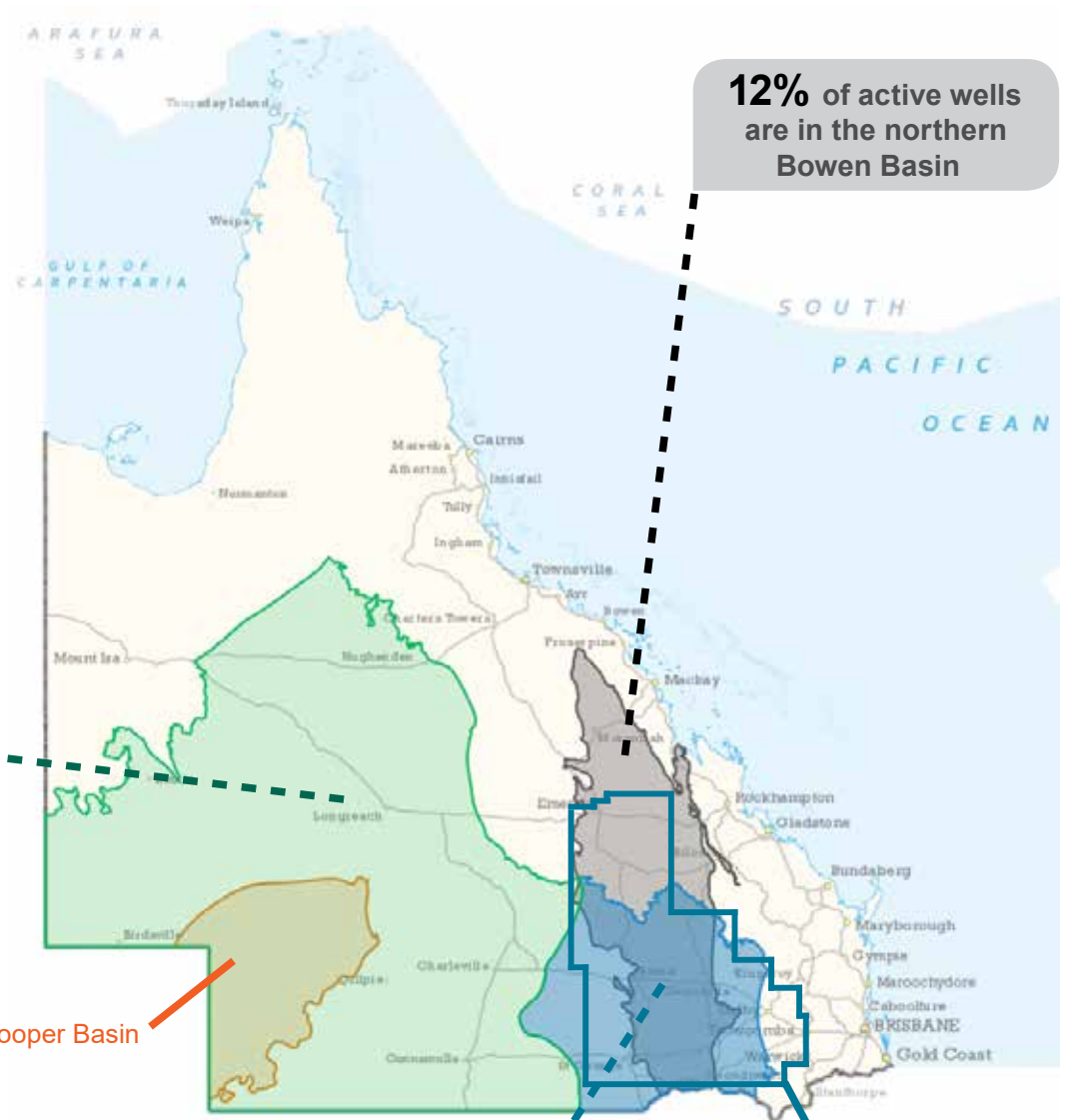
Approximately **13%** of these CSG wells and **55%** of these conventional wells have since been converted to water bores, or decommissioned and the well sites rehabilitated

## Active Petroleum and Gas Wells in Queensland

- Surat and southern Bowen basins (Surat CMA)
- northern Bowen Basin
- Cooper and Eromanga basins



(OGIA 2017, DNRME 2018<sup>9</sup>)



**12%** of active wells are in the northern Bowen Basin

**12%** of active wells are in the Cooper and Eromanga basins

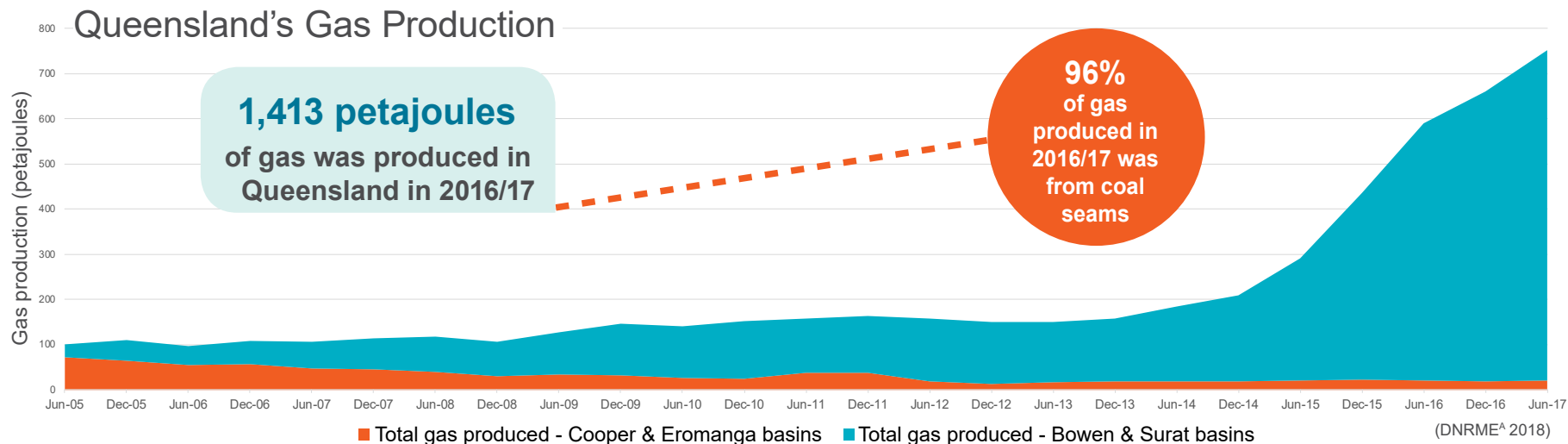
**76%** of active wells are in the Surat and southern Bowen basins (Surat Cumulative Management Area)

Surat Cumulative Management Area boundary

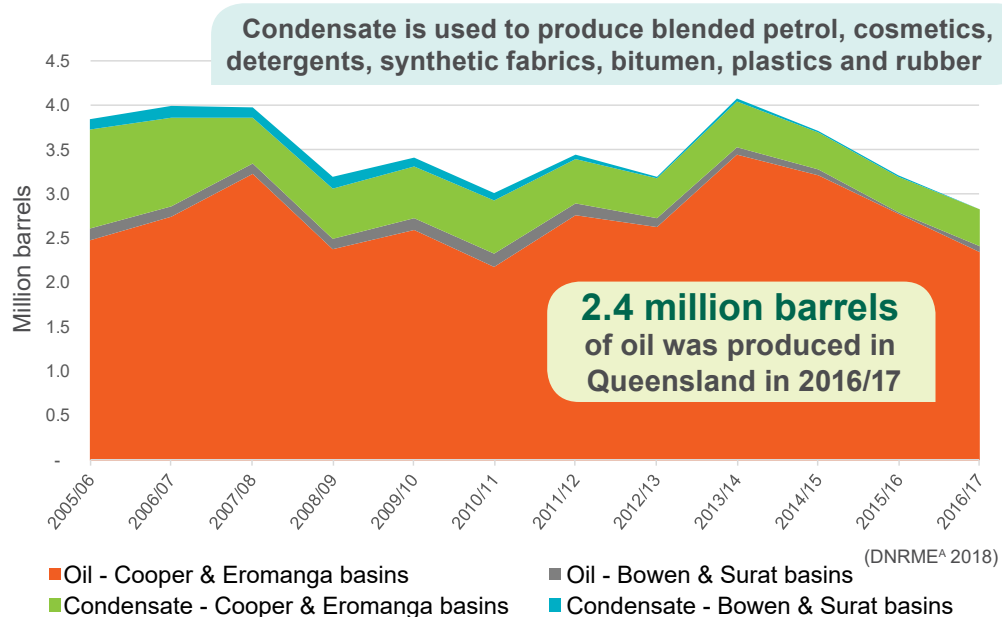




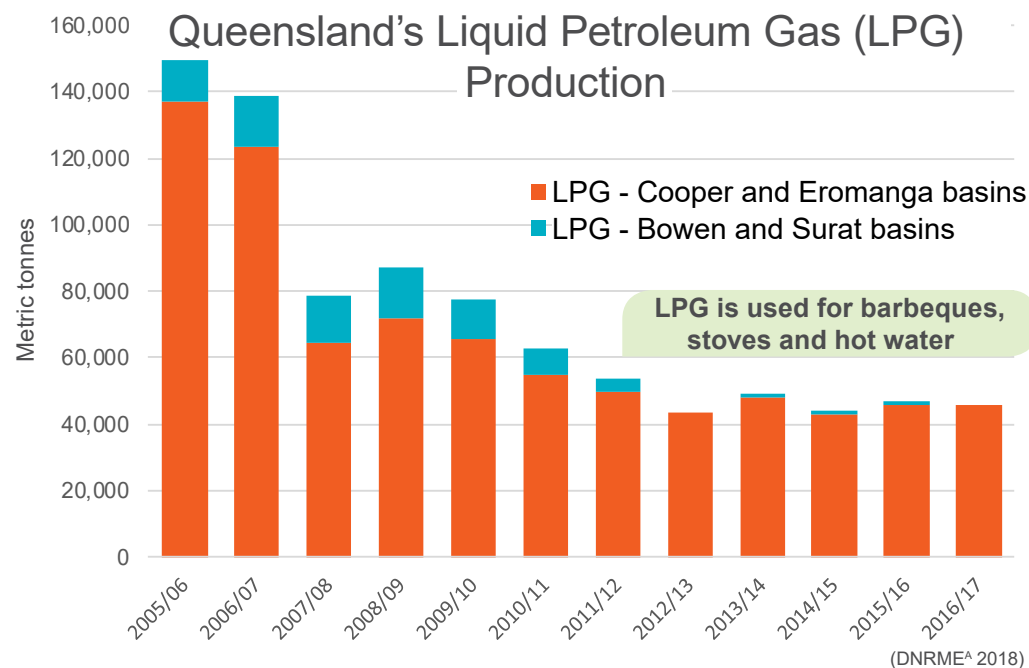
# PRODUCTION



### Queensland's Oil and Condensate Production



### Queensland's Liquid Petroleum Gas (LPG) Production





# GROUNDWATER MANAGEMENT & MONITORING

In areas of intensive petroleum and gas development, i.e. the **Surat Cumulative Management Area (Surat CMA)**, the **Office of Groundwater Impact Assessment (OGIA)** is responsible for:

- regional groundwater modelling
- assessing cumulative impacts on groundwater levels
- developing an **Underground Water Impact Report (UWIR)**

Outside of intensive areas of development, individual petroleum and gas companies must prepare a UWIR.

The UWIR for the Surat CMA identifies where groundwater levels in aquifers, bores and springs are predicted to be affected.

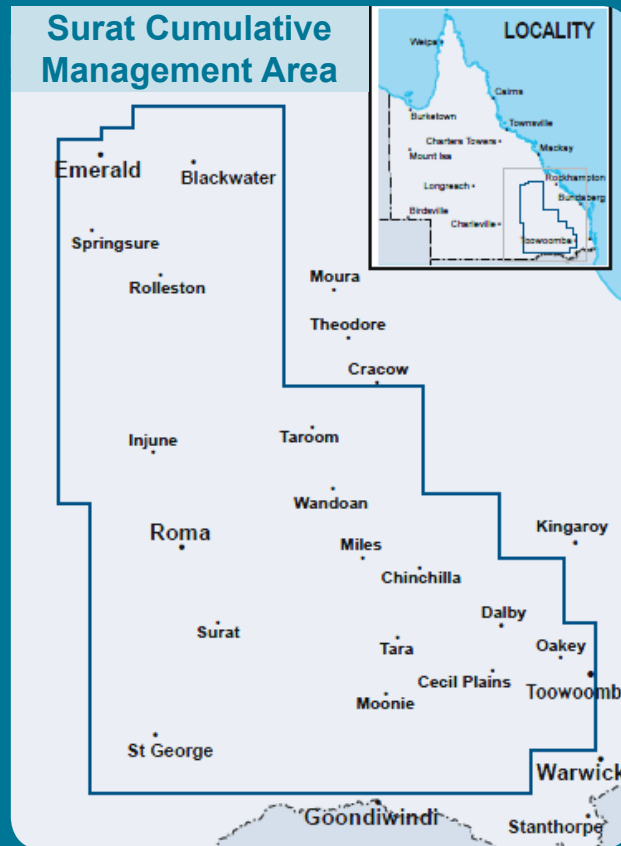
There are approximately **22,500** groundwater bores within the Surat CMA.

OGIA predicts **2%** of these bores will experience a groundwater level decline over the life of the petroleum and gas industry.

Gas companies are required to **'make good'** on any groundwater level decline in private bores by providing landholders with monetary compensation or alternative water supplies.

This may include drilling new bores or supplying treated water to the affected properties.

(OGIA 2016)



Map source: [www.business.qld.gov.au](http://www.business.qld.gov.au)

**More than 600** monitoring points have been established as part of the UWIR for the Surat CMA (OGIA 2016)

Many other groundwater monitoring points also exist:

**Groundwater Online** is a network of **73** continuously monitored bores across the Surat CMA

**Groundwater Net** is a network of **292** private water bores monitored by landholders

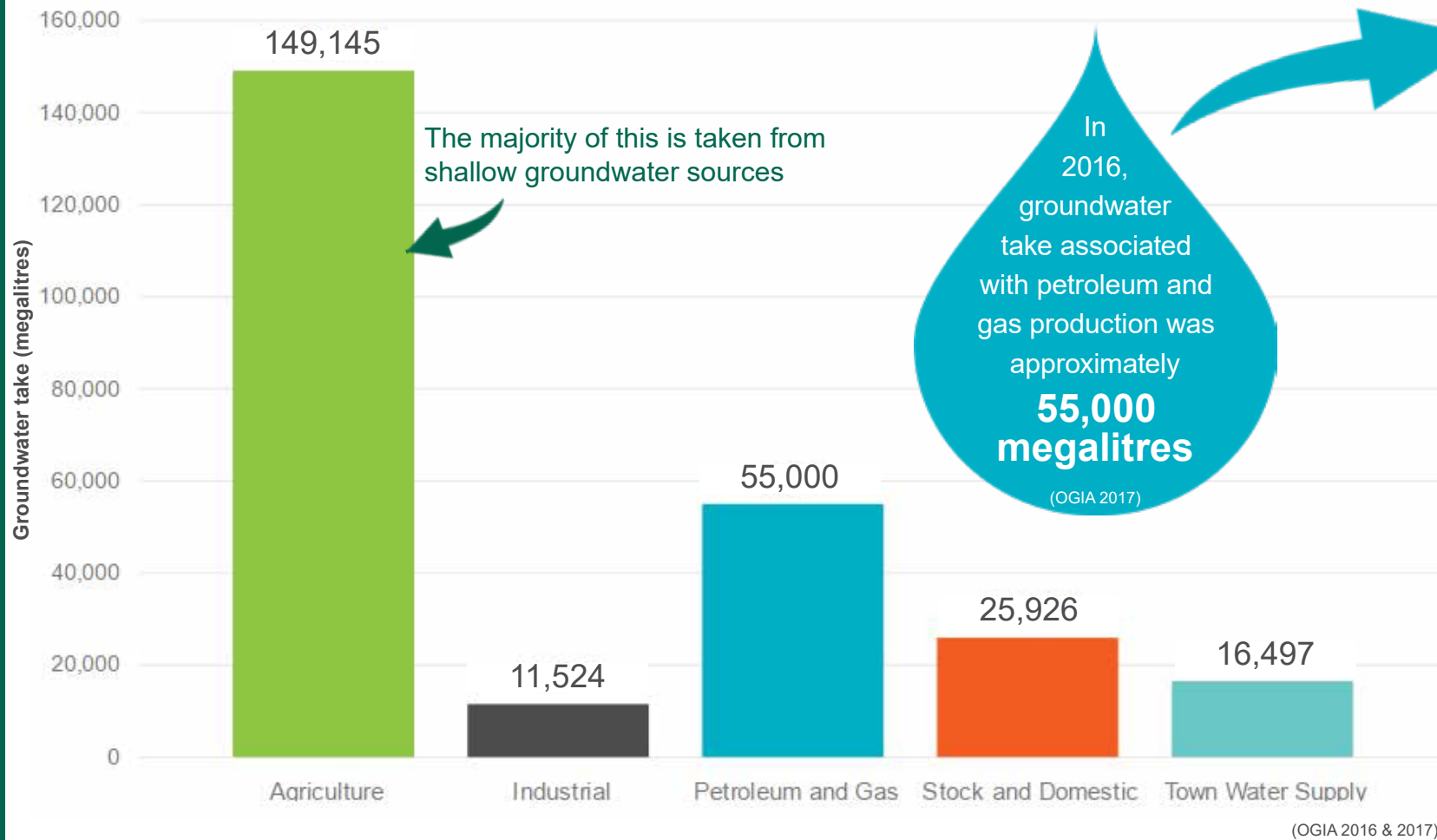
Groundwater monitoring data and predictions can be viewed online via the **Queensland Globe**

(DNRM 2018<sup>c</sup>)



# GROUNDWATER TAKE

## Estimated Annual Groundwater Take in the Surat CMA



Almost all of this water is treated to meet strict water quality standards and **beneficially used** for:

-  **agriculture**
-  **industry**
-  **managed aquifer recharge**

(APPEA 2018)

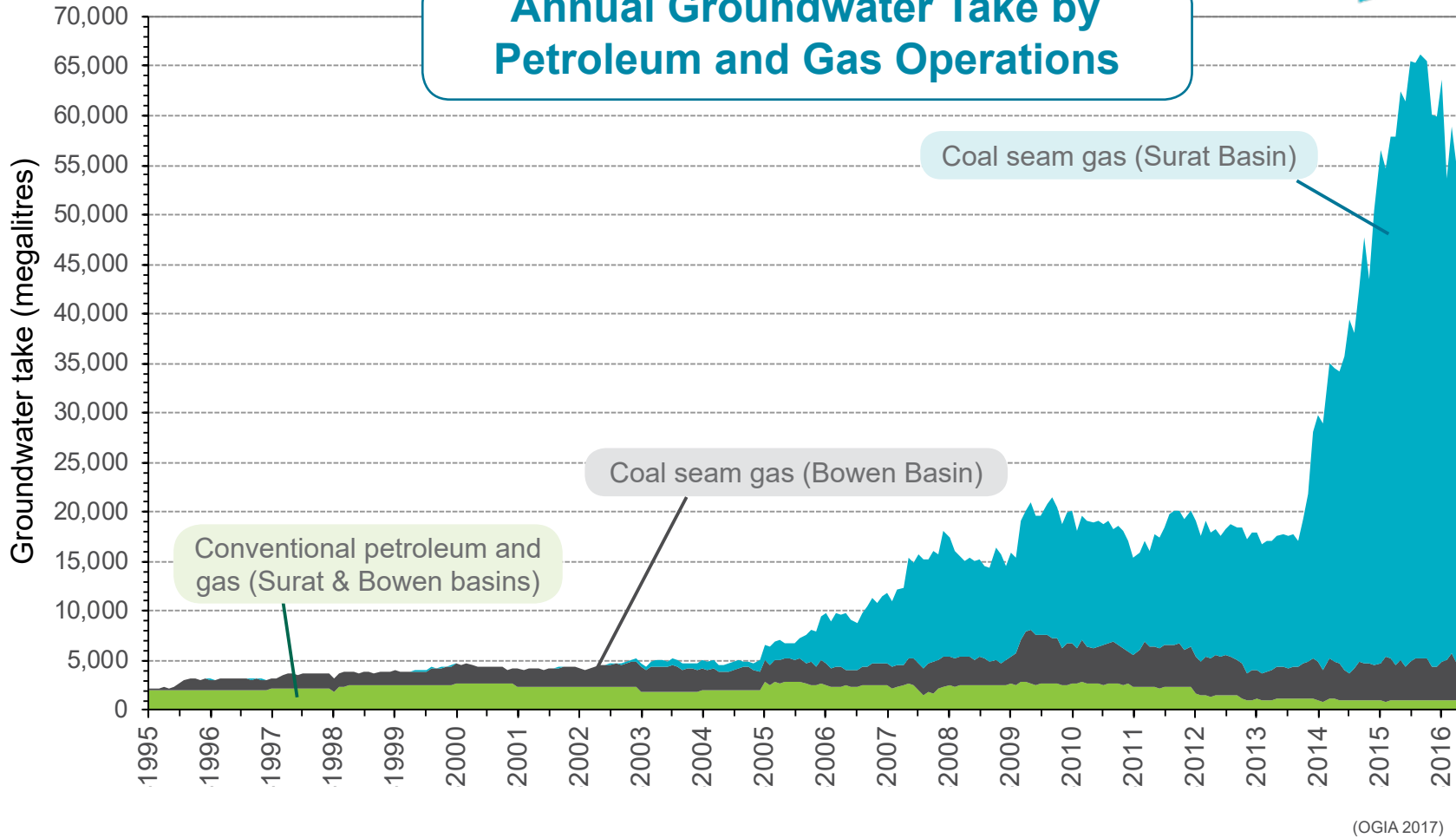
More than **200,000 megalitres** of groundwater is being extracted by non-petroleum and gas users every year

(OGIA 2016)



# MAKE GOOD AGREEMENTS

## Annual Groundwater Take by Petroleum and Gas Operations



Of the **22,500 bores** within the Surat CMA, **459** are predicted to have impaired capacity due to declining groundwater levels over the life of the petroleum and gas industry  
(OGIA 2016)

This includes **127 bores** that are predicted to have impaired capacity due to declining groundwater levels **by 2019**  
(OGIA 2018)

**73 bores** are under **make good agreements** with landholders  
(DES 2018)

About **4,100** baseline assessments have been completed and reported back to OGIA  
(OGIA 2018)



A baseline assessment collects information about the bore including water level, water quality, bore construction and associated infrastructure to benchmark bores prior to petroleum and gas development



## GROUNDWATER REGULATION & COMPLIANCE

### Regulatory framework

Groundwater take associated with petroleum and gas production is highly regulated in Queensland:

1

The ***Petroleum and Gas (Production and Safety) Act 2004*** and the ***Petroleum Act 1923*** authorise companies to take groundwater associated with the production of petroleum and gas.

2

The ***Water Act 2000*** imposes requirements to monitor and assess groundwater, and make good on any bores that are impaired as a result of petroleum and gas activities.

3

The ***Environmental Protection Act 1994*** imposes requirements on the management of groundwater taken during the production of CSG including conditions for its treatment, storage and use.

4

The ***Waste Reduction and Recycling Act 2011*** enables CSG water to be approved for use as a resource if it is deemed to have a beneficial use.

### Groundwater audits and inspections

The Queensland Department of Natural Resources, Mines and Energy conducts audits and inspections of the petroleum and gas industry.

The Department's auditing program reviews company standard operating procedures as well as processes in the field. The audits cover activities such as:

- groundwater sampling
- water level monitoring
- the integrity of groundwater monitoring bore construction
- associated activities.

The aim of these audits is to:


- ensure processes are followed
- establish credibility of the data collected
- ensure that work is undertaken in accordance with national and international best practice standards.

The Department also makes recommendations for improvement to industry systems and processes.




# CONSUMPTION

**1,431 petajoules**  
of gas was consumed in Australia in 2014/15



Gas accounted for **24%** of Australia's total energy consumption in 2014/15

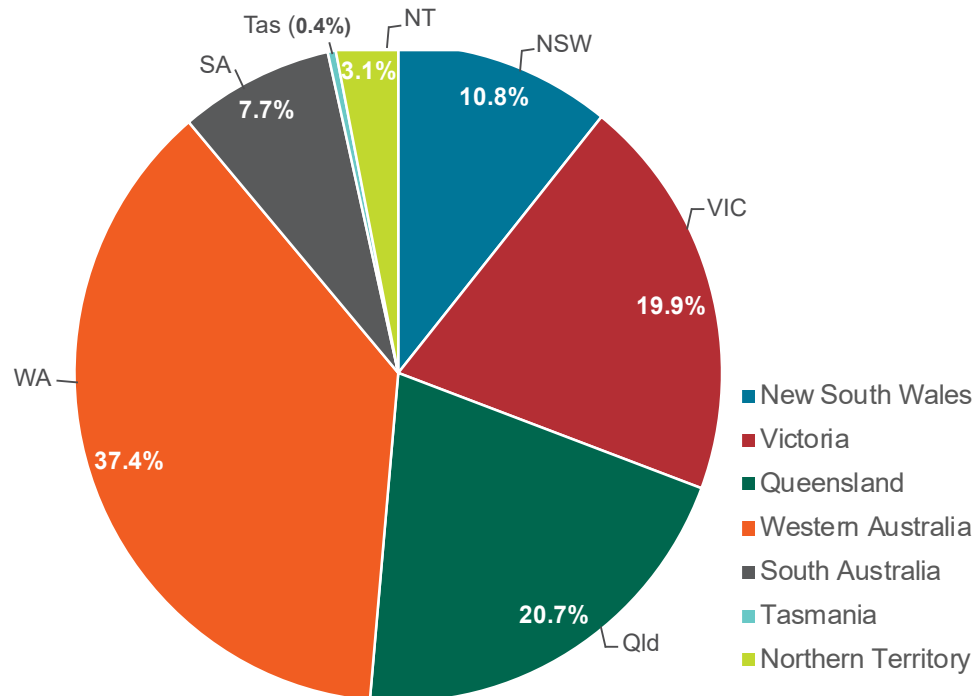


**366 million barrels**  
of oil was consumed in Australia in 2014/15

Oil, LPG and condensate accounted for the largest share of Australian energy consumption in 2014/15 at **38%**

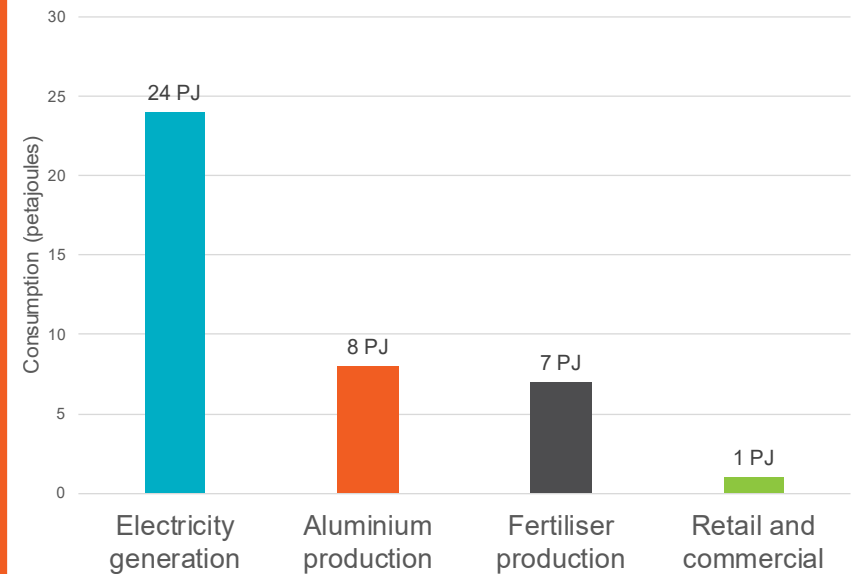
(DIIS 2016)

## Australian Gas Consumption by State/Territory 2014/15



(DIIS 2016)

## Queensland Domestic Gas Use Jan-Mar 2017



(EQ 2017)

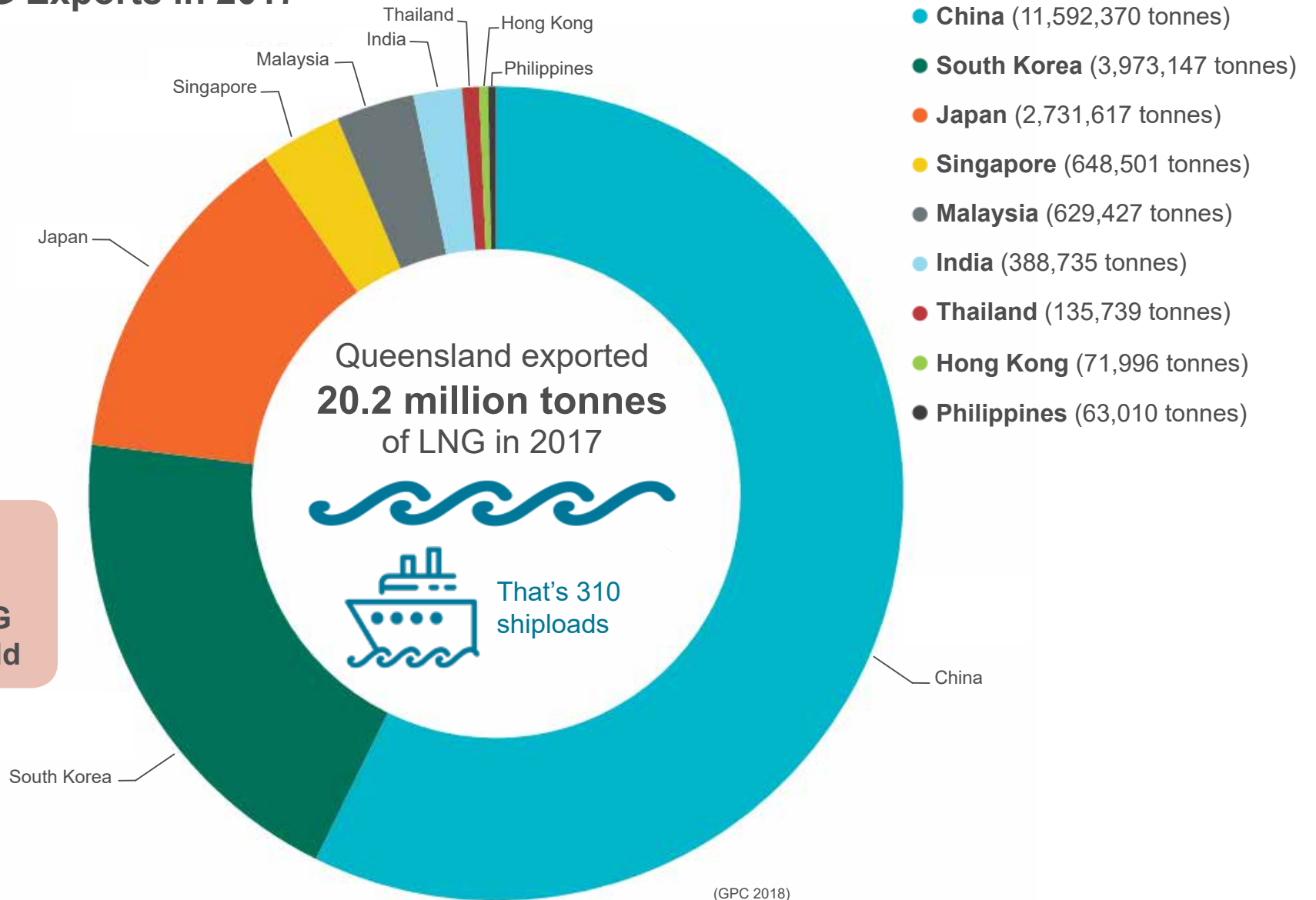


# LNG EXPORTS

## Queensland's LNG Exports in 2017

Queensland has **29%** of Australia's LNG production capacity  
(DIIS 2018)

Australia has now become the **2nd largest** LNG exporter in the world



(GPC 2018)



# COMMUNITY SPEND



Emergency Services



Roads

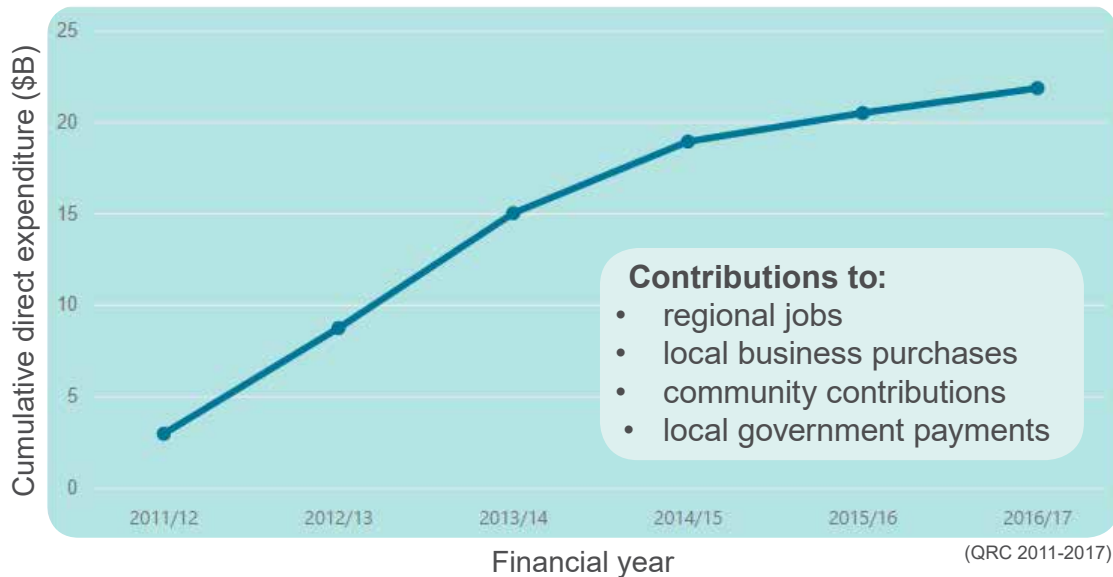


Healthcare



Education

## PETROLEUM AND GAS SPEND IN REGIONAL QUEENSLAND COMMUNITIES



**1,380**  
regional  
businesses directly  
supported by the  
petroleum and  
gas industry in  
2016/17

**131**  
regional community  
organisations directly  
supported by the  
petroleum and gas  
industry in  
2016/17

**\$1.4B**  
direct economic  
contributions to  
regional Queensland  
communities in  
2016/17





# EMPLOYMENT

## Direct Employment in Queensland's Petroleum & Gas Industry



(QRC 2011-2017)

More than **4,000 people** were directly employed in the petroleum and gas industry in 2016/17



Region	Unemployment rate
Maranoa	3.4%
Toowoomba	5.3%
Western Downs	5.6%
Queensland average	6.1%

(DJSB 2017)



Regional areas with petroleum and gas development have lower unemployment rates than the state average



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## THE GASFIELDS COMMISSION

The GasFields Commission Queensland (the Commission) is an independent statutory body established to educate, engage and inform the community about all aspects of Queensland's petroleum and gas industry.

The Commission supports respectful and balanced relationships among rural landholders, regional communities and the petroleum and gas industry by:

- helping regional communities adapt to the introduction of petroleum and gas development
- providing tools to enable informed decision making
- facilitating connections across the petroleum and gas industry, agricultural industry, businesses, communities and government
- promoting best practice business-to-business relationships
- providing a first point of contact for anything to do with petroleum and gas in Queensland
- compiling and distributing information about the onshore petroleum and gas industry.

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