

**Australian Maritime and Transport Arbitration  
Commission (AMTAC) annual address**

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**LNG: Driving Gas  
Globalisation,  
an Australian Perspective**

Speech by  
**David Byers**  
APPEA Chief Executive

## **[SLIDE ONE – Introduction]**

I thank AMTAC for inviting me to offer an Australian perspective on the role that liquefied natural gas – or LNG – can play in driving gas globalisation.

I would like to particularly acknowledge the Chief Justice of the Federal Court of Australia, the Hon James Allsop AO, and the Chair of AMTAC, Mr Peter McQueen.

## **[SLIDE TWO – What is APPEA?]**

My address this evening will focus on Australia's role in the global gas story and how growing demand for LNG is driving gas globalisation.

I will outline:

- The global gas market's current state and future outlook.
- Australian LNG's rapid growth and its significance to the national economy.
- And what Australia must do to further grow its share of the global LNG market.

I also want to emphasise the important role of continuous technological innovation in the LNG industry.

Clearly, finding, producing then transforming natural gas to a liquid and shipping it thousands of kilometres in specially built vessels demands advanced technology.

And the industry continues to evolve and enter new frontiers.

Innovations in drilling and gas extraction are now enabling gas production from coal seams and shale rocks and in deeper waters.

And another innovation now being developed – floating LNG – will enable the commercialisation of previously inaccessible gas resources offshore.

Can I say at the outset that when I talk about natural gas, there can be some confusion about terminology.

Natural gas from coal seams and from shales is the same as natural gas from traditional sandstone reservoirs.

It's all methane. Only the source rock differs.

Gas from coal seams and shales is used by businesses and households in just the same way as natural gas from other sources.

The coal seam gas flowing into Queensland's LNG plants will be used by our overseas customers just as they use any other delivery of gas.

Australia has been exporting LNG to Asian customers for 25 years.

In 1989, Australia had one operating liquefied natural gas project producing 2.5 million tonnes of LNG per year.

Now we have three operating projects. Last year, they produced 23.3 million tonnes and an average of one tanker a day leaves our shores for Asia.

In that year, the oil and gas industry put more than \$30 billion into the Australian economy and paid more than \$8 billion in taxes.

Another seven LNG projects worth \$200 billion are under construction, and four of these are due to start exporting in the next 12 months.

### **[SLIDE 3 – Australian LNG projects]**

By 2018, Australia will be the world's largest LNG exporter – a keystone energy supplier to several major Asian nations – an energy superpower.

By 2020, 10 Australian LNG projects will be collectively producing more than 85 million tonnes a year of LNG.

The industry will then be:

- putting almost \$65 billion into the Australian economy;
- paying almost \$13 billion in taxes;
- accounting for 3.5% of GDP, nearing double its contribution at the start of the decade.

The remarkable growth of our LNG sector is one of Australia's greatest economic success stories.

And it is far from over, providing we can be as smart in the future as we have been in the past 25 years.

Australia has more than enough gas for its domestic needs and its export ambitions.

The latest Geoscience Australia data indicates this country has 392 trillion cubic feet – or TCF – of identified gas resources.

These include conventional resources in central Australia, Bass Strait and in waters off Western Australia and the Northern Territory, as well as coal seam gas, mostly in Queensland.

When shale gas resources – mainly in WA and the Northern Territory – are considered, the total potential resource is around 819 tcf.

(As a rule of thumb, one TCF is enough to power a city of a million people for about 20 years. In 2013, the entire Australian economy consumed only 1.1 tcf of gas, with a further 1.1 tcf exported.)

So Australia has plenty of gas.

And it also has a strong track record as a reliable LNG supplier.

The market is there – no-one seriously doubts that there will be huge extra demand for gas over the next two or three decades.

The issue is whether new Australian-based projects can compete successfully with those proposed elsewhere around the world.

Let me explain a little more about the global gas market.

#### **1. LNG in the global gas market**

Natural gas currently accounts for around 25% of global energy consumption.

The International Energy Agency and others expect that gas will be the world's fastest-growing major energy source through to 2040.

According to ExxonMobil's 2014 Outlook for Energy report, global gas demand will rise by close to 65% between now and 2040.

During this period, gas will account for about 40% of the growth in global energy needs.

This demand is driven by the attractions of natural gas.

It is a clean, reliable and versatile source of energy.

Its low emission qualities have become highly prized as urban air quality has become a big issue in many parts of Asia.

Globally, the share of gas demand met by LNG has been rising quickly.

In 1990, LNG met just 4% of gas demand. Now it accounts for 10%.

Pipeline imports still account for 21% and domestic production for 69%, but LNG is catching up.

Use of LNG has risen by an average of 7.5% annually since 2000 – compared with 4% per annum for pipeline imports and 1.8% for domestic production.

For three of Australia's most important LNG markets – Japan, South Korea and Taiwan – LNG provides nearly 100% of gas supply as they have little to no domestic production or pipeline import capacity.

#### **[Slide 4 – Global gas trade]**

But Australia is not alone in striving to capture a higher share of this expanding global market.

The number and geographic spread of countries importing and exporting LNG continues to grow.

At the end of 2013, 17 countries were exporting LNG.

This year, Angola and PNG have joined the list of LNG exporters – new rivals for existing major exporters such as Qatar, Indonesia, Malaysia and Australia.

In the past six years, 11 countries have begun importing LNG.

There are now 29 LNG importing countries.

While this has been happening, interregional trade flows have shifted.

The most significant change over the past decade has been the rapid expansion of the Middle East to Pacific Basin LNG trade.

European LNG imports declined for the second consecutive year in 2013.

A tight supply market and weak European demand have seen cargoes redirected towards higher paying markets in Asia.

Europe's economic stagnation, and its continued call on coal and renewables for power generation, will likely limit its LNG demand through 2014 and beyond.

Asia will remain the largest source of demand – with 61% of total imports – though the potential restart of nuclear generation in Japan – the world's largest LNG consumer – may affect its import requirements.

Despite these interconnections, there is still no “global” LNG market with a single price structure.

In this respect, LNG is unlike oil, which operates as a global market with slight regional variations.

LNG has strong regional supply and demand dynamics, with global flows that link regional markets.

How long that lasts remains to be seen.

## **2. The shipping story**

Let me now canvass a subject dear to your hearts – shipping's essential role in the LNG story.

Shipping is crucial in connecting Australian gas with export markets.

It also epitomises the innovation and advanced technology that underpins the LNG industry.

Pipelines are best for short-distance trade, but they are not feasible at very long distances or through very deep water.

### **[Slide 5 - LNG shipping]**

To cost-effectively move natural gas across oceans, the gas must be liquefied.

The gas is cooled to  $-162^{\circ}\text{C}$ , changing it into a liquid that occupies  $\frac{1}{600}$ <sup>th</sup> of its original volume.

This dramatic reduction enables safe and efficient transport via specially designed LNG vessels.

Once at its destination, the LNG is warmed to return it to its gaseous state and delivered to natural gas customers through local pipelines.

LNG carriers cost US\$200 million to \$250 million each to build.

Their double hulls protect the cargo systems from damage or leaks.

They can operate on marine diesel, fuel oil or use gas vapour from the storage tanks on board to run steam turbines.

These high-tech vessels have an excellent safety record.

More than 80,000 LNG shipments have been completed around the world without a major accident or significant loss of cargo.

Today most new LNG carriers under construction carry 120,000–150,000 cubic metres of gas.

Based on Deloitte Access Economics analysis done for APPEA in 2012, each cargo in a tanker this size is worth about \$33 million at current prices.

But many ships – mainly from Qatar – can carry up to 260,000 cubic metres of LNG.

Obviously, the bigger the ship, the fewer trips it need make to deliver given quantities of gas.

But if a ship is too large, it cannot dock at some receiving terminals.

At the end of 2013, there were 357 vessels in the global LNG fleet with a combined capacity of 54 million cubic metres.

Sixteen new vessels entered the global LNG trade in 2013.

Another 31 LNG carriers are scheduled for delivery this year.

And about 90 more ships are now on order.

Up to 40 LNG tankers – around 20% of the 225 LNG vessels expected to be added worldwide by the end of 2020 – are set to be built in China, according to American Bureau of Shipping estimates.

China has ambitious plans to restructure the country's ailing shipbuilding sector and secure China's energy supply chain.

This will boost China's capability in high-tech ships and challenge the South Korean and Japanese shipyards that have been the main suppliers of large gas tankers for 30 years.

LNG carriers can be owned by producers, customers or shipping companies – or producers or customers in partnership with shipping companies.

Globally, shipping interests are dominated by three companies tied to National Oil Company-led LNG projects in Qatar, Malaysia and Nigeria.

But other players have now entered the ranks of the largest LNG carrier owners.

Japanese and Chinese shipping concerns have equity stakes in a growing number of vessels, though they do not always exercise direct commercial control in their marketing.



At Western Australia's North West Shelf project, a subsidiary company – the North West Shelf Shipping Services Company – runs a fleet of seven carriers owned by the North West Shelf partners.

Four LNG carriers are used by Pluto Project – two managed by Woodside and two by customers who are equity partners in the project.

At Darwin LNG, the tankers are owned by customers. But two of those customers – Tokyo Gas and Tokyo Electric – are also project partners.

Similarly, at Queensland LNG projects now under construction, Chinese and Korean customers have taken equity in the projects as well as owning or part-owning the LNG carriers that will transport the production.<sup>1</sup>

Traditionally, the LNG market has been based on long-term supply contracts – 20 to 25 years has been the norm.

But in recent years, sales have risen in the spot market and in the so-called portfolio market. The volume of non long-term traded LNG reached a new high in 2013 – 77.3MT or about one-third of global trade ( 237MT). Most (74%) of that spot LNG was delivered to Asian markets.

This has driven more diversity in the LNG shipping market.

The spot market tends to cater to one-off cargoes. An LNG producer might buy a spot cargo to meet contractual obligations if there has been an unforeseen stoppage at one of its projects.

In the portfolio market, an LNG producer with stakes in numerous projects might make a deal with a customer, specifying a schedule or cargoes but not the origin of those cargoes.

This lets the producer juggle shipments from a range of projects. All that matters is that delivery commitments are met.

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<sup>1</sup> China's CNOOC owns 50% of the first LNG production unit at Queensland Curtis LNG; Sinopec – owns 25% of the Australia Pacific LNG project; and Malaysian national oil company, Petronas, owns of 27.5% of Gladstone LNG while South Korea's KOGAS owns 25%.

There has also been an entry of portfolio buyers who buy cargos on the spot market and on-sell these to customers. This trend has been driven partly by the collapse of some European economies.

Spain, for example, has several LNG terminals. Long-term contracts but depressed demand means it needs to accept the shipments but find new buyers for the gas.

### **3. Capturing further growth**

As I have explained, in coming years LNG can contribute even more to Australia's prosperity.

But for this to happen, Australia must tackle some big challenges and address some major policy failings.

We must reverse the industry's recent productivity performance.

Costs at Australian LNG projects have risen dramatically.

This now threatens to undermine our competitiveness against tough new players in the global market.

Companies in the US, Canada, Mozambique and Tanzania are now developing – or planning to develop – projects targeting our Asian markets.

Each of these nations has geological factors, cost structures and regulatory environments that mean we expect they will be able produce LNG 20% to 30% lower cost than we can.

I've noted that by 2018, Australia will be the world's largest LNG producer.

But if a number of the American and Canadian projects now under consideration proceed and we do not build more projects or add production units to existing ones, we could lose this standing by the middle of the next decade.<sup>2</sup>

Our rivals are lean and hungry.

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<sup>2</sup> US has given conditional approval to 8 LNG projects, totalling production of about 95MT. Sabine Pass (Louisiana) will begin exporting in late 2015.

Can Australia compete? Or have we become complacent?

There are a number of areas on which we need to focus our attention. Tonight, I want to focus on two that have something of a maritime flavour or linkage.

Firstly – by developing new labour relations arrangements we can address the cost of major construction projects so we can compete for expansions of existing – “brownfields” – LNG projects.

Secondly – by investing in new technologies such as floating LNG, we can compete for investment in new – “greenfields” – LNG projects.

#### **4. Labour Market Reform**

Industrial relations reform is well overdue in Australia.

Inefficient industrial relations and labour market systems have produced:

- Labour shortages.
- Poor productivity; and
- Repeated disruptions to projects

High labour costs and low productivity are an unsustainable mix – particularly for major project construction.

The Fair Work Act facilitates continual ratcheting up of wages and allowances so that project owners cannot be confident about the cost of labour over the full life-span of construction.

Recent events in our industry have shown why labour relations reform must be central in the national productivity agenda.

In July and August of this year, the Construction, Forestry, Mining & Energy Union used its strategic position to threaten industrial action at the three LNG projects being built near Gladstone, Queensland.

After lengthy negotiations, an agreement was reached.

But this required huge pay rises.

Tradesmen's wages jumped about \$40,000 to reach \$200,000 a year, according a report in the Courier Mail.

This dispute arose because an enterprise bargaining agreement had expired and a new one had to be negotiated – four months from project completion.

The stoppages were disruptive and the outcome has had a significant impact on projects that were already facing cost pressures.

Incidents like this make investors flinch.

If we want more major projects built in this country, we must change our ways.

The way we manage them must change. The Fair Work Act must be revised, especially in regard to major resource project construction.

APPEA has advocated a new form of enterprise agreement to specifically apply to construction of major capital projects, such as large mines and LNG plants.

These Major Project Agreements – or MPAs – would limit the time available to negotiate and would apply for the entire project construction period – rather than being renegotiated every four years.

MPAs would also require negotiations to be specific to individual major projects' circumstances.

This would prevent the most recent deal struck automatically becoming the minimum benchmark for the next.

APPEA is also urging the Federal Government to consider further reforms to protect major capital investments once an MPA has been put in place – and therefore provide protection from disruption to service providers such as those in the maritime sector.

Unless we are prepared to see unemployment rise and living standards fall, we must improve productivity.

Unfortunately, the CFMEU is not the only union using the strong bargaining position it is granted under the FairWork Act to hold projects to ransom.

In July, the Maritime Union of Australia sought to undermine the use of Maritime Crew Visas for foreigners working on offshore platforms and construction.

This created great uncertainty and risked halting vital construction work.

This issue is also being played out in parliament.

APPEA believes the *Migration Amendment (Offshore Resources Activity) Act* – or The ORA Act should be repealed.

This Act extends Australia's migration zone offshore to include offshore vessels – requiring relevant workers on those vessels to hold skilled migration visas.

Yet with or without the ORA Act, terms and conditions of employment will continue to be protected – both under domestic laws and the International Labour Organisation's Maritime Labour Convention.

Non-citizens working on resource installations, or coming to the Australian mainland to work, already must hold work visas.

They also need valid visas to be immigration-cleared at Australian airports when travelling to and from resource installations and vessels.

Even if they need not hold a visa for operations on the resource installation or vessel, they are subject to immigration controls.

The Australian Government has sought to introduce regulations allowing holders of the maritime crew visa, the 400 visa and 457 visa to work in, or support, offshore resources activities.

But the Senate disallowed these critical visa regulations.

This had the potential to shut down operations and harm Australia's international investment reputation.

The government responded by issuing a Legislative Instrument so foreign workers in offshore resource operations could still legally work in Australian waters.

But the MUA is now challenging this ‘instrument’ in the Federal Court.

Whatever, the ultimate legal position may be, we must recognise that the oil and gas industry is global.

Many of the services provided to it are undertaken by vessels with highly-specialised, highly-skilled crews that travel the world, from job to job.

Owners of these vessels should be able to use their own crews.

The same reasoning used to justify the ORA could be used to force British Airways to switch out its crews and use Australian pilots and cabin staff when in Australian airspace.

We need a new, more flexible class of visa with an extended duration – say, 6 to 12 months – and no labour market testing requirements for globally specialised services.

The Australian Government has introduced a Bill to repeal the ORA Act.

But it has not yet been passed.

APPEA hopes senators consider what is at stake.

Visa and major project agreement reforms are critical reforms if the LNG sector is to increase investment and deliver more jobs.

Sadly, we are making it much harder to do business in Australia and must lift our game.

## **5. The promise of technology**

Let me quickly canvass the key area of technological innovation.

Advanced technology is crucial to our future LNG prospects, just as it has underpinned all of the industry’s past achievements.

I have already alluded to advances in drilling and hydraulic fracturing that have enabled the commercial production of gas from coal seams and shales.

Today, major new technologies include deepwater drilling and floating LNG – or FLNG.

These advances will let us produce oil and gas further from shore and in deeper waters from fields that were previously considered commercially unviable.

### **[Slide 6 - Floating LNG]**

In FLNG, a floating facility that will be moored over the gasfield for years or even decades will extract the gas from under the seabed, and then liquefy it. This eliminates the need for a long pipeline and liquefaction facilities situated onshore as far as 900 km from the gasfield.

The LNG will then be offloaded from the floating facility to a tanker and taken directly to market.

I am speaking in the future tense because the world has not yet seen its first operating FLNG plant, although several are now under construction.

Shell's Prelude FLNG project – scheduled to start production in 2017 – will develop fields 200km off the coast of Western Australia.

Prelude is designed to withstand category five cyclones.

It will be the largest floating facility built in human history—larger even than an aircraft carrier – as long as a par five hole at Royal Sydney golf course.

Using FLNG to develop previously inaccessible fields is a development option that could transform the LNG industry – it has the potential to be a true game-changer.

It will create jobs, export income and tax revenue that Australia would not otherwise enjoy.

## **6. Conclusion**

The world of LNG is changing and we can't stay in our comfort zones and hope to continue Australia's success story.

We must change how we operate.

We must do new things or do old things in better ways.

And we must innovate – both in business practices and in technology.

We are at a critical juncture in which nothing can be taken for granted.

LNG is driving gas globalisation and Australia is truly at the forefront of these developments.

Natural gas is a major fuel – essential to Australia’s energy security and to its balance of trade.

It is also essential to energy security and prosperity in several of our major trading partners.

LNG will certainly play a major role in Australia’s economic future – the question is: “Just how large can we make that role?”

**[Slide 7]**

My thanks again to AMTAC.

I hope you have found this address interesting and informative. Thank you.

**-ends-**

**See overleaf for references**



## References for statements in this speech

At the end of 2013, there were 357 vessels in the global LNG fleet with a combined capacity of 54 million cubic metres. ([International Gas Union World LNG Report – 2014 Edition](#), p6)

Sixteen new vessels entered the global LNG trade in 2013. ([International Gas Union World LNG Report – 2014 Edition](#), p6)

Another 31 LNG carriers are scheduled for delivery this year. ([International Gas Union World LNG Report – 2014 Edition](#), p6)

And about 90 more ships are now on order. (GTT (Gaztransport & Technigaz) website: <http://www.gtt.fr/references/vessels-on-order/>)

In China alone, shipyards are aiming to take some \$10 billion in orders for new LNG tankers over the rest of the decade. (Reuters report August 5, <http://uk.reuters.com/article/2014/08/05/china-lng-ships-idUKL3N00838P20140805>)

The number of countries importing or exporting LNG continues to grow. At the end of 2013, 17 countries were exporting LNG. ([International Gas Union World LNG Report – 2014 Edition](#), p7)

In 2014, Angola and PNG have joined the list of LNG exporters – new rivals for existing major exporters such as Qatar, Indonesia, Malaysia and Australia. (See: [www.tradewindsnews.com/weekly/336875/first-lng-ship-arrives-at-exxon-png-project](http://www.tradewindsnews.com/weekly/336875/first-lng-ship-arrives-at-exxon-png-project))

There are now 29 LNG importing countries.

In the past six years, 11 countries have begun importing LNG.

This includes three new importers in last year alone. ([International Gas Union World LNG Report – 2014 Edition](#), p7)