SEAAOC 2013

Address by John Anderson Santos Vice President WA & NT

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It's a great pleasure to speak to you today at SEAAOC, a conference which is becoming increasingly important for Northern Australia, in bringing together leaders from our industry, policymakers, and ultimately those keen to see our industry succeed in the region.

Before I begin, I would (also) like to acknowledge the Larrakia People, the Traditional Owners – past and present – on whose land we meet.

Today, I will explore the ingredients for our industry's success and I am going to do that by focusing on three points.

- 1. First, I will look at the future of energy, particularly natural gas, for our region.
- 2. Second, I will discuss the advantage Australia with an emphasis on *northern* Australia holds in its ability to secure gas for the region.
- 3. And third, I will outline the key steps that we all must take if we are to deliver on the opportunities available to us, and ensure that the economic benefits that this brings are realised.

THE FUTURE OF ENERGY



So let's start with the future of energy for the region.

Despite suggestions that growth might be slowing in China and other parts of Asia, overall, our region remains today the brightest prospect in the world economy.

Liquefied natural gas has a very important role to play in this Asian energy demand growth story, as well as meeting *global* gas demand.

LNG's share of global gas demand has risen quickly from just 4% in 1990 to around 10% today. LNG has been the fastest growing source of gas supply globally, increasing by 7.5% per annum on average since 2000.

And LNG is expected to continue to grow in importance, projected to represent 14% of global gas demand by 2030. As this chart shows, around 40 new LNG trains will need to be built by 2025 to meet the projected growth in global LNG demand.

This is a massive opportunity, but what stands out for me is that the demand takes place over a long period of time and that Asia will continue to steer the demand trajectory, accounting for two-thirds of global LNG growth¹.

The large Asian economies of China and India have been turning to gas to meet their fast-paced demand. LNG demand from South-East Asia is also growing as it provides a flexible solution to a number of energy concerns, such as replacing pipeline imports, offsetting declining domestic production and meeting demand in remote locations.

Ongoing concerns about the safety of nuclear power in both Japan and South Korea add further support for strong LNG demand. LNG's share of total gas demand in the Asian region is expected to grow from around 33% in 2012 to 38% by 2030.

¹ PFC Energy Data Insight: LNG's Rising Share of Gas Demand, 26 August 2013



So, what's driving this demand?

Energy is intrinsically linked to economic development and progress.

To deliver sustained economic growth or even to support existing levels of development – energy must be secured.

This is particularly true for the large economies of Asia, where demand growth is being driven by urbanisation – people moving into the cities and wanting access to energy.



The future demand for gas from Asia also signifies something else to me. While we have heard over the past few months considerable and often unhelpful talk about the end of the mining boom, there is strong evidence that Australia can continue to be a destination for major investment in new gas projects.

What does major mean? Well, if the projects in the pipeline that are planned, but not committed, actually go ahead, this would represent an additional \$145 billion in capital investment over and above the \$188 billion in capital from the LNG projects already sanctioned and under construction.

To put this into context, Australia's current oil and gas investments and their projected outputs to 2025 represent an increase in Australia's GDP of just over \$260 billion², equivalent to 20% of the economy's current annual output. The economic contribution of any new LNG projects would be over and above this already significant economic contribution.

This certainly does not sound like an industry on the decline. Instead, I believe this is a wonderful opportunity that Australia must grasp. And it is one that is definitely within our reach if we have the right policy settings and collaboration between stakeholders including industry players.

² Deloitte Access Economics "Advancing Australia Harnessing our comparative energy advantage", June 2012



Australia's LNG investment

Of course, Australia has already invested considerably in recent times to respond to Asia's energy opportunity, and this is the second part of my discussion that I would like to focus on.

It all began back in 1989, when Australia made its first deliveries of LNG exports from the North West Shelf. That facility now has five trains and is delivering gas under long term contracts to customers in Japan, China and South Korea, as well as helping fuel Western Australia's commercial and industrial development.

Today, seven LNG projects, worth an estimated \$188 billion, are currently under construction in Australia's west, north, and east. When this current wave of projects comes on line, Australia will become one of the world's largest LNG exporters with over 80 million tonnes exported annually.

The benefits to Australia from the construction of these massive infrastructure projects cannot be ignored. Last year alone our industry generated an estimated 100,000 Australian jobs.



But in order to be in such a position you must first have the gas in the ground, and fortunately here Australia has an advantage.

Today, Australia's proven conventional gas reserves are ranked 13th in the world. And as a result of the growth in demand from Asia, our geographic proximity to this market and the potential to access oil-linked prices, we have seen significant growth in resources being booked here at home.

A recent government report states that Australia's total demonstrated gas resource, including coal seam gas, is in the order of 400 Trillion cubic feet. Based on current production rates, this gives Australia around 150 years of gas supply.

And these estimates exclude the potential for developing our *shale* gas resources – calculated at over 400 Trillion cubic feet of potentially recoverable gas – making Australia the seventh largest holder of shale gas resources, globally.



Australia is, however, not the only country striving for the prize that the Asian gas market is putting up for grabs.

The LNG market is a competitive one. Our competitors will not wait for us.

In recent years, much of the growth in LNG supply has come from Qatar and then Australia. We now see new suppliers emerging including the US, Canada and East Africa.

In the US, the boom in shale gas development has seen gas supply increase to the point where gas has been able to effectively compete with coal for baseload power generation. And from an international perspective, it has freed up the US from importing LNG, and triggered the planning of multiple export projects.

For a nation heavily dependent, for decades, on importing its energy – and the associated geopolitical vulnerabilities that come with that – this turnaround from importer to ultimately exporter is a remarkable development.

Impact of US LNG exports US LNG exports will happen but are not expected to overwhelm the market Global LNG demand vs US LNG supply in 2025 (mmtpa) 500 450 ተ ~100 mmtpa 400 Contestable Market 166 350 300 250 200 Contracted Supply & Contract 150 287 Rollovers (ex USA) 100 50 0 2025 US LNG We have the energy Source: Wood Mackenzie, Contracted Supply & Contract rollovers are for Operational and Under Construction plants, includes SPAs, MOUs, and HOAs

It's important to keep some perspective here. Most forecasters expect that the US will be exporting in the order of 40 to 60 million tonnes per annum of LNG by 2025. Now, that's around 10-15% of global LNG supply, so while the US becoming a gas exporter is significant, US LNG exports are not expected to overwhelm the market, and a further 100 million tonnes of LNG supply will be required to meet forecast demand.

New entrants and new suppliers is good news for Asian LNG buyers, providing a diversity of supply that is important to achieving energy security.

It is also a sharp reminder to Australia that our projects, those in the planned but not committed phase, and beyond, must be competitive if they're to be developed. Investors in LNG development now have more options than ever before in choosing a destination for their capital, and new Australian projects must be cost competitive if they are going to attract the investment needed to get off the ground.

DELIVERING PROJECTS COMPETITIVELY

Which leads me to the final part of my discussion today – how Australia can continue to be a part of the global gas growth story.

Developing our natural gas resources is, of course, important to Australia. And the economic benefits that flow from their development should not be underestimated.



Let's look more closely at how our cost competitiveness is being challenged.

This slide shows LNG plant capex over time based on Wood Mackenzie's estimates. Many of the recently sanctioned and under construction Australian greenfield LNG projects are at the high end of the cost spectrum.

This is compared to the Sabine Pass LNG project in the US which is at the lower end, in part due to the favourable economics of converting an existing LNG regasification facility to an export facility.

A McKinsey & Company report released earlier this year states that the cost of building new LNG projects in Australia has surged in the past decade, and is now in the order of 20 to 30% higher than that of competition in North America and East Africa.

The massive infrastructure build across both the mining and oil and gas sectors over the past five years has been one major contributor to the rise of project costs in Australia, of late.



Thankfully, we expect to see some reduction in the cost pressures facing Australian projects as the construction of today's projects move to operation.

At Santos, we are already starting to see some of this flow-through into current contracts and tenders we are procuring right across our business.

Recent strategic sourcing and competitive tender processes have delivered cost savings of around 15% on average.

These benefits are being seen across the spectrum, including in materials and equipment supply, fabrication, construction and other related services.

A significant part of the costs facing our industry is labour, with the cost of Australian labour double that of many of our competitors. I am not suggesting that Australian wages should be lower – in fact, I believe we can have both increased prosperity and increased investment and growth.

But to achieve this, we need to be more productive, and that requires doing things differently. Fortunately, looking at new and better ways of doing things is something that engineers, and particularly oil and gas engineers, are quite good at.

The right policy settings are also important in attracting investment capital and ensuring development. Government policy and decision-making that comes as a surprise to industry, which is inconsistent and creates a mood of uncertainty, is a sure way of scaring off investment.

Clear and sound statements like the Giles Government's position on gas reservation – that the Northern Territory Government will NOT be interfering with the market through gas reservation – sends the right message for attracting investment. By contrast, equivocation or uncertainty on whether a government will or won't interfere is fraught.

The same can be said of the regulatory duplication and delay that is stifling gas development in other parts of this nation.

By way of example, bringing CSG water treatment, utilisation and monitoring regulation into line with the mining industry, and making the electric wiring standards of land-based rigs equal to international standards, without compromising safety or environmental standards, would reduce costs by between 4 to 6 US cents per British Thermal Unit $(US\$0.04/MMBtu - US\$0.06/MMBtu^3)$

If this regulatory burden doesn't scare off investment at that first instance, it's invariably delaying projects, and that *also* adds to cost.

According to a recent Productivity Commission draft report on Major Development Assessment Approvals Processes, an indicative cost estimate for a one-year delay on a large oil or gas project is in the order of \$700 million.

³ McKinsey & Co

Now I'd like to look at some examples in this region of where there are cost competitive opportunities for development.

From a northern perspective, it's worth pointing out that the oil and gas sector is already playing an important role in the Territory's economy, and is well placed to play a much bigger part in the future.

I can say this with some confidence given the company I work for, Santos, has operated in the NT for over 40 years. From small beginnings, we have continued to increase our presence in the NT, year upon year.

Darwin LNG: backfill and expansion

- Santos 11.5%
- Capacity 3.7mpta, LNG production since 2006
- Track record of reliable delivery (more than 350 cargoes)
- Land available for Darwin LNG expansion, government approval in place for up to 10 mtpa
- Planning for Phase 3 offshore drilling program underway
- Potential development pathway for Caldita Barossa gas



DLNG site at Darwin and expansion potential



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A good example of this is our 11.5% stake in Darwin LNG which produces gas from the Bayu Undan field in the Timor Gap, approximately 500 kilometres north-west of Darwin in 80 metres of water.

This was Santos' first entry into the LNG business, and was a significant investment that helped establish this city as Australia's second LNG hub.

Darwin LNG is now a key piece of infrastructure for the region. It first began exporting in 2006, it now exports around 3.5 million tonnes per annum of LNG and it has a track record for reliability having safely and successfully delivered more than 350 cargoes.

Preparations are underway to make a final investment decision on further offshore expansion, and, if next year's appraisal program in the Barossa field is successful, Darwin LNG is a real option for the development of that gas.

Meanwhile, onshore, there is land available for expansion at Darwin LNG, with government approvals already in place to expand the plant's capacity from 3.7 million tonnes per annum to up to 10 million tonnes per annum.

Collaboration and cooperation in our industry is something the industry collectively has strived for over the years, and while not a silver bullet, it should be seen as a way to unlock our resources.

And it is collaboration that I am talking about when I refer to Darwin LNG's future. Whether it be backfill or expansion – the proximity of Darwin to Asia, and the ability to use existing infrastructure, should be considered by industry as a real, economic and cost competitive option for the development of nearby fields.



The development and application of new technologies is another approach that Australia has previously adopted to discover and economically develop new energy sources. CSG to LNG is a great example. Another, more relevant example in this part of the world, is floating LNG.

Bonaparte LNG is one such project – a joint venture between Santos and French company GDF SUEZ to develop gas fields in the Bonaparte Basin, 250 kilometres west of Darwin.

The key to unlocking these resources has been the development of floating LNG technology, which dispenses with the need for the construction of several major pieces of kit, including pipes to shore, jetties and an onshore plant. In many instances, investors face a choice – either develop the offshore gas resources using floating LNG or don't develop the resources at all, an outcome that would cost billions of dollars in lost royalty revenue and hundreds of jobs.

The good news is, floating LNG is real, and it won't be too long before this technology brings previously stranded gas to market, and Australia will be at the forefront of this exciting innovation.

Jean-Francois Letellier, the head of our close partner, GDF SUEZ, will provide a detailed update on our Bonaparte LNG project tomorrow.

Browse – Crown success unlocks material play



Further to the west is the Browse Basin, which has come under a great deal of scrutiny in recent weeks and months, and not always in a positive tone.

But let me say at the outset the Browse is a world-class basin for hydrocarbons and despite recent recalibrations, its gas will be developed. On that view, I am resolute.

However, the cost of development is again an issue. Wood Mackenzie estimated the proposed onshore James Price Point LNG plant had a plant capex alone of US \$2,500 per tonne, compared to the current global average cost for greenfield LNG of US \$1,200 per tonne.

Compare this with an estimated capex of \$1,700 per tonne for floating LNG and you can see why the industry is so excited about FLNG.

Even more attractive is the capex for brownfield expansion in Australia, at around \$1000 per tonne; which is one of the reasons we are optimistic about the expansion opportunities at our Darwin LNG plant.

So, while the Browse Basin is certain to play a major part in the future of Australian LNG, its remoteness and lack of infrastructure means that things must be done differently for development to proceed.

And Santos has a particular interest in seeing the Browse Basin succeed as we have a strong acreage position there, where we have also enjoyed recent exploration success.

In fact, we are at a really interesting position in our exploration program with gas and condensate discoveries at Crown and Bassett West, and we are currently drilling at Dufresne.

Further work will be done to evaluate these resources but at the end of the day, we think the Browse Basin is going to require collaboration to be developed, and we are well placed with good relationships with most of the key players in the region.

Total, Inpex, Conoco and Chevron are partners of ours in the WA and NT business which I run, and I believe it is through collaboration that Browse gas will be unlocked.

Whether that be through floating LNG or the expansion of existing infrastructure, it's too hard and too early to be definitive on the path forward, but Santos will explore all commercialisation options to unlock our resources in the region.



Moving onshore, you could say that the NT is on the verge of an exploration boom for oil and gas with, now, nearly 90% of its land mass either under exploration permit or with an application for exploration permit.

And the Territory holds great promise for developing natural gas from shale, with estimates of nearly 200 trillion cubic feet of shale resources.

This presents not only another major source of gas for both the domestic and export markets, but promises to deliver significant employment opportunities as well as royalties and taxes that will benefit the Territory.

From a Santos perspective, we have continued to progress our interests locally, and in the past 11 months have committed to spend up to \$320 million on onshore exploration and appraisal in the NT.

Our current acreage in the Amadeus and Pedirka Basins, as well as the McArthur Basin, provide great potential for both liquids and gas production from conventional and unconventional sources.

And, can I say, we have seismic programs in the McArthur and Amadeus basins currently underway.

Importantly, the proximity of our acreage to existing infrastructure such as highways, pipelines and rail provide access to domestic and export markets.

If our exploration programs are successful, this delivers great optionality on how we commercialise our resources.

Infrastructure will be critical to the development of NT's natural gas resources, many of which are spread across remote areas.

Access to infrastructure: Moomba



It's a challenge that Santos is familiar with due to the remoteness of our own Cooper Basin fields in Central Australia. The Cooper has the advantage of existing processing facilities and transportation infrastructure for both liquids and gas.

This makes it much easier and faster to deliver product to the east coast markets, be it for domestic or export use.

The cost of developing an unconventional play will also need to be a focus for the industry. In the coal seam gas space, we are now beginning to adopt the manufacturing style techniques that have led to the shale gas boom in the US.

By combining horizontal drilling and fracture stimulation together with multi-well pad drilling we are gradually bringing down the cost per well and significantly improving project economics of onshore gas development.



I hope I have helped tell a clear story of the great opportunity Australia, and in particular northern Australia, has to supply the growing Asian demand for energy, but that we face big cost and competition challenges in meeting that demand.

The challenges are not insurmountable; they can be addressed through the application of new technology, leveraging existing infrastructure and through collaboration.

Australian companies and Australian workers have the opportunity to participate in projects pioneering new LNG technology.

Be it floating LNG or coal seam gas to LNG – in Australia, we are delivering world firsts, and the skills and experience that come from doing that are invaluable and must be harnessed to ensure Australia's abundant gas resources are unlocked to supply the region's future energy demand.

Of course, with a new Federal Government in place, it is important that government works together with industry to provide the stable and correct policy settings for these opportunities to be taken up, and for Australia to leverage our LNG know-how and skills to ensure the next wave of investment becomes a reality.

By ensuring we are globally competitive, Australia can go on to sanction further LNG projects, whether that's from brownfield expansion of existing plants, floating LNG or even new greenfield projects.

My message today is that the opportunities are there, and companies like Santos are well positioned to see these become a reality.

Thank you.