

M&CO Newsletter

Special Report: Queensland new purple gold rush: IT'S NATURAL GAS

According to ABC Radio National, we're at the threshold of a phenomenal rise in the importance of QLD sourced natural gas in Australia; and QLD is slated to soon become the world's 2nd or 3rd largest natural gas producer, behind Russia and at a par with wealthy Gulf State Qatar.

Over the past few months, some very big international energy companies have swaggered into Australia to stake claims on its natural gas fields. Australia's on the brink of becoming one of the world's biggest gas producers. Foreign companies put \$10 billion on the table for the gas that's still locked up in coal beneath Queensland. The rush for this coal seam gas has left many people, including many in the oil industry itself, open-mouthed for doing the buying are some of the world's biggest players in the energy game: Royal Dutch Shell, Petronas of Malaysia and British Gas.

A few months ago, a quietly spoken European energy consultant named Ben Hollins, told a conference in Perth that if Australia got its act together, it could rival most Middle Eastern countries as a gas supplier to the world. A lot of countries have huge supply challenges, and are therefore unable to meet that demand challenge. But Australia does have that opportunity. It could be the next Qatar. Qatar is next to Saudi Arabia, and it sits on one of the world's biggest gas reserves. Australia is now being compared with Qatar.

Australia has suddenly found itself sitting on astronomical amounts of natural gas, and the world's scrambling for gas as the oil price soars.

Global security experts such as Michael Klare in the US say natural gas is about to play a bigger role in international politics. Natural gas is more heavily concentrated in an even smaller number of providers than oil is. Just a dozen or so countries, Russia, Iran, the central Asian countries, Qatar, Algeria, Libya, Nigeria, have a very large percentage of the world supply of natural gas, so they're going to be in an even more privileged position.

These countries are going to suffer from the kinds of pressures that we see in the oil situation with other countries begging them for their resource wealth and the tendency for the wealth to be concentrated in the hands of a few.

As for Australia's natural gas, we're going to come under even more pressure to sell it. The countries that rely on it most are the countries that are running out fastest. The rest of the world is also seeing natural gas as a way to quickly cut back on carbon, because gas is half as polluting as oil or coal.

According to the head of the Australian Petroleum Association, Belinda Robinson, if we were able to develop what we understand to be the potential of Australian gas used in both domestic electric generation and exported to the Asia-Pacific region as liquid natural gas, this would result in 180 million tonnes of carbon dioxide being avoided per year. That is the equivalent of around 64 million cars; a very substantial proportion of Australia's greenhouse gas inventory, so a huge potential.

For Australia, that has set hard targets to cut greenhouse emissions, a wealth of gas at this time is a gift. With huge amounts of natural gas on Australia's North West Shelf, Bass Strait, the Gippsland Basin and, what got everyone really excited, is the gas in coal beneath Queensland, in the Surat Basin, west of Brisbane. This methane rising to the surface under its own pressure represents billions of dollars. The big money is the world price for natural gas.

It's this export potential that's propelled small Queensland gas prospectors into the share market's top 100 almost overnight. Five years ago the Queensland Gas Company (QGC), which had leases in the coalfields west of Brisbane, was worth \$20 million. Today, it's worth around \$5 billion. That's \$20 million to \$5 billion in just five years. According to QGC managing director, Richard Cottee, the fact is that there's a lot of coal in Australia and therefore there'll be a lot of gas in the coal. Ever since canaries were invented, they've known there's gas there. The trouble was that no-one knew how to get it out. They've now worked out how to in high permeable coals, get incredibly big flow rates and be some of the most productive, if not the most productive gas fields in the world.

One of the other Queensland-based gas companies that can hardly believe its luck is Arrow Energy. The company listed in 2000 with a \$5 million capital raising, really just focused primarily on coal seam gas and seen its stocks soaring off towards \$3 billion, after the petroleum giant Shell struck a deal to buy a stake in Arrow's coal seam gas leases. It's this ability to export gas as a liquid, LNG, and the huge amounts of gas being found in Queensland now, that's got everyone exited.

Queensland's coal-seam gas happens to be almost pure methane.

To get an idea of what's happening at the moment, you need to head out into these new gas fields west of Brisbane, to the Darling Downs. This is the start of the Surat Basin, where an enormous blanket of Jurassic-age coal is deep beneath the farms and cattle stations. It's a vast underground strip of black like liquorice, running from central Queensland down across the border into New South Wales. In the town of Dalby, about two hours west of Brisbane, the coal is several hundred meters down and it's under so much pressure, but the gas is actually squashed between the molecules of coal. It's also trapped with water, and if you drill a hole and start pumping the water out, the pressure is released and the gas comes out. All around there and further west for hundreds of kilometres, drilling rigs are rumbling across farms to sink wells. There's a frenzy of exploration at the moment because if there's going to be enough gas to export, thousands of wells like this will have to be drilled.

To get the coal to give up its gas, drilling companies have developed some clever techniques. For instance, they can drill down a few hundred meters into the middle of a coal seam and then go at right angles through the coal, to hit another well several hundred metres away. In this way, that part of the coal seam can be bled of all its gas. One of the big drillers

exploring the coal basins for the gas companies is Mitchell Drilling, and they're drilling all the way from north Goonyella to right across the border into Casino, and everywhere in between, and then from west of Toowoomba, Roma, then right up to Charleville.

Back in Brisbane, an observer of the coal seam gas industry for the past decade is Paul Massarotto, an oil man from Canada, and now a researcher in the University of Queensland's School of Engineering, and he's not surprised at all. His prediction is that the 21st century will be the century of natural gas. Natural gas will be the fuel of choice in many countries and in many applications. But Australia is not as big as Russian gas reserves, more of the Qatar. Qatar is one of the biggest in the Middle East in terms of gas reserves. Iran is probably running close behind. Libya and Algeria are also big in gas reserves and so is Canada, but all of these countries have got high consumption. So Australia is filling the marginal consumption expansion in the worldwide gas market and it's coming in at the right time. So with the resources & the right timing, that's really beneficial for Australia.

This is now dawning on the petroleum industry around the world. There are some serious hurdles still to get this gas overseas. Australia could be the number two or three producer of liquid natural gas in the world, yet it still only has two LNG projects in this country. There's also a sense that nobody really know how much gas we're sitting on. Queensland coal seam gas reserves alone could be in the order of 250 trillion cubic feet & on an international scale, that's huge! It's about as much gas as Saudi Arabia claims it has. However, the petroleum industry say that the bankable gas reserves, the ones we know about, where the wells have been drilled and the gas measured, are nowhere near that size. We know there are over 110 years worth of gas at current production levels, that's what is absolutely known, but taking into account coal seam gas, we've probably got many, many times more than that. One of the big challenges in Australia is exploring these areas and finding out exactly what treasures do lie beneath and then make some sensible decisions about what can be produced and where.

The US used to be self-sufficient in gas, but it now has to import, and its choices include Russia, Iran, Qatar, Nigeria and Australia, especially if we can get more export plants built.

Australia was fairly self sufficient in oil until the late 1990s but has to import just over half its oil now, and it costs the country a fortune. A lot of effort's being made to look for more, and there's still hope of another big oil strike, especially since the United Nations increased Australia's size a few months ago. Bits and pieces were added to its continental shelf off the north west of W.A., out past Lord Howe Island in the east, and down into the southern ocean, all together it's about the size of France. It just so happens that most of these areas may also have oilfields and perhaps gas. It's Australia's job to identify the best places to drill for oil and gas

Putting LNG or Liquid Natural Gas onto ships is the only way at the moment that Australia can export all this gas. It's been doing it since 1989 and more than 2,000 shiploads of LNG from the North West Shelf have already gone to China, Japan, South Korea, Europe and the US. Now, with several new LNG plants on the books in WA and Queensland, natural gas exports are going to be ramped up. And that means the gas used in Australia will become more and more expensive. It will be more closely tied to the world's price and the world's appetite for gas seems almost insatiable. According to Arrow Energy managing director Shaun Scott, if you go to a place like India or China, the population of Australia is born every year in those countries, and 30 % of people in China still don't flick a switch and get electricity. Once they've had air conditioning and they've got a car and electricity that they switch on at the wall, then there's no going back. So the market potential and the demand for energy is just enormous.

In Western Australian, the government is worried that there won't be enough gas left over for the local mining and metal industries, or the people of Perth. Gas has also become expensive, so the government stepped in last year to quarantine 15 % for the State. In Queensland, the government's mandated that 13 % of all electricity in the State has to be produced by gas-fired power stations. It's increasing that to 18 % by 2020. Once Queensland gas goes overseas, and the price of gas triples, there will be a big jump in electricity bills.

The reality is, though, that Queensland's gas may not be exported for years. The terminals still have to be built, contracts for gas signed, gas wells proven. Still, if these big companies like Shell are putting billions of dollars up-front, they must have done their sums.

But everyone will know a lot more about gas when carbon trading gets going in 2010. That, says the industry, is going to make gas even more attractive. Energy consultant & Executive Director of Acil Tasman, Paul Balfe says carbon trading pollution targets are going to put many coal-fired power stations out of business. It's bad news if you're a brown coal generator seeing a big reduction in emissions out of Victoria. What that means is the closure of a lot of brown coal capacity simply being priced out of the market by carbon pricing.

The Queensland Gas Company said it was going to spend \$600 million on a gas-fired power station in the Hunter Valley and is already building its first power station on top of its gas reserves near Condamine, west of Chincilla. The gas is coming straight out of the ground, not even being compressed and thrown straight into the power station. Great energy savings on that and therefore carbon savings, and become just eternally efficient. Don't waste any energy and the water the power station is using for cooling is coming from its own water. You've still got to push the energy out, though, into the grid if you want to build big power stations and supply a large proportion of the state, or even in New South Wales. It's more efficient to have a power station on top of the gas and push the electricity out.

The Darling Downs is one of Australia's big food bowls but there's also this sense that there's an industrial revolution under way here. Just off a side road near Dalby, tucked behind some scrub, is another power station. The Daandine Power Station is run by just two people. It's a series of big generators set up by Clark Energy, and it basically runs itself. The gas comes out of the ground; it's fed into these big motors, and out the other side comes electricity, enough to power the town of Dalby, with a bit for the grid. Down the road, bigger power stations are being built.

In terms of electricity generation, gas-fired electricity generation uses between one-sixth and one-third of the water that coal-fired electricity uses. The new Origin power station is going to use no water. So it's certainly a first for Australia. So it's not just the greenhouse benefits, but in a country like Australia, it's the water benefits that people have any understanding of at all. In fact it's the drought that really helped gas get a foothold in the electricity business in Queensland. Parts of the big water-cooled coal-fired power stations at Tarong and Swanbank in Queensland were shut down early last year when

Brisbane nearly ran out of water. A series of gas-fired generators took their place to keep Queensland's air conditioners running. There's talk of new gas fired power stations sending water back into Brisbane's dams. In Australia, about 20 % of the fuel we burn is gas, but in Europe, gas is a much greater part of the fuel mix and becoming bigger. According to University of Queensland researcher Paul Massarotto, Germany is shutting down its nuclear power plants and will be increasing their gas fired power plants instead. Italy, whose importing natural gas from Algeria and Libya, is also doing the same thing and converting a lot of their buses and public transportation fleets in Italy to natural gas. In some cities, local councils are prohibiting diesel powered trucks to enter the city because of the extra pollution they cause. They now want natural gas vehicles in the inner city, no more diesel powered vehicles.

In most Australian cities, public buses are being run on compressed natural gas, too. Unlike liquid natural gas, and LPG which is a by-product of the refining industry, compressed natural gas is still a gas. It's just squeezed into a smaller space, like the gas in your barbecue cylinder. You can easily run a car on it, but we're just not geared up for natural gas. It's fine for buses that return every day to a depot to refuel, but for cars it's not convenient because service stations don't stock it yet. Paul Massarotto says "It wouldn't be overly expensive to extend our network of pipelines to distribute more gas, in my opinion, and we should be able to start seeing an increase in the demand for natural gas vehicles from the public if we have that infrastructure in place. We have to break that 'chicken and egg' cycle and we have to have a policy framework to break that cycle, put in the infrastructure first, and once we have the infrastructure in place, then the demand will come about. So instead of buying high priced Japanese hybrid vehicles, we can buy some Australian-made technology and use Australian-made natural gas". It's a nice idea, especially with the price of compressed natural gas being around 25 cents to 35 cents a litre. You can use it now, if you happen to have a car that can run on compressed natural gas, and you can buy them overseas, you could also buy a small compressor and fill up your car from the gas mains at home.

The former general manager of the South Australian Gas Company, Ollie Clark, used to have a compressed gas car back in the 1990s. "My wife's car and mine were both running on natural gas, and we could just plug in overnight and fill up and drive around all day and then fill it overnight again. You buy a unit called a home re-fueller. The commercial name for the one that's available in the US is called Fill, and this is a thing that sort of hangs on your garage wall and you connect it to the gas and electricity and then overnight you connect it to your car. I think people will take a while to get used to that. But there's already something like 2500 compressed natural gas vehicles on our roads here, and there's about eight-million of them around the world, so it's not as if we're looking at some sort of unproven technology.

At some stage though, we're going to have to start using much more of our own gas. Oil's getting really expensive. It seems silly, given that we've got so much cheap gas, to be exporting that and then importing an energy that's not only more expensive, but more polluting. In fact at the moment, Australia import as much energy as oil, as it export, as gas, but pay \$15 billion for imported oil and receive \$4 billion for exported gas for the same quantity. The point is that gas prices might rise but we don't get that much for it at the moment. Even if it were to double, there's still a huge difference.

The other reason to use more of our own gas is simply for security. If we're locked into importing oil from other countries we're relying on them to remain stable and keep selling us that oil. The world's changing fast and Australia is a country seen as a stable supplier. Other countries want energy security too, and Australia is going to come under great economic and political pressure to sell gas to them. *(Edited from ABC Radio National Background Briefing, June 08)*

The promotion of Queensland Gas Company (QGC) to S&P ASX 100 on Friday, 20 June 2008 is further evidence of the arrival of coal seam gas as a mainstream energy source, says QGC Managing Director Richard Cottee, & is expected to lead to increased interest in QGC and the coal seam gas sector. Mr. Cottee said the elevation of QGC to the ASX 100 would cap a period of strategic positioning and partnerships, strong reserves growth, and belief in the value of coal seam gas. QGC was founded by Chairman Bob Bryan in August 2000 with a capital raising of about \$12 million & increased spectacularly its market capitalisation 433 times since then to \$5.2 billion by June 2008. Queensland Gas Company is exploring and developing coal seam resources of the Surat basin in South QLD. QGC has certified gas reserves in its Berwyndale-South and Argyle gas fields & aims to supply 10% of the Queensland gas market very soon through long term gas contracts with CS Energy Ltd, Braemar Power Partners and Incitec Pivot Ltd. Under these contracts, gas will be supplied from fields over ten years from 2006. Gas is typically sold under long term contract arrangements with utilities, large industrial users and steel plants. QGC customer base is mainly in Queensland. Key competitors include other coal seam gas explorers such as Arrow Energy, Purus (PUR), CH4 Gas Ltd (CHX) and Hillgrove (HGO).

Arrow Energy is an Australian top 200 publicly-listed energy company in coal seam gas developments, pipeline assets, electricity generation and liquefied-natural gas projects throughout eastern Australia and Asia. Current market capitalisation is more than **AUS\$2 billion**. As Australia's largest coal seam gas acreage holder, the company is now investing in downstream projects and international markets to secure higher margin sales. Arrow has access to more than 90,000 km² of coal seam gas exploration tenements close to Queensland's three key markets – Townsville, Gladstone, and Brisbane & account for more than 20 % of Queensland's overall gas production.

JDM & Team, Brisbane

Acknowledgements: ABC Radio national, www.investsmart.com.au, www.arrowenergy.com.au

The above information is of a general nature only. It is not client specific advice and does not take into account the objectives, financial situation or needs of any particular person. If you wish to discuss how this information may be relevant to your individual circumstances, please call, fax or email us as per below. In accordance with the SPAM Act, we will continue to send this information to you unless you advise us by email to the contrary.

A service of **M & Co Financial**

T 61 7 3831 6088 | **F** 61 7 3831 2444 | **E** info@mcofinancial.com | **W** www.mcofinancial.com