World Gas Conference – LNG in Asia Pacific: The Tiger of Many Stripes

ABSTRACT
To say global demand for gas and LNG is growing is an understatement. It is increasing dramatically, with demand for LNG itself is poised to more than double in this decade alone. The Asia Pacific region, once an insulated, niche LNG market, is now transformed into a many-striped tiger. Traditional European and Asian markets are bounding alongside new demand centres in China, India and the United States. Supply is diversifying, competition is intensifying, and customers are demanding more from suppliers than ever before – certainty, diversity, flexibility (for starters). As Asia and the Pacific become an intrinsic part of the global marketplace, Shell, as the gas market leader in the Asia Pacific region, has ensured that its portfolio is broad, balanced and cutting-edge – from coal gasification in China, to GtL production in Bintulu, Malaysia; from import terminal development in Pacific North America to power plant development in Japan and, to frontier development in Sakhalin, Russia; from legacy positions in Malaysia and Brunei, to its position at the forefront of the exciting and rapidly expanding Australian LNG scene. Everywhere you turn in Asia Pacific, the market is moving and changing and evolving. The tiger’s stripes are increasing in number, and Shell is a major participant. A key objective for Shell in Asia Pacific is to contribute strongly to the sustainable growth of gas supply in the region’s markets.
LNG in Asia Pacific: The Tiger of Many Stripes

In recent years, gas has become a key fuel in the global energy mix, demand has more than doubled over the past three decades and the International Energy Agency is predicting a further doubling in the thirty years ahead - an increase that is likely to be even greater in the Asia Pacific region. That means gas will be supplying a quarter of the world’s energy needs.

Shell’s own forecasts suggest that gas demand is likely to grow at 2½-3 percent a year in the next decade and, over the same period, LNG demand could grow even faster at 8-10 percent a year. As a result, we are seeing some far reaching changes in the global gas market and those changes have particular implications for both gas suppliers and gas customers in Asia Pacific.

For many years the LNG market in Asia Pacific was an insulated and niche one but it is now being transformed into one that is a key part of an interconnected global market and one which is influenced by developments across the world. Supply is diversifying, competition is intensifying, and customers are demanding more from suppliers than ever before. They are wanting certainty over security of supply and prices but also increased flexibility to meet fluctuations in demand, and a growing number are seeking to meet these aims through increased diversity of supply.

One indicator of the extent of the transformation in the global LNG business can be seen in the forecast changes in the respective market shares of different customers. In 2004, Asia Pacific made up about 70 percent of the global LNG market, with Japan and Korea being the largest importers of LNG in the world. By 2013 the Asia Pacific market is likely to have declined to about 50 percent of global demand. That change is not as a result of any decrease in demand in the region but rather reflects the rapid emergence of very significant and new demand in North America. Asia Pacific will, however, still probably be the largest overall market for LNG, with demand likely to double to around 165 million tonnes per annum over the next decade.

A changing environment for customers
One of the reasons for that increase in demand is the growth of new customers in the region. Those customers are found in countries with emerging economies which need increasing amounts of energy in order to maintain their rapid economic growth and they are countries that increasingly recognise the advantages of gas in meeting growing demand.

China, with its stated desire to increase the gas component of its primary energy mix from around 3 percent to 8 percent by 2015, is a very clear example of a new market for gas and LNG in particular. There are currently fifteen terminals at various stages of development in China and the first LNG shipment is due during 2006. If development continues at this pace China could be importing as much
as 40 million tonnes of LNG per annum by 2020, making it the region’s second largest consumer after Japan.

India too is a market with great potential to become a major buyer of LNG. The IEA is predicting Indian gas demand, driven by continued economic growth, could quadruple by 2030. Much of that increase will be met by LNG imports with two LNG terminals now in operation, Petronet’s Dahej terminal and Shell’s Hazira terminal, both of which have current capacity of 5 million tonnes per annum (mtpa) and the potential for expansion.

However, it is the emergence of significant North American demand for LNG that is driving the most dramatic changes in the global gas market. It is a growing, liquid and high price market and one that is now moving very clearly from potential to reality with dozens of projects at various stages of development. One new offshore Gulf of Mexico facility began operations in 2005, and six are under construction of which two are on the U.S. Gulf Coast, two in eastern Canada, one in eastern Mexico, and one in Baja California, Mexico. Ten proposals for new terminals have also received appropriate regulatory approval, underlining the scale of future activity in this market. Already, over the past year, the US has become the world’s third largest importer of LNG, with imports having increased by 29 percent in 2004 over 2003, and LNG now makes up more than 15 percent of all US gas imports.

What are especially significant for the Asia Pacific region are the developments that are being seen on the US West coast. Agreements have been signed for both the Gorgon and Sakhalin projects to supply LNG into the Energia Costa Azul terminal that is under construction on the west coast of Mexico. These deals are a very powerful sign of the reality that customers in Asia Pacific are now competing for supply with North American customers.

**A changing supply picture**

Alongside the emergence of new customers, we are also seeing significant developments in global gas supply through both the expansion of existing projects and the development of new ones.

There have been major new projects announced in the Middle East not least in Qatar, where in 2005 alone LNG deals worth more than $20 billion were agreed - including Shell’s joint venture with Qatar Petroleum to develop the Qatargas 4 project. Qatar has been a supplier to the Asia Pacific for about ten years and has been successful in diversifying its customers in recent years to include India and, in the future, the United Kingdom.

The Sakhalin II project in Russia will also have a major impact on the Asia Pacific market. It will have a two train LNG plant with a capacity of 9.6 mtpa and clearly represents a major source of new supply. The majority of its production has now been sold under long term contracts, securing customers in Japan, in Korea and in North America.
Other new sources of supply will come from the North West Shell venture expansion and the development of the Gorgon project in Australia and, looking further ahead, potential for developing the Sunrise fields in the Timor Sea and possible capacity additions in Brunei.

Clearly there is a great deal of activity at the moment to develop the projects to meet growing demand. However, the pace of development in the LNG business should not obscure the fact that there are real challenges in bringing energy projects and LNG projects in particular to final completion. Costs are rising, as projects become more challenging. LNG developments are highly capital intensive and are highly complex because of the length and nature of the whole LNG value chain. In particular, in an LNG project the discovery and development of the resources may not be in sequence with the development of the end market development or with securing financing. That means LNG developers, even in this growing market, will continue to need very high level strategic and commercial skills to manage and mitigate the inherent risks.

**Implications for contracts and prices**

There are clear challenges ahead for both suppliers and customers in an increasingly interconnected and complex global market, not least in managing the implications for both contracts and prices.

We are likely to see some increase in the role of the spot market. In 1992, the LNG spot market was approximately one percent of total sales but in 2004 that had risen to just over ten percent. However, because of the particular challenges of developing LNG projects and the fact that many customers continue to value long-term contracts for security of supply, the spot market is unlikely to become the dominant form of trading.

There will nonetheless be changes in prices and contracts and there are likely to be more opportunities to manage flexibility by spot sales and cargo swapping. We are already seeing evidence of an increasingly complex network of inter-regional trades, helped by growing shipping capacity, where suppliers are redirecting cargoes from their original destinations.

Perhaps the biggest change for customers in the Asia Pacific region is the increasing influence of high US gas prices. The reality is that with Henry Hub prices consistently around $6/MMBtu in the last 12 months it is, in some circumstances, becoming more attractive for Asia Pacific suppliers to transport LNG to North America than sell to the more adjacent North Asian markets. This illustrates very clearly the globalisation of the market and the fact that prices in the Asia Pacific region are no longer insulated from the effect of prices in other parts of the world.

These factors and the resulting uncertainty about the nature of the market and the direction of prices means that new contract negotiations, or existing contract price re-openers, or extension discussions are likely to become ever more complex and prolonged. Customers will continue to push for terms and conditions which favour their particular situation. Some will focus on flexibility, others will be eager to
secure upstream equity and for others diversity of supply will be the key factor but all will be seeking lower prices. This will be in clear tension with suppliers with unsold capacity who are likely to feel confident that growing demand means they can afford to wait for the best deal. They will also be looking for premiums for any flexibility sought by the customer, as well as wanting to secure flexibility themselves to arbitrage price upsides via spot sales, diversions or swaps.

Maintaining and developing Shell’s role in the market
These changes mean that supplier customer relationships are going to be ever more important. Shell, as the gas market leader in the Asia Pacific region, believes that it can build on its existing long standing relationships to meet the challenges ahead and but also use its experience to develop new relationships with new customers.

This is reflected in the way Shell’s very successful partnerships in Malaysia, Brunei and Australia are continuing to gain trains and position themselves to play a part in the future development of the market alongside newer projects such as Gorgon.

Malaysia LNG, in which Shell has a 15 percent stake, has been operating for more than 20 years at Bintulu and is the world’s largest single LNG facility with a capacity of 23 mtpa. It already supplies about 20 percent of Japan’s LNG and continues to expand into other markets. In 2005, jointly with Sakhalin, it secured the 20 year contract to supply Kogas with up to 3.5 mtpa from 2008. It will also be supplying LNG to the UK later this decade.

Brunei LNG (BLNG) has delivered more than 5000 cargos since it started operations in 1972 and the five-train plant at Lumut has a capacity of 7.2 mtpa. While BLNG is an independent company, in which Shell has a 25 percent share, it is an operation that typifies Shell’s approach in the region. It is based on a long-term commitment and a strong relationship with the host government to whom Shell provides added value in the form of technical and marketing support.

Having operated successfully for the past thirty years Brunei LNG is now putting in place plans for the next thirty years that include refurbishing and enhancing the existing plant, expanding capacity and negotiation contract extensions. Work is already underway on a number of projects to replace and upgrade existing assets that will allow the plant to continue to operate successfully until 2033. This includes the $90 million project to replace the main cryogenic heat exchangers in four of the five trains that was completed in 2005. This work will help to ensure BLNG continues to play a significant role in the developing LNG market.

Another long standing project is the North West Shelf Venture in Australia which has been operating successfully for more than fifteen years. A fourth LNG train has been completed and final investment decision has been taken to construct a fifth train that should be in operation by 2008. This will bring the total plant capacity to 15.9 mtpa. North West Shelf has been particularly successful in gaining
access to the Chinese market and will start supplying LNG into the Guangdong terminal during 2006 at the start of a 3 mtpa 25 year contract. This is in addition to securing ongoing business with customers in Japan and Korea.

A second LNG project, Greater Gorgon in Western Australia, in which Shell is an equity partner, is now in the design and engineering phase and will develop one of the largest natural gas fields in the region to supply an LNG plant of two trains of 5 mtpa on Barrow Island. The contracts already secured by the project underline the changing nature of the gas market and the ability of suppliers in the region to secure those new customers. Shell has committed capacity at the Energia Costa Azul terminal in Baja California for up to 2.5 mtpa to supply the North American market.

Another key project that Shell and its partners are developing and which is changing the dynamics of the LNG market is Sakhalin, Russia. Sakhalin is one of the biggest energy projects ever developed and is one of the most technically demanding. It also presents environmental, political and social challenges and it is clear that these kind of complex projects are likely to be increasingly important in meeting the world’s growing demand for energy. Having secured contracts to supply customers in Japan, Korea and North America, Sakhalin will clearly have a vital role in supplying a range of customers in the region and the increasing interconnected nature of the market.

All Sustainable Development Projects
Sakhalin, and the aforementioned Gorgon Project, are also testament to our commitment to the principles of sustainable development. No Shell project is commenced without full assessment of that project’s unique economic, environmental and social criteria. In the Sakhalin example, it has meant rerouting the offshore pipelines to avoid the feeding grounds of the Western Grey Whale to minimise any adverse effect on these critically endangered animals. In Gorgon, new benchmarks in quarantine management and CO$_2$ capture and geo-sequestration will be set. Every one of our projects adheres to these kinds of fundamentals and we are very proud of our track record.

An increasingly diverse range of options for gas
One of the distinguishing features of gas as an energy source is its flexibility and while the rapid growth in LNG is understandably the main focus of attention, this should not obscure the range of other business opportunities that are being developed in the gas market.

The Asia Pacific region was one of the first to recognise the advantages of LNG and has shown a similar pioneering approach to some of the emerging developments in gas such as gas to liquids and coal gasification.

Shell’s first commercial Gas to Liquids (GTL) plant, Shell Middle Distillates Synthesis (Shell MDS) is located in Bintulu, Sarawak, Malaysia and now has a capacity of 14,700 bbls per day. The plant was
commissioned in 1993 after nearly twenty years of research and pilot plant work. Although the chemistry of the GTL process is simple and widely known, making the process technically and commercially viable on an industrial scale presented huge challenges and the lessons learned at Bintulu have laid the foundation for the major development of a 140,000 barrel a day GTL facility in Qatar.

GTL Fuel is an ultra clean transport fuel with significantly lower emissions than diesel and can be used in conventional engines. These characteristics could be particularly attractive to customers in Asia Pacific where there are real challenges in meeting growing demand for cars without increasing local air pollution.

Another technology which could play a role in providing cleaner energy use is coal gasification. This process converts coal into synthetic gas so that it has similar emission levels as natural gas and can then be used as a chemical feedstock or in power generation. A range of coal gasification projects is underway in China. Shell has licensed its technology for use in 13 projects in China including one that supplies the Dongting fertiliser plant and one for a coal to propylene project being undertaken by Datang Power International. We are also investigating new coal gasification opportunities in Australia.

Shell is part of research integrated combined cycle coal gasification power plants which not only use coal in a more effective way but can offer the opportunity to sequester any carbon produced offering the potential for zero emission fossil fuels.

All these projects highlight both the growing opportunities to develop gas projects but also the increasing importance of being able to develop those projects in an integrated and flexible way.

**Conclusion**

Asia Pacific’s position is at the heart of a gas market that is evolving and changing rapidly. The tiger’s stripes are increasing in number, and Shell is a major participant both in developing its existing projects (emboldening those stripes) and in securing new opportunities across the region (creating new ones). The Asia Pacific market has long been an essential element in Shell’s business success and it looks forward to continuing to contribute strongly to the sustainable growth of gas supply in that market; in so doing, to play its part in the continued economic growth and development of the region.