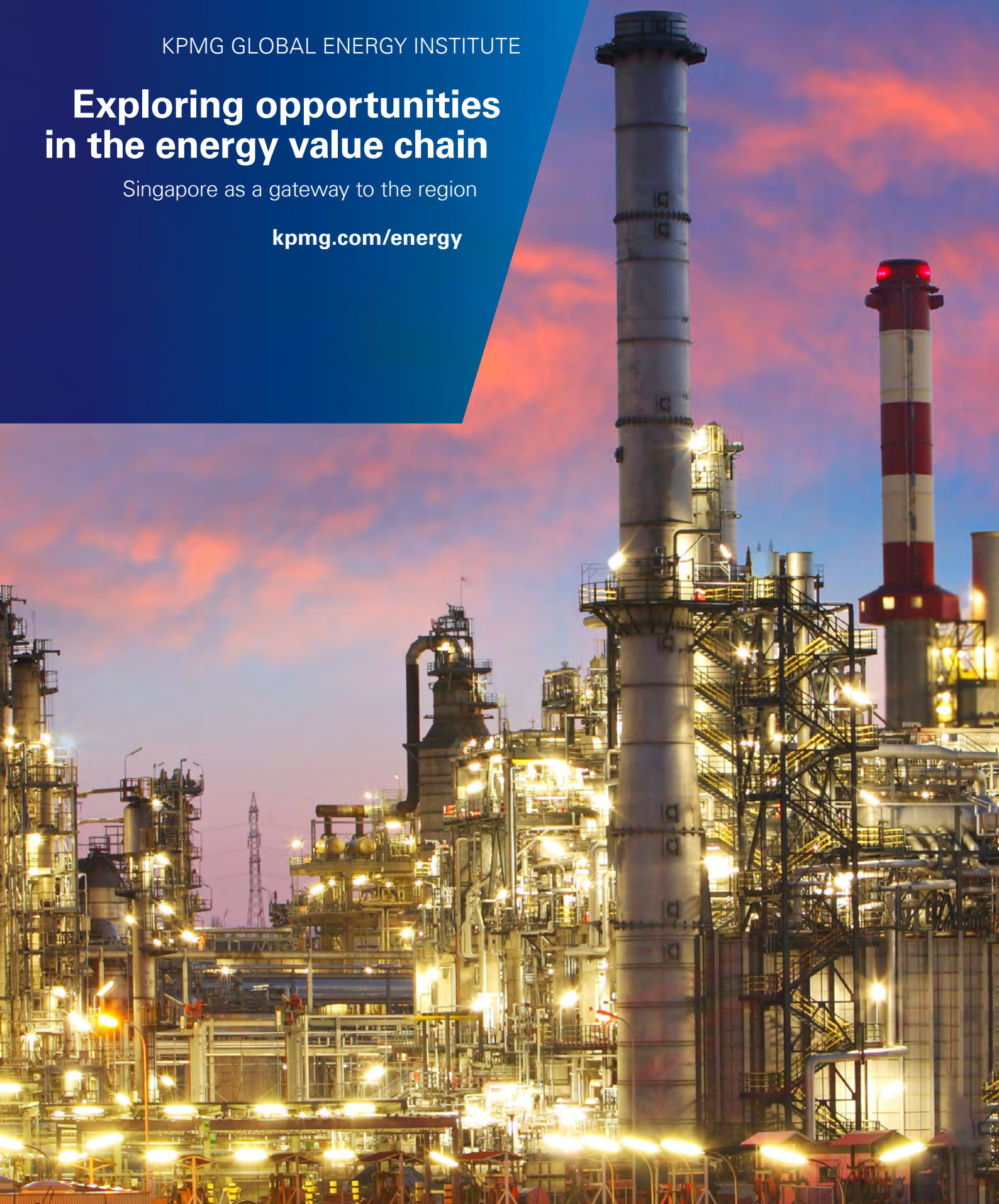


KPMG GLOBAL ENERGY INSTITUTE

Exploring opportunities in the energy value chain

Singapore as a gateway to the region

kpmg.com/energy



ABOUT THIS STUDY

The Asia Pacific energy market has taken the spotlight in recent years, with a number of heavyweights staking out their share of the Asian market by shifting operations to Asia. What is of keen interest to many is whether Singapore can continue to position itself as a hospitable base for operations and attract a fair share of foreign investments entering Asia.

The expansion of Singapore's oil and gas industry has received strong emphasis as a matter of national security, especially in light of growing domestic and regional appetite. Hence, there exists a need to explore further opportunities to enhance the nation's value creation throughout the Asia Pacific region. To bring these topics and opportunities to the fore, the KPMG Global Energy Institute conducted a programme of workshops, surveys, interviews and research initiatives with key energy stakeholders from the oil and gas industry in Singapore.

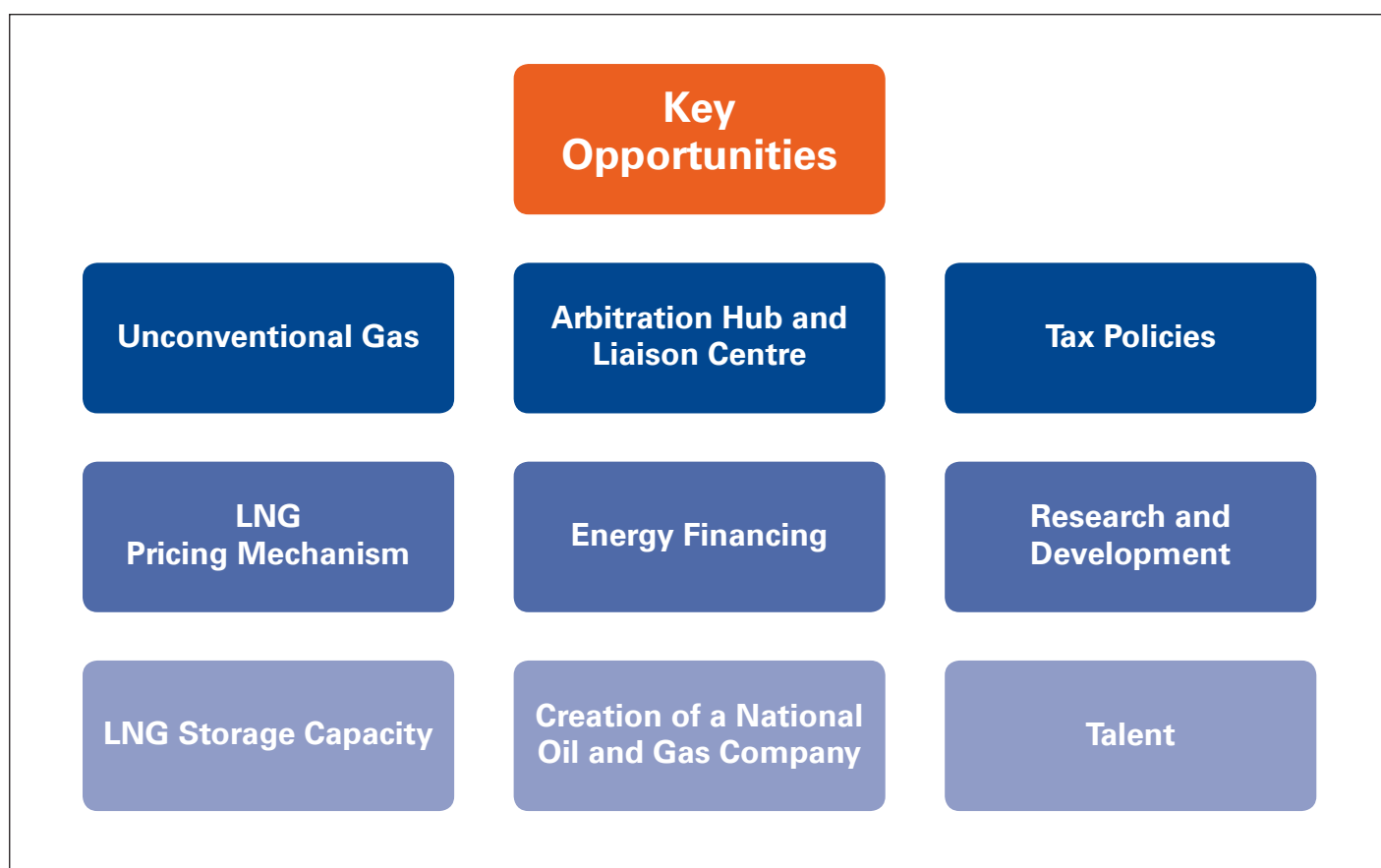
The findings of the study reveal Singapore as a potential regional hub which provides opportunities for both established and burgeoning energy businesses. Given its strategic location, supportive business environment and business-friendly tax system, the country plays host to energy companies looking to extend their reach into Asia. This study has identified nine areas of opportunities that speak to the industry's needs, on which Singapore should focus in order to remain competitive in the region. In the following pages you will find a clear exposition of these nine areas, as well as other salient findings of the study.

“International Oil Companies' relocation of their global teams to Singapore is strong testimony to Singapore's strategic positioning in Asia.”

– Pek Hak Bin

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EXECUTIVE SUMMARY

Unconventional gas

The majority of survey respondents are keen to see Singapore be more pro-active in gas trading-related activities. It was also noted that increased global gas production through shale exploration will grow trading hub opportunities for Singapore.

While shipping was a key area of interest, a number of respondents believe that Singapore needs to focus more on technology development in order to contribute to the exploration and production of unconventional gas.

National Oil Companies (NOCs) in Asia are investing in technology, infrastructure and efficient supply chains to produce and transport gas. This could present an opportunity for Singapore to establish a platform for locally-based International Oil Companies (IOCs) to reach out to NOCs, and vice-versa, to exchange knowledge and opportunities in Asia Pacific.

Tax policies

This was a key area of priority for respondents looking to establish operations in Singapore. Many executives are keen to see the Government continue to review tax policies to ensure Singapore retains its competitive, stable and transparent tax system.

In the race to be Asia's Liquefied Natural Gas (LNG) hub, Singapore's favourable tax treaties were seen as a strong asset to attract companies in the energy sector. It was also identified that Malaysia's Global Incentives for Trading closely rivals Singapore's Global Trader Programme.

While Singapore is known for its low corporate tax regimes, competitive reactions from the other countries in the region could mean Singapore may lose this advantage over time. Executives have expressed a need for Singapore to keep a close eye on its tax policies, and ensure that tax breaks are in place to encourage the right activities.

Arbitration hub and liaison centre

Interestingly, despite a large increase of cases undertaken by the Singapore International Arbitration Centre (SIAC), respondents do not see this as a major industry issue.

The Singapore Government has been focusing on the development of the country's arbitral capabilities over the years. This has helped establish Singapore as a neutral and highly competent venue for international commercial arbitration and mediation, akin to the Asian equivalent of Switzerland and London.

This position, coupled with Singapore's transparent and business-friendly banking and taxation systems, provides a solid foundation for the development of a liaison centre within the country. A liaison centre could benefit national and international energy companies as it endeavours to resolve disputes in a timely and impartial manner.

LNG pricing mechanism

The development of a LNG pricing

mechanism did not emerge as a key issue with most respondents. There was, however, a general consensus that Singapore should take a leadership role in setting pricing and reviewing incentives. This would ensure the city-state continues to attract gas-trading companies to base their headquarters in Singapore, consequently enabling Singapore to take the lead in influencing the region towards adopting a LNG pricing mechanism.

On that note, major IOCs have begun relocating their global teams to Singapore. The establishment of a Russian company's trading arm in Singapore is a testament to the country's reputation as a key trading hub in Asia.

Energy financing

When it comes to raising capital, many respondents rated Singapore very highly. That said, some mixed responses came through from several respondents, predominately those in upstream energy companies.

It was also noted that Singapore is behind Hong Kong in attracting oil and gas listings in the region. The Singapore Exchange's (SGX) S\$300m asset base requirement was deemed too high for junior Exploration and Production firms.

Singapore could put more focus on serving the financial needs of upstream and second-tier oil and gas companies. One way is to attract more small-medium energy players to list on the SGX. Islamic financing is another opportunity for Singapore to continue to develop and complement conventional financing methods. This would provide more financing options for global investors and energy companies to work together.

Research and development

Based on survey results, the majority of executives are keen to see Singapore participate more in the research and development activities related to unconventional gas. Another key finding is also that major oil companies have research centres in countries with a strong upstream focus.

In Singapore, research centres are largely driven by academic institutions, government agencies and local conglomerate companies such as SembCorp and Keppel. In 2010 the Singapore Government introduced an attractive 'Productivity and Innovation Credit' scheme that could benefit companies across all industries. Its benefits for oil and gas companies are still being discussed.

Singapore could develop suitable jobs by targeting development, design and high-end manufacturing in areas such as rig building. This would leverage the existing focus in the industry and subsequently strengthen Singapore's unique value proposition in the R&D area.

"New ideas can drive a first-mover, competitive advantage. The Singapore energy sector should take greater strides toward the commercialisation of intellectual property." – Pek Hak Bin

LNG Storage capacity

The majority of executives indicated the importance of Singapore's commodity and storage capacity as a key factor when it comes to valuing its strategic location.

Many respondents believe that Singapore should continue to capitalise on its geographical advantage through the expansion of oil and gas infrastructure. An opportunity that Singapore could consider capitalising on is to build floating storage facilities. By doing so, Singapore could potentially dominate the storage and shipment sub-sector in Southeast Asia.

In addition, Singapore could explore opportunities to cooperate with Malaysia to share geographical advantage of the gas trade route. Singapore is building the foundations of a global trading hub. The next steps could lead to the development of a gas pricing mechanism.

Creation of a national oil and gas company

Few executives saw a real need for

Singapore to create a NOC following PetroChina's acquisition of Singapore Petroleum Company in 2010.

That stated, having a NOC does give rise to partnership opportunities with other oil companies; these can facilitate the sharing of technology and expertise, and can also be helpful in establishing stronger diplomatic relations.

A further opportunity may exist for Singapore to investigate the establishment of a national gas company. Temasek Holdings has been investing in oil and gas assets overseas, acquiring stakes in Repsol and Cheniere. The number of NOCs, such as Emirates and Pertamina, based in Singapore reflect the attractiveness of Singapore as a host nation for the overseas arm of a NOC.

Talent

One respondent in particular observed a lack of a talent pool with upstream experience and consequently stressed the importance of training and education in this area.

The majority of respondents rated their talent development as 'intermediate', i.e. they have collaborative expertise with minimal knowledge gaps. Similarly, many were aware of a growing trend for China and Southeast Asia to nurture talent. They noted a real need for Singapore to develop tertiary education – with industry-specific faculties – on par with countries such as Malaysia, China, India and Australia that have industry-specific training at their universities.

In order to compete with the likes of these countries, Singapore needs to continue to differentiate itself by focusing on technology-intensive activities that require the employment of highly trained specialists. Thus, academia in the relevant fields of engineering and science could be geared towards preparing students for more technologically advanced jobs in the gas and oil sector.

Unconventional Gas

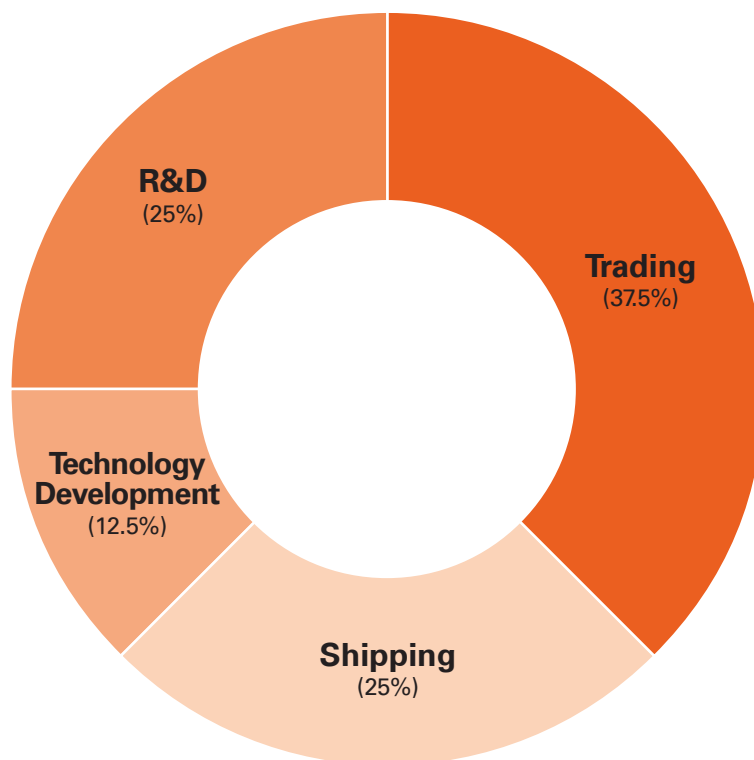
Most oil and gas executives are keen to see Singapore involved in gas trading related activities as Singapore has the necessary infrastructure in place. However few believe Singapore has strength in the technology development area to contribute to the exploration and production of unconventional gas.

The flux of gas through shale revolution will continue to grow hub opportunities for Singapore. The city-state is ready to meet trade demand with its solid infrastructure, especially with the Singapore LNG (SLNG) regasification terminal on Jurong Island soon to be in operation around mid 2013. This is bolstered by other favourable factors such as its strategic location, shipping and financial infrastructure, and its already strong reputation as the region's oil trading hub.

Upstream activities such as R&D and technology development are still perceived to be a weak area for Singapore as it lacks proximity to the source of unconventional gas exploration and production. However, it does not limit Singapore's opportunities to participate in the energy value chain.

A growing trend found is that major NOCs in Asia are investing in technology, infrastructure and efficient supply chains to produce and transport gas. The NOCs have very little experience in producing unconventional oil and gas reservoirs. The IOCs in Singapore and service companies will inevitably be assisting these NOCs in transferring technology know-how in the coming years as more unconventional reserves are brought into production throughout Asia. Singapore is leveraging on its strength in rig building. The Centre for Offshore Research & Engineering (CORE)

Survey response to the areas of unconventional gas in which Singapore can participate



runs joint industry developments programmes with many of the oil majors.

One trait of developing unconventional reserves is that thousands of wells must be drilled over many years to develop a large unconventional oil or gas field. Many wells means a lot more drilling rigs, transportation, fracture-treatment spreads and engineers. However, the current industry does not have enough geoscientists or engineers to undertake a widespread development of unconventional accumulations.

As the oil and gas industry hiring quotas have decreased over the last few years, the IOCs have the expertise and experience to develop unconventional oil and gas reservoirs, given experience in the Americas. The IOCs are well-positioned to offer their expertise to NOCs in heavy oil.

However, one of the bigger obstacles that will remain in Asia is the lack of regulatory infrastructure to facilitate IOCs' participation in oil and gas activities, especially for countries such as China and India. China is looking to adjust tax rates and provide subsidies while the Indian government continues to review existing production sharing contracts (PSCs) to incentivise the participation of foreign players. Signs of increased participation from Royal Dutch Shell and ConocoPhillips are bringing brighter prospects to the commercialisation of unconventional gas resources in the rest of Asia.

Singapore could look to leverage its strong presence of IOC firms by facilitating ways of working with NOCs in the region on unconventional gas projects.

Arbitration Hub and Liaison Centre

Interestingly, despite a 100 percent increase in the volume of arbitration cases handled by Singapore International Arbitration Centre (SIAC), Singapore's role as an arbitration hub was not seen by respondents as a major industry issue.

The Government has been focusing on the development of Singapore's arbitral capabilities since 2009, evidenced from supportive constitutional changes such as the repeal of Section 35 of the Legal Profession Act (Chapter 161) giving foreign lawyers the freedom to conduct Singapore law arbitrations.

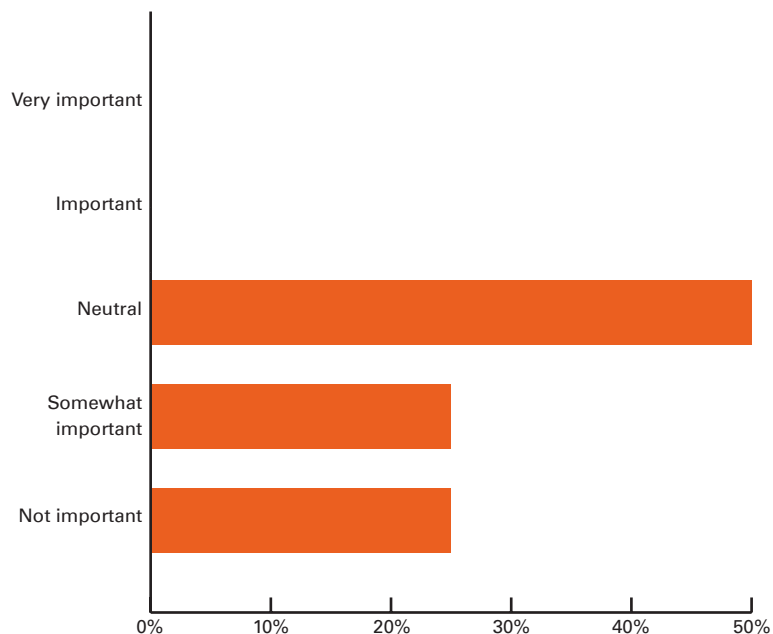
In fact, Singapore has established itself as a neutral and competent venue for international commercial arbitration and mediation, akin to the Asian equivalent of Switzerland and London. SIAC's involvement in oil and gas arbitrations has also increased together with the total number of arbitration cases.

Our further research points towards a growing consensus that Singapore can leverage its enviable reputation as the arbitration and mediation hub to facilitate the development of an upstream investment centre. Moreover, Singapore's transparent banking system and the Government's commitment to developing arbitration capabilities are cornerstones of a liaison centre that would be embraced by companies in the energy sector.

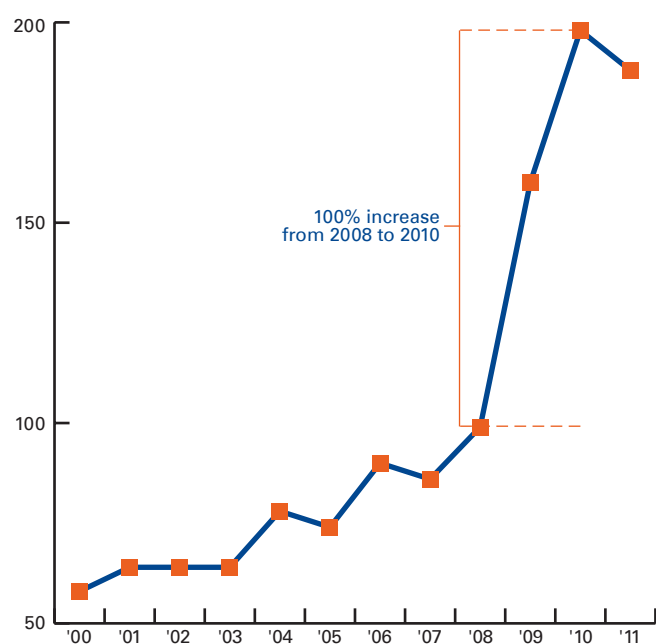
Singapore's unique value proposition is buttressed in its strong track record of enforcing laws in a transparent manner – a competitive advantage over countries where legal recourse is reputed to be futile, or where the arbitration laws do not always measure up to international standards.

Arbitration and mediation provide Singapore with a suitable avenue to accumulate more upstream know-how.

Survey response to the importance of Singapore as an arbitration hub



Number of cases handled by Singapore International Arbitration Centre from 2000 to 2011



Source: www.siac.org.sg

Tax Policies

Respondents placed the strongest emphasis on tax policies in deciding to set up operations in Singapore. Many executives are keen to see the Government review tax policies so that Singapore retains its competitive, stable and transparent tax system.

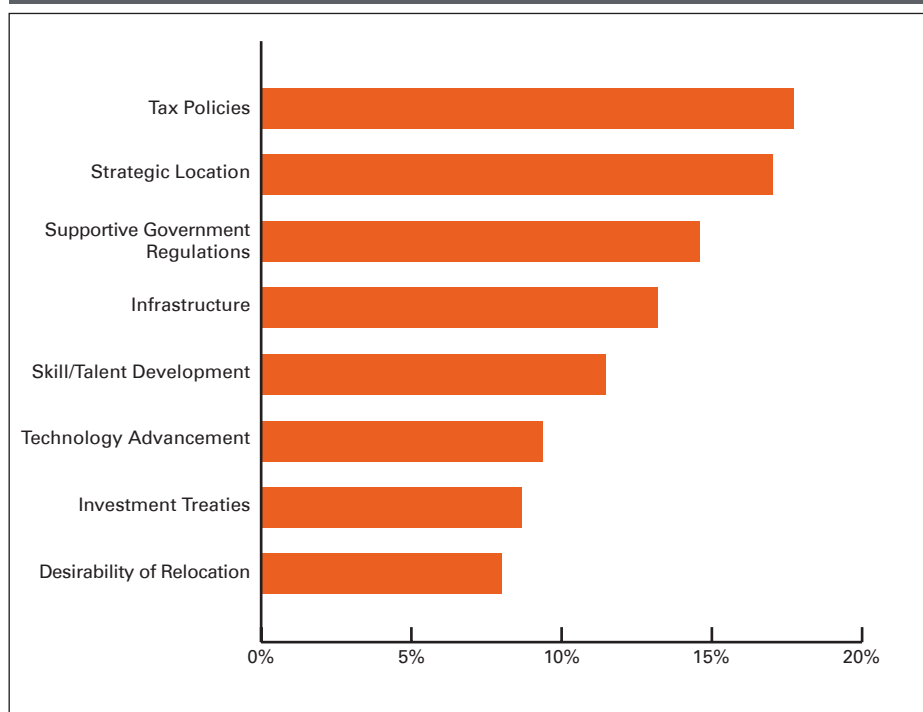
In the race to be Asia's Liquified Natural Gas (LNG) hub, Singapore's favourable tax treaties were seen as a strong asset to attract companies in the energy sector.

In 2001, Singapore introduced the Global Trader Programme (GTP), which subsumed the then Approved Oil Trader programme. Incentives under the GTP sought to encourage trading firms, including those in the oil and gas sector, to set up operations in Singapore. The programme would contribute significantly to the development of Singapore's economy over the next decade, registering a USD659 billion turnover among GTP companies in 2008 alone.

In 2011, GTP found a close rival in Malaysia's Global Incentives for Trading (GIFT), which was introduced by the Malaysian government just months before the launch of the Refinery and Petrochemical Integrated Development (RAPID) project at Pengerang. The incentives afforded under GIFT cannot be ignored given that they appear (at first sight) to be more attractive than those offered under Singapore's GTP particularly given that the RAPID LNG project is a virtual stone's throw from Singapore LNG (SLNG). However, it remains to be seen whether these quantitative differences will outweigh Singapore's obvious qualitative advantages.

What is currently observed is that most companies that have established operations in Singapore were not quick to relocate themselves in

Survey response for areas of interests for setting up operations in Singapore



Comparison between Singapore and Malaysia

Singapore's GTP	Malaysia's GIFT
5% – 10% for petroleum firms	3% for petroleum firms
5% – 10% for LNG firms	0% for LNG (3-yr) firms
Minimum turnover USD100m	Minimum turnover USD100m
Local business spending of S\$2m	Local business spending of S\$1.2m
Employ > 3 trading professionals	Employ > 3 trading professionals
5 year approval with substance test	5 year approval without substance test
Trading in any currency including SGD	Trading only with non-residents in any currency other than Ringgit

Source: IE Singapore and Malaysia Petroleum Resources Corporation 2013, accurate as of January 2013.

favour of lower taxes in neighbouring countries. Respondents expressed that Singapore's strategic location, strong government support and robust infrastructure were also important pull factors for them.

Given that most, if not all, of survey respondents ranked Tax Policies as one of their top priorities in deciding

whether to base operations in Singapore, it is KPMG's feedback for Singapore to constantly review its tax policies to ensure the country remains regionally competitive. In addition, respondents have also expressed a preference for stable and transparent tax policies to ease their decision-making process when entering into long-term gas contracts.

LNG Pricing Mechanism

Development of an LNG pricing mechanism does not seem to have emerged on oil and gas executives' agendas.

One of the reasons why executives are not keen on the establishment of an LNG pricing mechanism is because they are not prepared to shift away from the historical pricing link between oil and gas. Oil still remains to be the centre of the energy market and a key driver for energy commodities.

Besides, there are more sellers than buyers of gas in Singapore. Due to the buyer-seller dichotomy, the executives surveyed in Singapore are mostly sellers of gas and are not going to benefit from lower selling prices.

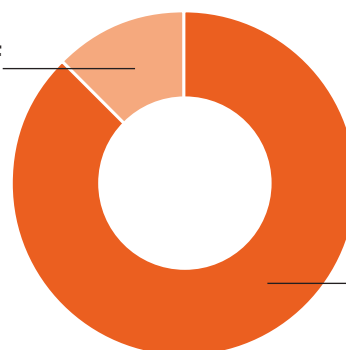
According to the International Energy Agency (IEA), Asia is forecast to consume 790 billion cubic meters of gas a year by 2015, making it the world's second-biggest market. Japan's review of nuclear in the wake of the Fukushima disaster, China and India's rapidly expanding LNG demand, clean energy policies and economic growth will drive LNG demand in the region.

Asian buyers are now paying up to five times that of US Henry Hub prices. As long as governments in the region continue to promote their NOCs and restrict trade, Asia will be stuck with higher costs and insufficient infrastructure for receiving, processing and transporting LNG.

Asian buyers are using oil indexing for contracts because there is no LNG price index in the region. Japan, China, India, Korea and Taiwan's rapidly expanding LNG demand has increased trade in the LNG spot market. Notably, Platts has already established a LNG price index proxy for all Asian LNG prices based on LNG delivered to Japan and South Korea. However, the price is determined by only two countries and fails to represent enough markets for supply-demand fundamentals to be accurate for the region.

Survey response for oil indexation versus LNG hub indexation for LNG pricing

Not in support of hub indexation
(12.5%)



No comment
(87.5%)

Institutional/structural requirement	China	Japan	Korea	Singapore
Market driven government approach	–	–	–	+
Separation of transport and commercial activities	–	–	–	+
Wholesale price deregulation	+/-	+	–	+
Sufficient network capacity and non-discriminatory access	–	–	–	+
Competitive number of market participants	–	+	–	+/-
Involvement of financial institutions	–	+/-	–	+

Source: www.iea.org

Singapore is in a strong position to take a leadership role in establishing itself as the regional LNG pricing hub mostly because of the government's hands-off approach to the gas markets. The city-state could promote price transparency and be one step closer to determine the price of gas based on supply and demand of LNG for the region.

Other factors contributing to Singapore's attractiveness as a price hub is also summarised in the table above.

Singapore's neutrality is an advantage. Together with the recent launch of Singapore's state owned LNG import terminal (SLNG), it is making first moves towards pricing and futures. However, the energy market would have to wait until 2017 before they see SLNG have enough capacity to re-export gas for trading within Asia Pacific.

Ultimately, to build a LNG trading hub for the region, it would be more compelling when Singapore reaches a critical mass

of players that includes a good number of buyers and sellers. Singapore already has a presence of a number of oil majors, and is likely that these majors want to conduct trade here.

It is vital that Singapore begins to consider the risk appetite of its customers in the short- and long-term to determine the price mechanism that is fair and transparent. By applying the right price mechanism for trade, it could ignite the spot market for the region, consequently promote a more competitive and deregulated LNG market.

Singapore Economic Development Board (EDB) can also review incentives to ensure Singapore attracts gas-trading companies to be headquartered in Singapore. Shell's recent move of its integrated gas business to Singapore demonstrates how IOCs are vested to target Asia Pacific as its gas-centred growth strategy. This significant move will continue to boost Singapore's strategic position as a global heartland of gas.

Energy Financing

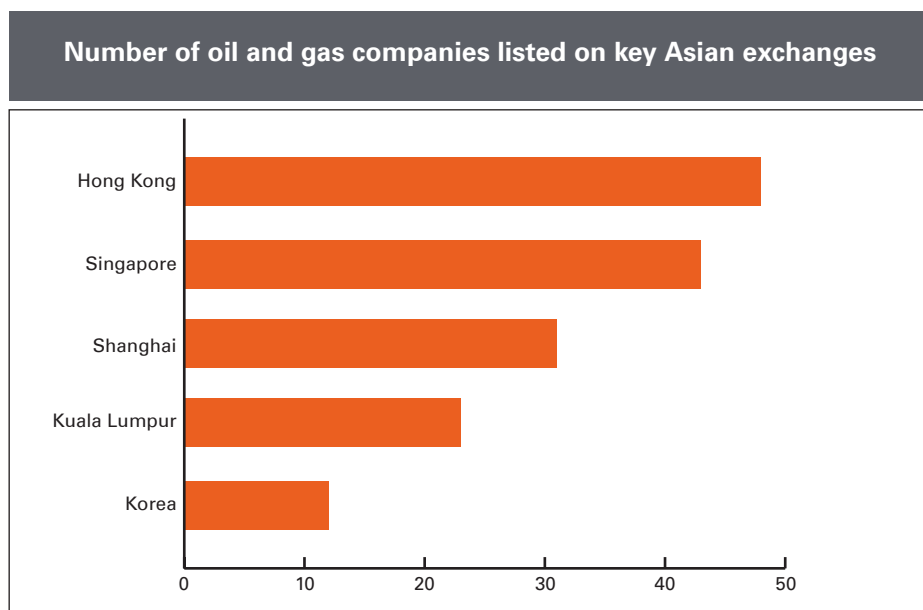
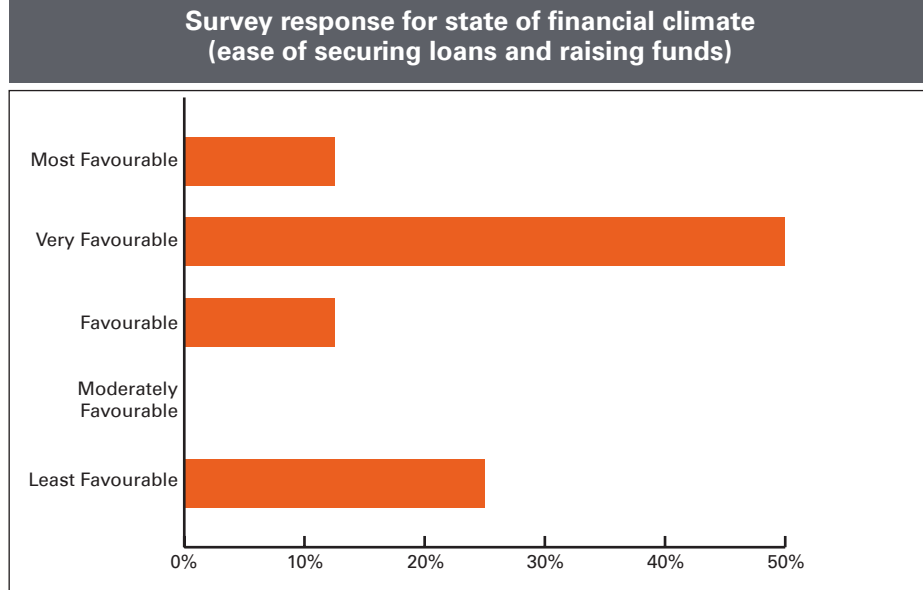
Many respondents rated Singapore very highly for providing ease in securing loans and raising funds. Some mixed responses came from several respondents who predominately belonged to the upstream sector.

Industry sentiments reveal an encouraging evaluation of energy financing in Singapore, with a majority of respondents expressing satisfaction with the status quo.

According to International Enterprise (IE) Singapore, an estimated 80% of capital raised is leveraged from banks, and the remaining 20% obtained from private or governmental sources. Thus, the recommended strategy moving forward is for Singapore to continue to provide a wide spectrum of financing options to suit the varying needs of the energy industry.

For example, Initial Public Offerings (IPOs) could be an attractive option for firms aiming to leverage Singapore Exchange's (SGX) reputational advantage, but might not appeal to firms that prefer not to be subjected to SGX's mandatory disclosures. The latter would potentially find a greater inclination towards bonds and business trusts, for which Singapore has a steady traction.

On the note of IPOs, it was observed that Singapore is behind Hong Kong in attracting oil and gas listings in the region. As a proportion of the exchange's total market capitalisation, the market capitalisation of oil and gas companies listed on SGX is an approximate 5.4%, trailing Hong Kong Exchanges and Clearing's (HKEx) approximated 7.6%. This is despite HKEx's more stringent listing requirements for energy companies, such as a higher minimum asset base set at SGD320 million. Singapore could examine the factors that have contributed to HKEx's attractiveness,



especially since both countries are similarly ill-positioned for upstream involvement. It would be helpful to determine whether Singapore's weakness may lie in a shortfall of sector marketing, or in the lack of a sophisticated investor base, where investors shy away from investment activities unfamiliar to them.

Some respondents have also expressed concern that SGX's SGD300 million asset base requirement could be too high for Small and Medium Enterprises (SMEs). In order for its energy industry to flourish, Singapore needs to attract

not just the oil and gas majors, but a whole belt of SMEs to bolster the ancillary functions. Thus, it is encouraged that SGX reviews the needs of SMEs to weigh in more strongly when reviewing its listing requirements on both Mainboard and Catalyst.

Islamic financing is another area of opportunity that was highlighted in the responses. There was a call for Singapore to continue to develop and complement conventional financing methods, so as to provide more financing options for global investors and energy companies to work together.

Research and Development

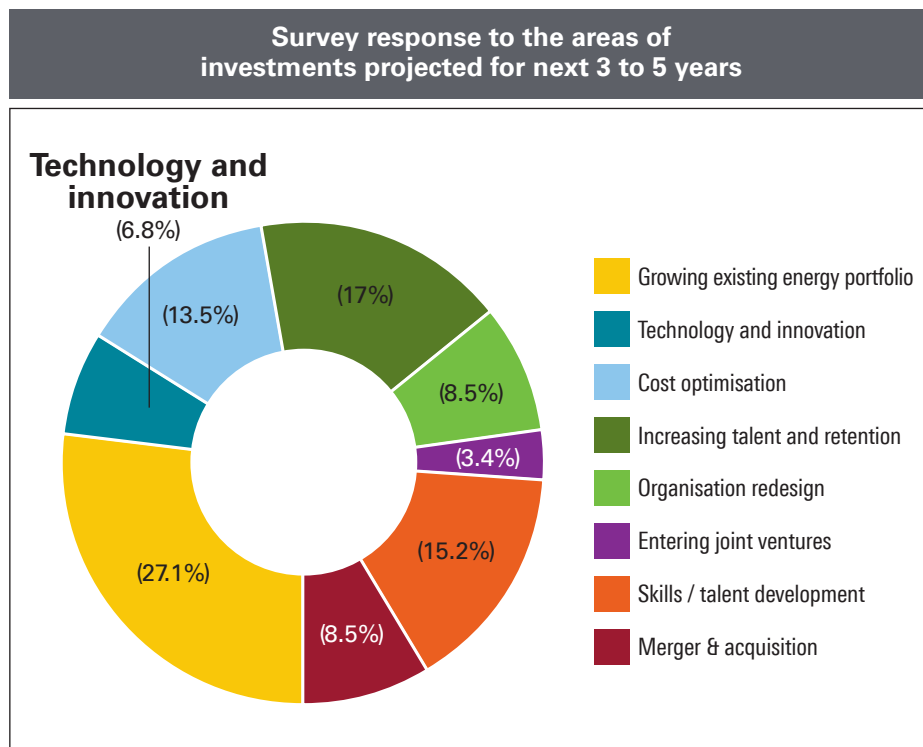
Technology and innovation was found to register a 6.8% level of interest for investment projected over the next 3 to 5 years. The majority of executives are still keen to see Singapore participate more in research and development activities related to unconventional gas.

Emerging Asian economies are recognising the inherent value of creating a strong research and development (R&D) infrastructure and capability across industries. The top five Asian countries (Japan, China, South Korea, India and Russia) account for 92% of the total R&D investment in Asia Pacific. The increasing trend for R&D spend is expected to continue through the next decade.

The growth in Asian R&D also reflects the output of scientists and engineers from its growing educational system. The combined number of researchers from South Korea, Taiwan, China, and Singapore increased from 16% of the total number of global researchers in 2003 to 31% in 2007.

That said, the Asia Pacific region is relatively low in proportion of researchers compared to the rest of the world. Countries such as Australia, China, Japan, Korea, Russia and Singapore are above the world's average of 1,081 researchers per million inhabitants. However, there is still a large disparity on the number of researchers per million inhabitants amongst developed and emerging countries in Asia Pacific. Emerging countries have begun to realise the need to create incentives for domestic and foreign companies to perform research in their countries. For example, Indonesia has set a goal to increase R&D investment to 3% of its GDP. This could be achieved by regulating benefits such as tax and trade incentives for private and state-owned businesses that allocate a portion of their profits to research.

In 2010, Singapore introduced an



attractive tax scheme "Productivity and Innovation Credit" (PIC) where businesses benefit from a 400% tax deduction and/or 60% cash payout for investment in innovation and productivity improvements. Such activities include, but not limit to, training, R&D and cost of IP rights. Singapore could promote this incentive to oil and gas companies based here to take advantage of the tax benefit.

Another key finding is that major oil companies have research centres in countries with a strong upstream focus (e.g. Australia, China, Malaysia and Middle East). As the majority of upstream activities occur outside of Singapore, it is not the first place companies think of for upstream R&D. Singapore's research centres are largely driven by academic institutions, government agencies and local companies like SembCorp and Keppel. In 2010, Singapore's A*STAR and local universities have begun to collaborate to develop R&D capabilities in oil and gas equipment sector to support local marine and offshore industry. A*STAR for instance has programs in multi-phase flow modelling and ruggedised electronics.

The recent establishment of DNV's deep water technology centre and

Lloyds' R&D centre in Singapore marks the start for further innovation and growth in R&D for the oil and gas sector. Amongst the institutes of higher learning, National University of Singapore recently established a partnership with the University of Houston in Subsea education. Although there are few actual problem-statements for academics in Singapore to work on in the upstream sector, the country clearly has strengths in rig building.

Singapore could develop suitable applied research programs and jobs by targeting development, design and high-end manufacturing, with a focus on rig building. Specifically, explore R&D initiatives that are multi-disciplinary to enable a more holistic approach to addressing issues.

The R&D function of oil and gas companies needs to serve its global markets by being closer to its customers. However, Singapore should find partners that are keen to build talent to grow its R&D investment.

There is more room for collaboration and knowledge exchange in the region. However, one has to consider which will come first, the chicken (R&D investment) or the egg (talent)?

LNG Storage Capacity

The majority of executives indicated the importance of Singapore's commodity and storage capacity as a key factor when it comes to valuing its strategic location.

With the expansion of LNG supply to South East Asia, gas output is set to grow over the short term in China, Korea, Malaysia and Vietnam. As supply of LNG and unconventional gas rises, trade flows will increasingly diversify with more shipments to occur within Asia. The diagram below shows the direction of major trade flows expected to occur in 2035 (International Energy Agency's World Energy Outlook, 2012).

Singapore can leverage its storage facilities to be the leader in trading and shipment in the Southeast Asian region.

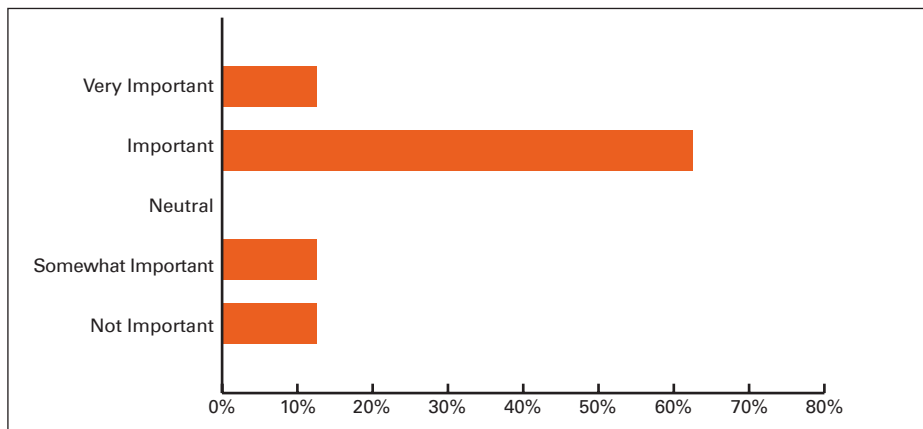
However, Singapore shares its geographical advantage with Malaysia, situated between the Middle East and Australasia, from where the bulk of LNG supplies are expected to be sourced.

Malaysia's 3.8mtpa (5.2bcm) Melaka LNG import terminal is still under construction and is due to come online in late 2013, as is Malaysia's LNG import terminal that is underway within its massive Refinery and Petrochemicals Integrated Development (RAPID) in Pengerang, Johor. The project aims to support Malaysia's ambition of being the Asia Pacific region's leading oil and gas trading hub and will allow multiple users to store and trade their product.

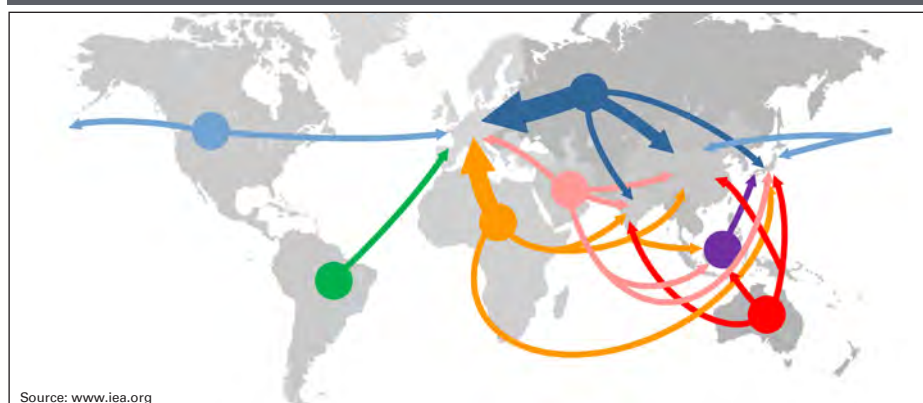
At the same time, Singapore has been establishing its own LNG terminal on Jurong Island at an estimated cost of US\$1.05bn and is due to start operations in the 2nd quarter of 2013. This terminal will be capable of meeting domestic demand in the short term, followed by importing and re-exporting LNG from multiple suppliers in the long term.

SLNG has received its first cargo from Qatar in March 2013 and is on track for commercial operations by end of June. In the short term, the terminal's initial

Survey response for importance of commodity and storage infrastructure in Singapore



Major global gas trade flows projected for 2035, International Energy Agency's world energy outlook 2012



throughput of 3.5mn tpa is largely dedicated to meeting its domestic demand. The planned extension for its third train will increase its potential capacity up to 10mn tpa of gas.

Singapore LNG Corp is currently considering a fourth gas storage tank big enough to fit four A380 jumbo jets to lower storage costs and hold cargoes from a 266,000 cubic-meter Q-Max LNG ship.

Singapore possesses first-mover advantage in the region. The city-state is already the region's leading oil trading hub, and SLNG has come online earlier (1st half of 2013) than Malaysia's RAPID LNG project (2nd half of 2013). Singapore will establish its presence earlier in the market to support and house an ever-growing LNG hub.

To remain competitive, Singapore could continue to develop its geographical advantage by expanding its oil & gas infrastructure, paying attention to the potential of floating storage facilities. Such initiatives have already begun with Shell building their second floating liquefied natural gas facility (FLNG) in Asia Pacific. Singapore could explore such opportunities to meet the increasing demand to overcome the country's limited land space.

Singapore can also collaborate with Malaysia to share the geographical advantage of the gas trade route. Malaysia's RAPID and SLNG terminals could work together to share the import and export trading activities for the region. This could be a win-win opportunity for both countries.

Creation of a National Oil and Gas Company

While being a business-friendly location is perfectly suited to the rise of new enterprises, few executives saw a real need for Singapore to create a National Oil and Gas Company (NOC) following PetroChina's acquisition of Singapore Petroleum Company in 2010.

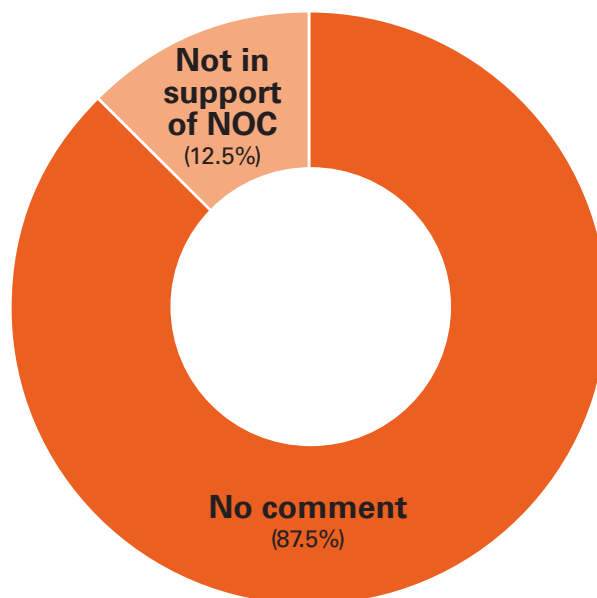
However, having a NOC comes with advantages which include becoming a flag-bearer with which other oil companies can enter into contracts. Such partnerships can facilitate the sharing of technology and expertise and can also be helpful in greater understanding of the region.

NOCs also include among their objectives the goal of redistributing oil wealth to their people. While Temasek Holdings and Keppel Corporation, two prominent organisations in Singapore, contribute to the nation's wealth through corporate taxes, a NOC's profits can be entirely channeled to benefit the nation. The subsequent creation of jobs would also be welcomed by its citizenry.

A NOC in Singapore could focus its efforts on augmenting its storage capabilities and growing Singapore's energy reserves, especially since Singapore has no natural reserves to rely on. Keeping substantial reserves can provide a hedge against fluctuating oil prices as a result of economic conditions, and can be seen as a vital strategy for strengthening national security.

Furthermore, an opportunity may exist for Singapore to investigate establishing a national gas company. Temasek has been investing in oil and gas assets overseas, acquiring stakes in Repsol and Cheniere. The number of NOCs, such as Emirates and Pertamina, based in Singapore

Survey response for importance of the creation of a national oil and gas company



points to Singapore's attractiveness as a host to NOCs (and possibly the overseas division of NOCs), and its infrastructural maturity to establish one of its own.

Talent

The majority of respondents rated their talent development as 'intermediate', i.e. they have collaborative expertise with minimal knowledge gaps. Also, there is a growing trend for China and Southeast Asia to nurture more talent. It is not unusual that China is the top consideration for the potential of talent development.

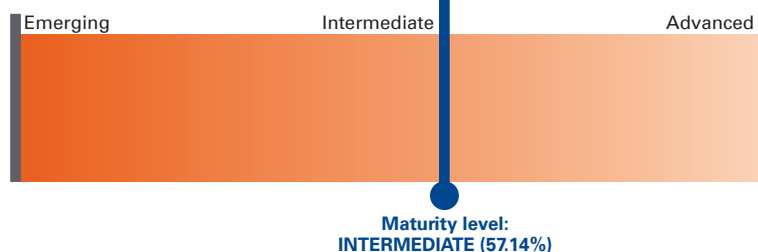
Large countries such as China and India have a very large talent pool. The number and quality of local universities largely determine local talent pools too. Thus, China and India are naturally attracting the lion's share of new R&D investment and training institutions.

Larger countries such as Australia, China, India, the Middle East also provide actual upstream sites on which R&D firms can conduct their research and trainees can gain practical experience. Unlike these countries, Singapore does not have field sites for upstream activities.

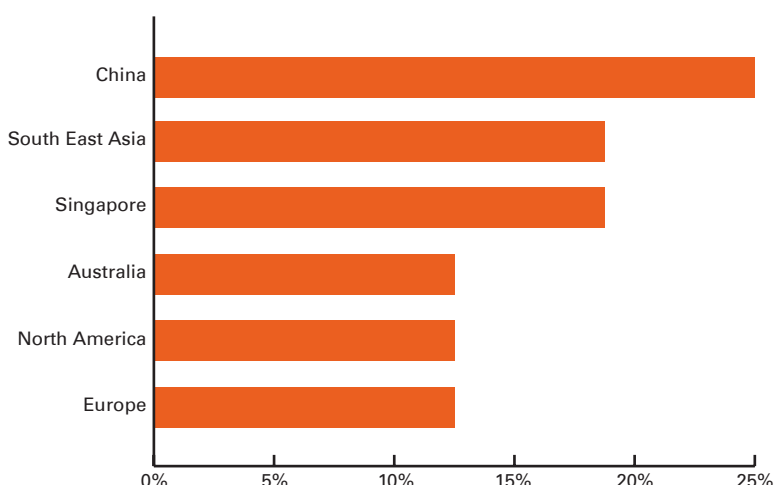
A key consideration for talent development and retention is for technical universities to build industry-focused faculties. Australia, China, India and Malaysia have petroleum related studies in their universities. Singapore's courses are largely focused on marine, offshore, subsea specialisations. It falls short in the upstream oil and gas area. A respondent from an IOC observed a lack of talent pool with upstream experience and stressed the importance of training and education in this area.

However, the lack of talent in upstream activities is mostly mechanical and offshore related work. This is a different skill set and Singaporeans may not be attracted to this area. Unemployment levels in Singapore are low and the people have options. Working remotely from these field sites is likely to be more ideal.

Survey response for maturity level of companies' talent development in Singapore



Survey response for countries with growing trends for talent development



In order to compete with China and India, Singapore could continue to differentiate itself by focusing on technology-intensive activities. Local university courses in geosciences could focus on advanced simulation software to prepare students for more technologically advanced jobs. This could mitigate Singapore's inherent lack of upstream talent pool.

Another opportunity could be to create an ASEAN/ Asian oil and gas program (like that of the European Erasmus Mundus programs). This would allow Singapore to leverage off regional universities, share best practices and

produce graduates that are well versed in regional oil and gas knowledge.

That said, companies may still not look to locate in Singapore until there is talent available. However, talent will only develop when the companies hire and provide the opportunity to learn.

The challenge is for the government to forge stronger ties in the sector with universities and companies to instill in them the pressing need for the development of upstream talent. Singapore should encourage companies to bring their assets to Singapore and develop the talent in Asia.

CONCLUSION

Growth trends in the energy sector reverberate strongly within Asia Pacific and Singapore should gear itself towards playing a significant role in the industry. Sound decision-making over the recent decades has begun to bear fruit for the city-state as it continues to poise itself for the future and strengthen its position in the race to emerge as a regional hub.

Based on survey findings and data gleaned to date, many companies have identified Singapore's attractiveness to be attributed to its strategic location, stable tax policies and a market-driven government approach to overseeing the energy industry. It is KPMG's view that both major and junior oil and gas companies stand to benefit significantly from investment and operational opportunities in Singapore. The forthcoming establishment of Singapore's LNG terminal will also fortify Singapore's gas storage capacities and cross-border connectivity, to take advantage of the burgeoning demand for LNG.

Nevertheless, KPMG's study identified room for improvement. Singapore needs to be responsive to shifting industry needs in order to attract more energy players into the country and retain its existing ones. The nine areas of opportunities highlighted in this paper could serve as a representation of industry sentiments and are certainly areas for Singapore to address their feasibility. Singapore will continue to play a major role in the energy value chain in Asia and its citizens need to be equipped for the challenge.

“Singaporean graduates and undergraduates should be able to participate in the opportunities by enrolling in energy courses that empower them to enter careers in oil and gas. We've seen several examples of career and learning opportunities being created in the sector around the world to support the industry's growth.”

– Pek Hak Bin

The KPMG Global Energy Institute (GEI):

Launched in 2007, the GEI, is a worldwide knowledge-sharing platform detailing insights into current issues and emerging trends within the Oil & Gas and Power & Utilities sectors. Energy professionals will have access to valuable thought leadership, studies, events and webcasts, about key industry topics. A regional focus to the GEI provides decision makers tailored insight within the Americas, Asia Pacific and the Europe, Middle East & Africa regions. The GEI strives to arm professionals with new tools to better navigate the changes in this dynamic arena. To become a member of the GEI or for more information please visit kpmg.com/energyaspac

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