HD **Oil and Gas - Asia Pacific**

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Scope of this report

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. The report examines the current environment as well as global and regional affairs that influence the development of the various industry segments using available data. Key financial results of leading public companies and other major players in the industry are also provided.

Research analysts draw on a range of credible industry and **company** data sources as well as news and information services to research and analyze the current trading environment, industry landscape and market trends and outlook for a particular sector. Primary sources are used, unless otherwise indicated, and include **company** data, e.g. annual reports and **company** financial results; macroeconomic and trade data; data and information from global and country regulatory, industry and trade bodies; government data; and reports from industry organizations and private research organizations.

Industries covered by the industry reports are defined by standard industry classification systems and leading companies are identified on this basis. SICs relevant to the industry include: 1311 (Crude Petroleum and Natural Gas); 1321 (Natural Gas Liquids); 1381 (Drilling **Oil** and Gas Wells); 1382 (**Oil** and Gas Exploration Services, Geophysical Mapping and Surveying, Other **Oil** and Gas Field Exploration Services); 1389 (**Oil** and Gas Field Service, NEC); 2911 (Petroleum Refining); 3533 (**Oil** and Gas Field Machinery and Equipment); 4612 (Crude Petroleum Pipelines); 4613 (Refined Petroleum Pipelines); and 4619 (Pipelines, NEC).

Current Environment

Sector Overview

Economic growth throughout the Asia-Pacific over the past six months led to a rise in the consumption of **oil** and liquefied natural gas (LNG) to fuel booming vehicle use and industrial growth, especially in **China**. **Energy** demand continued to rise significantly across developing Asia, driven by shifting economic, environmental and geopolitical factors, coinciding with a very tight global **oil** supply. The global growth of new **oil** supply hardly exceeded declining production from the world's large older **oil** fields, causing a very slight overall net supply increase.

Oil prices peaked at US$116.75 on September 9, 2013 before bottoming at US$103.08 a barrel on November 7 and then fluctuating upwards. **Oil** prices were relatively high in the third quarter of 2013 before hitting a low in the fourth quarter. This had significant economic implications as **oil** provides 60% of the world's **energy** needs, with the other 40% coming from **coal**, nuclear, hydroelectric, **wind**, **solar**, tidal power and biomass.

Asia-Pacific **oil** consumption growth was the second highest globally, 47%, after the Middle East's 57%, while consumption in the European Union (EU) fell by 5% and in the US by 3%. The decline in EU and US consumption was due to the shift from **oil** to gas and renewable **energy**.

Natural gas consumption continued to rise strongly over the past six months, as it did in the past decade, to fuel booming industrial needs and power generation. Asia accounted for 70% of the world's LNG market, and the strong demand combined with **oil**-linked LNG pricing, drove Asia-Pacific prices higher.

The demand was intensified by a sudden rise in demand from Japan to meet its electricity needs following the shutdown of its nuclear generators.

Natural gas continued to be the key to Asia-Pacific economic growth and environmental progress, with energy demand estimated to grow by 59% over the next three decades, after steady increases over the past decade. Natural gas can meet more of the demand for electricity, chemicals and plastics, improving quality of life and reducing environmental impact at the same time. Natural gas will slowly continue to replace coal as the region's second biggest energy source, with the upstream oil and gas market offering new business opportunities for the growing number of independent and expanding state oil companies.

Sector Performance

Global oil demand rose slowly in the second half of 2013, because of slow economic recovery and tight oil supply due to sanctions on Iran.

Key Asia-Pacific Oil and Gas Stock Performances

company	Ticker	July 1, 2013 Closing Stock Prices	December 31, 2013 Closing Stock Prices	Change (%)
China Petroleum & Chemical Corp (Sinopec)	SSE: 600028	RMB4.27	RMB4.48	4.9
PetroChina Co Ltd	SSE: 601857	RMB7.69	RMB7.71	0.3
China National Offshore Oil Co Ltd (CNOOC)	HKSE: 883	HK$13.16	HK$14.42	9.6
Indian Oil Corp Ltd (IOCL)	BSE: IOC	Rs236.35	Rs214.05	(9.4)
Hindustan Petroleum Corp	BSE: HPCL	Rs257.70	Rs237.30	(7.9)
Oil and Natural Gas Corp Ltd (ONGC)	BSE: ONGC	Rs328.30	Rs288.60	(12.1)
Caltex Australia	ASX: CTX	A$17.59	A$20.05	14
Woodside Petroleum Ltd	ASX: WPL	A$34.75	A$38.90	11.9
Santos Ltd	ASX: STO	A$12.30	A$14.63	18.9
Petronas Dagangan Bhd	KLSE: PETD	RM25.90	RM31.44	21.4
Average Rise/Fall (%)		5.16		

Source: Mergent analysis

Another company whose shares did well was Santos Ltd (ASX: STO), starting at A$12.30 (US$11.09), rising steadily to a high of A$15.66(US$14.11) on September 27, ending the period at A$14.63 (US$13.19).

The worst performing stock was that of Oil and Natural Gas Corp Ltd (ONGC) (BSE: ONGC), whose share price fluctuated greatly. Starting at Rs328.30 (US$5.35) on July 1, it plunged to a period low of Rs243.75 (US$3.97) on August 28, ending slightly higher at Rs288.60 (US$4.70) on December 31. Another company that did badly was Indian Oil Corp Ltd (BSE: IOC), whose share price started at Rs236.35 (US$3.85) on July 1, fell to a period low of Rs193.05 (US$3.15) on August 2, rose to a period high of Rs231.85 (US$3.78) on September 16, and ended at Rs214.05 (US$3.49) on December 31.

Leading Companies

All major oil companies in the region continued to climb back from recession, and benefited from a recovering global economy that spurred rises in crude prices, although the regional production and domestic refining margins of many leading companies declined.

China National Offshore Oil Co Ltd (CNOOC) (HKSE: 883)

China's biggest offshore oil producer CNOOC reported revenue of RMB170,764 million (US$28,056.525 million) for the nine months ended September 30, 2013, an increase of 17.4% from a year earlier. Its realized oil price was down by 6.8% to US$104.88 per barrel and realized gas price down by 4.9% to US$5.59 per 1,000 cubic feet. Its capital expenditure rose 54.1% to RMB60,675 million (US$9,968.903 million). Production levels were up by 17.8% from a year earlier to 103.4 million barrels of oil equivalent

(boe). The company made a discovery in Luda 5-2N at Suizhong 36-1 oilfield, Bohai, and successfully appraised Kenli 9-5/9-6 at Laizhou Bay Sag in Bohai.

Indian Oil Corp Ltd (IOC) (BSE: 530965)

State-owned IOC reported a net profit of Rs1,684 crore (US$274.492 million) for the quarter ended September 30, 2013, a drop of 82.5% from a year earlier. This was due to exchange losses of Rs2,158 crore (US$351.754 million) in the quarter, against an exchange gain of Rs2,289 crore (US$373.107 million) a year earlier. Revenue rose by 4% from a year earlier to Rs110,390.24 crore (US$17,993.609 million) and earnings per equity share were down by 82.55% to Rs6.94 (US$0.11). The company has increased its presence in the upstream sector and enhanced its capability in exploration and production (E&P).

It has participating interests in 13 domestic and nine overseas blocks and has made discoveries in some of them, while many others are undergoing geological and geophysical studies. IOC had an excellent operational performance in the just concluded fiscal year, surpassing all previous records. Its pipeline achieved its highest ever throughput of 75.55 million tonnes of crude oil and petroleum products, an increase of 10.3% from the previous year.

Petroliam Nasional Bhd (Petronas) (KLSE: PETD)

Revenue rose 8.5% from a year earlier to RM232,507 million (US$71,193.643 million), while cash flows from operating activities decreased by 5.3% to RM61,476 million (US$18,823.951 million). Total production rose by 5.7% from 1,985 thousand boe per day to 2,098 thousand boe per day. Crude oil and condensates production rose by 43 thousand boe per day due to production resumption in South Sudan, production enhancement efforts and new production from Malaysia and Iraq. Natural gas production rose by 105 thousand boe per day from a year earlier because of additional production from Canada and newly producing fields in Malaysia.

Mergers and Acquisitions

The rate of Asia-Pacific oil and gas mergers and acquisitions (M&A) picked up slowly over the six months under review, amid a slowdown in the global economy and sanctions on Iranian oil. The motivation for deals varied in different countries and companies. China and India's national oil companies (NOCs) continued their quest to acquire as much technology and knowledge as possible from their western partners to exploit their own huge unconventional assets, while Malaysia and South Korea focused on diversifying their reserves and production bases to boost national energy self-sufficiency.

High growth in emerging markets, over-capacity in developed regions and the need to develop new and efficient technology solutions for company development also drove M&As. Japan actively acquired overseas gas assets to replace lost nuclear power capacity after the Fukushima nuclear plant crisis, and to secure supplies of LNG before long-term contracts expire.

Regional companies also focused on portfolio management and concentrated on core business, given high oil prices and gradual economic recovery, and made M&As to gain market share. In January 2014, the Indonesian Government approved a proposal from state oil and gas company PT Pertamina to acquire state-run PT Perusahaan Gas Negara (PGN), a publicly listed gas distributor and transmitter, and the acquisition process will take eight months. Pertamina would merge PGN with its gas subsidiary, PT Pertagas that holds several gas concessions.

Pertamina would have 30% to 38% of PGN, the Government between 36% and 40%, down from its current 57%, and the public share would decline to between 26% and 30% from 43%. Pertamina's holding in PGN would increase to between 70% and 74% if the Government decided to be represented by Pertamina in PGN. Pertamina assessed that the acquisition would generate additional profits of between US$2 and US$3 billion from operational efficiency, dividends and taxes.

While M&As might not offer much immediate return, they should boost reserves and production of NOCs in the long term and help companies diversify from declining domestic reserves. They are important for energy security and supplement domestic crude oil and natural gas production.

Industry Profile

Industry Size and Value

The Asia-Pacific has less than 4% of the world's proven oil reserves, and the industry has few options to expand or maintain its current levels of production. The region has large coal reserves, the primary energy source in China and India, while the rest of the region relies on crude oil. The developing

countries will consume 94% of the **oil** consumed by industrialized countries by 2025, and **oil** is likely to remain the world's foremost source of primary **energy** over the next two decades.

Australia remains a significant player in the global LNG market, due to the development of its offshore gas resources and onshore unconventional gas reserves. Australia, ranked 11th in global natural gas reserves and fourth in LNG exports, has the potential to become the leading LNG exporting country, overtaking Qatar. Currently, Australian LNG is expensive, costing 20% more to deliver to Japan than LNG from Canada and the US. Floating liquefied natural gas (FLNG) will be the solution to reduce the cost and unlock stranded gas. FLNG is a water-based LNG operation that enables the development of offshore natural gas resources by floating above an offshore natural gas field. FLNG facilities can produce, liquefy, store and transfer LNG at sea before carriers ship it directly to markets.

Australia will be among the first countries to use FLNG technology, with several projects under development, such as Royal Dutch Shell's (LSE: RDSA) Prelude project, off Western Australia, and GDF Suez's Bonaparte FLNG project, off Northern Australia. FLNG requires revolutionary technology to solve technical and execution challenges. It offers environmental benefits over conventional offshore LNG that involves transport pipelines to shore, which could be several hundred kilometers away, and to an onshore processing facility, all of which involve construction materials and seabed and land disturbance. FLNG also reduces the impact on sensitive coastal habitats as it excludes the need for shoreline pipe crossing, dredging and jetty works.

FLNG facilities allow economic access to large reserves from offshore fields previously considered stranded gas, and are cheaper per tonne to build with a lighter environmental footprint than conventional LNG and other fossil fuel **energy** sources. The technology is not limited to offshore Western Australia or the previously considered stranded gas, but can also be used in regions where security issues prevent onshore processing.

Oil and Gas Production and Consumption

The level of overall **oil** and gas production and consumption in the region increased slightly over the past six months despite a weak global economy. Asia-Pacific crude **oil** proved reserves grew by 12.4% from a year earlier to 47.224 **billion** barrels in 2013. Production rose by 0.6% to 8,996.5 thousand bbl/d (bbl/d) in 2012, and consumption by 3.4% to 29,566.7 thousand barrels per day. **China** continued to have the largest global **oil** consumption growth, 5.5%, and 21.5% growth in natural gas consumption, compared with Japan's 11.6%.

ONGC discovered three significant new **oil** and gas reserves in India through the prolific KG-DWN-2005/1 and KG-DWN-98/2, both at Krishna-Godavari basin blocks in Andhra Pradesh and GK-28 in Kutch shallow offshore in the Western offshore basin. The **company** has yet to ascertain the commercial potential of the three discoveries and reserves estimates. The discovery was a significant boost to the **company**'s efforts in attaining critical hydrocarbon volumes for the viability of a possible cluster-based development for the block.

The Asia-Pacific's proved natural gas reserves fell by 0.1% from a year earlier to 504.408 trillion cubic feet (Tcf) in 2013, as the region tried to replace **oil** and **coal** with natural gas to reduce carbon footprints and greenhouse effects. Production levels were up 1% from a year earlier to 18,601 **billion** cubic feet (Bcf) in 2011, consumption by 6.8% to 22,001 Bcf, imports by 19.1% to 9,077 Bcf and exports by 1% to 4,241 Bcf. **China**'s gas production grew rapidly with new pipelines and exploration of gas potential basins, especially in the western interior and offshore. It has the world's longest gas pipeline that began operating in the fourth quarter of 2012.

Australia's gas industry is also growing rapidly, with its deep waters providing long-term gas production growth. Fields throughout the North West Shelf are being developed to supply a growing domestic market and to expand LNG export capacity. New large deepwater discoveries in eastern India are also being developed, leading to higher gas output to replace that from Mumbai where production has peaked.

Industry Focus

Strengthening **Energy** Security

Asia is the second largest gas-consuming region, and demand is rising quickly. The International **Energy** Agency (IEA) estimates that the LNG market will expand by a third from 2011 to 2017. The demand for **oil** is also growing, and the region is exposed to potential petroleum supply disruption in the Middle East, where Iran currently threatens to block access for **oil** tankers to the Strait of Hormuz, through which 20% of the world's **oil** passes.

A major disruption in the strait could increase **oil** prices to US$160 per barrel and trigger a severe crisis in Japan. Without nuclear power to diversify its **energy** mix, Japan's federal deficit could reach Y12 trillion

(US$116.4 **billion**), an associate for **energy** security and sustainability at Japan's Institute of **Energy** Economics estimates. Nuclear plants generated 30% of Japan's electricity before the Fukushima disaster, and the country has subsequently raised its imports of natural gas and introduced policies to boost renewable **energy** development. Without nuclear power, Japan is finding it hard to meet **energy** security goals.

Indonesia, a prominent regional producer of **oil** and gas, will need at least two more **oil** refineries to meet 50% of its fuel **oil** needs until 2020. Even with the construction of refineries with a capacity of 300 **million** bbl/d, the country will continue to be a net **oil** importer until 2025. Pertamina, the Indonesian state-owned **oil** and natural gas corporation, believes that demand for **oil** will continue to grow parallel with consumption in the transportation and industrial sectors, from 454.75 **million** barrels a year in 2013 to 850.38 **million** barrels in 2025.

China has urged Asian and European countries to boost their cooperation on **energy** security, disaster prevention and alleviation. It has also urged **energy** producers and consumers in Asia and Europe to work together to create a new principle of mutually beneficial cooperation, diversified forms of development and common **energy** security through coordination. Both regions need to develop clean and renewable **energy**, improve **energy** structure, stabilize prices, safeguard market stability, improve efficiency, and build **energy**-saving modes of production and consumption. Asian countries have acquired wide experience in disaster prevention, while European countries have developed the latest technology.

To boost **energy** security, **China** is urging the two regions to coordinate their policies, build a cooperative mechanism for emergency rescue in major disasters and provide mutual humanitarian assistance. **China** also recommends establishing an efficient information exchange channel to improve disaster monitoring and early warning and strengthen cooperation on the application of space technology in disaster prevention and alleviation. **China** has also suggested that countries share experience and improve their disaster prevention and alleviation ability through personnel exchange and training.

For Asia to reduce gas prices and improve **energy** security the region needs better physical connections between its various **energy** and electricity supplies. This was done by Europe to achieve relative **energy** security, and Asia could create such a super-grid by incorporating existing and new pipelines within Asia and those from Russia.

Policy and Regulatory Environment

Policies and regulations for all Asia-Pacific **oil** and gas industries are revised when the need arises to make them relevant and coherent with current markets and economic environments. Among the recent measures have been Australian Government tax changes in its federal budget in May 2013, which will directly increase costs associated with developing **oil** and gas resources, as they increase the costs associated with trading and buying into exploration permits.

This will result in a more costly turnover of companies' interest in exploration permits, a crucial step in enabling the commercial alignment that allows projects to proceed on a timely basis. The changes will have a particular impact on small or medium exploration companies that wish to sell an interest to larger, better-resourced or more experienced companies on a full or partial cash basis. The changes to the deductibility rules will mean that a purchasing **company** cannot obtain a timely deduction for the **acquisition** cost, resulting in less incentive for the **purchase**, and the proposed write-off period of 15 years will not reflect commercial reality.

The Indian Budget 2013 steeply raised the tax rate on royalties and fees for technical services that an Indian **company** pays to a non-resident Indian (NRI) or a foreign **company**. The rate rose from 10% to 25%, as the rate of tax on royalty in the Income-tax Act was lower than the rates provided in a number of double tax avoidance agreements (DTAA).

For an NRI residing in a country with which India has a DTTA, the new tax rate will not be applicable, but it will apply to India-US DTAA. Those who wish to claim the reduced rate of tax deduction at source (TDS) or a waiver of TDS under the DTAA must submit a tax residency certification from the country of residence to certify that the payer is a tax paying resident in the other country and that tax on that income is being paid in that country. This is to prevent leakage of tax revenue for either country.

Key Points

Current Environment

Economic growth throughout the Asia-Pacific over the past six months led to a rise in the consumption of **oil** and liquefied natural gas (LNG) to fuel booming vehicle use and industrial growth, especially in **China**.**Oil** prices peaked at US$116.75 on September 9, 2013, before bottoming at US$103.08 a barrel on November 7 and then fluctuating upwards.Global **oil** demand rose slowly in the second half of 2013, due

to slow economic recovery and tight oil supply due to sanctions on Iran.The stock prices of the top ten leading Asia-Pacific oil and natural gas companies by revenues rose by an average of 5.16% over the six months to December 31, 2013.The rate of Asia-Pacific oil and gas mergers and acquisitions (M&A) picked up slowly over the six months under review, amid a slowdown in the global economy and sanctions on Iranian oil.

Industry Profile

Asia-Pacific crude oil proved reserves grew by 12.4% from a year earlier to 47.224 billion barrels in 2013.Asia is the second largest gas-consuming region, with demand rising quickly and the IEA estimating the LNG market will expand by a third from 2011 to 2017.Better physical connections between various energy and electricity supplies are needed for Asia to reduce gas prices and improve energy security.Floating LNG will be a solution to reduce E&P costs and unlock stranded gas.

Market Trends and Outlook

Growing Asian nations, especially China and India have led the world's oil demand over the past few years.Asian equity capital continued to flow into private North American oil and gas companies as it has over the past four years.Asian companies are turning to unconventional gas to cut their reliance on imported energy, mitigate environmental damage and improve energy security.

The Asia-Pacific is likely to become the world's second largest gas market by 2015, but the market is dominated by long-term contracts, in which the price of gas is linked to that of oil, that have helped keep Asian gas prices much higher than those elsewhere.

Market Trends & Outlook

Asia-Pacific Continues to Lead Oil Demand Growth

The growing Asian nations, especially China and India, have led the world's oil demand over the past few years. The IEA expects Indian oil demand to rise by 3.9% annually and Chinese demand by 3.5% annually until 2030. Chinese oil demand is expected to more than double to 16.3 million bbl/d by 2030, from 7.7 million bbl/d in 2008, while Indian demand could jump from three million bbl/d in 2008 to 6.9 million bbl/d in 2030. This compares with just 1% year-on-year global growth, since most Organisation for Economic Cooperation and Development (OECD) economies are expected to have declining oil demand due to energy efficiency. India is likely to overtake Japan as the third largest oil and natural gas consumer by 2020, while China will overtake the US as the world's largest consumer by 2025.

The ten Association of Southeast Asian Nations (ASEAN) countries, many of which have seen rapid economic growth over the past three decades, will also see strong growth in energy demand. IEA estimates that total ASEAN demand is likely to increase from 3.5 million bbl/d in 2008 to 5.3 million bbl/d by 2030, because of rapid gross domestic product (GDP) growth and current levels of low energy consumption per person. ASEAN GDP is expected to rise by 4% annually from 2007 to 2015, and then by 3.7% a year from 2015 to 2030. Non-OECD Asia will see average annual oil demand growth of 1.8% until 2030.

Asian Investors Turn to North America

Over the past six months, Asian equity capital continued to flow into private North American oil and gas companies as it has over the past four years, with companies such as Sinopec, Itochu Corp (TES: 8001), Korea National Oil Corp (KNOC), CNOOC, Mitsui & Co (TSE: 8031), Marubeni Corp (TSE: 8002) and RIL very active. Investment targets ranged from Western Canada's oil sands and LNG complex to West Texas unconventional shale assets and the Gulf of Mexico through participation in buyout consortia that provide joint venture capital and preferred equity investment in corporations.

Through various asset bases, structures, returns and counterparties, investments are aimed at learning leading edge onshore drilling techniques, establishing incumbency in attractive asset bases and achieving strong returns.

Asian public institutional equity investors are following their private investment counterparts in looking at North American oil and gas opportunities for attractive growth and returns. Asian institutions are underweight in North American oil and gas, with investment totaling US$7.3 billion, 85% of it coming from Japan. North American public equity holdings in upstream companies indicate that there are opportunities to speed up investment in the sector.

Asian investors currently hold more than US$109 billion in oil and gas assets under management, and their market depth is enough to attract potential shareholders. Japan is the second largest single-country capital market in the world, with capital totaling US$22 trillion, and US$700 billion invested in foreign

equities, 44% of it in North America. Realizing the great potential of Asian investors, North American companies have conducted non-deal road shows in Asia to educate institutional investors, with prioritized stops in Tokyo, **Hong Kong**, Beijing, Seoul and Singapore.

Australian institutional investors are also beginning to look to companies in North America, where the LNG industry is increasingly a supplier of choice to Asian markets. Globalization within the North America industry has speeded up and companies are forming operational and financial partnerships with Asian counterparts.

Asian Development of Unconventional Gas Increases

Asian economies are turning to unconventional gas to cut their reliance on imported **energy**, mitigate environmental damage and improve **energy** security. **China**, India and Thailand already consume more gas than they produce, and that gap will widen unless they can boost their production of unconventional resources such as tight gas, shale gas and **coal** bed methane. **Energy** ministers from Asia- Pacific Economic Cooperation (APEC) countries recognize the need to explore ways to secure supplies other than from conventional gas.

The growth in shale gas in the US is having ripple effects on gas pricing throughout the world, including Asia. Japanese companies are looking at Henry Hub pricing for natural gas, due to the correlation between that benchmark and the price Japan must pay to secure gas on the spot market. The prospects for continuing or have more rapid growth in production, both in the US and elsewhere, are pressuring mid and long-term price assumptions. The US Department of **Energy**'s latest long-term forecast expects shale gas production to reach more than 12 Bcf per day by 2020, and 17 Bcf per day by 2035. Asian companies are forming alliances with western firms who are familiar with the technology used in the US shale gas sector and are trying to secure a stand in that market themselves.

China is set to exploit more unconventional gas reserves to meet rising demand and to power its rapid economic growth as it grapples with **energy** shortages and climate change. The National **Energy** Administration (NEA) reported that **China** has huge unconventional gas resources, and that increasing unconventional gas production could ease **oil** demand, dodge rising costs of **oil** production and cut carbon emissions. **China**'s **coal**-based **energy** consumption mode is changing as the country seeks to reduce carbon dioxide emissions per unit of GDP by 40% to 45% from 2005 levels by 2020.

The Government is encouraging the use of more natural gas to meet its burgeoning domestic **energy** needs, while reducing greenhouse gas emissions by using cleaner-burning gas and renewable **energy** resources. Exploration and production companies are learning from foreign companies experienced in shale gas drilling how to explore for and develop **China**'s untapped shale gas resources. The development of shale gas has raised environmental concerns, including the possible pollution of groundwater supplies. However, most industry experts are confident that unconventional gas might soon become an additional alternative source of **energy**.

Market Outlook

Asia-Pacific estimates its economic growth in 2013 at 7.3%, despite the global economic downturn and uncertainty surrounding Eurozone sovereign debt. A significant restriction on economic growth is the region's huge dependence on foreign **oil** and gas imports. To reduce dependency and boost **energy** security, countries are seeking to satisfy as much demand as possible from domestic sources, especially in **China**, India, Thailand, Malaysia and Indonesia. Thus, Asia is becoming an increasingly important region for **oil** and gas exploration and drilling. As the sector is dominated by offshore production, its offshore capex is likely to grow significantly over the next five years.

Asia-Pacific is likely to become the world's second largest gas market by 2015, but the market is dominated by long-term contracts, in which the price of gas is linked to that of **oil**, that have helped keep Asian gas prices much higher than those elsewhere.

Asia's rapid growth depends on the availability of LNG supplies to meet rising future **energy** needs, mainly for new, cleaner electricity generation. Its rush for resources risks pushing **oil** and LNG prices higher and strengthens producers in using **energy** for political and diplomatic advantage. The region's quest for more secure **oil** and LNG supplies has driven it toward greater dependence on and engagement in key **oil** and gas exporting regions, especially the Persian Gulf and the Middle East. The uncertain political situation and unrest in the Middle East have concentrated the risks of supply disruption on the Asian **oil** market, which is the primary destination of Middle East **oil**, while disruptions in the Persian Gulf would expose all importers to price rather than physical risks.

Japan, once considered a mature and saturated market, has now become a resurgent market and will remain the world's largest LNG importer for the next few years. Japan's rising LNG needs have begun to intensify concerns among other Asian LNG buyers over **energy** security. These concerns will likely

continue for the next five years, until more supplies become available from major new projects. By 2020, North American shale gas supplies could play a key role in meeting Asia's needs for supply diversification.

Country Profiles

Australia

Sector Overview

Over the past six months, Australia's **oil** production fell as consumption rose, in a continuing long-term inverse trend that has remained ongoing over several years. The **oil** and gas industry contributes 58% of Australia's primary **energy** and A$28 **billion** (US$25.24 **billion**) a year to the economy, with access to **energy** resources essential to continuing economic growth. The industry is responsible for more than A$0.30 (US$0.27) in every dollar of Australian private sector investment. While Australia has found gas faster than it has produced it, as it has done for a quarter of a century, it only has a decade of known **oil** resources remaining at current production rates.

The development of Australia's gas resources continued due to the rise in demand from Asia and the ability to sell LNG to Asia at **oil**-linked prices. Nevertheless, Australia is the world's most expensive place for offshore petroleum E&P, three times more expensive than the US Gulf Coast and a little costlier than Norway. Despite that, it has benefited from a US$180 **billion** LNG investment boom with seven major projects under construction.

These projects are 80% more capital intensive than those in operation, mainly due to labor costs being double those of many of its competitors, even though productivity is lower. The industry is in danger of missing out on another US$150 **billion** investment in new LNG projects due to high costs, although the investment is needed for new projects to meet Asian and domestic demand. The LNG industry is likely to dry up by 2017 if there are no additional projects.

The resources boom has provided successive Australian Governments with extra tax revenues for the past decade. The May 2013 tax changes in the federal budget, which affect exploration costs, and new capitalization rules, will negatively influence the industry's international competitiveness. They continue the trend of fiscal and regulatory changes that have reduced investor confidence. The industry is currently investing around A$200 **billion** (US$180.26 **billion**) over five years on new projects that will pay **billions** every year to the Government and create more than 100,000 new jobs.

Oil Sector

The **Energy** Information Administration (EIA) estimates Australia's crude **oil** proved reserves at 1.433 **billion** barrels in 2013, up by 0.5% from 2012. Production levels fell by 2.1% from 2011 to 519.1 thousand bbl/d in 2012, while consumption picked up by 1.9% to 1,126.1 thousand bbl/d.

Brisbane-based Linc **Energy** discovered a 233 **billion** barrel shale **oil** source in the Arckaringa Basin in South Australia's far north with an estimated value of A$20 trillion (US$18.026 trillion). South Australia's **Mining** Minister said that it is still early to say if the reserve can be tapped profitably.

Natural Gas Sector

The EIA estimates Australia's 2013 natural gas reserves at 43.037 Tcf, up by 54.5% from 2012. The country produced 1.02 Tcf in 2012, down by 17.7% from a year earlier, and consumed 1.02 Tcf, a decrease of 17.7%. Imports in 2012 rose by 67.8% from 2011 to 386 Bcf, and exports by 11.6% to 1,069 Bcf.

Gas production is growing, but generates less than 9% of the country's electricity, low by international standards. Gas is an under-used resource with potential for further expansion as it is the cleanest practical source of large-scale base load and peaking power for Australia, is cheaper than **solar** and **wind** power, and does not depend on weather conditions or the time of day.

Leading Companies

Santos (ASX: STO)

In third quarter 2013, Santos produced 13.4 **million** barrels of **oil** equivalent (mmboe), down by 1% from a year earlier, and by 8% from the previous quarter. Sales volumes fell by 7% to 15.5 mmboe from a year earlier, but rose by 8% from the previous quarter. Sales revenue rose by 20% to US$1,027 **million**, driven by the highest production in six years, strong **oil** prices and higher third party sales volume. Gas production of 9.5 mmboe was 5% lower than a year earlier, with higher Darwin LNG production offset by lower production in Bangladesh and the Otway Basin.

Woodside Petroleum (ASX: WPL)

Woodside Petroleum's production decreased to 21.9 mmboe in third quarter 2013, down by 17.4% from the corresponding period in 2012, but up by 9.5% from the previous quarter. Sales volumes also decreased, by 15.7% from a year earlier to 20.9 mmboe, but rose by 3.5% from the previous quarter. The decrease in production and sales volumes was due to the Vincent FPSO, offshore Western Australia being off station for planned shipyard maintenance, lower LNG sales from Pluto, Carnarvon Basin, Western Australia due to unplanned outage at the beginning of the quarter, and lower condensate sales from the North West Shelf due to the timing of shipments. Sales revenue decreased by 26.8% to US$1,338 **million** from a year earlier but declined by 0.5% from the second quarter. The larger gas volumes sold resulted in lower average realized prices, while the average Brent price for the quarter was US$109.65 per barrel, slightly above the US$109.42 per barrel a year earlier.

Market Outlook

New plants are likely to boost Australia's LNG capacity from 24 **million** metric tonnes a year to more than 80 **million** metric tonnes by 2017, with most of the additional output designated for Asian markets. Many sedimentary basins have seen little exploration, while many regions with hydrocarbons have not been drilled to any significant extent.

Australia could soon overtake Indonesia as Asia-Pacific's biggest importer of refined products when old and high cost refineries such as Clyde and Kurnell on the outskirts of Sydney close and with demand continuing to rise strongly. The increasing reliance on **oil** imports is likely to benefit independent trading houses.

China

Sector Overview

Over the past six months, **China**'s economic growth has slowed and **oil** and petrochemical demand has been weak, although demand for **oil** products continued to grow. The Government further improved the pricing mechanism for **oil** products, adjusted natural gas prices and announced a premium pricing policy for upgraded quality **oil** products.

China is the world's largest **energy** consumer and the second largest **oil** consumer behind the US. Its economic development and prosperity depends on its access to natural resources of which it has few of its own. **China**'s 12th Five-Year-Plan sets aggressive targets for shale gas production of 0.6 Bcf per day by 2015, with plans to scale-up production to between 5.8 and 9.6 Bcf per day by 2020. Between 1,200 and 1,500 wells need to be drilled to meet the target, but only 60 exploration wells have been drilled so far.

China continued to focus on developing largely unexploited reserves in the western interior provinces and offshore fields, since its large **oil** fields have matured, and production has peaked. It had speeded up its exploration for **oil** and gas in deepwater areas in the South **China** Sea, which contains up to 30 **billion** tonnes of **oil** and 16 trillion cubic meters of gas.

China continued to build pipelines to ship 440,000 barrels of crude and 12 **billion** cubic meters of natural gas a day from the Bay of Bengal in Myanmar to Kunming, Yunan Province. The **oil** pipeline will be 800km long and the natural gas pipeline will extend further to meet the needs of cities such as Kunming, Guizhou and Guangxi in southwestern **China**. This project is part of the country's efforts to improve **energy** security as its economy continues to expand.

Oil Sector

EIA reported that **China**'s crude **oil** proved reserves in 2013 rose by 25.7% from 2012 to 25.585 **billion** barrels. Production in 2012 rose by 1.6% from 2011 to 4,416.2 thousand bbl/d, and consumption by 4.3% to 10,276.8 thousand bbl/d.

In November 2013, **China** took control of Ecuador's **oil** sector after securing the rights to up to 90% of Ecuador's **oil** shipments for the next few years, in exchange for covering 61% of the country's US$6.2 **billion** financing needs in 2013. Little of the **oil** will be shipped to **China**, but **Chinese oil** firms can sell the **oil** to Ecuador's trading partners and receive enormous discounts, and the US is the largest recipient of Ecuadorean **oil**.

Natural Gas Sector

China had proved natural gas reserves of 124.2 Tcf in 2013, an increase of 16.1% from 2012, EIA reported, and production levels rose by 11.4% from 2011 to 5,152 Bcf in 2012. Domestic production could not match consumption, causing a big rise in imports.

A China-Myanmar gas pipeline became fully operational on October 20, 2013, and will fuel China's southwest regions with piped natural gas for the first time and decrease gas prices in those areas. Some 793 km of the 2,520 km trunk line are in Myanmar, running through south west China's Yunan, Guizhou and Chongqing Provinces, and south China's Guangxi Zhuang Autonomous Region. The pipeline starts from Kyaukpyu Harbor, Myanmar and ends in Guijang, Guizhou province, and its builder, China National Petroleum Corporation (CNPC), said that it would transport 12 billion cubic meters of gas each year to Myanmar and the Chinese regions. This will improve local air quality as 90% of local factories in Guizhou currently rely on coal and most residents' cooking fuel is refined from coal.

Leading Companies

China Petroleum & Chemical Corporation (Sinopec) (HKSE: 386)

Sinopec, Asia's biggest refiner, reported a 21.56% increase in third quarter profit from a year earlier to RMB22.183 billion (US$3.64 billion). Its operating income rose by 7.09% to RMB724.68 billion (US$119.06 billion), with basic earnings per share up by 17.9% to RMB0.191 (US$0.031) and diluted earnings per share rising by 16.45% to RMB0.177 (US$0.029). The company optimized exploration areas and made major breakthroughs in new blocks such as the Tarim Basin in Xinjiang Province. It intensified its progressive exploration and oil reserve evaluation in projects such as West Junggar in Xinjiang, Tahe in Heilongjiang and East Shengli in Shangdong, while continuing to develop the Daniudi Gas field in northwestern China.

PetroChina (HKSE: 857)

PetroChina, the nation's largest oil and gas producer, earned a net profit of RMB29.77 billion (US$4.88 billion) in third quarter 2013, up by 19.4% from a year earlier, basic earnings per share totaled RMB0.16 (US$0.03), and its operating income rose 5.5% to RMB581.688 billion (US$95.57 billion). The company made significant progress in oil and gas exploration and production and achieved steady output increases in the third quarter. Adhering to the principles of market-orientation and profitability, PetroChina optimized resource allocation and sought rigorously to reduce losses and increase profitability in refining and chemicals. It also adjusted its marketing strategies to boost sales and enhance profitability by focusing on quality and profitability.

Market Outlook

While the global economy continues to be sluggish, China's is likely to have grown by 9% in 2013, with demand for oil and gas up by 4% as government stimulus measures continue to filter through the economy. The EIA expects oil production to have increased by 170,000 bbl/d to 4.5 million bbl/d in 2013, and oil consumption to have increased by 400,000 bbl/d. The EIA estimates that China will import about 75% of its crude oil by 2035, as demand is likely to grow faster than domestic production.

China's access to natural resources is an important requirement for social stability and economic growth. China hopes that the semi-submersible CNOOC 981 rig, the first independent deepwater drilling rig operated by a Chinese company, which began drilling in the second quarter of 2012, will reduce its dependence on oil imports and help develop deepwater exploration technologies and equipment. Further shale exploration will help to meet the growing domestic demand for gas and reduce the country's dependence on imports.

India

Sector Overview

The oil and gas industry is one of the six main industries in India and plays an important role in the economy. India increasingly relies on imported LNG, being the world's fourth largest importer, accounting for 5.3% of global imports in 2012. It has a network of 9,537 km of crude pipeline with a capacity of 138.3 million metric tonnes per annum (mmtpa). Indian Oil Co Ltd (IOCL) (BSE: IOC) has the longest crude pipeline network, 4,376 km, 45.9% of the national total, and has the longest pipelines, the 1,870 km Salaya-Mathura-Paripat Pipeline and the 1,302 km Haldia-Barauni or Paradip-Barauni Pipeline. ONGC has the largest capacity, 65.5 mmtpa, or 47.4% of the national total, followed by OICL's 40.4 mmpta, or 29.2%.

The Government raised gas prices in April 2013 for the first time in three years, as it implements reforms to boost industry, revive the economy and increase LNG imports. Raising prices nearer to world levels could boost investment in the sector; increase much needed supply to the world's fourth-largest energy

user, and make LNG imports from major producers such as Qatar more attractive. Independent consulting **firm** FACTS Global **Energy** said that it was a good time for the Government to consider raising prices because investment in the **oil** and gas sector was drying up as private sector players remained cautious.

The existing contract price, US$4.20 per **million** British thermal units (mmBtu), expires on April 1, 2014, and national elections are due by May 2014. The new rate is likely to be based on US export prices and Japan's import numbers, possibly boosting prices by at least 60% to US$6.70 per mmBtu, which the **Oil** Ministry says will still be only about half LNG import costs. The Government calculates that without the price increase, supply will be only half of India's gas demand, which will rise from the present 286 **million** cubic meters a day to 466 **million** cubic meters in 2016 or 2017.

Oil Sector

India had proved crude **oil** reserves of 5.476 **billion** barrels in 2013, down by 2.3% from a year earlier. Production levels also declined, by 0.6% from 2011 to 990.2 thousand bbl/d in 2012, while consumption rose by 6.2% to 3,621.8 thousand bbl/d.

Indian national **oil** companies have purchased **equity** stakes in overseas **oil** and gas fields in South America, Africa and the Caspian Sea region to obtain reserves and production capability. Nevertheless, most imports continue to come from the Middle East, where Indian companies have little direct access to investment.

Natural Gas Sector

India's proved reserves of natural gas rose by 7.6% from 2012 to 43.825 Tcf in 2013, while consumption fell by 8.2% to 2,076 Bcf, with no exports.

The country has a huge potential demand for natural gas, the penetration of which is much lower than the global average. India wants to double the current 10% share of gas in its **energy** mix by 2020, and reduce the consumption of expensive diesel and fuel **oil**. The finance head at LNG importer Petronet LNG Ltd (NSE: PLNG), 50% owned by state-run firms, said that any increase in natural gas prices would help raise the acceptability of imported LNG.

Leading Companies

Oil and Natural Gas Corporation (ONGC) (BSE: ONGC)

ONGC provides 72% of the country's total crude **oil** and 48% of natural gas production. For the fiscal half year ended September 30, 2013, it reported 15.8% lower profit after tax of Rs100.8 **billion** (US$1.64 **billion**) compared with a year earlier, and 23.8% higher revenue of Rs100.83 **billion** (US$1.64 **billion**). Crude **oil** production declined by 0.7% to 12.977 **million** metric tonnes, and of natural gas by 3% to 12.392 **billion** cubic meters, while total sales rose by 4% to Rs416.67 **billion** (US$6.79 **billion**).

ONGC's subsidiary ONGC Videsh Ltd (OVL) signed a memorandum of understanding (MoU) with Petrovietnam (PVN) on November 20, 2013, to promote joint cooperation in the hydrocarbon sector in Vietnam, India and other countries. The MoU is a development of the agreement signed between OVL and Petrovietnam on October 12, 2011, when the latter offered five blocks to OVL for assessment as to their viability.

Reliance Industries Ltd (RIL) (BSE: RIL)

and net profit rose by 9.4% to Rs10,842 crore (US$1,767.246 **million**).

The **company**, together with BP plc (NYSE: BP), discovered gas condensate in the Cauvery basin off the east coast of India. RIL is the operator with 70% **equity** and BP has a 30% share. The well CYIII-D5-S1 was drilled at a water depth of 1,743 meters to a total depth of 5,731 meters, to explore Mesozoic age reservoirs. RIL also signed a MoU with ONGC to explore the possibility of sharing RIL's infrastructural facility on the East Coast. The MoU aims at working out the modalities for sharing of infrastructure, identifying additional requirements and firming up commercial terms, in line with the global practice of sharing infrastructure.

Market Outlook

The **oil** and gas industry is having difficulty making enough profit to expand exploration and production (E&P) as growing fuel subsidies, and an uncertain global economy, have burdened the industry. India is likely to experience an **energy** deficit, importing 77% of its total domestic crude **oil** demand. The gas deficit is likely to continue for the next six months, boosting LNG imports, while a large portion of demand will remain unsatisfied due to price sensitivity among end users.

Although Indian oil and gas companies are likely to explore global investment opportunities in shale gas, this is unlikely to have any impact on improving the gas deficit situation in the near future. India is likely to become a net importer of natural gas in the next two years if the situation does not change, risking over-dependence on other countries and giving it little bargaining power. The Petroleum Ministry expects imports of LNG to rise further to 50% of demand in fiscal 2013, and surpass domestic production in fiscal 2015.

Indonesia

Sector Overview

Indonesia is the world's third fastest growing economy, with its energy sector seen by the Government as playing a key role in maintaining the country's development. Crude oil production has declined since 1998, as the largest oil fields have matured and no new comparable resources have been developed. The Indonesian Petroleum Association (IPA) warned that oil and gas potential needs to be developed to drive sustainable economic growth, and the country is focusing on securing energy sources for its domestic market.

Ruby natural gas field offshore East Kalimantan (Borneo) started production through the Sebuku production sharing contract with Mubadala Petroleum, Abu Dhabi, (70% share), Total E&P Sebuku, 15% and Inpex South Makassar Ltd, 15%. The field will produce a peak 100 million standard cubic feet per day (MMscfd) for four years and produce 214 bcf over 10 years. The field, in 60 m of water in the Makassar Strait, produces from four wells in the Oligocene Berai formation. A 312-km, 14-inch, subsea pipeline connects the Ruby platform with the Senipah terminal on East Kalimantan, operated by a subsidiary of Total SA (PAR: FP). PT Pupuk Kalimantan Timur buys the gas for use in a fertilizer plant.

Oil Sector

Indonesian crude oil proved reserves rose by 3.7% from 2012 to 4.03 billion barrels in 2013. Production levels fell by 4.1% to 974.3 thousand bbl/d, while consumption remained the same as a year earlier at 1,384 thousand bbl/d. The remaining hydrocarbons in Indonesia are becoming harder to extract as most are in remote spots that require lots of expensive new infrastructure and technology, and state-owned Pertamina lacks the necessary expertise.

Natural Gas Sector

Indonesia's proved natural gas reserves fell by 23.2% from 2012 to 108.4 Tcf in 2013, while production levels declined by 4.4% from 2010 to 3,255 Bcf in 2011, consumption by 5% to 1,327 Bcf, exports by 5.4% to 1,366 Bcf, and there were no imports in 2011.

Three new gas fields developed by Chevron Indonesia Co - Bangka field, Gendalo and Gehem, all in East Kalimantan - are likely to begin production in 2015, 2017 and 2018, respectively. Masela block in the Arafura Sea, north of Australia, with total reserves of 171.316 billion cubic meters and a soon to be set up floating LNG plant, is expecting first production in 2016.

Leading Companies

PT Medco Energi Internasional Terbuka (JSX: MEDC)

Medco Energi's main activities are oil and gas exploration, development and production, power generation and renewable fuels with operational areas in Indonesia, Cambodia, Oman, Yemen, Libya, Tunisia and the US, including one LPG plant and three power plants. In the nine months ended September 30, 2013, operating revenue declined by 1.1% from a year earlier to US$652.235 million, gross profit by 11% to US$277.452 million, while cash flow rose 73.5% to US$196.012 million.

A wholly owned subsidiary of PT Medco Downstream Indonesia, PT Medco Ethanol Lampung, which deals in ethanol production, closed its ethanol plant on October 16, 2013, due to insufficient supply of feedstock such as cassava and molasses. The closure means that the company has no operating business unit in PT Pums Medco Petroleum, a high speed diesel trading and distribution unit, so PT Medco Downstream Indonesia and its subsidiaries no longer have downstream operations.

PT Energi Mega Persada (ENRG) (JSX: MEDC)

net income by 907.7% to US$214.227 million and gross profit by 68.5% to US$244.549 million.

The company secured a new US$203 million syndicated five-year loan facility arranged by Bank of AmericaMerrill Lynch, Bank of India and Intesa Sanpaolo SpA on December 11, 2013, with a current

annual interest rate of Libor +6%. The money will be used to settle most of the outstanding loan facility, allowing ENRG to reduce interest costs up to US$26 million in 2014.

Market Outlook

Indonesia should experience strong economic growth in the next six months leading to an increase in energy consumption. The Energy and Mineral Resources Minister estimates that state revenue from the oil and gas sector totaled Rp350 trillion (US$28 billion) in 2013, and that coal miners and oil and gas producers generated Rp450 trillion (US$36 billion) in state revenue. The ministry allocated Rp18.8 trillion (US$1.5 billion), an 18.9% increase from 2012, to expand and improve energy infrastructure in 2013, as the country wants to boost the state budget.

Japan

Sector Overview

Restoration and reconstruction from the Great East Japan Earthquake pushed the Japanese economy to modest recovery over the past six months. The economy started to pick up in the first half of 2013, driven by the US recovery, a rebound in domestic stock prices and a weakening yen, optimism over the Government's economic policy and monetary easing by the Bank of Japan. Japan was the world's biggest importer of LNG even before the Fukushima nuclear plant disaster, and now consumes a third of global output, but ensuring reliable supplies and reasonable prices has became difficult.

Japan began producing natural gas from offshore methane hydrates in March 2013, a major breakthrough with potentially explosive consequences for both energy markets and efforts to deal with climate change. It is considered the world's first major breakthrough in tapping a potentially massive alternative source of natural gas and could meet Japan's needs for 100 years. The Government plans to develop technology to enable commercial use by 2018.

Oil Sector

Japan's crude oil proved reserves in 2013 were the same as in 2012, 0.044 billion barrels. Production levels dropped by 0.6% from 2011 to 135.5 thousand bbl/d in 2012, while consumption rose by 5.4% to 4,714.8 thousand bbl/d, and there were no exports.

Japan has long seen a declining trend in domestic demand for petroleum products, and this continued over the past six months due to more use of fuel-efficient vehicles and the progress of industrial energy-saving measures. Nevertheless, the demand for petroleum products was at a similar level to that of a year earlier because of increased demand for fuel oils for electric power stations resulting from the suspension of nuclear power operations after Fukushima.

Natural Gas Sector

Japan's 2013 proved reserves of natural gas were the same as in 2012, 0.738 Tcf. Consumption rose in 2012 by 0.6% from a year earlier to 4,388 Bcf, imports by 4.8% to 4,314 Bcf, and there were no exports.

The nuclear plant shutdown after the Fukushima disaster forced Japan to import more LNG for power utilities, causing short-term prices to shoot up on the spot market. Japan paid a record for LNG in April 2013 as a government pledge to boost monetary stimulus weakened the nation's currency and increased the price of fuel imports. Japan paid Y82,477 (US$800.03) a metric tonne for the fuel in April, higher than the previous record of Y81,089 (US$786.56) in September 2008.

Leading Companies

JX Holdings (TSE: 5020)

The company's net income rose by 234.2% to Y89,706 million (US$870.148 million) in the first half ended September 30, 2013; net sales rose by 11.3% to Y5,777,689 million (US$56,043.583 million), operating income by 272.8% to Y139,429 million (US$1,352.461 million), and ordinary income by 121.2% to Y176,115 million (US$1,708.316 million). Subsidiary JX Nippon Oil and Gas Exploration (Offshore Malaysia) signed a production sharing contract (PSC) with Malaysia's Petronas for the 4,200 km? Deepwater Block 3F with a depth of between 150 and 1,300 meters off the northwest of Sarawak and prospects for oil discovery. The company holds a 40% interest in the project.

Idemitsu Kosan (TSE: 5019)

The company's net income totaled Y38,814 million (US$376.496 million) in the first half year ended September 30, 2013, compared with Y2,448 million (US$23.746 million) a year earlier due to increased extraordinary income assisted by insurance proceeds. Its net sales rose by 14.4% to Y2,346,968 million

(US$22,765.59 million), ordinary income by 98.3% to Y47,398 million (US$459.761 million), and operating income by 84.1% to Y51,439 million (US$498.958 million), due to valuation gains on inventories resulting from increased Japanese yen-dominated crude oil prices.

Market Outlook

Japan's oil consumption is likely to remain static in the next six months. The Government is increasingly cautious about the impact of high fuel costs on the economy, especially since the Fukushima disaster forced utilities to return to thermal power generation. Japan is now trying to obtain shale gas from the US, and hoping to negotiate a price cut from other resource-rich countries such as Russia, which is facing a declining share of the European market.

South Korea

Sector Overview

South Korea is a major energy importer, mainly of oil, natural gas and coal. It is the world's fifth largest crude oil importer and second largest LNG buyer. The Energy Ministry announced a new energy development scheme focused on improving the financial status of state-owned companies and boosting exploration capacity by refraining from costly M&As. It is reviewing its overseas investments in oil and gas because of poor profitability, especially those made by Korea National Oil Corp (KNOC), Korea Gas Corp (KOGAS) (KSE: 036460) and Korea Resources Corp (KORES) in the past five years that could lead to asset sales to offset losses. The three state firms invested US$23.21 billion from 2008 to 2012, causing debt-to-equity ratios to jump in 2012 compared with those in 2007. The Energy Minister said that the country is now focusing more on the quality of its overseas resource investment rather than quantity.

Oil Sector

South Korea does not have its own oil reserves and imported 2,371.966 thousand bbl/d in 2010. Oil demand is likely to continue to drop up to 2019, due to more stringent energy efficiency standards and a declining population. Oil companies have upgraded refining facilities and increased upstream investment, and have begun investing in alternative energy projects. KNOC will increase its oil inventories to 141 million barrels by 2013, with an additional 101 million barrels to be held by the Government as international cooperative stocks.

Natural Gas Sector

South Korea's proved reserves of natural gas dropped by 0.1% from 2012 to 504.408 Tcf in 2013. Consumption rose by 8.6% from 2011 to 1,753 Bcf in 2012, imports by 1% to 1,671 Bcf, and there were no exports. The city gas network, which serves residential, commercial and industrial consumers, accounts for the majority of natural gas sales, about 54% in 2011, while power generation companies make up most of the remainder.

Leading Companies

SK Energy (KSE: 96770)

SK Energy, the largest Korean oil refiner and marketer, explores for and produces LNG domestically and internationally. Its third quarter 2013 revenue totaled KRW11.481 trillion (US$10.33 billion), while operating income decreased by 97% from a year earlier to KRW13.3 billion (US$11.97 million), due to the decline caused by the worsening petrochemical market. The refining margin is likely to improve due to increased demand in the winter season, but improvement will be limited due to the supply increase from China and the Middle East. SK Energy is planning to secure its reputation as South Korea's leading export company through the reinforcement of its export product portfolio and the verification of export markets.

S-Oil Corp (KSE: 10950)

S-Oil is in the fuel, petrochemical and lubricants businesses and is one of the most competitive Asia-Pacific oil refiners. It owns the 580,000 bbl/d Onsan Refinery at Ulsan and other facilities producing petrochemicals and lube base. Its third quarter 2013 sales fell by 4.4% from a year earlier to KRW8,125,613 million (US$7,313.052 million), gross profit by 74.5% to KRW163,684 million (US$147.316 million) and operating income by 95.2% to KRW25,104 million (US$22.594 million). Its capital expenditure was estimated to have increased in 2013, largely due to heavy maintenance and process improvements, while some investment items in core business for future growth are under in-depth review.

Market Outlook

As South Korea plans to boost production at its overseas fields to 35% of imports by 2020, to strengthen **energy** security, the Government is introducing comprehensive measures to reduce **oil** consumption, which greatly affects economic growth. The measures include boosting production of more fuel-efficient cars, tax exemptions for buyers of hybrid cars and small vehicles, and increasing tax deductions by KRW1 **million** (US$9,000) for public transport users who make payments through credit or transportation cards.

The Government hopes that the measures will reduce **oil** consumption by 26 **million** barrels up to 2015, and cut dependence on **oil** to 33% of all **energy** consumption in 2015, from the estimated 37.5% in 2012. At the same time, South Korea has made the development of shale gas and electricity storage systems the new economic growth engines, and is looking to tap overseas shale gas. The Ministry of Knowledge Economy wants to expand imports of the new fossil fuel to 20% of all natural gas imports by 2020, hoping that the development will reduce the price of liquefied natural gas and the money spent on gas imports.

Currency Conversion Table

Currency exchange rates as of January 15, 2014

currency unit	Units per US$	US$ per Unit
Australian Dollar (A$)	1.1095	0.9013
Chinese Yuan (RMB)	6.0860	0.1643
Indian Rupee (Rs)	61.1853	0.0163
Indonesian Rupiah1 (Rp)	11,806.4000	0.00008
Japanese Yen (Y)	103.5300	0.0097
Malaysian Ringgit (RM)	3.2659	0.3062
South Korean Won (KRW)	1,057.8700	0.0009

Bank Indonesia

Key References

Key References

Global

BP Statistical Review of World **Energy**

A comprehensive guide to **energy** market statistics.

http://www.bp.com/centers/**energy**

Energy Information Administration (EIA)

A statistical agency of the US Department of **Energy**.

http://www.eia.doe.gov

International **Energy** Agency (IEA)

An intergovernmental body committed to advancing security of **energy** supply, economic growth and environmental sustainability through **energy** policy cooperation.

http://www.iea.org

Organization of Petroleum Exporting Countries (OPEC)

Comprised of 11 **oil** developing countries, OPEC's primary mission is to stabilize **oil** prices and help producers achieve a reasonable rate of return on their investments.

http://www.opec.org

Australia

Australian Bureau of Agricultural and Resource Economics (ABARE)

A government economic research agency that provides economic analysis and forecasts to enhance the competitiveness of the Australian agricultural, mineral, **energy** and forestry industries.

http://www.abare.gov.au

Australian Bureau of Statistics (ABS)

Australia's national statistical agency.

http://www.abs.gov.au

Australian Institute of Petroleum (AIP)

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http://www.aip.com.au

Australian Petroleum Production and Exploration Association (APPEA)

A representative body of the **oil** and gas exploration and production industry in Australia.

http://www.appea.com.au

Australian Trade Commission

Australia's trade and investment development agency.

http://austrade.gov.au

China

General Administration of Customs

A full ministerial level government agency that directly reports to the State Council of **China** and manages all the customs regions nationwide.

http://www.customs.gov.cn

National Development and Reform Commission (NDRC)

A macroeconomic regulatory department that develops national economic strategies, long-term economic plans as well as annual economic plans.

http://www.ndrc.gov.cn

India

India Brand **Equity** Foundation (IBEF)

A public-private partnership between the Ministry of Commerce and Industry, the Government of India, and the Confederation of Indian Industry whose primary objective is to build positive economic perceptions of India globally.

http://www.ibef.org

Ministry of Petroleum and Natural Gas

The ministry that develops and coordinates policy, law and projects related to petroleum in India.

http://www.petroleum.nic.in

Indonesia

Badan Pelaksana Minyak dan Gas Bumi (BP Migas)

A regulatory body responsible for all upstream **operations** in Indonesia.

http://www.bpmigas.com

Indonesian Petroleum Association (IPA)

.

http://www.ipa.or.id

Ministry of **Energy** and Mineral Resources (MEMR)

The ministry responsible for developing Indonesia's substantial **energy** and mineral resources.

http://www.setjen.dpe.go.id

Japan

Ministry of Economy, Trade and Industry (METI)

METI is responsible for a wide range of industrial fields, including basic industries, machinery and information industries, and consumer goods industries. It is also in charge of affairs related to foreign trade, high technologies, environmental protection and industrial location, **energy** and other areas.

http://www.meti.go.jp/english

Petroleum Association of Japan (PAJ)

PAJ is an association of refiners and primary distributors in Japan. Its main activities include collecting the opinions of its member companies and compiling the proposals to be incorporated into the Government's petroleum policy.

http://www.paj.gr.jp/english/index.html

South Korea

Korea **Energy** Economic Institute (KEEI)

The KEEI contributes to national **energy** policy-making by collecting, analyzing, and disseminating **energy** information.

http://www.keei.re.kr/keei/main_eng.html

Korea Petroleum Association (KOPA)

KOPA aims to attain a sound and systematic development of the petroleum industry through the promotion of mutual understanding among member firms.

http://eng.**oil**.or.kr

Ministry of Commerce, Industry and **Energy** (MOCIE)

MOCIE plays a pivotal role in South Korean economic policy regarding industrial development, international trade and **energy** resource management.

http://www.mocie.go.kr/eng

Sales Contacts

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