

APEC Oil and Gas Security Newsletter

Natural Gas Storage in China: Solution to Seasonality of Demand

by Monica Nagashima

The spring and summer of 2018 sustained the highest northeast Asian spot LNG prices in four years, averaging from USD 9 to over USD 11/mmBtu (USD 2 to USD 5/mmBtu higher than the year before). Prices first surged toward the end of 2017, when China took to the international LNG market to meet its end of year pollution targets that required increases in gas usage over coal. A year later, the market is still reeling. Although in the upcoming 2018/2019 winter it is unlikely that China will repeat the same import rush, Asian prices remain high, as buyers and traders continue stockpiling LNG in anticipation of new seasonal volatility.

One way that China can buffer its domestic demand from external price shocks is by expanding natural gas storage. While the storage capacity meets 26% of the annual natural gas demand in Europe and 18% in the United States, it meets less than 10% in East Asia and only 5% in China. As China expands natural gas usage for heating in the northern provinces, demand is expected to become even more seasonal in the upcoming years. Domestic demand volatility can have spill over effects on external markets, which could in turn harm China's domestic appetite for LNG.

Recognizing the problem, the government issued a series of policies to expand the storage facilities. The 13th Five Year Plan on Natural Gas Development targets the development of 14.8 bcm of underground gas storage (UGS) capacity by 2020. The State Council also mandated that by 2020 the following is ready in storage capacity: 10% of annual contracts for wholesale suppliers, 5% of annual contracts for city gas distributors, and 3 days-worth of demand for each administrative region. If achieved, it would be the equivalent to 16% of the national gas demand. Recently, PetroChina announced own plans to develop 15 bcm of *(next page)*

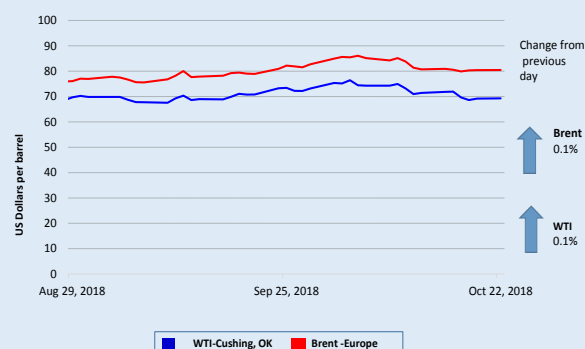
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Highlights

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- Crude Oil Spot Price (WTI and Brent)
- Natural Gas Spot Price (Henry Hub)

CRUDE OIL SPOT PRICES



WTI—USD 69.25 (Oct 22)

Source : US Energy Information Administration



*“which could in turn harm
China’s domestic appetite
for LNG.”*

Natural Gas Storage in China.....

storage by 2025, the equivalent to 10% of China’s peak seasonal demand.

So far, China’s 24 UGS facilities were converted from depleted reserves. Much like with new gas fields, developing underground storage is expensive as well as technically challenging, taking years of appraisal and testing. As such, in a regulated market with monopolized distribution, storage projects struggle to attract commercial interest. Efforts have been led by the state-owned PetroChina with a nearly USD 10 billion budget, and policymakers are additionally trying to boost outside investment. If they succeed, the Chinese market would enjoy a buffer from external price shocks while Asian markets would see the balancing of regional LNG prices.



Notable FIDs on New LNG Export Capacity

by Ichiro Kutani

LNG Canada announced that they made the final investment decision (FID) on their new natural gas liquefaction plant at Kitimat in British Columbia, state of Canada. LNG Canada consortium consisted of Shell as the operator, Petronas (Malaysia), Petro China (China), Mitsubishi Corporation (Japan), and Kogas (Korea). LNG Canada envisions to start operating two liquefaction units with a total LNG production capacity of 14 million ton per annum (mtpa) “before the middle of the next decade”. The project is expected to become the first liquefaction project among the pipeline of similar plans located at pacific coast of North America.

The significance of FID is not actually small. For LNG importing economies in Asia Pacific, additional LNG supply capacity and emergence of new exporter will definitely contribute to enhancing natural gas security. In addition, the project could possibly supply LNG at competitive price as it requires shorter shipping mile to reach demand center in Asia, compared with other liquefaction plants located at Gulf of Mexico. On the other hand for Canada as an exporter, the project helps the economy realise its long-awaited dream of having new outlet for their natural gas resource—the growing Asian market. Canada can strengthen demand security of natural gas resource and use it as a leverage to foster national economy.

One week before the FID of LNG Canada, Qatar Petroleum announced their decision to expand LNG production capacity (*next page*)

*“...will definitely contribute to enhancing
natural gas security.”*

Notable FIDs.....

from current 77 mtpa to 110 mtpa in the middle of 2020s. Taking into consideration these two FID announcements, the world will see a total of 47 mtpa additional LNG export capacity in mid-2020s. Fuel switching from higher carbon content fuel—coal and oil—to natural gas is one of the pragmatic approaches toward climate change. Ample supply of natural gas is essential to such action. The two FIDs are notable decision making in light of supporting stable natural gas supply and possibly, mitigating climate change.

Stronger US Dollar and Effects on APEC Economies

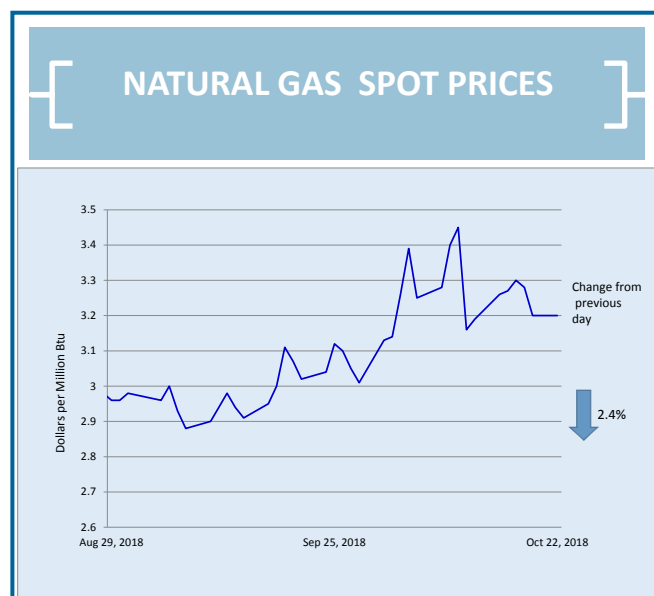
by Yasuaki Kawakami

The US dollar has gained momentum this year on the back of the economy's robust economic growth and the continuous interest rate hike by the US Federal Reserve. The trade weighted US dollar index released by the Federal Reserve surged to 125.45 on 21st September, up by 5.8% since the beginning of this year. The stronger dollar has led to sharp currency depreciation in some APEC economies. The Indonesian rupiah has declined by 8.5% on August against the dollar since January this year, 8.4% for the Chilean peso, and 5.5% for Philippine peso, according to the IMF statistics. In early September, the rupiah per US dollar hit a 20-year high.

A weakening currency may cause several effects on an economy. First, a devalued currency could help an economy boost exports. Second, devaluation increases the debt burden of foreign-denominated loans. Since the ratio of private-sector debt to GDP generally remains on an increasing trend in emerging economies, a weak currency could be a risk hindering a sustainable economic growth. Third, currency depreciation may result in inflation for economies that rely much on imported goods. More specifically about oil, imported cost of crudes and oil products priced in local currency gets high. This is the reason why nowadays, Southeast Asian economies such as Indonesia and Viet Nam try to maximise domestic supply of indigenous crudes.

"...imported cost of crudes and oil products priced in local currency gets high."

With the strong uptrend in international crude prices, the currency depreciation will lead to substantial rise in consumer prices of oil products at the pump for net oil-importing economies. Two implications can be drawn for APEC economies: (a) High oil products price would prevent oil demand growth in APEC's emerging economies, (b) Should an economy subsidise oil products including gasoline and diesel, the price uptrend would worsen the economy's finance.



Henry Hub—USD 3.22 (Oct 22)

Source : US Energy Information Administration



Dr Kazutomo IRIE

Dr Kazutomo IRIE is President of Asia Pacific Energy Research Centre (APERC) as well as Managing Director of the Institute of Energy Economics, Japan (IEEJ), since 8 June 2018. Until then, he was General Manager of APERC as well as Senior Research Fellow of IEEJ. In that capacity, he was mainly responsible for energy policy cooperation with APEC economies through various projects on energy efficiency and low-carbon energy, and also for APEC Oil and Gas Security Initiative (OGSI).

His energy-related duties at the Ministry of International Trade and Industry (now the Ministry of Economy, Trade and Industry) of the Japanese Government include Deputy Director of Petroleum Policy Planning Division and Petroleum Stockpiling Division (concurrently), Deputy Director of Public Utilities Policy Planning Division, Director for Promotion of Power Station Development Office, Director of Nuclear Power Generation Division and Director of Radioactive Waste Regulation Division.

After retiring from Director-General of Training Institute of Ministry of Economy, Trade and Industry in 2008, he worked at Japan Nuclear Energy Safety Organization (JNES) as Senior Counselor and concurrently at the University of Tokyo as Professor in charge of research and education on nuclear policy and law until 2012.

His overseas experiences include Economic Counselor of the Japanese Embassy at Canberra, Australia. *(next page)*

Interview with Dr Kazutomo Irie

In this issue of the Newsletter, we are privileged to have Dr Kazutomo Irie, current President of APERC, himself an advocate of energy security. He will share with us his experiences and motivation in conducting the OGSI.

APERC—Aside from the ministerial instructions, what inspired you in conducting the OGSE/OGSI project?

Dr Irie—During 2001-2003, I was working at METI's Nuclear and Industrial Safety Agency (NISA) which was in-charge of nuclear safety issues. There was an annual exercise to address nuclear emergency scenarios. The scenarios were prepared by a limited number of the officials and the details were not revealed to other officials at NISA until the day of the exercise. That activity was successful and the participants learned important information about coping with a nuclear emergency situation. So when the OGSE was developed, I could apply the experiences I had in participating in these nuclear emergency exercises, although there are many differences between a nuclear emergency and an oil or gas emergency.

As regards networking, during the time that I was working at the University of Tokyo after the retirement from METI in 2008, I was requested to handle a project with IAEA (International Atomic Energy Agency) called ANSN (Asian Nuclear Safety Network). It's a project funded by the government of Japan, on networking with government officials within Japan and other Asian countries which have nuclear power generation and/or radiological use for medical and other purposes. I was the chair of the group in charge of nuclear and radiology safety regulatory issues. As such, I had to meet relevant officials of the governments in Asia and was able to promote and facilitate discussion among these officials. I found the program important and helpful, especially for other Asian countries that prefer to have an actual sharing and discussion of experiences and relevant issues rather than reading from any available sources. This was the kind of networking I envisioned for OGSI. Hence, we developed OGSI (Oil and Gas Security Initiative) as one of its pillars.

APERC—In those years that APERC was conducting OGSE/OGSI, what do you think were the common causes of oil or gas supply security disruption? Is it global oil and gas markets volatility, natural calamities, or geopolitical instability, among others?

(next page)

Dr Irie—I find that global oil and gas market volatility and geopolitical instability are not given as much weight in oil or gas supply security disruption as natural calamities. In the first two cases, there were some lead time to prepare in the event that these will be happening. However, when natural calamities hit an economy, like a typhoon, earthquake or flooding, the effect on supply security may be large and disruption may be immediate. Recently, Japan has been hit by big disasters like flooding, typhoons and earthquakes. In these calamities, electricity supply was disrupted, and there was no time to prepare for the effect of these calamities. Almost every corner of the earth faces this kind of natural disaster. We should prepare continuously, even without any indication of natural disaster.

APERC—*We understand oil and gas supply security were your topic for dissertation. Can you briefly tell us about it?*

Dr Irie—*My dissertation is not only about oil or gas, but energy security in general. At the time I was preparing the paper, I was thinking of how to relate national security with energy security, as I find energy security is an important issue to be addressed by the government. During the time I was conceptualising the paper, it interested me to know the relationship or differences between national security and energy security. I thought that energy security is a part of an extended form of traditional national security. Both have the same basic structure and can be analysed in relation to interests to be defended, threats to the national interest and tools for defense against threats.*

APERC—*What do you still look forward for APERC to do as regards the OGSi project?*

Dr Irie—I really look forward seeing many APEC economies volunteering to host OGSE and attend the annual OGSN Forum. I also look forward to APEC members proposing challenging topics for OGS Studies.

In the near future, I would also like to expand OGSE; make it broader to include electricity security. As gas is an important fuel for electricity, we can discuss electricity security from a gas fuel supply standpoint under the framework of OGSi. However, it is difficult to address electricity in terms of the grid system or distribution system from the

He is an author of numerous papers on energy policy and law both in Japanese and English, and also two books in Japanese, *The Creation of "Electro Garden City"* and *Is There Future for Nuclear Energy?*

He graduated from the University of Tokyo (Bachelor of Law) in 1979 and Georgetown University (Master of Science in Foreign Service) in 1988. He was conferred Doctor of Energy Science from Kyoto University for his dissertation of "Conceptualization of Energy Security" in 2002.

viewpoint of gas security or failure of coal thermal or hydro power plants. It would be challenging to discuss or address the technical side and as such, new experts would be needed.

In September of this year, a large earthquake hit the Hokkaido region of Japan and damaged a large coal power plant and the grid system. This damage triggered a black-out of the whole Hokkaido area. It was very damaging to the life and daily activities of people in Hokkaido. Hence, I would like to see the addition of electricity supply security to the OGSi project.



Photo and Photo Story



Dr Irie and other participants in the 4th OGSN Forum held in Tokyo last 7-8 April 2018, during site visit at Cosmo Oil Company Chiba Refinery.

Middle East Update •

Saudi Arabia Suspends Oil Exports After Rebels Attack

by Shuji Hosaka

On July 25, Saudi Arabia announced its two tankers were attacked by Yemen's Shiite rebels, al-Ḥūthī, in the Red Sea near the Bab al-Mandeb Strait, one of the tankers sustained minimal damage. Al-Ḥūthī, however, denied Saudi's allegation and claimed they launched a missile on a Saudi warship, not tankers, off the west coast of Yemen. After this "attack," Saudi Arabia suspended oil shipments through the Strait.

The Bab al-Mandeb Strait connecting the Red Sea with the Arabian Sea is one of the world's busiest shipping routes. The Strait is around 25 kilometres at its narrowest point and considered not only as a vital link on the trade route between the Mediterranean and Asia, but also a critical choke-point for energy transportation with some 4.8 million bpd of crude and products shipments mainly from the Persian/Arabian Gulf to European countries (2016, US EIA.) Some of Asia's crude oil imports from North Africa, Kazakhstan, Azerbaijan and Russia also pass through this Strait. A full closure of the Strait would force tankers sailing from the Gulf, North Africa and Central Asian states bound to Europe and Asia around the Cape of Good Hope, which would add to enormous transit time and cost.

The Saudi -led Arab coalition started to attack Iranian-backed al-Ḥūthī in 2015 in order to rescue Yemeni President Abd Rabbo Hādī Maṣṣūr and his legitimate government which was driven away from the capital, Sana'a, by the Shiite rebels. Since then, al-Ḥūthī have often warned they can block the Bab al-Mandeb. Yemen's military with the help of the coalition launched an offensive in June to regain Yemen's main port of Ḥudayda near the Strait from al-Ḥūthī in a bid to cut off the primary supply line of the rebels.

Oil trade was not significantly disrupted by this "attack" and the suspension of Saudi shipments. Saudi Arabia soon resumed oil shipments. However, if the situation of Yemen deteriorates, the Bab al-Mandeb might again be a focal point of energy security.

"...if the situation of Yemen deteriorates, the Bab al-Mandeb might again be a focal point of energy security."



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Asia Pacific Energy Research Centre

The Asia Pacific Energy Research Centre (APERC) was established in July 1996 in Tokyo following the directive of APEC Economic Leaders in the Osaka Action Agenda. The primary objective of APERC is to conduct researches to foster understanding among APEC members of regional energy outlook, market developments and policy.

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