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APEC Oil and Gas Security Newsletter

Natural Gas Shortage in China

by Yoshikazu Kobayashi

As the coldness of winter is getting severe, natural gas shortage becomes an acute problem this winter in China. In order to prioritize the supply for heating demand in northern provinces of the country, a number of industrial gas users cut off their gas supply and are forced to reduce their business activities.

According to the report by Nikkei, two thirds of Chinese provinces are affected by gas supply shortage this winter. Gas supply rationing extends beyond northern provinces to inner provinces such as Sichuan or central coastal provinces such as Jiangsu.

The biggest reason of gas supply shortage was regarded as due to the Chinese government's fuel-switching policy from coal. Local governments in northern cities and provinces such as Beijing and Hubei promoted natural gas use by banning coal-fired boilers for industry and residential use and closing local coal mines to improve air quality. Thanks to this policy initiative, air quality in northern areas has certainly increased; but because the fuel switching from coal to natural gas was too rapid in some locations, so that the development of supply capacity and transportation infrastructure have not been able to catch up with the demand growth.

The supply shortage naturally increases the country's LNG import demand. China's LNG import in November 2017 increased by more than 50% compared to the same month last year and the utilization of LNG receiving terminals in northern China is reported to exceed 100%. The sudden increase of China's LNG procurement also becomes one of the major reasons for the surge of spot LNG price in Northeast Asia from $6/mmbtu in September last year to more than $11/mmbtu in January this year. ***(next page)***

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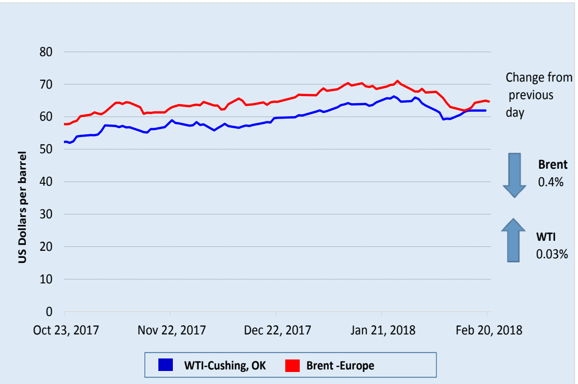
- Upcoming Event • EGCFE Oil and Gas Meeting
- Crude Oil Spot Price (WTI and Brent)
- Natural Gas Spot Price (Henry Hub)

CRUDE OIL SPOT PRICES



WTI—USD 61.91 (Feb. 20)

Source : US Energy Information Administration

> *"...biggest reason of gas supply shortage was regarded as due to the Chinese government's fuel-switching policy from coal."*

Natural Gas Shortage.....

To address the problem, the Chinese government took over the capacity to allocate natural gas supply from national oil companies and set a ceiling of the domestic gas price as emergency response measures. In order to improve the capacity of the country's gas market to absorb the seasonal demand fluctuation, the Chinese government will need to further promote infrastructure developments such as storage capacity and pipeline network. Policy coordination between coal consumption restriction and development of alternative energy supply infrastructure is also important. In international LNG market, a more liquid and actively trade spot market will help ease the volatile seasonal demand in China.

More LNG Through the Panama Canal

by Ichiro Kutani

The number of LNG ships that navigate the Panama Canal marked an incredible 859% increase—from 17 ships in 2016 to 163 ships in 2017. Most of the ships were thought to have loaded LNG at the Gulf Coast of the United States and delivered to Asian market. It was a big jump considering the fact that the expanded Panama Canal only started operation in June 2016.

According to Japan Maritime Center, the expanded Panama Canal shorten the navigation day to 20 from 31 days and 34 days when passing through Suez Canal and Cape of Good Hope, respectively. Shorter navigation day lowers the LNG shipping cost by $0.3-0.8/MMBtu and $0.2-0.7/MMBtu through Suez Canal route and Cape of Good Hope route, respectively.

For now however, only one LNG vessel is allowed to navigate the Panama Canal in a day, which can be translated to 365 as maximum number of LNG shipping through the canal in a year.

Discussion to increase navigation slot of LNG ship in Panama Canal is taking place.

Let's assume the maximum deliverable amount of LNG from a 180,000m3 size LNG vessel, through the canal is approximately 30Mton p.a. This amount of LNG is equivalent to the annual LNG consumption of Korea in 2016. If we compare the amount in terms of exportation, it is smaller than Australian export (approx. 42Mton p.a.) but larger than Malaysian export (approx. 24Mton p.a.) in 2016.

> *"...increasing the navigation slot of LNG ship....both the United States and Asian importers can enjoy larger benefit of energy security."*

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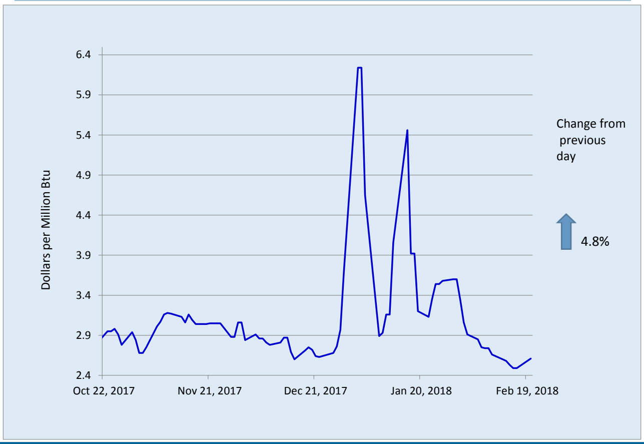
More LNG Through…..

LNG exported from United States is characterized by its flexibleness and price formation. Flexible LNG supply in terms of amount and destination is of value to adjust in-balance of supply and demand in importing country. Furthermore, non-oil-link priced LNG in import basket can reduce price risk.

If increasing the navigation slot of LNG ship will materialize, both the United States and Asian importers can enjoy larger benefit of energy security.

NATURAL GAS SPOT PRICES



Henry Hub—USD 2.61 (Feb. 20)

Source : US Energy Information Administration

Oil Market Update

by Tetsuo Morikawa

Oil prices rapidly surged in early January. On January 11th, Brent price surpassed $70/bbl for the first time in three years, reflecting the stock drawdown in the US and unstable situation in the Middle East. Market rebalancing is certainly underway mainly due to joint production cuts by OPEC and ten non-OPEC producing countries as well as solid demand growth. The compliance rate of the production cut in 2017 was as high as 95%. The demand is expected to have grown by 1.5 million barrels per day (mb/d) to reach 97.8 in 2017.

However, there is a considerable skepticism in the market as to whether this price increase will continue. The rationale of such skepticism is, needless to say, the significant potential of shale oil production. The US production at the stage of January 19th was 9.88 mb/d, up 12% from a year ago. Shale oil is the major source of this production increase. The rig count, an important indicator of production prospect, also on January 19th was 747, up 36% from a year ago. The number of drilled but uncompleted (DUC) shale wells is the all-time high at 7,493 in December 2017.

Hedging activities by oil producing companies at NYMEX WTI futures are also expanding, reflecting that producers are willing to invest for additional production.

With all these developments, IEA predicts in the monthly Oil Market Report published on January 19th that the US will produce as much as 10.4 mb/d and will be the largest producing country in the world in 2018. Therefore, it is no surprise that crude prices declined in early February. Given the fundamentals mentioned above, Brent price is likely to average $65/bbl in 2018.

"...such skepticism is, needless to say, the significant potential of shale oil production."

Prof Pedro Gamio Aita

Dr Pedro Gamio Aita, has almost 29 years of relevant experience in the fields of energy sector, planning, public affairs, management, networking, training, mostly in developing countries. He has a Master degree in Public Policies and finishes another in Political Science and Post-Graduated courses in Renewable Energy issues, Management, Environment Legislation, including Climate Change. As former Vice minister of Energy of Peru, he was the direct promoter and responsible of the New social and environment Regulation in the petroleum sector, New Regulation for Renewable Energy in Peru, energy efficiency, public-private partnership and climate change. He is currently working as Regional Manager for Latin America at Global Village Energy Partnership International. He is currently managing projects in Mexico, Honduras, El Salvador, Guatemala, Panamá, Colombia, Perú, Chile, Brazil and Argentina. Dr Gamio has a thorough understanding of the cross-cutting themes, such as gender and social equality (author of the books "Petroleum, Environment and Native Communities" and "Energy, where are we going?"). He was promoting and supervising 22 projects regarding entrepreneurs and access to energy in Latin America. He was Main Advisor in the Energy and Mines Commission at the Peruvian Congress. He was National Mandatory at Repsol Exploration.

Interview with Prof Pedro Gamio Aita

Prof Gamio has almost 29 years of experience in the field of energy. He has a broad knowledge on the energy developments in the Latin America. Prof Gamio was one of the experts in the recently conducted OGSE in Peru in November 2017. APERC OGS Secretariat was honoured to have him for the Interview with the Experts in this issue of the Newsletter.

APERC— In academia what are your research topics which are related to oil and gas security?

Prof Gamio —There are studies about gas mass use in the country, the monitoring of advances in the residential area, electric area and a few advances in transportation. There are as well investigations about diesel and the need to modernize a state refinery so that the heavy crude oil can be processed.

APERC— You have also been an advisor and part of the negotiating team of Peru at COP 20, delegate and lecturer at COP 21 in Paris. COP 21 Paris Agreement brings all nations together to exert efforts in creating sustainable future, how do you think the Accord impacts future oil or gas supply?

Prof Gamio — For a country which is among the 10 most vulnerable to climate change, the diversification of the energy matrix is relevant. The energy transition means working more as sources such as renewable alternatives and natural gas.

APERC— As an advisor and consultant to many international organizations, have you been involved or have provided advise on oil or gas security issues?

Prof Gamio —Yes, I have worked in the matrix diversification plan with natural gas and now with renewable alternatives.

APERC— As a former Vice Minister of Energy in Peru, were there cases that you have been confronted with threats of possible oil or gas supply disruption in Peru? If so, what were the cause – due to global oil and gas markets volatility, natural calamities, or geopolitical instability, among others—and how was this address?

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Interview.....

Prof Gamio —Yes, a permanent multidisciplinary planning group was formed in order to manage and to better the contingency plans of all parts involved, as well as to articulate everybody´s effort.

APERC— You were part of the team of experts in the recently conducted oil and gas exercise in Peru. What was your impression? Do you think this kind of exercise should be continued in other APEC member economies in the Americas?

Prof Gamio —This effort to work the climatic change scenes which the region faces is fundamental, many vulnerabilities have been identified.

OGSE IN PERU

Team of OGSE Experts including Prof Gamio together with other participants in OGSE in Peru held last 6-8 November 2017. See related story found in this page.

Photo courtesy of APERC

OGSE in Peru

by Diego Rivera Rivota

Peru was the most recent host of one of the APEC Oil and Gas Security Initiative pillar activities, the Oil and Gas Security Exercise (OGSE). The Fifth Oil and Gas Security Exercise jointly organised by Asia Pacific Energy Research Centre (APERC) and the Peruvian government through the Ministry of Energy and Mines, took place in Peru's capital, Lima on 6-8 November 2017. The event gathered around 30 Peruvian participants representing the most relevant stakeholders in the oil and gas industry, including officials from Peru's Central Government, representatives from companies, regional government officials and members of academia.

Peru's energy demand has been growing steadily since 2003 and this trend is expected to persist going forward. The Peruvian economy relies heavily on oil and gas consumption. Demand for these fuels is expected to continue growing at very high rates. Peru is a net importer of crude oil and refined products and a net exporter of gas. In this context, a secure and diversified supply of oil and gas is indispensable for Peru's economic growth and development.

APERC invited six renowned oil and gas security experts from the APEC region to form the OGSE Expert Review Team. The Expert Review Team's responsibilities were to assess, comment and provide recommendations to the Peruvian participants' responses on the presented emergency scenarios for oil and gas. The members of the Expert Review Team were Ms Martha Vides from the Latin American Energy Organization (OLADE); Ms Sylvia Larrea from the Inter American Development Bank (IADB); Dr Phoumin Han from the Economic Research Institute for ASEAN and East Asia (ERIA); Mr Hiraoki Maruyama from the Japan Oil, Gas and Metals National Corporation (JOGMEC); Mr John Powell from the Department of Energy of the United States; and Dr Pedro Gamio from the Institute for the Sciences of Nature, Territory and Renewable Energies at the Pontifical Catholic University of Peru (INTE - PUCP).

The first day was devoted to general presentations on the APEC OGSE, as well as the APEC Exercise Model Procedure (OGS-EMP). In addition, the Peruvian government presented their energy planning policy and approach to energy security. In the afternoon session, the first hypothetical supply disruption scenario was presented for oil and oil products. Participants discussed the possible impacts and actions to be taken and then presented to the Review Expert Team their responses. On the second day, a separate (***next page***)

OGSE.....

disruption scenario was presented for gas supply. Likewise, the Peruvian participants started a discussion on how to minimize the effects of such a disruption in the gas sector. After the participants' presentation of their responses, the Review Expert Team provided their assessment and recommendations for both scenarios.

APERC and the Review Expert Team are currently drafting the OGSE in Peru final report, in which a more detailed assessment and specific recommendations from the Review Expert Team will be included. The Final Report is expected to be published in April 2018.

Middle East Update

Iraqi Oil Export Hit Record High 3.82 Million b/d in 2017

by Akiko Yoshioka

Iraqi oil export is increasing. In December, the southern oil export from Basra port increased for four consecutive months and the annual average for the total oil export of the federal Iraqi government recorded 3.325 million b/d in 2017, of which 99% was from the southern export terminals. On the other hand, the agreement between federal Iraq and the autonomous Kurdistan Regional Government (KRG) for a joint northern oil export collapsed in mid-2017 because of the deepening mutual distrust. Consequently, the gross volume of oil that KRG handed over to SOMO, the federal Iraq's State Oil Marketing Company, at Ceyhan port in Turkey between January and June 2017 was merely 5.86 million bbl. It may be recalled that the two made a deal in the summer of 2016 in consideration for cooperating in the military campaign of ousting IS from Mosul, the Iraq's second largest city.

Since the KRG exported an annual average of 493 thousand b/d in 2017, separate from the federal Iraq through the Kurdistan pipeline to Turkey, the combined gross annual oil export of Iraq from both of federal southern export and KRG's northern export in 2017 reached an all-time high in the history of Iraq at 3.818 million b/d.

The next challenge for the Iraqi government will be the diversification of oil export routes along with the capacity expansion of production and export. Despite taking back Kirkuk and Bai Hassan oilfields from the KRG in reaction to the independence referendum forced through in September 2017, technical problems in those fields is hampering resumption of oil production. In addition, the northern oil export pipeline from Kirkuk to Turkey has suspended operations for nearly four years due to relentless bomb attacks by insurgents. Therefore, almost 300 thousand b/d of production capacity is currently left idle. The political negotiation with the KRG to resume the northern export through the Kurdistan pipeline may well not start until the next general elections in May 2018 are over, at the earliest. As an alternative, the federal Iraqi government is now discussing a plan for constructing a brand-new pipeline to Turkey.

In the short term, the government will focus on the expansion of southern oil export and production capacities including the installment of the fourth SPM (Single Point Mooring) with the nominal export capacity of 850 thousand b/d and the new bidding rounds for developing nine oil fields located on the borders of Iran and Kuwait scheduled in May 2018. Since most of oil export from southern Iraq are bound for Asian countries, it would be benefitting most of APEC member economies.

"....the agreement between federal Iraq and the autonomous Kurdistan Regional Government (KRG) for a joint northern oil export collapsed in mid-2017 because of the deepening mutual distrust."

Upcoming Event ●

4th Oil and Gas Security Network Forum

The 4th Oil and Gas Security Network (OGSN) Forum will be held in Tokyo on 7-8 March 2018 and preparations are almost in the final stage.

As in the previous, the forum will serve as a venue to form a network of working level officials in the APEC economies and experts from international/regional organizations. Experts from IEA, ACE, ERIA, JOGMEC and for the first time since OGSN started, OLADE. Oil and gas experts from APEC member economies are expected to make a presentation on the oil and gas emergency preparedness of their respective economies.

Part of the Agenda will be a site visit to an oil refinery located outside of Tokyo.

Result of the 4th OGSN will be reported in the next issue of the OGS Newsletter.

Upcoming Event ●

APEC Expert Group on Clean Fossil Energy (EGCFE)

Following the APEC Experts Group on Clean Fossil Energy (EGCFE) Coal Meeting held last September 2017, the Japanese government, assisted by APERC, will be hosting the EGCFE Oil and Gas Meeting on 8-9 March 2018.

The EGCFE leads the APEC Energy Working Group's (EWG) work on clean fossil energy, supporting EWG's overall efforts to promote economic growth, energy security and resilience, and environmental sustainability in the APEC region.

The respective oil and gas experts from APEC member economies are expected to make a presentation or report on notable development on clean fossil fuels in APEC Economies in the meeting.

Result of this event will also be reported in the next issue of the OGS Newsletter.

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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