

APEC Oil and Gas Security Newsletter

The Paris Agreement: Hope in the Future and Reality

In December 2015, historical climate accord was concluded in COP 21, the Paris Agreement.

The Paris Agreement is epoch-making in terms of number of economies which has committed to reduce greenhouse gas (GHG) emission. While the Kyoto Protocol covered only developed countries the Paris Agreement covers 188 countries including developing economies. The world has succeeded to move one step forward to create environmental sustainable future.

Nevertheless, there are some pessimistic views on the agreement. For instance, one is questioning lack of obligation for each country to achieve their reduction target. Then another is arguing that the sum of reduction target is less than the necessary GHG emission reduction amount to reach the goal of halving emission by 2050. Hence, should we regard the agreement as a useless one? No, we need to carefully think about it.

Today, many economies around the world are proceeding in energy efficiency improvement and expansion of renewable energy use. Economic principle alone cannot explain this trend since, in general, these kind of technologies are expensive than conventional ones. There is no doubt that the world has already started to move toward low carbon society. The Paris Agreement may boost or accelerate the transition of global energy structure. It is true that the agreement left something to be desired. However, if we underestimate it, we may suffer from *Galapagos Syndrome*.

However at the same time, we also need to pay attention on the reality of developing economies. There remain many economies where fossil fuel supply including oil and gas is prioritized in light of energy access and affordability. Even in developed economies, it requires long period of time to change their energy structure. Each economy would require balancing two different objectives; the necessity to cope with existing reality and to quest long-term goal.

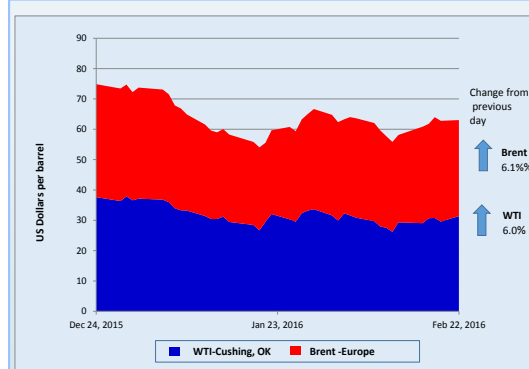
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- Natural Gas Spot Price (Henry Hub)
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CRUDE OIL SPOT PRICE

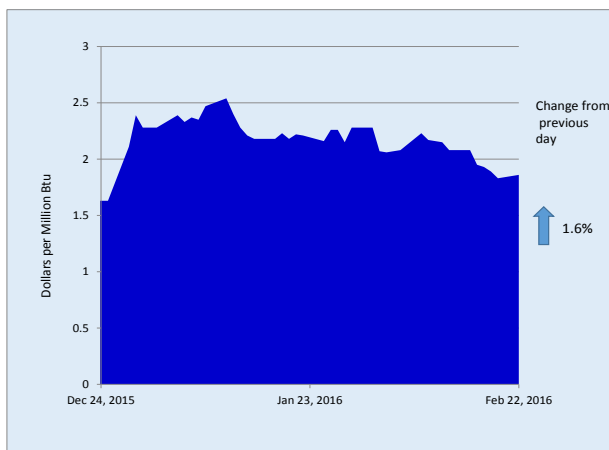


WTI—USD 31.37 (Feb. 22)

Source : US Energy Information Administration

“...may not bring significant physical impacts to demand-supply balance in Asia.”

NATURAL GAS SPOT PRICE



Henry Hub—USD 1.86 (Feb. 22)

Source : US Energy Information Administration

“The world has succeeded to move one step forward to create environmental sustainable future.”

New and Old Oil Supply to Asian Market

Amid the freefall of the international crude oil market, a possibility of additional new and old crude oil supply is emerging in the Asia Pacific crude oil market.

The new supply is emerging from the east end of the region, the United States. Since the 1970s, the United States had recognized crude oil as short supply products and banned its exports with a few exception (exports to Canada etc.). With the rapid growth of shale oil production, supply surplus particularly that of light sweet crude oil, become evident and the justification of the regulation became openly questioned. Republicans who supports the lifting of the regulation successfully obtained Democrats’ compromise by inserting the provisions for lifting the regulation to the annual budgetary law. The lifting is already effective and it is reported that two crude oil cargos have already exported to Europe at the end of December 2015.

The old supply comes from the western side, Iran. On January 16, EU3+3 countries and Iran implemented the Joint Comprehensive Plan of Action (JCPOA), an interim agreement, lifting the economic sanctions against nuclear development by Iran. Because crude oil export from Iran was severely restricted by the sanctions, there is a high expectation that the lifting of sanctions will increase the country’s crude oil export.

This new supply, however, may not bring significant physical impacts to demand-supply balance in Asia. Distance from the US to Asia and the narrowing differential between the US domestic crude oil price such as WTI and international crude oil price such as Brent will discourage active export from the US. It is also not easy for Iran to increase its exports because fierce competitions against other oil producers is inevitable given the current loose market condition. The recent diplomatic strife against Saudi Arabia may add another competition element between the two countries.

It is therefore too early to judge that these two new supplies will bring significant oil supply security benefits to Asia Pacific. Yet the existence of such additional supply itself provides the opportunity of diversification if market conditions allows and will be alternative source in case of emergency. The emergence certainly is a good news for the region and will contribute to the enhancement of the region’s energy supply resilience.

Middle East Update—Feud Between Iran and Saudi Arabia Likely to Remain

At the break of the New Year, Saudi Arabia severed relations with Iran, following attacks against Saudi diplomatic facilities in Iran by mobsters who were enraged by the Kingdom's action to execute a dissident Shiite jurisprudent. Regional organizations, such as the Arab League and the Organization of Islamic Cooperation, have followed suit in not only denouncing the Iranian government for its breach of the Vienna Convention, but also Iran's interference in other states' matters. Iranian leaders have reacted harshly against Saudi allegations by charging that "divine consequences" will fall on the House of Saud. For the moment, chances for mediating the two countries, which are at odds against each other over civil wars in Syria and Yemen, are extremely slim.

The outbreak of newly brewed tension between the two OPEC giants was not taken seriously by the oil markets in Europe and the U.S., which further plunged to its lows in 7 years. Since neither Iran nor Saudi Arabia is ready to cut its oil production in order to accommodate the weaker market demand, and that indications are there that Chinese economy is slowing down further, it is unlikely that the excess of supply will be rectified soon.

Flexibility and Security Challenges in the LNG Market

The first 50 days of 2016 witnessed a relatively quiet start of unprecedented expansion and transformation of the global LNG industry. Three major LNG production projects, which were previously expected to start exports from Australia and the United States by the end of last year, all slipped into the current year. Both demand and prices of gas and LNG around the world are relatively low even in the midst of northern hemisphere winter.

More than 100 million tonnes per year of incremental LNG export capacity is expected to come online in the world by the end this decade. One of the specific features of this expansion phase is an increasing portion of flexible supply among the new capacity. As a capital intensive LNG production project requires massive upfront investment, a final investment decision (FID) is normally made only after offtake commitments for most of the planned production capacity. *(next page)*

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"Competition is expected to intensify in the next few years between producers, portfolio players, and firsthand buyers to find eventual home for their flexible volumes."

Flexibility and Security....

Such an offtake commitment was traditionally made by a utility company or a national champion buying company in a consuming country until the last decade. In recent years, however, along with proliferation of consuming markets around the world, an increasing number of so-called portfolio players have made such LNG lifting commitments at LNG production plants without specifically designating final destinations of cargoes. Some of the traditional end-user companies have also adopted similar strategies more recently to obtain some flexible volumes to resell to different outlets depending on market conditions.

Although those players have preferred to enhance flexibility in the LNG market by having flexible LNG volumes, anticipating rather steady and healthy growth of the consuming markets in parallel with the planned rapid expansion of the global LNG production capacity, the outlook of the global LNG market is now much more uncertain, or more bearish, than anticipated a few years ago.

Competition is expected to intensify in the next few years between producers, portfolio players, and firsthand buyers to find eventual home for their flexible volumes. More LNG is expected to be produced based on shorter notices of final destinations, rather than long-term fixed designations.

This is also expected to have significant implications on future new project developments, as in the longer-term LNG end-users will have choices between existing suppliers with older long-term contracts expiring, the above-mentioned flexible volumes seeking homes and brand-new projects. In order to maintain steady growth of the LNG industry with comfortable levels of diversification and security of both supply and demand, grassroots production capacity should be added from time to time.

Innovative ideas are needed to realise new LNG production projects under difficult environment.

Excerpt from OGSS Series

The Impact on Oil Distribution by the Great East Japan Earthquake and Future Issues and Countermeasures

The Great East Japan Earthquake in March 2011 caused tremendous damage including the Fukushima Daiichi nuclear power plant which was estimated to be around 16 to 25 trillion yen.

The impact on infrastructures was also enormous: full restoration of electricity and city gas took about 100 days and 50 days respectively; all traffic lanes became available on February 3, 2012, nearly 11 months after the earthquake; and as for railways, only 91% has been restored even as of the end of June, 2014.

For a while, the oil industry was also heavily damaged and the major fear subsided only in April when the availability of petroleum at the time of disaster was reconfirmed.

A day following the earthquake (March 12), the government asked oil companies to maintain a sufficient supply capacity to perform a stable supply to disaster areas. The government ease the private sector stockpiling requirements by reducing 3 days on March 14, and another 22 days on March 21 from the total number of obligations in March.

Meanwhile, the private sectors established an emergency headquarters within the Petroleum Association of Japan (PAJ) to deal with the emergency situation. It implemented an around-the-clock emergency supply to socially important infrastructures (e.g. hospitals, etc.), municipalities and the Self-Defense Forces engaged in life-saving activities, in compliance with the requests from the Prime Minister's Office.

In addition, the private sectors structured new oil supply logistics to provide long distance transport by tankers, tank trucks, and tank cars beyond the usual commercial sphere, and required to cover damaged infrastructures such as oil refineries and oil depots, roads, and railways. At the same time, they established a cooperative system among oil companies mainly in disaster areas and promoted joint use of the oil storage facilities capable of shipping oils (*next page*)

The Impact...

and tank cars. Such cross-company efforts enabled the prompt supply of oil.

As for the supply of petroleum products, the volume of crude oil processed decreased by 30% just after the earthquake. It returned to about 90% level by the end of March and the shortfall was compensated by increasing the operation rates of existing oil refineries, cancelling export, performing emergency import and transferring oil products to disaster areas.

Furthermore, tank trucks were brought in from other areas to ease the logistical bottleneck of long-distance transportation caused by tank trucks washed away by the tsunami, and deteriorated road conditions.

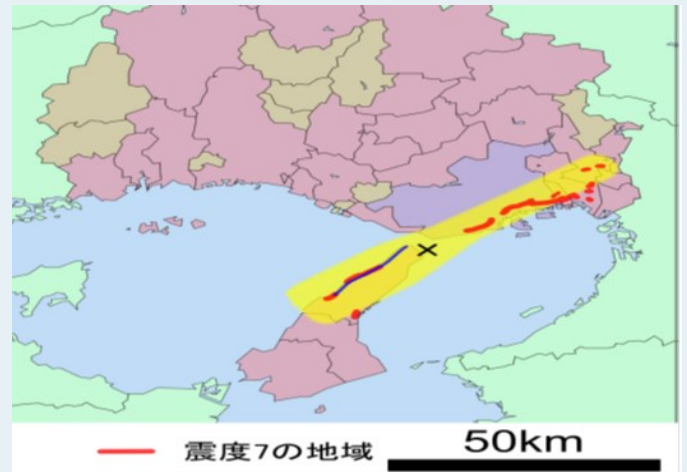
Post-quake retail prices of oil products from March to May were 1 to 3 yen per liter higher than the usual prices (at the national level), but the prices came back to normal in June, so that major turmoil or violent fluctuations didn't occur. Owing to the positive attitudes of oil companies and the oil distribution industry who did not take advantage of the situation, price of oil products did not increase and have instead considered the relationships with the customers from a long-term perspective.

The volume of oil shipments from March to August 2011 largely decreased over the previous year but returned to almost normal in September. In the meantime, the volume of gas shipments in April and subsequent months was higher than the previous year, partially because of reconstruction demand.

Measures taken by the private sectors based on the lessons learnt from the earthquake were, improving quake resistance of oil refineries and petrochemical complexes, toughen up them against liquefaction and participation in maintenance program of core service stations against disasters. On the government side, the Petroleum Reserve Law was revised (effective November 1, 2012), wherein the national reserve oil and LP gas could be released not only when oil import was insufficient but also when the amount to certain areas was not enough due to disaster. Moreover, the government mandated oil wholesalers to prepare beforehand a cooperative supply plan

against disaster for every 10 areas in Japan.

Whenever great earthquake occurs, restoration of infrastructure networks including roads, sea and air routes would usually take a long time and transportation of oil especially long-distance become difficult. Therefore, power consumers regarded as important infrastructures such as hospitals and fire stations, are required to improve their respective fuel reserved for in-house power generators (at present, approx. 50% reserved fuel good for more than 3 days) to be able to deal with temporary oil supply disruptions after earthquakes.



The Areas of Seismic Intensity of 7 (at the time of the Great Hanshin and Awaji Earthquake)
Photo taken from the study

Damaged service station in Kesenuma City



Photo taken from the study



Mr. Jonathan Elkind - serves as the Assistant Secretary for the Office of International Affairs (IA) and previously served as the Principal Deputy Assistant Secretary. Prior to joining the Energy Department, Mr. Elkind worked as a senior fellow at the Brookings Institution, focusing on energy security and foreign policy issues. He also founded and headed EastLink Consulting, LLC, an independent consultancy focusing on energy, environment, and investment. From 1998 to 2001, Mr. Elkind served on the staff of the U.S. National Security Council as Director for Russian, Ukrainian, and Eurasian Affairs. Between 1989 and 1998, he served in a variety of other government positions on the National Security Affairs staff of the Vice President of the United States, at the U.S. Department of Energy, and at the Council on Environmental Quality.

Mr. Elkind received a Master of Business Administration (MBA) degree from the University of Maryland. He also has a Master's degree in Soviet history from Columbia University and a Bachelor's degree from the University of Michigan.

Source : <http://www.energy.gov/ia/office-international-affairs>

Interview with Assistant Secretary Jonathan Elkind

Asst. Sec. Elkind is an expert on energy, environment and investment. He was also invited as a speaker in the 2015 LNG Producer-Consumer Conference held in Tokyo, Japan in September 2015.

APERC—As one of the invited speakers at the 2015 LNG Producer-Consumer Conference, discuss the importance of the conference.

Asst. Sec. Elkind— The 2015 LNG Producer-Consumer Conference provided a good opportunity for both government officials and company executives to actively share information and ideas on the challenges facing the LNG market. By bringing together regional and global experts we were able to have active and productive discussions.

APERC—How do you feel the recent decrease in oil prices affect supply?

Asst. Sec. Elkind - According to the U.S. Energy Information Administration (EIA), U.S. oil production peaked in April 2015 at 9.6 million barrels per day. Increased production in the United States contributed to the global oil surplus, causing prices to decrease. As oil markets stabilize companies are adjusting investments in oil exploration and development to align with market demand.

We are also seeing the effects oil prices on consumption. According to the International Energy Agency, global oil consumption grew by 1.8 million barrels per day or 2.0 percent in 2015, which is the fastest growth we have seen in 5 years and EIA estimates that U.S. gasoline consumption increased by 3.0 percent during the first nine months of 2015 compared with the same period in 2014.

In summary, low oil prices will cause oil markets to tighten over the coming years which increases sensitivity to changes in supply and it is an issue that DOE closely monitors.

APERC—Over your tenure at the Department of Energy, have you experienced any potential supply disruptions in the United States or any APEC member countries?

Asst. Sec. Elkind—During my tenure, the United States and APEC members experienced three significant energy supply challenges:

1) In early 2011, internal conflict caused a near-total disruption of Libya's oil exports and, despite relatively small market share, global markets reacted to the reduction in oil supply. In concert with a collective action by the other member countries of the International Energy Agency (IEA), the United States released 30 million barrels of oil from its Strategic Petroleum Reserve. The collective action calmed the market, and demonstrated our willingness to act when oil supply disruptions threaten the world's economies. (*next page*)

Interview....

2) Hurricane Sandy caused major power outages in the north-eastern United States in October 2012. About 8.5 million customers (residential, commercial, and industrial) were without power at some point during or after the storm. Hurricane Sandy caused significant damage to fuel distribution infrastructure as well. The U.S. Coast Guard helped get the ports open, and additional fuel tankers from the Gulf of Mexico were allowed to provide additional fuel resources to the region. Two years later, as part of the effort to strengthen fuel resiliency, Secretary Moniz announced the creation of the first federal regional refined petroleum product reserve containing gasoline. The Northeast Gasoline Supply Reserve holds one million barrels of gasoline between locations in the New York Harbor area, the Boston area, and South Portland, Maine.

3) The March 2011 earthquake and tsunami in Fukushima significantly disrupted Japan's energy supply, leading to a complete shutdown of Japan's nuclear power sector, and forcing the country to make up for the loss in power through increased imports of gas and oil. Thermal generation of electricity rose to 90 percent of Japan's total electricity output during the first four months of 2012. Later in 2012, Japan's electric power utilities consumed more liquefied natural gas and petroleum to make up for the shortfall in nuclear output.

Upcoming Event: The 2nd APEC Oil and Gas Security Network Forum

The Asia Pacific Energy Research Centre (APERC) is now preparing for the "2nd APEC Oil and Gas Security Network Forum". The forum will be held in Kagoshima City, Japan on 10-11 March 2016.

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, ASCOPE, HAPUA and ERIA are expected to participate in this undertaking.

The site visit is scheduled in Kiire Oil Terminal and Sakurajima Visitor Center (a volcano mini museum).

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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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