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APEC Oil and Gas Security Newsletter

Floating Liquefaction Can Enhance Supply Security

by Yoshikazu Kobayashi

It is widely known that the adoption of Floating Storage and Regasification Unit (FSRU) has significantly expanded the global LNG market by providing a quick and relatively low-cost solution for LNG import. Although not deployed as extensively as FSRU, floating liquefaction technology is also becoming a practical option of exploiting smaller and remote natural gas reserves and thus, increasing the supply capacity in the world.

Malaysia's Petronas Floating LNG (PFLNG) whose liquefaction capacity is 1.2 million tons per annum (mtpa) is so far the only commercialised project; but in 2018, two new floating liquefaction projects, namely Australia's Prelude (3.6 mtpa) and Cameroon LNG (2.8 mtpa) are scheduled to start up. Malaysia's Petronas plans to add another 1.5 mtpa unit in 2020, and ENI, an Italian oil and gas company, is constructing 3.3 mtpa Coral LNG project with floating liquefaction technology. It has indeed become a realistic means in liquefaction plant development.

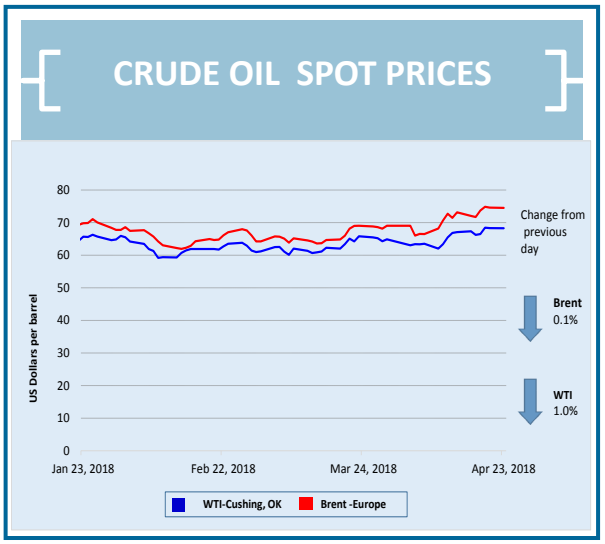
Floating liquefaction technology is usually applied to natural gas fields of smaller reserves at remote distance from onshore. Because it does not require securing land, it can significantly shorten the construction period and reduce environmental footprint. It can be a sensible option in countries where there is a shortage of local labor force because most of the liquefaction facilities are built at shipyard abroad. In Asia Pacific, there is a number of "stranded" natural gas fields which is remote from demand centers and is not large enough to be commercialised by conventional liquefaction technology. Floating liquefaction is therefore, an effective tool to develop such reserves.

Enhancing supply capacity, especially in Asia Pacific, greatly improves the regional energy security to ensure sufficient supply to meet growing LNG demand. Floating liquefaction also helps (***next page***)

In this issue

Highlights

- Upcoming Event ● APERC Annual Conference 2018
- Upcoming Event ● IEEJ/APERC International Energy Symposium
- Photo and Photo Story
- Crude Oil Spot Price (WTI and Brent)
- Natural Gas Spot Price (Henry Hub)



WTI—USD 67.61 (Apr. 23)

Source : US Energy Information Administration

"...it will undoubtedly contribute to resilience and supply security of natural gas in Asia Pacific. "

Photo and Photo story

PETRONAS FLOATING LIQUEFIED NATURAL GAS

The Petronas Floating Liquefied Natural Gas (PFLNG) is the world's first floating LNG facility. It successfully produced the first LNG drop from the PFLNG Satu on 5 December 2017.

Photo and caption courtesy of Petronas https://www.petronasofficial.com/floating-lng

"...this kind of disagreement ....often happens in all fields of energy policy in every country."

Floating Liquefaction .....

diversify supply sources and reduces import dependence by vitalising the stranded asset within the region.

The technology is of course, not free from drawbacks. It is an expensive liquefaction solution on unit basis, the capacity cannot be easily expanded, and is influenced by sea condition. Attracting external sources of financing is still difficult as its safety record has not yet been guaranteed. PFLNG and Prelude projects in fact, have been fully funded by the facility operators (Petronas and Shell, respectively).

In any case, its project costs can be reduced and managed by utilising and modifying existing LNG tanker into floating liquefaction facility. The operational safety can also be proven with the preceding projects' continued operation.

If floating liquefaction technology becomes an established solution, it will undoubtedly contribute to resilience and supply security of natural gas in Asia Pacific.

Energy Security and Local Public Opinion

by Ichiro Kutani

Recently in Canada, Kinder Morgan Canada has announced that they halted most work on the Trans Mountain pipeline expansion project. The project is expected to solve the bottleneck of transporting crude oil produced in landlocked Alberta to the pacific front British Colombia. The reason for halting the "national interest" project is due to the protests from the state government of British Columbia , municipalities, and environmental groups. The company chairman even said the company would cancel the project if legal challenges cannot be resolved before the end of May 2018. Immediately after this notice from Kinder Morgan Canada, the federal minister of Natural Resource Canada and Premier of Alberta state, reconfirmed to support the project by announcing its importance and benefit.

This is just one of several cases that demonstrates local public opinion affecting national policy/interest. Ideally, national policy including oil and gas security, desires to conform to public opinion. Unfortunately however, this is not always the case, as this kind of disagreement illustrated above often happens in all fields of energy policy in every country. For instance, issues regarding the role of nuclear and coal in Japan and Thailand's energy mixes, respectively. ***(next page)***

Energy Security …..

One way that a government would deal with this is by changing the policy that is publicly acceptable. If we consider the fundamental principles of democracy, it could be the right action. At the same time however, we also need to understand that local public opinion sometimes lacks scientific evidence or broader perspective. These aspects are what a government should be considering in policy-making, particularly on energy security policy. The government should take a firm role in national energy security as it cannot be fully attained by either market mechanism or local public opinion. Although government should give serious consideration on public will and reflect it in formulating energy security policy whenever possible, it also need to challenge local public opinion when necessary.

In this context, both policy making process and communication between stakeholders are obviously crucial. APEC could start sharing knowledge and experiences in these fields to form better oil and gas security policy .

Oil Stockpiling in Southeast Asia

by Tetsuo Morikawa

On OGS Newsletter issue No.16 in June 2017, the author reported about the 5th ASEAN+3 Oil Stockpiling Road Map (OSRM) in Manila. OSRM is an annual event and the 6th OSRM workshop was held on March 28th in Bangkok, hosted by Department of Energy of Thailand.

At the workshop, Cambodia, Laos, Thailand, and Viet Nam reported respective status of oil stockpiling, although other ASEAN member countries were absent. Thailand is the most advanced in the region— currently industries are obliged to hold 30 days stocks, the quantity will be increased further to 45 days in 2025. The workshop revealed that Laos has turned out to be the first country in the region with government stockpiling. However, generally speaking, oil stockpiling level in ASEAN countries remains lower than the IEA standard that is 90 days of net imports. Joint stockpiling scheme among ASEAN countries is an even more distant target.

Since a joint stockpiling scheme covering all ASEAN countries is a long-term agenda, it is realistic to develop by individual countries and/or joint stockpiling in selected counties perhaps with considerable demand size and geographical proximity.

Considering the financial burden to develop government stockpiling at designated site(s), utilising oil terminals as a stockpiling base might be an option to start with. For example, developing stockpiling in Indonesia is especially important due to its large demand and relatively small stocks. Establishing a joint oil sharing scheme between Indonesia and other countries will also enhance oil supply security in ASEAN. With significant storage capacity and many international oil companies and traders, Singapore can play an important role to enhance regional supply security if Indonesian players like Pertamina, hold stocks in Singapore on behalf of the Indonesian government.

Other countries outside the ASEAN could also have significant roles by way of offering storage capacity and refinery/infrastructure development for ASEAN. Japan, for instance, could offer spare storage capacity to ASEAN countries since the declining demand in the country might need lower stockpiling level.

“Joint stockpiling scheme among ASEAN countries is an even more distant target.”

Dr Han Phoumin

Han Phoumin has about 17 years of experience working at various international and inter-governmental organisations and multi-disciplinary research consortiums related to energy market and technologies, environment, integrated water resource management, governance, integrated water resource management, and economic development in the region of ASEAN and EAST ASIA. He specialised in economic development and policy and applied econometrics. Much of his career in the past 10 years involved with power sectors, especially with sustainable hydropower development, renewable energy research, energy efficiency, clean coal technology, energy security, and energy demand and supply forecasting. He is a co-author of published book on "ASEAN Rising Beyond 2015" and also co-editors to various publications such as "Energy Market Integration; Energy Security; Oil Supply Resiliency; Financing Clean Coal Technology; Environmental Regulations for Power Plants, Energy Subsidies Removal in EAS, Energy Outlook and Saving Potential in East Asia, Energy Poverty, and the development of National Energy Statistics in Cambodia, Lao PDR and (***next page***)

Interview with Dr Han Phoumin

In this issue of the OGS Newsletter, we are honoured to have Dr Han Phoumin, an Energy Economist from Economic Research Institute for ASEAN and East Asia (ERIA), sharing his various experiences in ASEAN and East Asia. Dr Han has been part of the OGSE/OGSI project as one of its experts since 2013. Please note that the views and opinions expressed in this interview are those of the expert and do not necessarily reflect the official policy or position of ERIA.

APERC—As a researcher, which topics have you conducted study in relation with oil and gas security in the ASEAN or APEC in general? Can you please explain briefly? What is your research plan in future?

Dr Han—I have been assigned to various research projects related to energy matters in East Asia Summit (EAS) region. I was a co-author of published book on "ASEAN Rising Beyond 2015" in which I wrote about energy security in ASEAN. I was also co-editors to various publications such as "Energy Market Integration; Energy Security; Oil Supply Resiliency; Development of Eco Town Study in ASEAN, Financing Clean Coal Technology; Environmental Regulations for Power Plants, Energy Subsidies Removal, Energy Outlook and Saving Potential, Energy Poverty, and the development of National Energy Statistics in Cambodia, Lao PDR and Myanmar" and other ongoing work with country specific such as the development of "Gas Master Plan in Myanmar, the development of energy efficiency in Mongolia, the development of energy master plan in Cambodia, and other downstream regulations with relations to oil and gas safety regulations and storages". In addition, I was chosen as expert for the peer review for the oil and gas subsidy removal in Peru, headed by USA Energy Department funded by USAID. More importantly I have been chosen by APERC as one amongst experts for the Oil and Gas Security Exercise for APEC activities.

Although all energy related studies as mentioned above are contributing to energy security in the region, two studies are very much related to oil and gas security in ASEAN. They are "Scenario Analysis of Energy Security in EAS Region and Oil Supply Resilience in ASEAN".

The study of "Scenario Analysis of Energy Security in EAS Region" uses three scenarios as key factors affecting regional energy security: supply uncertainty in the Middle East and Russia, low oil price, and use of cheap coal. In each scenario, the plausible outcomes are generated based on expert analyses. This study further proposes the following policy recommendations: (i) Create a resilient-energy system which means that importing countries need to have diversified fuel mix, shifting ***(next page)***

Interview…..

from fossil fuel consumption to more renewable energy. For exporting countries, this means becoming less dependent on oil revenue for domestic economic growth. (ii) The exporting country needs to have an earning margin, which is also fair enough to reflect affordability of importing countries. (iii) Encouraging, implementing and accelerating the deployment of high-efficiency coal-fired power generation and other environmental technologies are key to use resource effectively and held abate carbon dioxide emissions, and thus contributing to energy security.

The study of "Oil Supply Resilience in ASEAN" aims to share Japan's experience with ASEAN countries in dealing with oil supply disruption either from abroad or domestically as a result of natural or artificial disasters. After the Great East Japan Earthquake in 2011, Japan's supply of oil products, gas, and electricity was disrupted in some regions. As a result, the government and the industry comprehensively reviewed their energy policies after the event. Domestic oil supply was one of the issues, and a set of measures were taken to ensure the stable supply and the swift recovery in case of disruption. The increasing oil demand in ASEAN countries threatens supply security. Yet, oil stockpiling and other security measures have not been developed to the level of countries of the Organization for Economic Co-operation and Development. Many ASEAN countries are exposed to various risks of supply disruption, such as natural disasters, accidents, and terrorist attacks. The study analyses the current status of relevant oil supply security activities in the ASEAN region, identifies the required actions to enhance resilience in oil supply security, and proposes measures to enhance oil supply resilience in the region by using Japan's experience after the earthquake in 2011.

My future research plan will be developed to contribute to the EAS Mid- and Long-Term Energy Policy Road Map, in which four pillars are highlighted:

Pillar 1: Enhancement of Energy Supply Capacity: The research will likely involve innovative technical and finance support schemes and policies to develop necessary new and efficient energy infrastructure. The research scheme contributes and corresponds to APAEC program area no. 1-7.

Pillar 2: Enhancement of Energy security: The research will likely support the construction of a framework aiming at reducing the risk during normal time and tackling the risk when it occurs.

Pillar 3: Environmental Conservation & Climate Change Countermeasures: The research will support formulation and operation of energy usage with low carbon and pollution prevention measures (corresponding to APAEC program area no. 3-5).

Pillar 4: Building Basic Information and Knowledge Support to Energy Policy Transition: The activities will estimate energy supply and demand outlooks and recommend connectivity enhancement and budget resources as basis for sound long term energy policy making (corresponding to APAEC program area no. 1,6)

APERC—What do you think were the common cases of threats that have confronted those members in ASEAN or APEC? Please explain briefly what were the causes of such possible supply disruption—due to global oil and gas markets volatility, natural calamities, or geopolitical instability, among others? How did you address them?

Dr Han—Despite the region of ASEAN and APEC economies are varied in terms of economic, social, and environmental characteristics, however, they are sharing common challenges of maintaining/and/or improving energy security, keeping robust economic growth, and curbing CO_2 emission. Most countries in ASEAN and some APEC economies see the rising of fossil fuel import dependency from the Middle East, posting the region vulnerable ***(next page)***

Dr Han (cont..)

Myanmar" and other ongoing work with country specific such as the development of "Gas Master Plan in Myanmar, and the Energy Efficiency in Mongolia". Further he also published various articles and working papers related to energy issues and challenges. He possess a Ph.D. specialising in Economic Development and Policies from Kobe University, Japan, and a Master of Science specialising in Regional Economic Planning from Asian Institute of Technology (AIT), Thailand.

Interview…..

to any disruptions in the supply of oil and gas. Yet, oil stockpiling in ASEAN and some APEC economies and other security measures are yet to be developed to the level that can cope with unexpected supply disruption as it may arrive from external factors such as conflict in the Middle East, natural disasters, accidents, and terror attacks on oil supply cargo.

Almost 80 percent of oil export from the Middle East is bound for Asia. So far, the piracy and armed robbery has played a role in disrupting the free movement of vessels, causing delays, financial losses, and even loss of life. Data from the International Maritime Bureau (IMB, 2016) of the International Chamber of Commerce (ICC) reveals that globally in 2016, acts of piracy and robbery at sea have declined over the past 5 years. However, the piracy incidents in Southeast Asia and South Asia are either rising or continuing unabated which could post threat anytime on supply security to ASEAN and some APEC economies.

Beside oil supply security risks, ASEAN and APEC economies are regularly affected by natural disasters such as earthquakes causing tsunami, heavy rainfall which resulting in floods, and storms hitting domestic infrastructures. Tsunami, storms and floods are the major natural disasters that could significantly damage roads, rails, bridges and energy infrastructures. These risks combined with relatively underdeveloped/poor state of the road system in some countries of ASEAN and APEC result in the further risk of oil supply disruption, especially the supply transported by lorry. It has been observed that more natural calamities seem to increase due to climate change. The typhoons and floods could possibly damage not only roads but (in any extreme case/scenario) it possibly damages port and railways, and other infrastructure which could prevent oil transportation to major part of the country for domestic oil supply and distribution. In such extreme case but plausible, it may take at least weeks or even months before oil transportation can be resumed normally as some countries do not have any strategic oil stock piling to address the supply shortage during oil supply disruption. Oil supply in many countries in ASEAN and some APEC economies, have been undertaken by private companies, and the government's regulation is to impose these private companies to hold inventory (operational) oil stock at the terminals for about 20-30 days varied depending on countries. However, these oil importing companies, in reality, may hold operational oil stock of only about 15-20 days as the country may not have mechanism in place to monitor petroleum product stock holdings of these companies. The government's imposing on companies to hold inventory oil stock of about 30 days will require these companies to invest more for oil facilities in which oil importing companies may not comply with, if without government's inspection and monitoring system in place.

Very fortunately that some APEC economies have strong economy and energy resiliency infrastructure that could offer supports in terms of energy cooperation (i.e., oil stock sharing or any form of agreement such as oil stock ticketing) to support other countries during the oil supply disruptions. Since some APEC economies are also member of International Energy Agency (IEA), their required oil stock equal to at least 90 days of net import. Thus, they are bound by the joint commitment of IEA during the procedure of stock release to help members during distress.

Although some governments in ASEAN and APEC economies are putting efforts to develop the energy infrastructures such as building oil refinery and tapping more domestic oil production, but they may still face many challenges which could threaten energy security as a results of domestic issues such as good governance around these resources, as well as inadequate energy policy in both downstream petroleum products regulation and upstream of resource extraction. Furthermore, the energy security situation could be worsening from the view point of lack of fuel diversifications in the energy mix. In addition, some countries in ASEAN and APEC economies do not have explicit institution to deal with energy emergency response during the disruption of energy supply. Given all the background of energy landscape of ASEAN and APEC economies, below are suggested implications to the governments and stakeholders for considerations: ***(next page)***

Interview…..

–As the regions are expected to have stable economic growth in the medium to long term, in which industry sector will play major role to contribute significantly to Gross Domestic Product (GDP), many countries in ASEAN and APEC economies will need a stable, reliable, and affordable energy price to ensure that products are competitive to global market. In this regard, Countries may need to establish an institution such as National Emergency Strategy Organization (NESO) to deal with energy supply disruption in the future.

–ASEAN and APEC economies may consider establishing hard infrastructure such as oil stock piling by the government, on top of what oil importing companies holding inventory oil stock at 20-30 days of net import. Having oil stock is very significant to ensure that important industries and sectors such as hospital, food industries, electronics, are well protected during emergency response to energy supply disruption. Having own stock of oil and gas is a good signal to investors, and it could attract more important investment to the regions such as electronics and others as these sectors will require stable energy supply without black out, and energy input is key to overall production cost to ensure industries remain competitive to products produced outside of the region.

–Policy makers may need to develop energy policies to shelve the country from potential risks by bringing energy resiliency through appropriate energy policy and energy infrastructure investment such as oil receiving terminals, ports, pipelines, and strong electricity grids. Besides these hard infrastructure, energy efficiency and conservations (EECs) policies are low-hanging fruit, but they require policy makers be committed to policy formulation, effective implementation and monitoring on all EEC's policies. These EECs' policies are expected to save lots of energy at the final consumption sectors (industry, transportation, commercial and residential sectors) which contribute to energy security.

–In addition, the region could see all huge energy saving in the transformation sector if policies be formulated to ensure that new fleets of power generation be deployed for high efficiency and low emission power generations. Collective measures and actions to rapidly develop and deploy energy efficiency and saving in all sectors and double the share of renewable energy such as solar, wind, and biomass power generations to the overall energy mix for inclusive and sustainable development are also highly recommended as a holistic approach.

APERC—Also in your collaboration with the ASEAN you have somehow came across on ASEAN Petroleum Security Agreement (APSA). Do you think an APSA-type arrangement can be applicable to APEC region as a whole or other sub-regions in APEC?

Dr Han—First of all, APSA is an agreement signed and ratified by all ASEAN Member States. APSA can be seen as a substantial achievement among ASEAN Member States, laying the foundation for responding collectively in the event of a severe disruption of petroleum supplies. It is a clear recognition of the enhanced security that comes from coordinating response policies and acting in solidarity in an oil supply crisis. Unfortunately, APSA has yet to be made operational in reality due to some reasons that need to be more specifics in terms of the need to developing operational manual which will serve as a guideline for the functioning of the APSA institutional body. Another important issue of APSA is the need to have clear roles and responsibilities of the APSA Secretariat, which is necessarily central to the operationalisation of APSA.

Nevertheless, through APSA, ASEAN Member States has a right to request assistance from other Member States only when country faced/met the following:

◊ Country in distress experienced a shortfall which is a) exclusively due to natural calamity, explosion of facili ties or war; and b) continuous over a ***(next page)***

period of at least 30 days; and c) of at least 10% of the daily average domestic consumption of crude oil, petroleum products and natural gas over the last twelve (12) months; and,

◊ Country in distress has implemented short-term measures to reduce its daily average domestic consumption of crude oil, petroleum products and natural gas.

If all Member States collectively decide to meet the submitted request then all Member States shall endeavor to supply crude oil, petroleum products and natural gas, on a voluntary and commercial basis, to the Member State which submitted the request for assistance, in the aggregate amount equal to 10% of the daily average domestic consumption of crude oil, petroleum products and natural gas of the Member State which requested assistance.

However, the above conditions based on experts' view may be difficult to have the APSA trigger because 10% of consumption is a very high threshold, particularly when considering both oil and natural gas combined over an extended period 30 continuous days of such severe shortage is an extraordinary length of time. If APSA is to be operational, there is an urgent need to have an effective emergency response system in place first in each ASEAN member states, because having emergency measures is a prerequisite to requesting assistance and receiving assistance from other Member States during crisis. However, the establishment of emergency oil stockholding seems never been clear in APSA which could be a major obstacle to the operationalisation of APSA.

Making APSA operational will benefit the ASEAN member states in which the benefits from energy security and cooperation could go beyond the energy itself. Thus, if APSA is operational, it will surely contributing to member of APEC because some APEC's members are also ASEAN members. APSA if operational should play central role to bridge the ASEAN to APEC in terms of energy security, oil stock piling and coordinated emergency response measures (CERM).

The operationalisation of APSA may need to address few more elements bellows which are critical for the operationalisation of APSA:

◊ Having each Member State clarifying the specific emergency measures that would allow participation in a coordinated action for "Short term emergency measures" and "Coordinated emergency response measures". A specific commitment by all Member States to establish such measures would significantly strengthen APSA.

◊ Standardisation of methodology –A clear methodology regarding calculations of baseline measures and operating procedures should be elaborated and disseminated among Member States, for having trigger of APSA.

◊ Data and information gathering – Data is a critical component of any emergency response system, yet APSA does not sufficiently elaborate a framework for assuring gathering and processing of the data necessary under the CERM. The specific data requirements necessary for the established methodology, including definitions of data points and timeframe of regular and emergency data gathering, should be determined. This is particularly needed to allow the Secretariat to properly verify requests for assistance submitted by the Member State in distress.

◊ Lastly, of course, having strong and operational APSA body.

APERC—Finally, you have been part of the OGSE and OGSI projects of APERC as one of the oil and gas security experts. Can you share with us your impression on the oil and gas security exercises that APERC was conducting? What lessons can APEC learn from these projects?

Dr Han—First, I am very grateful to Mr President Takato OJIMI, and Dr. Kazutomo IRIE, the General Manager of APERC, for their kindness and professionalism in leading the important task of conducting the Oil and Gas Security Exercise (OGSE) in APEC economies since 2013, following the APEC Energy Ministers' directive to pursue ***(next page)***

Interview…..

regional cooperation on supply emergency response through workshops and exercises. As such, ERIA has been invited to join along the expert team in the region from the beginning where I am very fortunately been participating from inception.

APERC held the first two oil and gas security exercises (OGSE) in 2013—the Joint Southeast Asian Exercise in Bangkok, Thailand, and the Indonesian Exercise. In November 2015, APERC officially launched the Oil and Gas Security Initiative (OGSI) expanding the program related to supply security consisting of three pillars (OGSE, OGSN, and OGSS). The Philippines hosted the 3rd OGSE and the first under the OGSI in December 2015. Subsequently, Australia and Peru voluntarily hosted OGSE in 2017. Russia and Japan hosted OGSN in 2017 and 2018, respectively.

From my points of view, there are a lot of benefits the APEC economies gain from the OGSE to prepare the country's readiness to address the issue on energy supply security, and on how to deal with the threats of possible supply shortage during emergency situations. All APEC economies have different institutional structures to deal with emergency crisis. However, not all countries have National Emergency Strategy Organisation (NESO) to deal with oil and gas emergency response. All participating economies in the exercise so far have energy policy framework, and all participates to the exercise are aware of the regulations and acts to deal with emergencies situation. The energy security policies are varied from economy to economy, and they are generally framed on each economy's perception of own security. All participating economies in the exercise stressed the importance of communication strategy; however the level of preciseness and how they reach out to public will need to be further enhanced through clear communication plan and strategy such as who will announce the emergency plan during the emergency time is the most critical. All participating economies in the OGSE understood well about supply measure during the emergency response. However, the level of preciseness will need each economy to have good data and information to assess their energy system resiliency during distress time. They also understood well about demand restriction measure during the emergency response. All and all, all participating economies in the OGSE are doing very well with the procedure-wise. However, all economies realised the need to have good data and information for them to assess precisely the impacts on their energy system in case of disruption of oil and gas. Furthermore, all participating economies in the exercise expressed the importance of domestic oil and gas inventory, physical oil stock, and regional cooperation for the assistance from members during oil and gas emergency response.

Again, my view on OGSE is, very successful and big positive impacts for countries to strengthen their energy security for both hard and soft infrastructure to deal with oil and gas disruption. More importantly, OGSE is the capacity buildings to APEC economies whose economy's readiness is yet to be prepared for oil and gas disruption, and it is also a forum of exchange of experiences and practices amongst APEC economies for oil and gas emergency response and measures taken by each economy.

From the 1st to the 4th OGSE, there are lots of changes for country's preparedness for oil and gas disruption, particularly participating economies and involved agencies have collected a lot of data and information to assess their energy infrastructure as well as their ability to cope with distress during oil and gas disruption. Furthermore, their institutional body to deal with oil and gas disruption such as NESO or similar body have gains strength and knowledge.

APEC economies will continue to benefit from the OGSE and the positive impacts will be huge for APEC economies' readiness to respond to oil and gas disruption. Eventually, all APEC economy will have both hard and soft energy infrastructure in place, which are resiliency to risks causing any oil and gas supply disruption to the region and to each economy.

I wish the OGSI Programme continue to have successes with fully supports by all APEC economies.

Middle East Update

Securing Oil and Gas Export from the Middle East

by Yasuhiko Nagata

Domestic energy demand, especially electricity in the Middle East has been surging rapidly due to the economic expansion and population growth. As oil and gas reserves are the richest among the world, the countries in the Middle East are keen to maintain a strong revenue stream from exports of crude oil and refined products.

One of the factors in the energy demand explosion is caused by the lower energy prices, leading into the inefficient use of energy. Therefore, most countries in the Middle East have started eliminating subsidies on various energy including fuel oil and electricity. For example, Saudi Arabia revised its electricity tariff and gasoline price upward again effective January 2018.

While both oil and gas-fired power plants are widely used for base load supply, the need to reduce reliance on these fuels means that renewable or nuclear power plants could be the substitutes. In Saudi Arabia, Riyadh finds some impetus to develop solar energy and wind power projects under the National Transformation Program initiative. Saudi Arabia looks into diversifying away from the traditional resource and is targeting to develop 3.45 gigawatts (GW) of renewable energy by 2020.

Fuel switching has become an urgent and crucial issue in the Middle East. UAE is about to start operating its first nuclear power plant, while its energy minister recently announced the tendering of a renewable energy project of up to 1 GW per year for power generation. Iran has started to build their second nuclear power plant in Bushehr in March 2017. Egypt, too, is considering introducing nuclear energy.

Improving energy efficiency through subsidy optimisation and accelerating diversification of energy sources strengthens export capacity of oil producing countries in the Middle East; thus ensuring the stability of oil supply for APEC region.

4th Oil and Gas Security Network Forum in Tokyo

by Fang-Chia "Yoshika" Lee

The 4t^{h} Oil and Gas Security Network (OGSN) Forum was held on 7 March 2018 in Tokyo, Japan. The participants include 5 experts from International Energy Agency (IEA), ASEAN Centre for Energy (ACE), Economic Research Institute for ASEAN and East Asia (ERIA), Latin American Energy Organization (OLADE) and Japan Oil, Gas and Metals National Corporation (JOGMEC), respectively, as well as delegates from 16 APEC member economies. This is the 2nd biggest forum in terms of the number of participating economies, next to the 2nd OGSN Forum which was held in Kagoshima in 2016.

The Forum started with an opening session, with representatives from Ministry of Economy, Trade and Industry, Japan (METI) and JOGMEC, introducing Japan's oil and gas security policy. Followed by outcome report of the latest Oil and Gas Security Exercise in Peru, where all the participating experts agreed it was a great exercise that it brings the government awareness of importance of energy emergency response. The Peruvian government also gave positive feedback on the Exercise, stating they will include the emergency response in their future energy plan.

Following the discussion on Oil and Gas Security Exercise in Peru, APERC, IEEJ and other invited international organisations gave respective presentations on their latest work on energy security. It is the first time for OLADE to participate OGSN. OLADE representative introduced the establishment background of OLADE, as well as the three major pillars of OLADE's focus – energy security, sustainable energy and access to energy. In addition, various OLADE members adopted sustainable energy development due to vulnerability to climate change. ***(next page)***

4th Oil and Gas…..

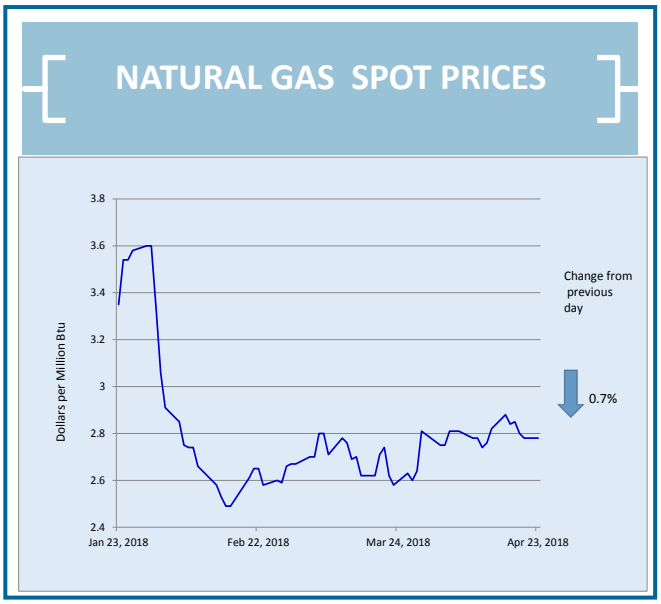
In the last session, each APEC economies gave a presentation to update their oil and gas supply and demand situation and policy or government reforms. For instance, Australia advocates for a greater regional IEA focus, where Asia is driving global oil consumption growth while IEA membership is limited to the two ends of the regional supply chain. Chile plans to build 3 LNG terminals with total capacity of 33.5 mcm/d by 2020. Malaysia introduced Third Party Access (TPA) in 2017, which will encourage competition and new suppliers' entry. Mexico becomes a net gas importer in 2016 as domestic gas production continues to decrease.

All economies gave positive feedback and recognised the importance of OGSN, stating they learned a lot from each other economy's presentation. The OGSE in Peru final report will be published in May and will be sent to EWG members for comments. The next OGSN Forum is scheduled to be held in Sendai City, Japan in April 2019.

Photo and Photo story

The OGS Experts including Dr Phoumin Han who appeared in this issue of the OGS Newsletter; member economies' representatives , officials and staff of METI and APERC who participated in the 4th OGSN Forum held in Tokyo, Japan on 7 March 2018.

Photo courtesy of APERC OGS Secretariat



Henry Hub—USD 2.78 (Apr. 23)

Source : US Energy Information Administration

Upcoming Event ●

APERC Annual Conference 2018

The Asia Pacific Energy Research Centre will holding its annual conference on 30-31 May 2018.

The annual conference showcases APERC's current and future activities that respond mostly to the Ministerial directives in addressing energy security and environmental challenges .

One of the sessions will focus on the implications of the three scenarios used in the preparation of the 7th APEC Demand and Supply Outlook, on energy sector investment, trade, and geopolitics. It will begin with an overview of the energy investment, trade, and security analysis included in the Outlook. The it will continue with detailed discussion on these topics, including the geopolitical implications of those scenarios.

Distinguished speakers invited for this session are expected to deliver presentations on energy security, trade and investment.

Upcoming Event ●

IEEJ/APERC International Energy Symposium

On 1 June 2018 the IEEJ/APERC International Energy Symposium will also be held. This will be the 4th joint symposium organised by IEEJ and APERC.

The first IEEJ/APERC International Energy Symposium was organised in 2015 as a special "pre-event" before IEEJ and APERC celebrated their 50th and 20th anniversaries in 2016., respectively Since then, it has been held once a year as a major event for IEEJ and APERC to address world-wide topical energy issues inviting distinguished speakers to discuss and share their thoughts on the selected issues.

The joint Symposium 2018 will have an overall theme (tentative) of "Rethinking the Global Energy Governance". One of the sessions will address issues on the perspectives of energy geopolitics.

Results of both conference and symposium will hopefully be included in the June 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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