

LPG Market at Forefront of Shale Revolution

Ken Koyama, PhD
Chief Economist, Managing Director
The Institute of Energy Economics, Japan

On April 14 and 15, I had an opportunity to attend an international conference on liquefied petroleum gas (LPG) in Singapore. Deep and wide discussions at the conference focused on LPG issues including present and future supply and demand in the Asian LPG market, impacts and future courses of U.S. LPG export expansion, LPG price trends and pricing problems, LPG tanker market trends and the positioning of LPG as a petrochemical material. I learned much knowledge about these issues at the conference. From my perspective on the international energy landscape, I here would like to review particularly interesting points made at the conference.

The most impressive point for me was that I could reaffirm that the LPG market has been exposed to the impact of the U.S. shale revolution ahead of other energy markets and that market players are implementing strategies responding to the impact. The focus of interest for energy market players regarding the shale revolution has included the impact of fast-expanding shale gas production and growing U.S. liquefied natural gas exports on the Asian LNG market, and the easing international oil supply-demand balance and crude oil price plunges through a sharp shale oil output expansion. In reality, however, dramatic and structural changes have emerged in the LPG market well ahead of LNG and crude oil markets.

The United States, which had been a net LPG importer, has rapidly expanded LPG production and exports in line with the sharp increase in shale gas and oil output. It turned to a net LPG exporter in the early 2010s and replaced Qatar as the world's largest LPG exporter with LPG exports at some 14 million tons in 2014. The LPG market change has thus become a harbinger of a future LNG market change where the United States is expected to affect Qatar's position as the world's largest LNG exporter. Given progress expected in present LPG export projects, U.S. LPG exports are forecast by some people to exceed 30 million tons in 2020, accounting for 30% of the global LPG market.

Participants in the Singapore conference also discussed how the recent plunge in crude oil prices would influence U.S. LPG exports. I felt that they were still divided over medium to long-term impacts of oil price plunges on the LPG market in which shorter-term problems attract more attention than in the LNG market. But they dominantly expect that U.S. LPG production and exports will basically sustain an expansion in line with a continued increase in shale oil and gas output unless oil prices remain extremely low.

The substantial expansion in U.S. LPG supply has triggered great changes in the global or Asian LPG market, including diversification of supply sources, relaxation of the supply-demand

balance, price drops and effects on price formation. The Middle East as a whole still maintains the largest global LPG market share of nearly 50%. But the share is expected by some people to fall to less than 40% in 2020 due to a future increase in U.S. supply after Qatar lost its position as the world's largest LPG exporter to the United States. Meanwhile, Russia's LPG supply expansion, though having no direct relations with the shale revolution, has also contributed to LPG importers' diversification of import sources. While LPG demand in Asian emerging countries such as India, China, Indonesia and Thailand has been expanding, supply is growing enough to satisfy the expanding demand, leading the LPG supply-demand balance to substantially ease. In the Asian LPG market, the Saudi-fixed contract price, known as CP, has served as a benchmark. Under the abovementioned relaxation of the supply-demand balance, the benchmark CP has recently declined to less than \$500 per ton from the \$800-1,100 range between 2011 and the first half of 2014. Factors behind the CP drop include the crude oil price plunge as well as the easing LPG supply-demand balance.

Factors behind the CP fall also include U.S. LPG's growing inflow into the Asian market and its impact on pricing. U.S. LPG prices are based on the benchmark Mont Belvieu (MB) price that depends on the supply-demand balance for the product (as is the case with the Henry Hub price for natural gas). Prices of LPG exports from the United States, based on the MB price, have declined substantially on an expansion in U.S. supply, occasionally widening their gaps with the remaining high CP to more than \$400. The large price gaps have allowed MB-based U.S. LPG imports to become favorable for Asian buyers even with transportation and other related costs taken into account, leading to sharp growth in U.S. LPG imports into Asia. U.S. LPG now accounts for 14% of Japan's total LPG imports, the third largest share after those for Qatar and the United Arab Emirates.

Competitive U.S. LPG's massive inflow into Asia has affected prices of rival Middle Eastern LPG, bringing about the sharp fall in the CP. The CP (and MB) fall has narrowed the CP-MB gap to around \$200, shaking the economics of MB-based U.S. LPG imports. But U.S. LPG imports are still useful for diversifying supply sources and checking rivals. All these points regarding U.S. LPG have interesting implications for the expected future growth in U.S. liquefied natural gas (LNG) exports and its impacts on the supply-demand balance and LNG pricing.

Another interesting point is that LPG market players in Japan, the largest LPG importer in Asia and the world, have foreseen the abovementioned major changes and made strategic responses to them, helping accelerate market changes. Major Japanese market players have anticipated moves of "game changers" in the U.S. LPG market, expanded U.S. LPG imports and taken advantage of the import expansion for possessing more LPG carriers to increase transportation capacity and use the increase for strategic purposes and for developing international trading responding to growing LPG demand in Asian emerging countries. They have thus taken very interesting actions. In this respect, participants in the Singapore conference indicated their great interests in the Japanese LPG industry's restructuring (the establishment of the Big Three setup comprising Astomos Energy, ENEOS Globe and Gyxis). We must pay attention to the point that the industry restructuring and the abovementioned aggressive international strategies have resulted from these Japanese market players' efforts to enhance their and their industry's competitiveness in the face of difficult conditions represented by the mature Japanese LPG market and to improve their international competitiveness for their growth.

In the LPG market that is changing at the forefront of the shale revolution, Japanese and other major players are implementing aggressive international strategies. Oil and LNG market participants will have to closely watch the future LPG market in a bid to learn lessons.

Contact: report@tky.ieej.or.jp

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