

Increase in LPG imports from the United States due to the Shale Revolution

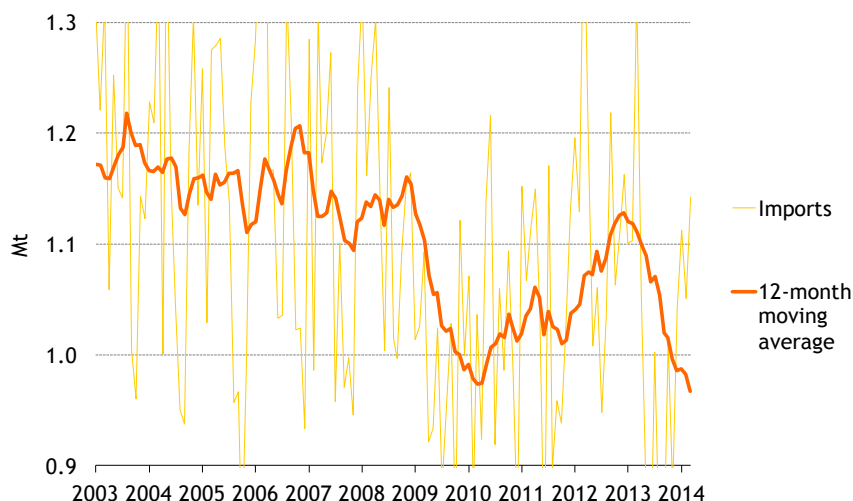
—Overall imports decrease below one million tonnes a month—

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LPG imports decrease to the levels of about 30 years ago

Imports of liquefied petroleum gas (LPG) are decreasing (Figure 1). After rising to 13.33 million tonnes in FY2012, the volume of LPG imports dropped to 11.61 Mt in FY2013, falling below the 1 Mt/month line. This is the lowest level in almost 30 years, even lower, albeit slightly, than FY2009 affected by the Lehman shock.

Figure 1 LPG imports



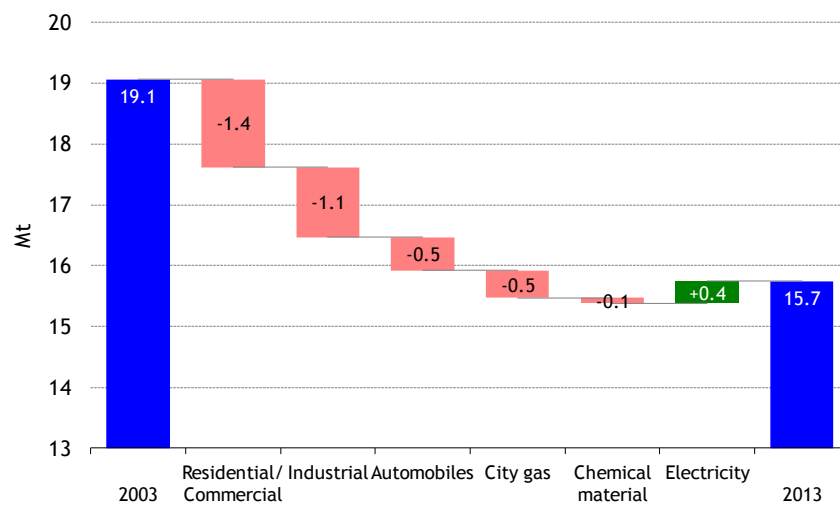
Source: Ministry of Economy, Trade and Industry “Petroleum Statistics”

This is not because imported LPG is being pushed out by increased production of LPG by domestic refineries. In fact, the output of refineries is levelling off in the mid-term due to the gradual decline in crude oil throughput.

The decrease in LPG imports is due to falling demand rather than competition among suppliers. In 2013, the demand decreased by 1.16 Mt year-on-year to 15.74 Mt. This is 17% or 3.32 Mt less than a decade ago (Figure 2). The true cause of this trend is energy saving and fuel switching in the residential and commercial, and industrial sectors. The gradual reduction of LPG-fuelled vehicle fleets, particularly taxis, and the switching of city gas material have also contributed to this decrease. LPG for power generation increased to 0.86 Mt due to the intensive operation of thermal power plants caused by the shutdown of

nuclear power plants after the Great East Japan Earthquake (peaking at 1.56 Mt in 2012). However, this was nowhere near enough to cancel out the decrease for other uses.

Figure 2 Contribution to the change in LPG demand (2003-2013)

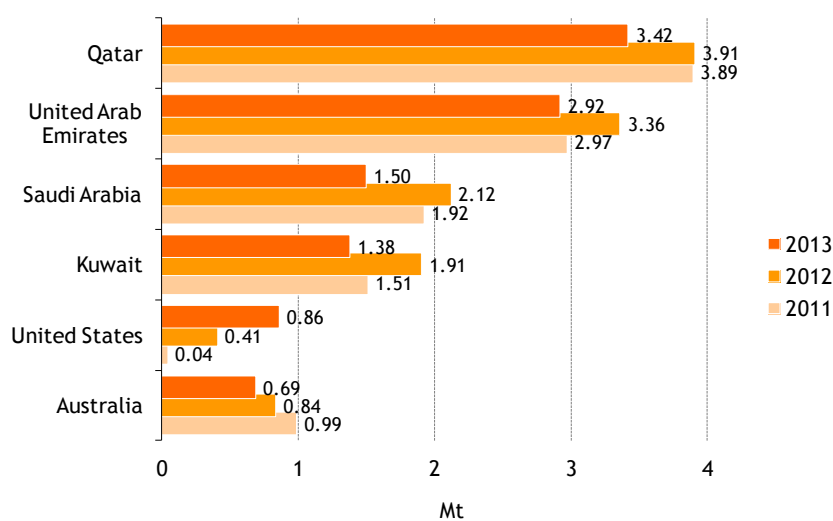


Source: Estimated based on the information from Japan LP Gas Association

Imports declining from the Middle East, rising from the United States

Due to the fall in imports caused by decreasing demand, imports from most of major import sources, particularly the Middle East countries, fell below that of the previous year (Figure 3). In 2013, the imports from Qatar, the United Arab Emirates, Saudi Arabia and Kuwait all dropped by 0.4 Mt to 0.6 Mt from the previous year (dependence on the Middle East dropped to 78% from 84%).

Figure 3 LPG imports (major suppliers)

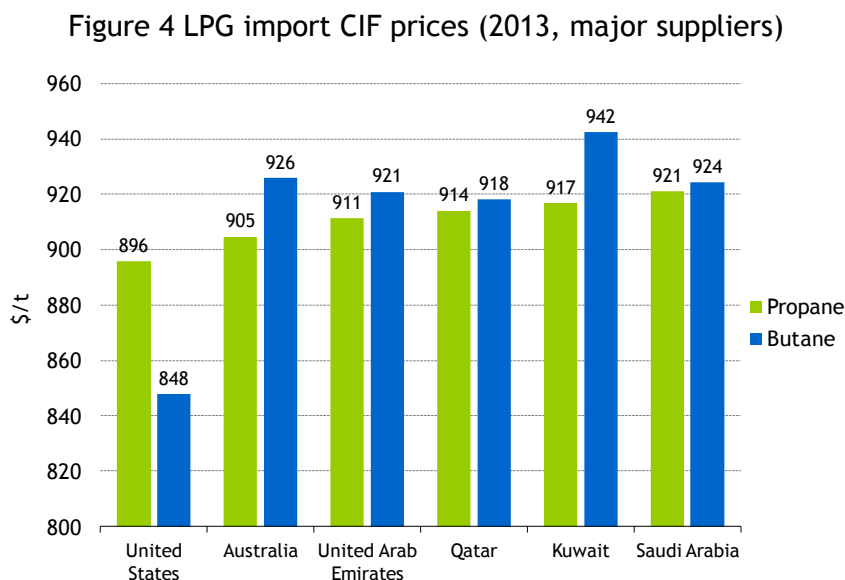


Source: Ministry of Economy, Trade and Industry "Petroleum Statistics"

Under such circumstances, the only exception was the imports from the United States, which increased. Imports from the United States, which were negligible in 2011, soared to 0.86 Mt in 2013 due to the launch of term-based imports, and are expected to exceed 1.8 Mt by 2016. The United States is now the largest LPG exporter to Japan after the Middle East countries. The share of the United States expanded to 7%, moving up from 11th to fifth place. Behind this result is the Shale Revolution, which has made the United States one of the world’s largest LPG exporters.

Expectations for cheap LPG due to the Shale Revolution

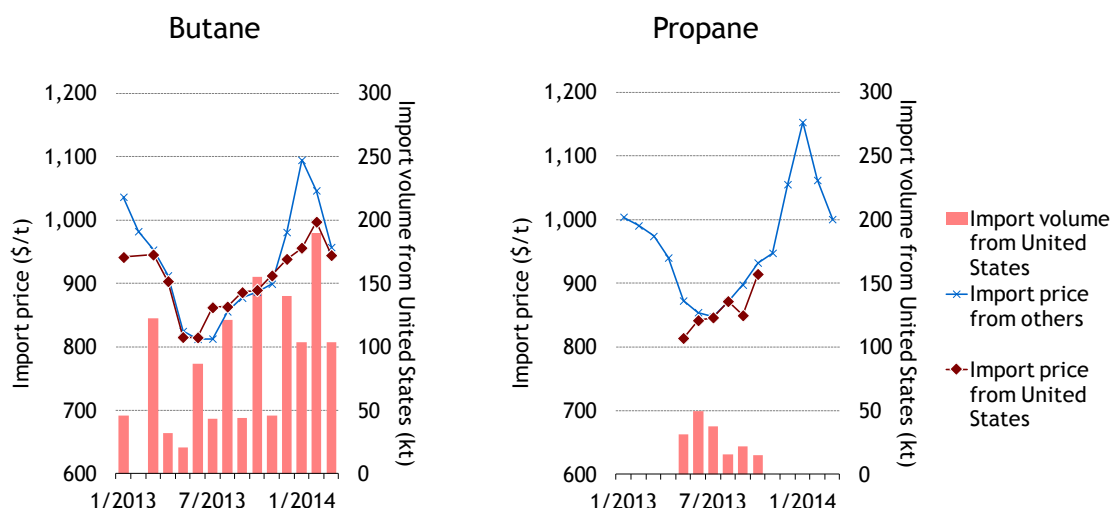
Hopes are rising for purchasing cheap LPG from the United States, even ahead of liquefied natural gas (LNG). In 2013, the import CIF price of LPG from the United States was cheaper than that from other major suppliers for both propane and butane (Figure 4). Particularly remarkable was the low price of butane. Information such as this could attract the attention of the Japanese who are struggling with soaring energy costs.



Source: Estimated based on Ministry of Finance “Trade Statistics of Japan”

However, care is needed when interpreting the price of LPG from the United States, particularly butane. This is because butane from the United States was imported only at a certain period of the year (Figure 5). In 2013, the LPG price was higher at the beginning and the end of the year and was lower towards the middle. As butane from the United States was imported only from May to October when the price was low, it appeared even cheaper than it was when compared to other suppliers in terms of annual average price. The average import price was lower similarly for non-US suppliers from May to October at \$891/t, compared to the year-round average of \$936/t.

Figure 5 CIF prices and import volume of LPG from United States



Source: Estimated based on Ministry of Finance “Trade Statistics of Japan”

While the imports of propane from the United States also varied among months with no or low imports, the reason for its cheapness is not exactly the same as butane. Towards the end of 2013, the import price of Middle Eastern propane soared as Saudi Aramco raised its Contract Price (CP) at once to the highest level ever (November: \$875/t, December: \$1,100/t). At around the same time, the price of propane at Mont Belvieu, the United States also soared due to the harsh cold wave. However, the rise in the import price of propane from the United States remained under control due partly to price breakdown.

Benefits of importing LPG from the United States?

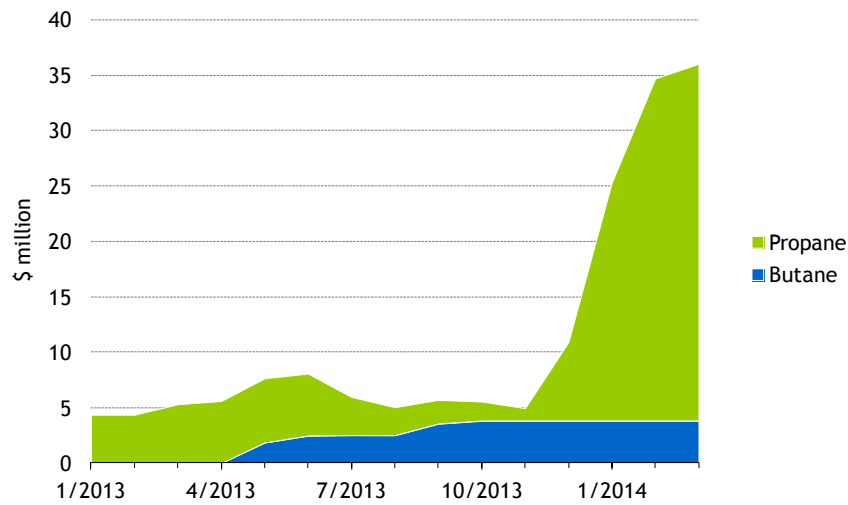
The expansion of the Panama Canal¹ scheduled for 2015 is expected to lower the cost of shipping LPG from the United States to Japan. Even without this benefit, importing LPG from the United States has, at least so far, provided a certain amount of economic benefits, estimated at a saving of as much as \$35 million in imports² in total since January 2013 (Figure 6).³

¹ Due to the confrontation between the Panamanian government and the consortium of construction companies over the budget overrun (December 2013 to February 2014), the construction is not due to be completed until the end of 2015.

² Compared to the estimated import value if LPG was not imported from the United States.

³ As the transportation lead time to Japan differs for each supplier country, note that there might be a time lag in the month of arrival of LPG in Japan, when the export FOB price is applied. This time lag could affect the result of calculation if the target period is not sufficiently long.

Figure 6 Estimated saving by importing LPG from the United States (cumulative)



Note: Cumulative since January 2013. Calculated by Σ Volume of LPG import from the United States \times (Import price from the others - Import price from the United States)

Reducing the import volume and adding the United States, which has very low geopolitical risk, as a major supplier would help improve security in terms of supply stability. Going forward, Japan is expected to add to these achievements and fully enjoy the benefits of the Shale Revolution by attempting to reduce the import price of LPG from the United States. At the same time, Asian consumer countries including Japan are expected to use this opportunity to gain bargaining power for the pricing of CP-based LPG, which is now in the hands of the producers.

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