ASIA PETROCHEMICAL OUTLOOK H1 2017
OLEFINS & POLYMERS

PETROCHEMICALS SPECIAL REPORT
JANUARY 2017

OLEFINS
Bullishness in Asian ethylene market likely to ease in H1 2017 2
Supply overhang to weigh on Asian propylene market in 2017 3
Asian butadiene markets to see strength early H1 2017 amid tightness 4
China’s urbanization, MTOs drive Asian methanol demand in 2017 5

POLYMERS
Asian PE market poised to soften in 2017 on oversupply 7
Supply overhang, demonetization limit PP upside in H1, but futures may support prices 8
Asian PVC to hold firm in H1 2017 as China plant inspections tighten supply 10
China, India to drive Asian MEG, PET recovery in 2017 11
Steady growth likely for AA/VAM on lack of capacity additions 12
OXOLS uptrend to stretch into H1 2017 on strong demand, tight supply 13
FOREWORD

Asian olefins and polymers markets will mostly face an oversupply situation, fueled in part by a lighter steam cracker turnaround season and fresh production capacity. In South Korea, KPIC plans to increase its ethylene production capacity to 800,000 mt/year from 470,000 mt/year. Last year, ethylene imports from the US increased and this is expected to continue into 2017. In 2017, propane dehydrogenation plants are expected to have a greater impact on the propylene market as PDH units stabilize their production. As a result of low crude prices, naphtha and propane feedstock costs have enabled cracker and PDH operators to run their units at full tilt due to wide production margins. Over in butadiene markets, a heavy turnaround season for extraction units and few deepsea cargoes are expected to support spot prices in the early first half of 2017. Over in China, methanol demand will grow as the country seeks feedstock for its burgeoning methanol-to-olefins sector. Demand is expected to outpace domestic production by a significant margin in 2017, requiring heavier imports. Like its upstream ethylene feedstock, Asia’s polyethylene market is concerned about a glut; especially as the US is expected add about 3 million mt/year of fresh PE capacity and Asia will add about the same production volume. China’s polypropylene market will encounter a similar dilemma as fresh production will exceed the country’s PP demand. As a result, China’s PP imports are expected to fall, S&P Global Platts Analytics data shows. Amid the supply and demand fundamentals, China’s futures markets are expected to have volatile impact on the polymers markets. Towards the end of 2016, Chinese markets were affected by their domestic futures price volatility. According to S&P Global Platts data, the CFR China styrene monomer marker hit a seven-month high of $1,153/mt on March 7 last year, while the styrene monomer margin climbed to a breakeven level is $350/mt.

Strong demand for spot ethylene cargoes from styrene monomer producers in China and ethylene end-users in Japan also boosted the Asian ethylene market.

OLEFINS

BULLISHNESS IN ASIAN ETHYLENE MARKET likely to ease in H1 2017

Bullish sentiment in the Asian ethylene market will likely ease in the first half of 2017, as the tightness in supply tones down with fewer steam cracker turnarounds in the year compared to 2016, market sources said.

The market was fueled by a supply crunch amid heavy steam cracker turnarounds in 2016 in Northeast Asia. According to the Japan Petrochemical Industry Association, or JPCA, Japan’s ethylene production amounted to 4.627 million mt for January to September, sliding 9.3% from a year earlier.

In 2016, seven steam crackers out of a total of 13 in Japan were shut. The total ethylene production capacity taken offline was 3.6 million mt/year, including Asahi Kasei’s 470,000 mt/year steam cracker in Mizushima – which was mothballed in February. The seven steam crackers represent 51% of the country’s total ethylene production capacity.

In South Korea, three steam crackers out of a total of 11 were shut for annual maintenance in 2016. The three steam crackers have a total ethylene production capacity of 2.24 million mt/year, or 32% of the country’s total of 6.979 million mt/year.

As a result of tight ethylene supply, the CFR Northeast Asia ethylene price climbed up to $1,200/mt on April 8, the highest level since July 15, 2015, when the price was assessed at $1,205/mt.

The price spread between ethylene and naphtha rose to $832/mt on April 5 last year, the highest level since June 30, 2015, when the spread was calculated at $842.50/mt. The typical breakeven level is $350/mt.

Strong demand for spot ethylene cargoes from styrene monomer producers in China and ethylene end-users in Japan also boosted the Asian ethylene market.

The Ministry of Finance data also showed Japan’s ethylene exports dropped significantly in 2016. Japan’s ethylene exports for January to September amounted to 275,766 mt, marking a 61.4% drop from the same period a year earlier.

© 2017 S&P Global Platts, a division of S&P Global. All rights reserved.
But in 2017, the same extent of supply tightness is not expected on fewer steam cracker turnarounds.

In Japan, four steam crackers out of 12 are scheduled to be shut in 2017 for annual maintenance. The combined ethylene production capacity of the four steam crackers is 1.47 million mt/year, or 23% of Japan’s total.

In South Korea, two steam crackers with a total capacity of 670,000 mt/year, or 8% of the country’s total production capacity, are due to be shut in 2017 for maintenance. During that period, South Korea’s KPIC plans to increase its ethylene production capacity to 800,000 mt/year from 470,000 mt/year.

Market participants also expect deepsea supplies from Saudi Arabia and the US to continue to flow into Asia. Saudi Arabia’s PetroRabigh has delayed the startup of a new polyethylene plant to the first quarter of 2017 from 2016.

Ethylene exports from the US also increased last year, with the volume hitting 111,348 mt for January to July, marking a 76.6% spike from the same period a year earlier.

The Asian ethylene market started to lose some strength in the fourth quarter, hit by rising deepsea supplies. On October 18, the CFR Northeast Asia ethylene price was assessed at a two-month low of $1,050/mt.

— Fumiko Dobashi, fumiko.dobashi@spglobal.com; edited by Geetha Narayanasamy, geetha.narayanasamy@spglobal.com

SUPPLY OVERHANG TO WEIGH ON ASIAN PROPYLENE MARKET IN 2017

Asian propylene is likely to face pressure from a supply glut in 2017 with fewer steam crackers scheduled to undergo maintenance and propane dehydrogenation plants that started up in 2015 or early 2016 seeing more stable production, according to sources.

“If operations of PDH units become stabilized, then…supply will be more ample,” a Japan-based market participant said.

Idemitsu’s steam cracker in Chiba, with propylene production capacity of 224,000 mt/year, is scheduled to be shut for maintenance from April to June. This will be followed by Mitsubishi Chemical shutting its Mizushima steam cracker from May to June. The unit is able to produce 320,000 mt/year of propylene.

Early in H2, the steam cracker in Chiba operated by Mitsui Chemical, which can produce 331,000 mt/year of propylene, will be shut for 40 days of scheduled maintenance.

Compared to maintenance shutdowns in 2016, only half the capacity will be closed in 2017. The crackers which shut this year for maintenance accounted for at least 1.75 million mt/year of capacity.

In South Korea, only two plants are scheduled to shut for maintenance in 2017 -- Korea Petrochemical Industry Corporation’s steam cracker, with a propylene production capacity of 230,000 mt/year, in Onsan in April; and SK Energy’s No. 1 plant, with a propylene production capacity of 140,000 mt/year in Ulsan in March -- which will shut only a third of the capacity taken offline in 2016.

In Taiwan, two of five naphtha-fed steam crackers are due to be shut in 2017 for annual maintenance, according to company and market sources. CPC’s Lin Yuan 6 plant with a propylene production capacity of 430,000 mt/year and Formosa’s Mailiao 3 with a propylene production capacity of 600,000 mt/year will shut in Q1 and Q3, respectively, for maintenance. The steam crackers which shut last year accounted for only 515,000 mt/year of propylene capacity due to a delay in turnaround at CPC’s cracker, which was originally scheduled for December. It has been pushed back to Q1 2017 now.

Ample supply from PDH plants

In 2016, new capacity of 1.76 million mt/year was added to the Asian propylene market from three new PDH plants in Northeast Asia.

Another 1.01 million mt/year of capacity is expected to come online in 2017.

Fujian Meide Petrochemical’s 660,000 mt/year PDH plant in Fuzhou is slated to start up this year while Tianjin Bohai’s 600,000 mt/year Phase II PDH plant will come on stream with a partial startup of 350,000 mt/year. The remaining capacity is targeted for startup in 2018.
PDH plants started making profits in late 2016 due to lower propane prices, after being negative since September 2015. According to a northeastern market participant, propane prices were expected to remain lower than naphtha because of an abundance of supply. PDH producers are expected to take advantage of this and operate their plants at high rates.

These new capacities could weigh on prices 2017 especially as older PDH units iron out their operational issues and stabilize their run rates, sources said.

**Downstream polypropylene and acrylonitrile**

Polypropylene demand growth in China rose about 5.5% year on year in 2016 and is expected to remain stable in 2017, according to S&P Global Platts Analytics. Meanwhile, PP demand growth in India, seen at about 11% last year, was estimated to grow to about 12% this year, according to Platts Analytics.

However, Asian PP capacity growth is estimated to outpace demand growth by 760,000 mt in 2016.

Two notable coal-to-olefins startups last year include China Coal Mengde New Energy's 300,000 mt/year plant in Inner Mongolia's Ordos city and Shenhua Group's 300,000 mt/year CTO plant in Xinjiang.

On December 5, S&P Global Platts assessed both PP Raffia and PP Injection CFR Far East Asia at $1,005/mt, up $5/mt on the day.

Meanwhile, ACN saw steep price increases following a force majeure announced by Ineos at its Greenlake plant in July. Naphtha-based ACN producers have been enjoying attractive margins due to wide price spreads between ACN and naphtha. The spread hit $970/mt on September 27, levels last seen on March 8, 2015. As of November 29, S&P Global Platts assessed the ACN-naphtha spread at $824.50/mt.

On December 5, S&P Global Platts assessed both PP Raffia and PP Injection CFR Far East Asia at $1,005/mt, up $5/mt on the day.

Several sources said that more supply from the US was expected to arrive as Ineos' Greenlake operations are likely to normalize by end December or early January. Participants said that Ineos' supply was expected to arrive in Asia by Q1 -- February or March at the latest. This could weigh on ACN prices. The Green Lake facility has a production capacity of 1 billion lb/year (450,000 mt/year) of ACN.

As early as November, synthetic rubber producers sought prompt cargoes, drying up supply for both November and December.

The end-2016 tightness was aggravated by unexpected outages at China's Fujian Refining and Petrochemical, or FREP, late November to early December and at India's Haldia Petrochemicals in early December.

FREP operates two butadiene extraction units, with capacities of 60,000 mt/year and 120,000 mt/year, while Haldia runs a 97,000 mt/year plant.

Amid the tightness, synthetic rubber demand emerged as a result of firmer natural rubber prices.

On the Tokyo Commodity Exchange, rubber futures hit Yen 245.6/kg ($2.13/kg) on November 29 -- the highest level in one-and-a-half years.

The natural rubber surge was attributed to consumption growing faster than production.

On December 7, consumption by member countries of the Association of Natural Rubber Producing Countries, rose 4.3% to 7.387 million mt over January-November while production increased 0.4%, said Nguyen Ngoc Bich, ANRPC's secretary-general.

Global natural rubber prices are likely to remain firm in the short term due to stronger crude oil prices and as consumption growth outpaces production, ANRPC said.

ANRPC members account for 90% of global natural rubber production.

In addition to the confidence in the natural rubber markets, several butadiene producers said fewer deepsea cargoes are foreseen until the end of January 2017.

In Europe, olefins production from steam crackers returned to 100% in December, especially after LyondellBasell's OM4 plant in Wesseling, Germany, completed its scheduled maintenance late November as well as Versalis’ Dunkerque, France, cracker.

The tight availability and natural rubber surge coincided with earlier than expected pre-holiday demand from China and Taiwan.

In 2017, the Lunar New Year holidays are scheduled for January 28-31, earlier than February 8-13 in 2016. Typically, pre-holiday buying is seen in the Chinese markets before market participants break off for the holidays.

Traders and importers in China anticipate spot prices to move higher due to a tighter supply outlook resulting from butadiene extraction unit turnarounds in Q1.
Prices hit multi-year highs
Spot prices in Asia hit multi-year highs on December 12, 2016, at $1,720/mt FOB Korea and $1,780/mt CFR China, S&P Global Platts data showed. The last time the CFR China price was higher was on March 14, 2013, when it was assessed at $1,845/mt. For FOB Korea, the last time the price was higher than $1,720/mt was on March 15, 2013, at $1,725/mt.

Asian supply is expected to tighten in Q1 as turnarounds begin as early as February. Although planned, the affected butadiene producers are expected to build up their inventories to tide them over the shutdown period.

For instance, Malaysia’s Lotte Chemical Titan plans to shut its No. 2 naphtha-fed steam cracker at Pasir Gudang and downstream production units from mid-February, for scheduled maintenance lasting about 40 days. The affected downstream units include a 100,000 mt/year butadiene extraction unit.

Over in South Korea, domestic demand for butadiene is expected to increase as LG Chem plans to convert one of its styrene oligomerization units to produce styrene from its aromatic plant in Yuseong, South Korea, a move which is expected to boost its butadiene production.

Due to the conversion, the company’s ABS capacity will increase 30,000 mt/year to 880,000 mt/year, while PS production will be halved to 50,000 mt/year.

Nevertheless, by the end of H1 2017, the market strength is expected to ease as the tightness in supply tones down with fewer butadiene units undergoing maintenance in 2017 compared to 2016.

For instance, South Korea’s Yeochun Naphtha Cracking Center plans to shut its 220,000 mt/year butadiene unit at Yeosu in May 2017 for about three to four weeks, while Lotte Chemical will operate its 130,000 mt/year unit at Yeosu and 150,000 mt/year unit at Daesan for most of 2017 except for a short shutdown of about a week.

Save for unexpected butadiene unit outages and lower availability of deepsea cargoes from Europe, a bullish start to H1 2017 is likely to stabilize before the six months end.

— Clement Choo, clement.choo@spglobal.com; Edited by Geetha Narayanasamy, geetha.narayanasamy@spglobal.com
PETROCHEMICAL MARKET ANALYSIS

Understanding complex petrochemical markets is crucial in gaining a competitive advantage.

The global petrochemical feedstock slate is becoming more diverse. As producers strive for a cost advantage, low-cost feedstocks are fueling investments decisions.

Platts’ analysis of the global petrochemical markets allows you to dig deeper into:

- **Supply and demand**
  Understand which regions have a supply surplus and which have a deficit – and the impact new capacity additions will have.

- **Long- and short-term coverage**
  See how regional and global capacity will change over the next 12 months, or throughout the next 10 years.

- **Global trade flows**
  Track how global trade flows are changing and understand what this means for each regional market.

- **Variable cost curve**
  See where each petrochemical facility sits on the variable cost curve and how cumulative capacity additions are affecting regional production costs.

- **Coal-to-Olefins projects**
  See new planned projects, together with the location, capacity and on-track status for each.

Platts’ analysis of the petrochemical markets is delivered through outlook reports, datasheets, visualization tools and direct access to our analysts.

For more information on Platts’ Petrochemical Analytics, visit: [www.platts.com/petrochemicals](http://www.platts.com/petrochemicals)
MTO-linked PE margins also fell -- from an average of $253/mt in Q1-Q3, to an average of $134/mt during October and November. Typical MTOs, which produce both PP and PE, were operating below breakeven levels, excluding non-variable costs like debt servicing as of December 1, according to industry sources.

If the narrow or negative MTO margins persist well into 2017, operators will have to lower run rates, which in turn will weaken demand for methanol and push down prices, sources said.

MTO margins are calculated using assessed CFR Far East Asia PP raffia and high density PE film prices, minus the cost of producing olefins. The cost of producing olefins equals to about three times CFR China methanol feedstock cost plus $200/mt for fixed costs.

MTO profitability is especially critical because MTO operators were the swing buyers over the last two years, able to purchase feedstock at prices which deterred traditional end-users.

In effect, the fortunes of feedstock methanol were now intertwined with key MTO downstream markets like PE and PP, as feedstock purchasing managers made weekly buying decisions based on polyolefin prices.

A 1% week-on-week increase or decrease in CFR Far East Asia (China) PP raffia's weekly average, was seen to cause a 0.68% change in the methanol CFR China weekly average, according to Platts analysis.

Futures surge seen in Q4 may correct in H1

Methanol prices in H1 2017 may also weaken as the market corrects itself following the futures-driven rally seen in Q4 that had the MTO operators contemplating operational rate reductions.

The actively traded January 2017 methanol contract on the Zhengzhou Commodity Exchange had surged 20% since September 30, to Yuan 2,513/mt as on December 1, the exchange data showed.

“The [Chinese] government’s policy of stimulus may be causing successive [asset] bubbles,” an end-user said. “[I am] definitely worried that hot money is flowing into the methanol futures market,” he added, referring to funding from retail investors and the financial sector.

As producers moved to capitalize on the bullish sentiment, China’s methanol import price rose 22% to $291/mt on a CFR China basis over September 30-December 1, Platts data showed.

Downstream of the MTO market, the January 2017 PP futures on ZCE also surged 18% over the same period, despite an expected supply overhang, sources said. However this was not enough to offset rising methanol prices as it takes three units of feedstock to produce one unit of polyolefin, sources add.

China methanol deficit supports US, Iran expansions

Overall, China’s growing methanol demand is expected outpace production by a significant margin in 2017, requiring heavier imports.

China’s methanol production for 2017 is expected to increase 5%-7% year on year to about 54 million-55 million mt, according to an industry estimate.

Three-fourth of this will be produced from coal, and the remainder from natural gas and coke-oven gas feedstocks.

China’s 2016 imports are expected exceed 8 million mt, a surge of about 60% year on year, if the import trend seen over January-October in China’s Customs data continues.

In 2017, imports are expected grow modestly year on year, sources said, with more imports expected from expansions in the Americas and Iran.

Ample US methanol capacity, at 5.75 million mt/year at the beginning of 2016, tipped the country into a net exporter this year and was poised to expand further in 2017 with the startup of the 1.75 million mt/year US Gulf Coast Naphtha plant, according to Platts data.

The change in trade flow patterns can be seen already, with the US, Trinidad & Tobago and Venezuela accounting for 14% of China’s total methanol imports over the first three quarters of this year.

© 2017 S&P Global Platts, a division of S&P Global. All rights reserved.
The Chinese government has also expressed interest in tapping into the US shale gas linked methanol.

An October report by China’s Ministry of Industry and Information Technology advises its government to support resource exploration and development projects related to North America shale gas-based methanol by “encouraging key enterprises through investment, mergers and acquisitions, restructuring.”

Meanwhile, Iran which accounted for 29% of China’s imports over Q1-Q3, looks ready to increase exports later in 2017 with two major startups planned.

The new 2.55 million mt/year Kaveh project, and the 1.65 million mt/year Marjan project, are expected to be completed by Q3 2017.

— Yi-Jeng Huang, yi.jeng.huang@spglobal.com; edited by Haripriya Banerjee, haripriya.banerjee@spglobal.com

POLYMERS

ASIAN PE MARKET POISED TO SOFTEN IN 2017 ON OVERSUPPLY

The Asian polyethylene market is likely to weaken in 2017 amid poor macroeconomics and oversupply, leading to the narrowing of production margins but still above the breakeven level, industry sources said.

Many changes are expected in the Asia PE market this year, in terms of feedstock and trade flow patterns, they said.

PE demand from the downstream plastics sector took a hit last year, reflecting the slowdown in China’s GDP growth in 2016 compared to 2015. Looking ahead in 2017, China’s GDP growth is forecast to ease a little, to 6.2%, from an estimated 6.6% for 2016, according to the International Monetary Fund.

There, however, may be some upside as PE supply tightens due to turnarounds in Northeast Asia in the first half of 2017. The market will also continue to see price volatility due to currency fluctuations and procurements on a just-in-time basis due to refusal to take risk and hold buffer stocks, the sources said.

A total of around 0.5 million-1 million mt/year of PE capacity is expected to be offline in H1 2017 for scheduled maintenance, according to S&P Global Platts data and market sources. This compares against an estimated 1 million-1.5 million mt/year of offline capacity in H1 2016.

Structurally more supply
Overcapacity remains a top concern for Asia’s PE market in the long run, sources said.

The US will add around 3 million mt/year of capacity in 2017, according to Platts data and market participants, with some of that volume bound for Asia.

In addition, Asia plans to boost capacity by around 3 million mt/year in 2017 and the Middle East by 1 million-1.5 million mt/year, with the majority of incremental supply expected to flow into Asia, sources said.

Currently, around 80% of Middle Eastern supply makes its way to Asia, market participants said. Total Middle East production is estimated at 17 million mt/year for 2016, according to S&P Global Platts Petrochemical Analytics.

Startup of coal-based PE plants may be delayed
Although China’s coal-based PE plants have been planned despite oversupply, on the back of job-creation initiatives, future coal and shale gas-based PE projects may be delayed, depending on whether a low oil price environment continues or if oil prices start to recover, sources said.

Some coal-based PE producers said they would be able to compete profitably only when oil prices are above $60/b.

Meanwhile, the development of numerous shale gas-based PE projects in the US needs a higher oil price to generate expected returns, US sources said. According to Platts Petrochemical Analytics, an oil price above $40/b was required, depending on the region.

In addition, due to the lack of skilled workers in the industry, high wages were used to lure the skilled ones, and this has hiked project costs. The higher labor costs could push construction costs up by as much as 25%, according to Platts’ analysts.

Construction delays and logistics issues will also likely cause delays in the expansion of these projects, sources said.

Production margins to stay profitable
In 2017, the PE-naphtha spread is expected to remain within a profitable range amid surplus supply and weak demand for naphtha, industry sources said. The PE-naphtha spread averaged $160-$300/mt over January-December, based on a conversion cost of $500/mt, according to Platts calculations.

ASIAN INTEGRATED PE MARGINS TO STAY POSITIVE IN 2017 ($/mt)
Coal-based PE margins in China averaged in the low $300s/mt over January-December, according to Platts Petrochemical Analytics.

Methanol-based PE margins averaged $100-$350/mt over January-December, and were expected to remain steady in positive territory in 2017, sources said. The margins are calculated by using a formula taking $145/mt for operating costs and a 3:1 methanol to PE ratio.

Ethane-based PE margins in Saudi Arabia averaged in the low $800s/mt over January-December, despite ethane gas prices rising in Saudi Arabia in 2016, according to Platts Petrochemical Analytics.

The outlook for unintegrated producers -- producers who buy intermediate feedstock ethylene to feed into PE units -- was unclear. The PE-ethylene margin has been volatile -- trended into positive territory in February, but for most of 2016 it was negative, Platts data showed.

PE and ethylene prices are not as closely linked because the overwhelming majority -- over 80%-- of Asian PE producers use naphtha as feedstock. Ethylene exists as an intermediate feedstock within the refinery and is often not traded but piped into the downstream units, sources explained.

Changes in trading patterns, marketing strategies
Regulatory changes, such as the uniform goods and services tax structure to be implemented in India from April 2017, will help to boost production and trade in both the upstream and downstream sectors, Indian sources said.

Increased competition faced by local suppliers might help bring domestic Indian prices down and increase imports, some end-users based in India said.

With a flood of supply chasing demand in 2017, distributors said they would need to provide more pre- and post-sale support and do more marketing to boost sales. As there are many new plants, some of them entirely new without prior experience, branding and supply regularity would be the differentiating factors, buyers said, to entice them to procure.

Changes in feedstock
According to market sources, PE units using alternative feedstocks such as coal and shale gas would increase from 10% to 20% or more, as new volumes of shale-gas based PE facilities begin to produce by the second half of 2017, sources said. It is roughly estimated that naphtha feedstock based PE production amounts to around 80% of the current global total, with coal and natural gas-based production making up the rest, market sources said.

China low density polyethylene and liner low density polyethylene import demand will decrease with increased domestic production in 2017, while imports would mainly be high density polyethylene film, sources said.

In China, PE film imports over January-October were around 7 million mt and of this total, more than half were HDPE, customs data showed. HDPE imports were largely stable year on year over that period, while LLDPE and LDPE imports dropped 5.84% and 9.76%, respectively, according to the customs data released for October. LDPE and LLDPE imports dropped due to the rise in local production from new plants, such as ChinaCoal Zhonghui Mengda's 300,000 mt/year plant which started up in Q4 2016 and Sinopec Zhongtian Hechuang's new 300,000 mt/year LLDPE and 370,000 mt/year LDPE plants that came online in the second half of 2016.

LLDPE may also increasingly take market share from LDPE in China, due to LLDPE's lower prices and higher availability, sources said. LLDPE prices were last assessed at $1,130/mt CFR FE Asia on December 7 while LDPE was $1,250/mt CFR FE Asia, according to Platts data. LLDPE and LDPE are frequently blended to make packaging film resin.

SUPPLY OVERHANG, DEMONETIZATION LIMIT PP UPSIDE IN H1, BUT FUTURES MAY SUPPORT PRICES

While China's polypropylene demand is expected to increase 5% year on year to more than 21 million mt in 2017, it will likely be outpaced by the 15% year-on-year surge in production as new plants and expansion projects come online, according to S&P Global Platts Analytics.

The Shenhua Group is planning two major expansions in early 2017, according to industry sources.

The Baotou 2 expansion at its existing Inner Mongolia plant will add 400,000 mt/year of PP supply by the end of the first quarter or early second quarter, a Shenhua source confirmed.

The Ningxia 3 expansion near Yinchuan City, will add two PP lines totaling 600,000 mt/year of capacity by early Q2, sources said.

China's Zhong Tian He Chuang Energy also plans to start a second methanol-to-olefins unit and its downstream 350,000 mt/year PP plant at its new coal-based petrochemical complex in Ordos, Inner Mongolia, in late March 2017, a company source said.

These three projects alone will bring online 1.35 million mt of new PP capacity by Q2 2017, which would exceed China's expected demand growth for the year once they gear up to full production.

China's PP homopolymer imports have been falling at more than 5%/year over the last five years following domestic production increases, according to China's customs data, and this is expected to continue into the next year with the additional capacities coming online.
China imported 3.4 million mt of PP homopolymer in 2015, but is set to import less than 3 million mt in 2016, assuming the trend seen over the first three quarters of this year holds.

As such, by 2017 imports are likely to fall to less than 2.7 million mt, industry sources said.

PP homopolymer imports from Saudi Arabia are expected to drop to less than 500,000 mt for the whole year 2016, down about 25% from 2015, and representing the biggest loss by volume.

Imports from Southeast Asia -- Singapore, Thailand and Malaysia -- are expected to be about 550,000 mt, down 14% year on year.

South Korea, the current top PP raffia exporter to China, is expected to supply 810,000 mt in 2016, down 4% year on year.

South Korea produces specialty grades that are not readily available in China and so imports from the country have been less affected, traders said.

"South Korean producers sell a lot of specialized PP films to China, including biaxially oriented PP, cast PP and others," a major Chinese importer said, whereas Middle East raffia grades tend to compete head to head with domestic PP.

**PP futures volatility clouds outlook**

While fundamentals point to a supply overhang in the first half of 2017, China's volatile futures market is a wildcard which may provide price support in Q1 as it is doing in Q4 this year, industry sources said.

Actively traded January 2017 PP futures on the Dalian Commodities Exchange has surged $161/mt from October 10 to $1,069/mt as of November 11, on a dollar import parity basis, according to the DCE.

The rally lifted futures prices above domestic PP raffia prices, which were up only $73/mt over the same period to $1,031/mt.

The CFR Far East Asia PP raffia marker was up $80/mt over the same period to be assessed at $1,045/mt on November 11, according to S&P Global Platts data.

"Speculation from China's financial [sector] is the cause of the recent PP futures price surge," said a Sinopec PP manager.

"Stock [market] activity has been curtailed, real estate investments have been curtailed, the hot money is looking for a home, in commodity [futures] such as plastics, coal, and metals," he added.

Industry sources agreed that the underlying demand-supply fundamentals did not explain the recent bullishness in PP, since November is typically a low demand season.

A sudden withdrawal of support from the financial sector may see a quick downwards correction in PP prices, traders said, but the exact timing is difficult to predict.

The futures market has been heavily influencing prompt prices recently as traders purchased prompt cargoes to cover for selling futures contracts.

For example, the market was in contango on November 11 with futures prices exceeding prompt prices by about $38/mt, and traders were able to sell January futures contracts and cover their positions by buying prompt cargoes to store till delivery, securing a relatively riskless profit after considering warehousing costs, a trader said.

This pushed up prompt prices and attracted international producers to divert more cargoes into China, she added.

If China's hot money continues to support its futures market, PP from South Korea, the Middle East, the US and India will continue to arrive into China during the first half.

Deepsea US homopolymer cargoes which are due to arrive late January to March were sold at a $30-$50/mt discount compared with standard Middle East or Indian cargoes, as international traders rushed to tap into China's bullish market, traders said.

India will be especially keen to export PP as it grapples with its own demand issues due to demonetization, sources said.

**India demonetization to slow demand Q1**

India's domestic polymer demand has crashed since the government's surprise demonetization policy was announced this month.

Prime Minister Narendra Modi announced on November 8 that Rupees 500 and Rupees 1,000 notes would not be recognized as legal currency and would need to be exchanged for new notes distributed by banks.

There is widespread cash shortage leading to a slump in retail demand that has hit cash-dependent, small to medium polymer converters, sources said. As such, they have been forced to operate on a need-to basis over November and December, the sources added.

Some factories were staying shut few days a week to cut costs and deal with manpower shortages, as workers headed to queue at banks, an end-user said.

**Q4 PP FUTURES SURGE LIFT DOMESTIC SPOT AND CFR PRICES ($/mt)**

![Q4 PP Futures Surge Lift Domestic Spot and CFR Prices](https://example.com/plot)

Source: Platts
Demonetization has impacted not just end-users, but also the packaging, trucking and logistics sectors and polymer producers directly, said a senior manager at Vinmar International, a global petrochemical marketing and distribution company.

The turbulence caused may shave more than 1% from India’s GDP, which will directly impact India’s PP demand, polymer traders said, adding that the PP demand slump is likely to persist until at least mid-January, with its effects lingering throughout Q1 2017.

Not all PP sectors were equally impacted though. “[PP] raffia and biaxially oriented PP sales to the cement industry or the FMGC [fast-moving consumer goods] sector are not [as affected],” a major producer said. “However, textiles, where there are lots of cash sales, has been impacted,” he added.

Nevertheless, the domestic demand slump is forcing major Indian producers to look abroad for customers.

“Indian Oil Corp., GAIL, Haldia Petrochemicals, Reliance Industries are all selling polymers into China at a heavy discount,” a trader said.

— Yi-Jeng Huang, yi.jeng.huang@spglobal.com; edited by Haripriya Banerjee, haripriya.banerjee@spglobal.com

ASIAN PVC TO HOLD FIRM IN H1 2017 AS CHINA PLANT INSPECTIONS TIGHTEN SUPPLY

Asian PVC prices would likely remain stable and strong in the first half of 2017, as ongoing inspections on carbide-based PVC plants in China limit output, resulting in excess supply in the region drying up, market sources.

Japan’s Vinyl Environmental Council Chairman Mamoru Kadokura said the Asian PVC market would likely keep its strength (2017) due to a production shortfall in China.

The demand-and-supply structure in the Asian PVC market is shifting towards balanced due to the tightening of supply, after tilting towards ample supply.

Supply has been ample for years, due to high operating rates at carbide-based PVC plants in China amid low coal-based PVC production costs.

As a result, the Asian PVC market had been under pressure constantly, falling below the cost level often. In 2014, the spread between PVC and vinyl chloride monomer feedstock averaged at $134.52/mt, and at $143.87/mt in 2015, lower than a typical breakeven spread of $150/mt.

But amid the current bullish PVC market, the spread between PVC and VCM averaged at $171.16/mt so far in 2016, higher than the breakeven spread.

China’s PVC plant operating rates have been reduced from the middle of this year. The Chinese government ordered carbide-based PVC producers to temporarily shut their plants or reduce operating rates amid tightening environmental regulations. As a result, China’s PVC supplies tightened quickly, which pushed China’s domestic PVC prices to be higher than CFR prices. The plants will, however, be ordered to shut permanently if they do not follow the regulations.

According to S&P Global Platts data, ethylene-based PVC in China’s domestic market was assessed at Yuan 7,700/mt on October 30, the highest level since September 11, 2011, when it was at Yuan 7,925/mt. Carbine-based PVC was assessed at Yuan 7,400/mt on October 30, the highest since September 18, 2011, when the price was at Yuan 7,425/mt.

China’s PVC market did not lose steam in November, and hit a record-high level. On November 16, the ethylene-based PVC price was assessed at Yuan 8,500/mt, and carbide-based PVC at Yuan 8,450/mt, Platts data showed.

“It seems this time the government is serious about reinforcing environmental regulations. The plant owners can be fined if they increase the operating rates without the government’s permission,” said a Chinese market participant.

“I have been in the PVC business for 30 years and I have never seen the PVC market this strong before,” said a PVC market source in Japan.

Tracking the bullish local market in China, the CFR China PVC price also climbed to a one-year high of $930/mt on October 23. Some market sources said the CFR China PVC price still has room for an increase, despite the ongoing low winter demand season, as the CFR China PVC price is still lower than the domestic price.

The current domestic PVC price is calculated at around $1,000-$1,030/mt on an import parity basis.

The lower carbide-based PVC plant operating rates in China has slashed PVC exports from China. According to the latest data by the Chinese customs department, China’s PVC exports in September slid 42.4% month on month to 82,002 mt.

<ASIAN PVC-VCM 2016 SPREAD MOSTLY ABOVE BREAKEVEN ($/mt)>
PETROCHEMICAL COMMODITY PRICES

Make confident pricing decisions based on Platts’ coverage of the key petrochemical markets. You can access the latest price assessments, news and market commentaries, whenever and wherever you need them.

Platts provides you with:

- **Daily spot prices** - Negotiate confidently on spot deals with your counterparties with access to an independent and impartial set of reference prices.
- **Reported bids, offers and trades** - Get a sense of where the market is trading on a particular day so that you can benchmark your own data against that of Platts.
- **Assessment rationales** - Gain an additional level of confidence with the knowledge of how we arrived at a particular price before you approach your counterparty or enter it into your own models.
- **Daily news** - Get a rounded picture of market activity to support your investment decisions.
- **Access anywhere** – Keep up to date wherever you are, with access to prices on your desktop, tablet or smartphone.

5 REASONS TO CHOOSE PLATTS

1. We’re impartial and independent, with no vested interest in the market.
2. We have an open and transparent price discovery process, designed to reflect the true market value.
3. We operate across the energy value chain, integrating upstream knowledge into our downstream prices.
4. We go beyond the required reporting standards to be IOSCO compliant.
5. We’re connected to every global market.

For more information on Platts’ price assessments and market insight, visit: [www.platts.com/petrochemicals](http://www.platts.com/petrochemicals)
India has been hit by the lower PVC exports from China, as Chinese PVC typically accounts for around 30% of India’s total PVC imports. India’s PVC buyers have no choice but to accept high offers from other PVC suppliers such as Taiwan, Japan or Southeast Asian countries.

As a result of a firm PVC market, Asia VCM would likely remain supported. The CFR Far East Asia VCM price rose $15/mt week on week to be assessed at $775/mt on November 3, 2016, the highest level since November 16, 2014, when the price was assessed at $780/mt.

The CFR Far East Asia VCM price rose $10/mt week on week to be assessed at $800/mt on November 17.

— Fumiko Dobashi, fumiko.dobashi@spglobal.com; edited by Geetha Narayanasamy, geetha.narayanasamy@spglobal.com

CHINA, INDIA TO DRIVE ASIAN MEG, PET RECOVERY IN 2017

The Asian monoethylene glycol market and its derivatives, polyester fiber and PET resin, will recover during the first half of 2017, driven by robust polyester demand in China and India, according to producers in the region.

“Global demand for MEG was estimated at 25.7 million mt in 2015, with China accounting for 12.85 million mt or half of it,” said a major MEG producer.

The producer sees China’s healthy demand continuing into 2017, and expects the country’s demand for MEG to grow 4%-5% in 2017, from around 5% in 2016.

“Major consumer markets such as China and India still require significant amounts of MEG feedstock to produce polyester fibers and PET resins -- these will continue to be the main drivers of growth,” the producer said.

The IMF has maintained its forecast for Indian GDP growth at 7.6% for 2016 and 2017, while trimming Chinese GDP growth to 6.2% for 2017 from 6.6% last year.

In terms of polyester growth, we forecast Indian polyester demand to grow 11%-13% for 2017,” the producer said.

“China imported 8.45 million mt of MEG in 2014, and 8.77 million mt of MEG in 2015. From January to August 2016, China imported around 4.8 million mt, and would likely import around 7.5 million mt for 2016. For 2017, China would likely import a similar volume of 7.5 million mt, given increased domestic Chinese production of MEG from traditional and non-traditional sources,” said a Taiwan-based MEG producer.

Operating rates across Taiwanese, South Korean and Japanese MEG plants were reported around 80% while in China, was estimated around 70% -- taking an average of 50% for coal-based MEG production and 90% for traditional MEG production, and around 85%-90% across middle Eastern MEG plants.

MEG margins to stay positive

Asian MEG margins had been under pressure since June due to low seasonal demand for polyester fiber and PET resin, resulting in weaker demand for feedstock MEG.

With MEG prices averaging $600-$650/mt from June to August, the MEG production margin was calculated at minus $10-$60/mt, with Asian ethylene contract prices around $900/mt CFR NE Asia, said a Taiwanese producer.

The MEG production margin is calculated by multiplying the ethylene price by a conversion of 0.6 and adding an estimated $100-$120/mt of production costs, and then subtracting this figure from the MEG price.

“With current MEG prices rebounding to around $670/mt CFR China -- due to bullish crude and regional production issues -- and ethylene contract prices around $900/mt CFR NE Asia, ethylene-based MEG producers are enjoying positive margins of $10-$30/mt. Naphtha-based producers are able to enjoy much better margins of around $140/mt, based on average naphtha prices at around $400/mt CFR Japan,” said the Taiwanese producer.

“We expect MEG prices to be supported through the PET/polyester seasonal high, from end-February onwards, and anticipate MEG prices to improve to around $700/mt by end-March, and be sustained through Q2, if not at higher price levels,” he said.

Seasonal demand, firmer feedstock, lower run rates to boost PET prices

Asian PET producers expect seasonally high demand from end-February, amid firmer feedstock MEG and purified terephthalic acid prices, to lift PET prices during the first half of the year.

Prices of Asian PET resin fell progressively from May, trading around $848-$870/mt FOB Northeast Asia between July and...
September, from a high of $920/mt FOB Northeast Asia in May -- dragged down by weaker demand during the seasonal lull and falling feedstock MEG and PTA prices. PET margins, whilst remaining positive, were also pressured.

Demand typically picks up following the Chinese Lunar New Year from end February, and with improved demand, Asian polyester fiber and PET production rates would likely be raised to above 85% across Taiwan, South Korea and Japan, and above 80% in China, said a Taiwanese PET producer.

For 2017, with expected PET capacity additions in China, most producers are likely to keep lower run rates even during the seasonal high to ensure that supply remains balanced, the producer added.

"Also, with higher crude prices, likely to be around $45-$50/b, higher feedstock MEG and PTA prices will bolster PET prices, and we forecast PET prices to trade around $930-$950/mt FOB Northeast Asia, at the least," the producer said.

— Jennifer Lee, jennifer.lee@spglobal.com; edited by Geetha Narayanasamy, geetha.narayanasamy@spglobal.com

STEADY GROWTH LIKELY FOR AA/VAM ON LACK OF CAPACITY ADDITIONS

The acetic acid and downstream vinyl acetate monomer markets will see steady growth in 2017, market sources said, citing a lack of new capacity.

Although demand in downstream butyl and ethyl acetate sectors is expected to track slowing domestic economy in China, AA supply was likely to tighten in the second and third quarter of 2017 amid maintenance scheduled at regional plants, sources said. The International Monetary Fund estimates China's GDP growth in 2017 at 6.2%, down from 6.6% forecast for 2016 in its October update.

Demand is likely to pick up in early February, after the Lunar New Year holidays as buyers emerge to restock for the traditional manufacturing season, sources said.

The methanol/AA spread was likely to remain steady as both are not expected to see price volatility, sources said. Prices were likely to be range bound within a $200/mt deviation on bearish macro-economic outlook and low crude prices, they added.

AA prices have remained in the $300s/mt CFR FE Asia for most of 2016, while methanol has been in the $200s/mt CFR China, according to S&P Global Platts data.

Meanwhile, VAM prices were likely to see a gradual rise amid continued strength in the downstream emulsion and adhesive sectors, industry sources said.

Two plants are to undergo debottlenecking in 2017, adding 250,000 mt/year of nameplate capacity, but this was not likely to be sufficient to meet growing needs, sources said. Current plant status updates were unavailable.

VAM consumption from emerging Asian markets is expected to remain robust and grow at 5-10% year on year in 2017, an industry source said. Demand growth will be driven mainly by China, and also Southeast Asian countries such as Malaysia and Indonesia, said a major producer.

Although a few buyers warned that demand might soften on unstable macroeconomics in 2017 and producers could cut production if prices fall.

The view on VAM margins was mixed, given that the price of ethylene, a main feedstock, was forecast to remain soft but AA, another feedstock, was expected to be firm in 2017. The AA/VAM spread averaged $450-$600/mt over January-October 2016, according to S&P Global Platts data.

— Heng Hui, hui.heng@spglobal.com; edited by E Shailaja Nair, shailaja.nair@spglobal.com

MAINTENANCE SCHEDULE FOR ASIA’S AA PLANTS IN 2017 (‘000 mt/year)

<table>
<thead>
<tr>
<th>Company</th>
<th>Capacity</th>
<th>Location</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shanghai Wujing</td>
<td>700</td>
<td>Shanghai, China</td>
<td>July, one month</td>
</tr>
<tr>
<td>Jiangsu Sopo</td>
<td>1,200</td>
<td>Zhenjiang, China</td>
<td>April, one month</td>
</tr>
<tr>
<td>BP YPC Acetyl Co</td>
<td>500</td>
<td>Nanchang, China</td>
<td>July, one month</td>
</tr>
<tr>
<td>BP Petronas Acetyl</td>
<td>550</td>
<td>Terengganu, Malaysia</td>
<td>August, two months</td>
</tr>
<tr>
<td>Chang Chun</td>
<td>300</td>
<td>Mailiao, Taiwan</td>
<td>April, one month</td>
</tr>
<tr>
<td>Formosa BP</td>
<td>350</td>
<td>Mailiao, Taiwan</td>
<td>September, 25 days</td>
</tr>
<tr>
<td>Daicel Chemical</td>
<td>440</td>
<td>Himeji, Japan</td>
<td>May, one month</td>
</tr>
</tbody>
</table>

Source: Platts

OXOLS UPTREND TO STRETCH INTO H1 2017 ON STRONG DEMAND, TIGHT SUPPLY

The Asian oxo-alcohols market looks likely to maintain its current of growth into the first half of 2017 as demand from China remains constant and increasing environmental regulation in the country curbs supply, industry sources said.

The modest but steady recovery in the oxo-alcohol market began building in the fourth quarter 2016 due to strengthening...
oil prices boosting feedstock costs and a recovering Chinese economy, market participants said.

While it has yet to recover to the highs seen in 2012-2013, participants were optimistic about the outlook for H1 2017.

Production margins for oxo-alcohols were high from 2009 until 2012, when they began falling due to oversupply as domestic Chinese production began to outpace domestic demand, putting China on track to becoming a net exporter of oxo-alcohols.

However, the gap between domestic supply and demand in China has been steadily eroded over the past three to four years by increasing domestic requirements for consumer goods, floor and wall coverings and plasticizers.

China’s demand for plasticizers is indirectly related to its gross domestic product. The country has met its GDP growth target of 6.7% for 2016 and is slated to achieve that rate again in 2017, indicating demand is steady.

Oxo-alcohol markets kicked off 2016 with a whimper, with prices hovering around five-year lows over January and February amid widespread oversupply.

PA, DOP PRICES CONVERGE AS DOP PRICES SPIKE ($/mt)

![Graph showing PA and DOP prices]

However by Q4, feedstock propylene and orthoxylene prices had gained strength and supply of phthalic anhydride and dioctyl phthalate had tightened, and both these trends are seen likely to continue into H1 2017.

Propylene, which is used to produce normal butyl alcohol and 2-ethyl hexanol, rose 51% to a year-to-date high of $890/mt CFR China on October 17, 2016, from a five-year low of $590/mt CFR China on January 18, 2016, S&P Global Platts data showed.

NBA prices rose 22% to $710/mt CFR China on November 17,

Orthoxylene, the feedstock for phthalic anhydride, rose a sharper 36.4% to $835/mt CFR China in December 2016 from January 2016. As a result, PA shot up 58.3% to $600/mt CFR China on January 28, 2016.

The price jumps in 2-EH and PA, which are used to make DOP, boosted DOP prices 27% to $970/mt CFR China in December 2016 from $765/mt CFR China in both February and August 2016.

Q2 seen more volatile
Oxo-alcohol prices generally rise and fall in line with upstream crude and feedstock propylene and orthoxylene costs.

Market participants this week were confident that global crude prices would remain steady to firmer in Q1 2017, but cautioned Q2 2017 could prove a bumpier ride.

China’s NBA market is seen as oversupplied, with many producers, and is notoriously difficult to track as most deals are done directly between producers and buyers, market sources said.

They expected NBA producers to adjust their operating rates to keep prices stable, with some going as far as capping rates at 50% of capacity.

Propylene price movements will be the key influence on NBA performance and producers will react by keeping operating rates flexible, they said.

Demand for 2-EH in China was estimated 1.8 million mt in 2016, and domestic output at more than 2.1 million mt, leaving around 300,000 mt available for export, mainly to Southeast Asia and India, market sources said.

China targets becoming a regular net exporter of oxo-alcohols by 2020.

South Korea and Japan, two other major Northeast Asian oxo-alcohol producers, make an excess of 5,000-6,000 mt/month that is targeted for the export market.

The only exception in the region is Taiwan, where Nanya has not been exporting 2-EH as it is needed for domestic plasticizer and DOP production.

While plastics demand looks set to be volatile 2017, PVC demand will likely remain strong in H1 2017 on short supply due to ongoing regulatory inspections of carbide-based PVC plants in China, market sources said.

This will likely result in strong demand for DOP, a key plasticizer used in making PVC flexible.

Increasing environmental oversight of oxo-alcohol producers in China could curb the supply of 2-EH. With around 75% of China’s 2-EH production used to make DOP, this could also result in a shortfall in DOP supply.

Taiwan’s Nan Ya, a major DOP supplier, is expected to continue to export volumes to China at prices similar to domestic China levels, a market source said, adding that Nan Ya’s plants were integrated with its upstream units and that it receives tax-free incentives in China.

China’s PA capacity currently stands at 2.3 million mt, according to market sources.

Prior to 2016, operating rates had been estimated at 50% of capacity, with 30% of producers using naphthalene as feedstock as it was cheaper than using OX. However, strong demand for PA in 2016 has seen plants ramp up production to about 80% of capacity.

As a result, naphthalene-based PA could be in short supply in H1 2017 as naphthalene output could be affected by a regulatory clampdown on coal production to reduce pollution.

— Karen Ng, karen.ng@spglobal.com; Edited by Wendy Wells, wendy.wells@spglobal.com

S&P Global Platts

For more information, please visit us online or speak to one of our sales specialists:

www.platts.com | support@platts.com

© 2017 S&P Global Platts, a division of S&P Global. All rights reserved.