

✓ چشم انداز صنایع شیمیایی جهان

بازار جهانی محصولات شیمیایی ششمین سال رشد خود را تحت تاثیر عواملی همچون تقویت تقاضا، فشرده‌گی عرضه و سودآوری بیشتر در سال ۲۰۱۸ تجربه کرده است، این شرایط موجب گردیده تا رشد سرمایه گذاری در مناطق آمریکای شمالی، خاورمیانه، چین و آسیا را شاهد باشیم.

براساس پیش بینی موسسه IHS، صنایع شیمیایی جهان در سال ۲۰۲۰ تحت تاثیر عوامل زیر قرار خواهد داشت:

- احداث مجتمع های یکپارچه پتروشیمی - پالایشگاهی
- توسعه صنایع بازیافت ضایعات پلیمری - پلاستیکی
- توسعه صنایع شیمیایی در چین
- افزایش رقابت استفاده از خوراک های سنگین تر به جای خوراک های سبک گازی

✓ پیش بینی وضعیت صنایع الفین و پلی الفین ها در سال ۲۰۱۹

اهم تحولات صنایع پلیمر - پلاستیک جهان در سال ۲۰۱۸ به شرح زیر می باشند:

- پیشی گرفتن نرخ رشد تقاضای جهانی از نرخ رشد GDP آن
- رشد دو رقمی تقاضای چین
- سرمایه گذاری آمریکا در تولید و صدور محصولات پلیمری - پلاستیکی علیرغم وقوع جنگ تجاری با چین

صنایع پتروشیمی جهان در سال ۲۰۱۹ تحت تاثیر عوامل زیر قرار دارند:

- افزایش تقاضای جهانی حمل و نقل نفت خام و سوخت های فسیلی
- سیاست راهبردی چین در خودکفا شدن در تولید محصولات پایه شیمیایی و پلیمری
- اجرای موج دوم سرمایه گذاری در صنایع پتروشیمی آمریکا
- بازیافت ضایعات پلیمری - پلاستیک ها
- رشد مصرف در میان کشورهای در حال توسعه

✓ وضعیت بازار پلیمر - پلاستیک اروپا

بازار پلیمر اروپا در سال ۲۰۱۹ در انتظار واردات ظرفیت های جدید پلی اتیلن از آمریکا و افزایش عرضه پروپیلن برای تولید پلی پروپیلن می باشد.

✓ بهره برداری از مجتمع پتروشیمیایی شل در آمریکا ..... ۹

شرکت شل بهره برداری از چهارمین واحد آلفا الفین های خود را با ظرفیت سالانه ۴۲۵ هزار تن در خلیج آمریکا آغاز نموده و مجموع ظرفیت آلفا الفین خود در این ناحیه را به ۱/۳ میلیون تن در سال رسانده است، از آلفا الفین ها در بسیاری صنایع از قبیل شوینده ها، روغن های موتور و صنایع صابون سازی استفاده می شود.

✓ توسعه صنایع پتروشیمیایی آمریکا در سال ۲۰۱۹ ..... ۱۰

توسعه صنایع پتروشیمیایی آمریکا در سال ۲۰۱۹ تحت تاثیر عواملی همچون دستیابی به خوراک ارزان قیمت و حمایت های دولتی در بخش مالی - تجاری همچنان ادامه خواهد یافت ، براساس پیش بینی انجمن شیمی آمریکا (ACC) رشد تولید در سال ۲۰۱۹ به حدود ۳/۶ درصد خواهد رسید که از نرخ رشد ۳/۱ درصد سال ۲۰۱۸ بالاتر است.

✓ احداث مجتمع آروماتیک ها در خلیج آمریکا ..... ۱۲

شرکت Motiva در صدد احداث یک مجتمع آروماتیک ها به همراه یک واحد کراکر در خلیج آمریکا است ، واحد کراکر اتیلن با استفاده از مخلوط خوراک ها و با سرمایه ۴/۶۸ میلیارد دلار و واحد آروماتیک ها با سرمایه ۲ میلیارد دلار احداث خواهند شد.

تهیه و ترجمه: احمد کشوری

فرحناز عرب حسنی

# Global chemical industry outlook: Assessing today's strong markets and preparing for the 2020s

03 August 2018 [Mark Eramo](#)

The year 2018 represents the sixth year of an extended upcycle in global chemical markets - characterized by robust demand, tight supply, and strong profitability. This extended period of profitability has caused a surge in reinvestment planning activity in North America, the Middle East, China and other Asia locations. Even in Europe, thought to be disadvantaged companies are pursuing investments in new capacity. The forecast for new petrochemical investments integrated with refining could result in capacity additions that overwhelm trend line demand growth in many markets. At the same time, many risks are developing that represent potential drags on global growth. Key issues include rising crude oil prices, domestic fiscal policy and currency fluctuations, geopolitical tensions, and a variety of trade disputes. Slowing economic growth in the early 2020s represents a threat to strong chemical market conditions. As the industry rides a wave of high profits, IHSM is tracking the emergence of several trends that will reshape refining and chemicals industries during the 2020s:

- **Mobility trends and refinery/petrochemical integration:** A forecasted decline in the rate of growth for transportation fuels is causing many refining companies to re-think their petrochemical strategy, seeking a higher conversion of crude oil into chemical products.
- **Plastics recycling and waste:** these are perhaps the most critical issues that will influence the industry during the 2020s. Globally, communities are exploring bans on single-use plastic applications, while the visual of plastics waste in the oceans is now an international media issue. A slowdown in demand growth for commodity plastics resulting from increased recycling and application bans, must now be considered in long-term forecasting.
- **Evolution of the Chinese chemical industry:** The solidification of China as a global force in chemicals continues, as many changes are occurring in China's domestic market. Key areas to watch include: economic transition, environmental protection, fuel standards, private ownership, self-sufficiency goals, conventional/non-conventional technology, capital cost advantage, an advancing specialty chemical sector, and international trade ambitions.
- **Heavy-versus-light feedstock competitive environment:** Crude-to-chemicals technology is emerging in all regions while investments in gas-based chemicals in North America continue. Regional competitiveness will be significantly influenced by the price of crude oil. Ethane is no longer a "trapped" feedstock in North America, as companies have invested in the infrastructure to bring this low-cost feedstock to the international market.

During the decade of the 2020s, investors in the chemical industry will seek to balance the "petrochemical trilemma,": economic benefits of investment in the chemical value-chain, a sustainable approach to the consumption of natural resources, and offering sound environmental stewardship that is responsive to societal demands for a healthy and clean environment. The images of smog-filled air and beaches filled with plastics trash are moving local communities and political leaders to take actions that are not always the best solution to the problems at hand.

The chemical industry must continue to proactively engage on all fronts - seeking cooperative, fact-based solutions to these challenges and working side-by-side with local communities and government. IHS Markit can support your need to understand how your business can thrive in the 2020's. Reach out to the experts in this issue to start the conversation.

## Where do polyolefins and olefins fit into 2019's petrochemicals story?

1/7/2019

[WoodMac](#): In the 1967 film 'The Graduate', a bold prediction was made: "There is a great future in plastics." Since then, global consumption of plastics and new applications have been the main demand driver of the petrochemical industry.

Even in 2018, plastics continued to take center stage for the world's petrochemical industry. Global demand growth rates exceeded global GDP growth, we saw double-digit demand growth rates in China despite a waste import ban, there was another year of peak profitability across most regional petrochemical-to-plastic value chains and consumers and governments declared war on single-use plastics. Additionally, despite engaging in a trade war with China, the U.S. began implementing a large wave of export-oriented petrochemicals and plastics investments.

The dynamic market events of 2018 will be further enhanced by these key themes concerning the petrochemical industry in 2019:

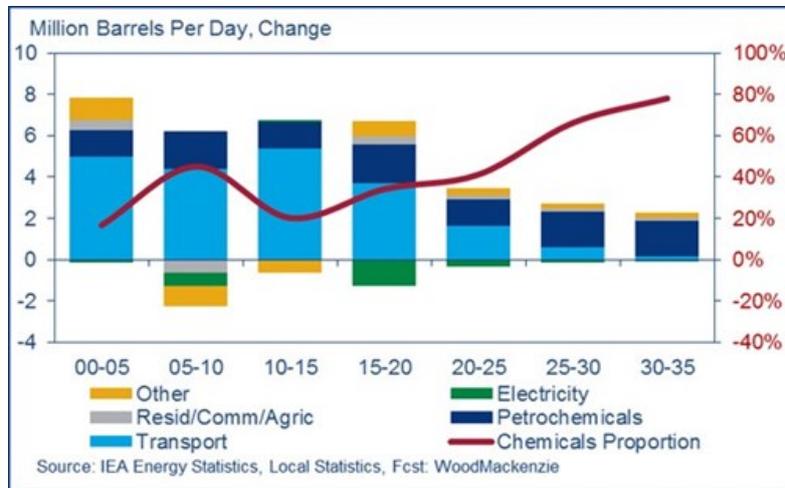
### **1. Peak crude oil transportation demand**

Transportation demand, via gasoline, diesel and other distillates, represents the majority of end-use applications for crude oil. As a result, most existing oil refineries are configured to maximize transportation fuels.

The majority of oil companies and analysts, including Wood Mackenzie, believe that transportation demand for crude oil will peak globally in the late-2020s due to improved internal combustion engine efficiency standards, increased use of electric vehicles, and consumer preferences. As a result, many oil production and refining companies are emphasizing chemicals - particularly olefins and aromatics - as a key target area for future crude oil long-term demand growth.

Dedicated crude-oil-to-chemicals technologies are being developed by Saudi Aramco, Sabic and ExxonMobil. Many traditional oil refineries will consider retrofitting to maximize production of chemical feedstocks rather than transportation fuels. Other major strategic moves will take the form of mergers, acquisitions, and joint ventures to more tightly connect companies that have crude oil/refined product supply with chemical markets and demand e.g. Saudi Aramco becoming one of the 5 largest chemical companies after acquiring Sabic.

These trends will force national oil companies (NOCs) and international oil companies (IOCs) to greatly increase participation in petrochemical markets.



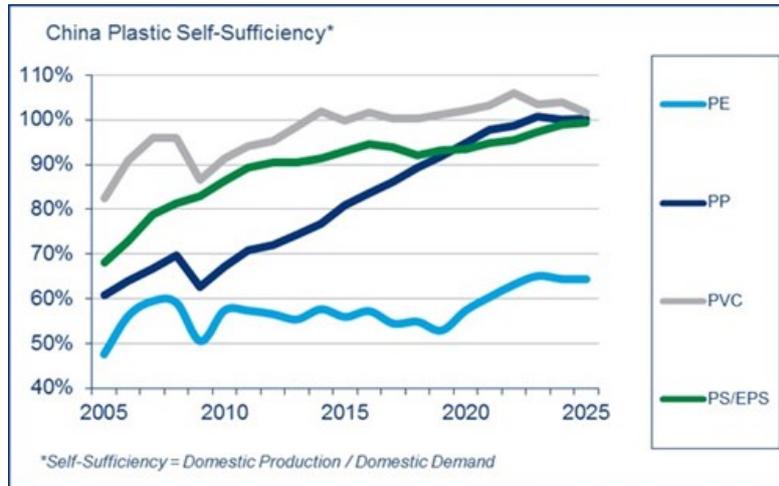
**Above: Global crude oil demand growth**

## 2. China's drive towards self-sufficiency for basic chemicals and polymers

China has traditionally been the world's largest importer of most petrochemical and plastic raw materials, which has driven its rapid growth in finished goods manufacturing over the past fifteen years. China is massively investing in propylene and primary derivatives to become self-sufficient in this value chain, just like they have already done for polystyrene and PVC chains.

China is currently only around 55% self-sufficient in the ethylene value chain and continues to be the largest importing country in the world for ethylene, polyethylene, ethylene glycol, and other ethylene derivatives. However, China will begin to measurably increase its self-sufficiency in the ethylene value chain through more domestic capacity in this sector beyond the traditionally state-controlled companies of Sinopec, Petrochina, and CNOOC by encouraging further private Chinese and Western investments. The majority of new refinery/paraxylene projects will be implemented by private Chinese companies. These crude-to-chemicals projects often include ethylene complexes as well. Several Chinese steam crackers will also be built by private companies based on imported ethane and/or LPG.

Even with an ethylene self-sufficiency rising above 60%, China will still be extremely dependent on imports for this value chain. There will be a race to fulfill this need among new domestic Chinese capacity additions, other Asia capacity additions (e.g. Korea, Indonesia, Malaysia), Middle East capacity additions, Russia capacity additions, and North America capacity additions. Therefore, competition for importing ethylene and ethylene derivatives into China will likely become tougher.

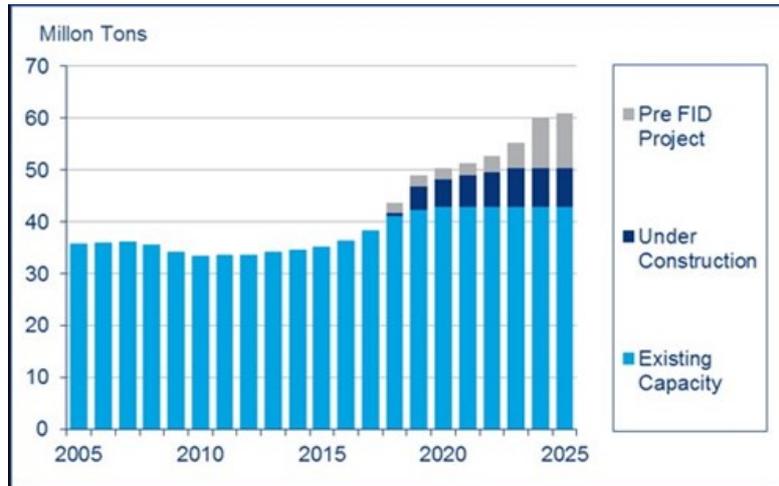


### 3. Second wave of investments in North America

North America's shale gas developments have accelerated a huge wave of new ethane-based ethylene/PE/MEG export-oriented facilities starting up in the 2017-2019 period. A second wave will reach FID in 2019/2020, with commercial production expected in the first half of the 2020s.

However, North American ethane prices rose to unexpectedly high levels in 2018 due to inadequate infrastructure to bring ethane from shale gas fields to steam crackers, and a surge in demand from the first wave of new ethylene facilities. This recent spike in ethane prices will give pause to those considering a second wave of investments in North America. However, there is plenty of cost-advantaged ethane supply in North America to support a second wave of export-oriented ethylene and derivative facilities that will become available after further ethane midstream infrastructure investments are completed.

Significantly more NGL exports will also occur from the U.S., as evidenced by increased volumes of associated liquids anticipated from the Permian Basin and the construction of several new export terminals. Many of these new NGL exports will be targeted to feed China's propylene (new PDH units) and ethylene (new ethane and LPG crackers) assets. However, as long as the current trade war continues between the U.S. and China, many new China chemical project decisions and government approvals based on imported ethane and propane will be delayed.



**Above: North America ethylene production capacity**

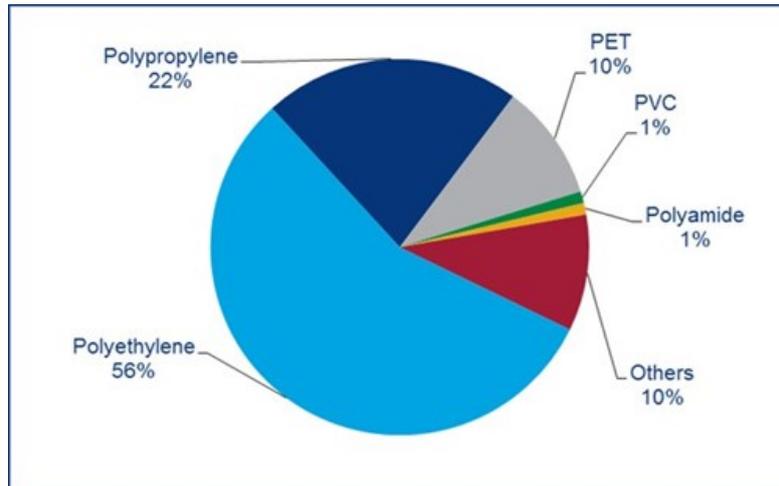
#### **4. Recycling of plastics**

Improper waste disposal of plastic goods in the world's oceans has resulted in a backlash against single-use plastics from consumers, governments, and brand owners.

This backlash has taken the form of bans or levies on certain plastic products (e.g. straws and bags), initiatives to recycle more plastics (e.g. investments in recycling infrastructure system and development of chemical recycling technologies), and improvements to waste management systems, particularly in developing countries that often dispose of most waste including plastics directly into waterways.

These initiatives are being, and will continue to be, implemented by changes to consumer behavior, government legislation, industry trade association responses, and major brand owner requirements for the sustainability of their products and packaging.

Olefins and polyolefins represent the greatest share of existing plastic packaging. Plastic companies will, therefore, strive to make their products more recyclable, look for ways to incorporate recycled materials into their business and/or production processes, and to ultimately prepare for longer-term demand destruction of particular plastic single-use segments.



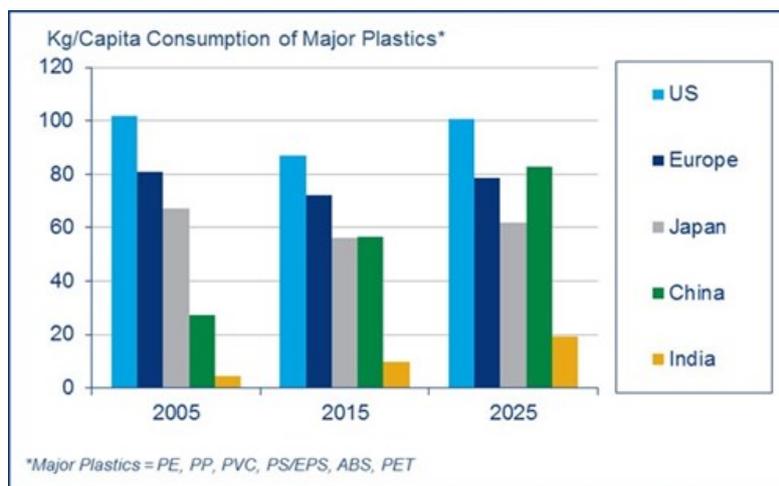
**Above: Global plastic packaging market**

### **5. Consumption growth in the developing world**

Like most raw materials, petrochemical demand growth is fastest within developing economies. Economies with rapidly developing finished product manufacturing industries and a rapidly growing middle classes seeking higher standards of living are leading demand growth for petrochemicals.

China is evolving from a manufacturing and export economy to an economy with a rapidly growing middle class. As such, we expect China's demand growth for petrochemicals and plastics to maintain a similar pace - as has been witnessed for the past decade. There are still rapidly growing manufacturing industries and/or middle classes in India, Southeast Asia (Vietnam, Indonesia, etc.) and Africa, which will also see rapid demand growth for petrochemicals for the next 20+ years.

Plastics are also assisting with the global energy transition towards cleaner and renewable fuels. Some examples include plastic piping used to transport natural gas within electric power plants, plastic piping used to recycle water from shale gas wells, plastic structures used in solar panels and wind turbines, and plastic components used in electric vehicles.



Above: Personal consumption of plastics

## PE market to reckon with new capacities, PP tempered by propylene supply

27 December 2018 12:00

LONDON (ICIS)--European polymers markets are set to diverge further in 2019 as polyethylene (PE) continues reckoning with the global new capacities while polypropylene (PP) remains tempered by upstream propylene supply.

PE imports into Europe from new capacity in the US are expected to have more of an impact in 2019, although by the end of 2018 already large volumes for particular grades were already heading eastwards.

The picture for PP in 2019, on the other hand, will be marked by the planned cracker maintenance programme that may leave monomer very snug.

The long-awaited PE imports from the US have finally started arriving, with large volumes of C4 (butene based) and low linear density polyethylene (LLDPE) have already been shipped to Europe, with prices for those grades plummeting.

European PE net prices were low in global terms, with many spot net prices below the headline contract price, a phenomenon that has been in place for some weeks.

While the flow of imports from new US capacities was slow for most of 2018, it accelerated towards year-end and volumes have already been booked for January.

With December prices falling on the back of lower naphtha prices, January arrivals could be too high to work.

PP prices have also fallen, but erosion has been milder, and imports were not such a feature in this market.

The PE market is not as weak as it might have been, however, as low water levels on the Rhine have affected output at some sites.

One LLDPE plant in Germany has also been offline for some time, but in spite of this there have not been supply shortages and buyers are relaxed.

In 2019, a series of planned cracker outages is expected to offset an increased volume of imports to an extent, as PE output will inevitably be down alongside the cracker outages for some of the time at least.

PP will also be down during this time, but in this market the fear of crackers being slow to come back on line is stronger.

If all goes according to plan, there should be no problem with ethylene supply, or even propylene, but any delay in one of the big crackers in particular could lead to supply issues on monomer, and hence polymer.

Some PP producers have made significant efforts to ensure they have secured enough propylene for 2019, but that it has been an expensive exercise.

PE will be a different story.

Ethylene output will be lower in 2019, but with availability of imports from new capacity there should be no shortage of product, and several buyers have been talking to new sellers to arrange contracted imported volumes for 2019.

Between the third quarter of 2017 and the end of 2019, US PE capacity will have increased by 6.5% in tonnes/year, which represents an increase of 39% of capacity.

Moreover, by the end of 2022 this will amount to an increase of 12.1m tonnes of PE, according to ICIS data, meaning an increase of 74% in US capacity over the whole period.

In the short term, some PE players in Europe expect prices to rise, however, arguing that net prices are lower than the ethylene contract and polymer margins are thin, with most of the margin in the cracker.

The success of any move to increase prices would depend on the level of demand in the market.

Europe is a net importer of several PE grades, and imports are key to sustain the market.

Fears of an economic slowdown in Europe, and a trend toward using recycled material and less plastic, could also begin to affect consumption of virgin plastics.

An added complication comes from the trade war between China and the US, which is expected to cause changes in trade flows, although these would still take time to take effect.



© 2018 ICIS

PE and PP is used in packaging and the manufacture of household goods. PP is also used in the automotive industry, and PP in automotive.

## Shell starts production at new petrochemicals unit in US Gulf Coast

1/7/2019

Houston – Shell Chemical LP (Shell) announced the start of production of the fourth alpha olefins (AO) unit at its Geismar, Louisiana, USA chemical manufacturing site. The 425,000-tonne-per-year capacity expansion brings total AO production at Geismar to more than 1.3 million tonnes per annum. Start-up operations began in December 2018.

Alpha olefins are key ingredients in many finished products that people use and enjoy every day, including laundry detergents, motor oils, and hand soaps.

“Our team delivered this world-class expansion project safely, on time and within budget,” said Graham van’t Hoff, Executive Vice President for Shell’s global chemicals business. “This is a key growth project for Shell’s global chemicals business. Geismar will continue to play a leading role in providing the materials for products that an increasing number of people need and enjoy.”

The new unit strengthens Shell’s leading position in the US Gulf Coast and illustrates the strategic value of its integrated downstream business. The Geismar site is supported with advantaged ethylene feedstock from Shell’s nearby Norco, Louisiana and Deer Park, Texas manufacturing sites, enabling the site to respond to market conditions.

The expansion project contains around 3,570 tonnes of steel, 18,290 meters of concrete and 85 linear kilometers of pipe. Several new pieces of infrastructure were built as part of the expansion, including a new water cooling tower, a significant expansion of the site’s rail loading capabilities, and the repurposing of a previously idled tank farm.

## **US chem industry to grow despite global economic uncertainty**

28 December 2018 19:00

HOUSTON (ICIS)--The US petrochemical industry in 2019 is primed to continue the growth thanks to feedstock advantage trumping increased economic uncertainty various trade and fiscal policies.

### **Feedstock advantage**

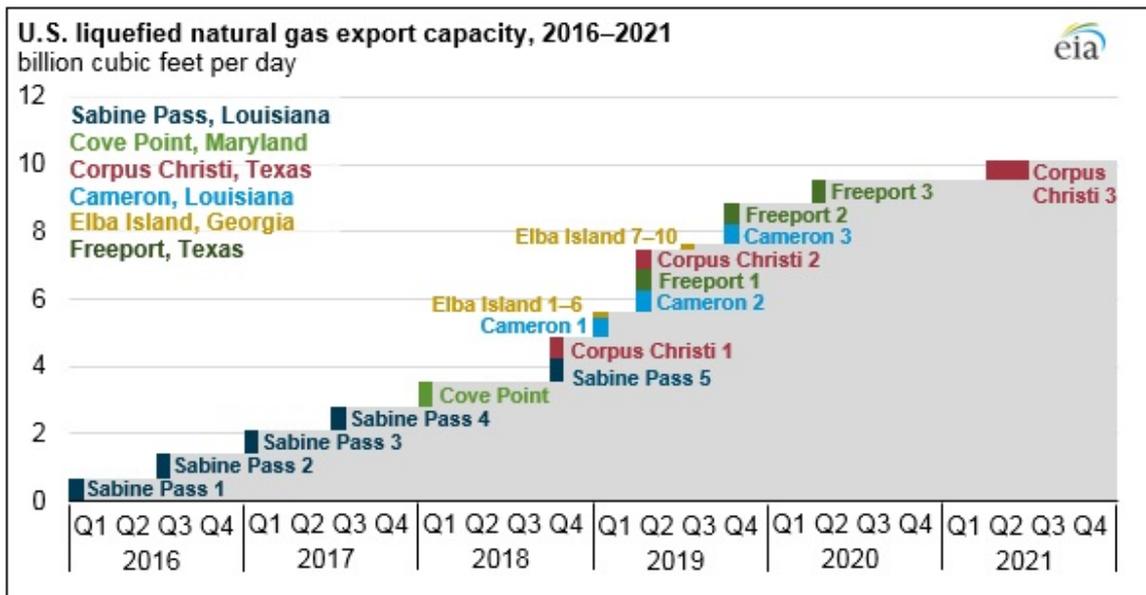
The American Chemistry Council (ACC) expects chemical output to grow by 3.6% in 2019, compared to 3.1% in 2018.

Competitive advantage from shale gas is the main factor keeping the US petrochemical outlook positive, the ACC said.

Although US chemical manufacturers experienced higher oil and gas prices at the end of 2018, the ACC noted they continue to enjoy cheaper and more abundant feedstocks and energy compared to foreign competitors.

The Energy Information Administration (EIA) said it expects strong growth in US natural gas production in 2019 to pressure prices lower.

Liquid natural gas (LNG) export capacity is expected to more than double in 2019, the EIA said, from 3.6bn cubic feet per day (bcf/d) in 2018 to 8.9 (bcf/d) at the end of 2019.



Despite this forecast, market participants could turn cautious following the last quarter of 2018.

"I think so much has changed in the last three or four months, the steadily rising cost of the feedstock for the chemical guys, and the volatile price of oil has brought a little more caution into the game," Deloitte vice chairman Duane Dickson said. "For the chemical industry it's brought a more cost reduction mindset."

### End-use markets

As noted by the ACC, US economic growth in 2018 remained dynamic across a wide spectrum of industries, and chemicals output improved as a result.

The ACC forecasted that improvement in major end-use markets such as housing (representing \$15,000 in chemical product per housing start) will also encourage gains in US chemical production for 2019.

	2018	2019
<b>Housing starts</b>	1.27m	1.34m

Source: ACC

The auto industry, which represents an average \$3,250 worth of chemical products per light vehicle, has a less positive outlook than other sectors.

New US light vehicle sales are expected to average 16.8m in 2019 as opposed to 2018's estimated 17.5m in sales, as forecast by the National Automobile Dealers Association (NADA).

### Foreign markets

The ACC warned that slowdown in foreign markets presents one of the major risks to US economic activity in 2019, as well as restricted access to those markets.

Despite recent progress, rising trade tensions also risk economic disruption, which will in turn negatively effect the chemical industry.

### **Investment enigma**

The US chemical industry's success in 2019 hinges on abundant and affordable energy/feedstocks, a strong US manufacturing base, a beneficial regulatory environment and access to global markets, as noted by the ACC.

Even if all those factors remain ideal, it's likely chemical companies will favour methodical approaches towards investment decisions for 2019.

	<b>2018</b>	<b>2019</b>
<b>Business investment</b>	6.8%	4.7%

*Source: ACC*

Regarding mergers and acquisitions (M&A), the focus on lower costs will translate into and buying companies at affordable values as opposed to reducing M&A activity overall.

Dickson said companies will likely continue to search for cost savings as they consolidate their businesses.

“I think they’re really going to look at tightening their belts,” Dickson said .“For investments that we saw in digital technology or sustainability, they’ll probably do it, but not as aggressively as if the earnings picture was as it was during the first half of this year [2018].”

## **Motiva seeks incentives for cracker, benzene/PX plant on US Gulf**

20 December 2018 18:19

HOUSTON (ICIS)--Motiva Enterprise may build a new cracker and aromatics project at its refinery complex on the US Gulf Coast, according to documents it filed with the Texas state government.

Both projects would be world scale, and Motiva would build them at its complex in Port Arthur, Texas, Motiva said in a Chapter 313 application it filed with the [Texas Comptroller of Public Accounts](#).

Such applications provide companies with tax incentives if they are approved by the state.

Motiva did not specify the capacity of the projects.

In a statement, the company said that it may make a final investment decision (FID) by the end of 2019.

Construction on the ethylene plant could start in the first quarter of 2020 and operations could start in the fourth quarter of 2022, Motiva said. The company could invest \$4.68bn on it.

Based on an earlier announcement, the ethylene plant would rely on mixed feeds.

Construction on the aromatics unit could start in the second quarter of 2020, and operations could start in the fourth quarter of 2022.

The aromatics project would produce benzene and paraxylene (PX), Motiva said. It estimates investing nearly \$2bn in the project.

Both projects are still in the evaluation stage, Motiva said. So far, Motiva has signed agreements regarding preliminary design and engineering work as well as developing other technical studies and estimates. These will help the company determine whether the projects are technically viable and cost competitive.

Motiva hinted that it may consider other locations, saying that other places also offer incentive programmes to attract investment.

In the statement, Motiva said the FID would depend on strong economics, incentives and support from regulators.

Earlier this year, Motiva's parent company, Saudi Aramco, [announced that the company](#) had signed \$8bn-10bn worth of memoranda of understanding (MoUs) covering process technologies for possible ethylene and aromatics units in the US.

One of the memoranda will evaluate using TechnipFMC's mixed-feed ethylene production technologies. Another will evaluate using Honeywell UOP's aromatics extraction and production technologies for benzene and paraxylene (PX).