



REACTION

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Introduction

Welcome to the first edition of REACTION magazine for 2017. As we reach the end of earnings season, many global chemical companies have reported robust results for 2016 but the outlook for 2017 and beyond remains mixed. Political uncertainties abound in Europe, with national elections due this year in Germany and France, following the recent poll in the Netherlands, where the parties are still trying to form a government as we go to press. Asian growth rates have come off from where they have been, but remain the strongest globally. Meanwhile, in the US, the industry is excited by President Trump's proposed spending plans and tax cuts...if he can get them done.

In this edition, we take a look at the ongoing wave of M&A activity, which is changing the face of the global chemical industry. We also investigate the changing shape of the Middle East chemical industry and what companies need to do to be successful in the face of declining feedstock advantage. Last, but certainly not least, there's also an update on the latest trends and dynamics affecting the chemical industry in China.

As ever, our global chemicals and performance technologies team remains active in the industry, and we'll again be hosting our annual industry conference in Dusseldorf on June 27th. We hope to see many of you there.

We'll be back with our next edition in July, with an overview of customs tax practices for the global chemical industry and a deep dive into our recently launched Digital Transformation Survey with KPMG in Germany. Also starting with this edition, REACTION magazine is going green, replacing our print version with a fully digital magazine.

If there are any other topics you would like us to cover in future editions of REACTION, please don't hesitate to contact us.



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GCC chemical companies

on the move as global
competitors

By Oliver Gawad

A dramatic fall in crude oil prices, reduced advantage from cheap feedstocks, a shifting competitive landscape and other challenges are forcing Gulf Cooperation Council (GCC) chemical producers to rethink the way they have done business for decades. Taking a cue from chemical industries in both the East and West, GCC companies are exploring a variety of solutions that are showing strong potential for sustainable growth in the future.



GCC chemical industry¹

Petrochemical companies in countries belonging to the GCC make the following contributions:



US\$79.7

billion sales
revenue



27%

of GCC
manufacturing
added value



143,000

employed



144

million tons of
annual production
capacity



The new normal

In today's global economy, the 'new normal' means different things to different businesses in different regions. For chemical producers in countries belonging to the GCC — Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE — the new normal means that the golden years of advantaged cheap feedstocks and high growth are over — at least for the moment.

During the 1990s and 2000s, cheap and available feedstocks, rapidly growing emerging economies with high-demand markets and old and withdrawing production assets in the West gave petrochemical producers in the GCC significant advantages. However, Brent oil prices have collapsed from a high of more than US\$120, down to US\$50 as of February 2017, with no significant price increase expected in the short term.² Naphtha prices linked

to the price of crude also plunged. Since then, the decline in oil prices has triggered petrochemical price decreases of around 50 percent, drastically cutting GCC oil and gas revenues.³ These price declines were accompanied by the global economic slowdown, a cooling of demand in emerging markets and the threat of highly competitive shale-based projects in the US.

At the same time, the region moved toward gas scarcity in recent years. As a result, Saudi Arabia, the region's largest producer of petrochemicals, more than doubled the price of ethane at the beginning of 2016, to US\$1.75/million Btu from 75 cents/million Btu.⁴ Some 70 percent of the Middle East's petrochemical industry uses natural gas as its raw material.⁵ When crude was in the range of US\$100 per barrel, the oil-gas price spread favored ethane-

Brent oil price

(US\$ per barrel)



— Spot price

Source: Capital IQ and EIA

¹ 2015 statistics, GPCA and KPMG research

² Global Implications of Lower Oil Prices, IMF, <https://www.imf.org/external/pubs/ft/sdn/2015/sdn1515>. See also, Crude oil prices expected to increase slightly through 2017 and 2018, U.S. Energy Information Administration, 12 January 2017, <http://www.eia.gov/todayinenergy/detail.php?id=29532>; and Short-Term Energy Outlook, U.S. Energy Information Administration, 7 February 2017

³ Op. cit., Global implications of lower oil prices

⁴ Middle East looks to the future, Chemical Week, 7 November 2016, http://www.chemweek.com/lab/Middle-East-looks-to-the-future_83372.html

⁵ Middle East: Less Competitive, But Still Adding Massive Capacity, C&EN, 11 January 2016

based crackers, so this change in price differential has had a huge impact on the margins of steam crackers in the Middle East.

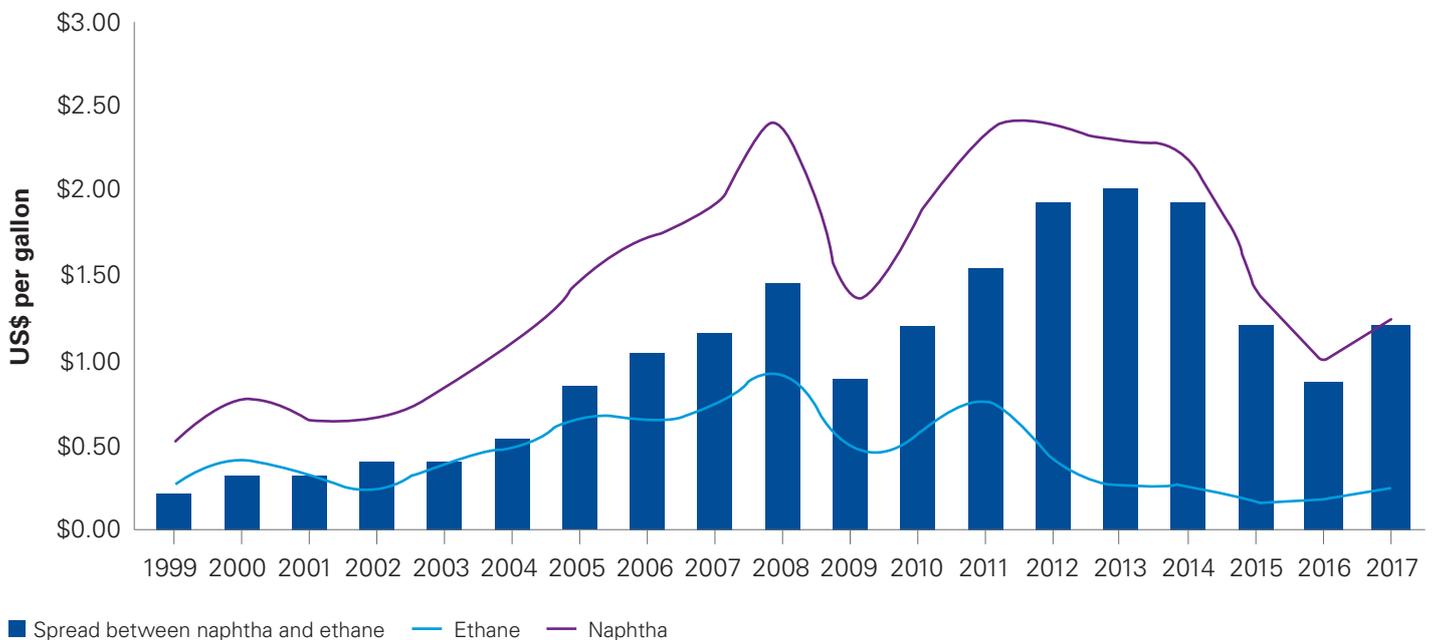
As if this weren't enough, capacity expansion in China and Iran is adding downward price pressures to global petrochemical markets. China has long been the world's largest importer of polyethylene (PE) and polypropylene (PP), but the country recently has launched a colossal capacity expansion initiative in its petrochemical industry. From 2015 through 2019, China will have increased its high-density polyethylene (HDPE) capacity by almost 50 percent.⁶ Development of coal-based olefins and dedicated propane dehydrogenation (PDH) units in China may cut China's PP imports by roughly 80 percent by 2019.⁷

In Iran, the lifting of international oil sanctions pose a similar threat to GCC producers. Iran has already announced projects aimed at boosting its methanol capacity from about 5 million tons in 2015 to more than 9 million tons in 2020.⁸ These include five petrochemical projects that are expected to start up by the end of March 2017.⁹ Iranian producers will directly compete with methanol producers exporting from Saudi Arabia, Qatar and Oman.

No wonder that GCC petrochemical producers are taking a long, hard look at how to maintain their competitiveness. Solutions are being developed that include examining new business models, undertaking M&A and joint ventures (JVs) enhancing the international footprint, upgrading operations and supporting a corporate culture focused on innovation and commercial excellence.

“Iranian producers will directly compete with methanol producers exporting from Saudi Arabia, Qatar and Oman.”

Divergence between naphtha and ethane prices



Source: US Energy Information Administration, Chemical Week, ICIS. www.chemicalweek.com and www.businessinsider.com

⁶ Op. cit., Why the Middle East's Petrochemical Industry Needs to Reinvent Itself,

⁷ Ibid.

⁸ Iran's set petrochemical capacity target to 180 million tons, IranThisWay, 5-11-2016, <http://iranthisway.com/2016/11/05/irans-set-petrochemical-capacity-target-180-million-tons/>

⁹ Iran to start up five petchem plants by end of March, Chemical Week, 12 January 2017, http://www.chemweek.com/regions/mideast/iran-to-start-up-five-petchem-plants-by-end-of-March_84748.html



New strategies and business models

GCC chemical producers are facing a paradigm shift from a strategy based on volume and domestic feedstocks to a more holistic and global approach, often including a move further down the value chain.

The decision to adopt a new business model is never simple. The future of the company depends on a rigorous assessment of current states and future requirements in key areas such as feedstock cost and supply, product portfolio, technologies, network partners, new product development pipelines, stakeholders' mindsets, global reach and connectivity to potential end-user industries.

Most GCC companies have traditionally been focused on commodity production. Today, many of these companies are

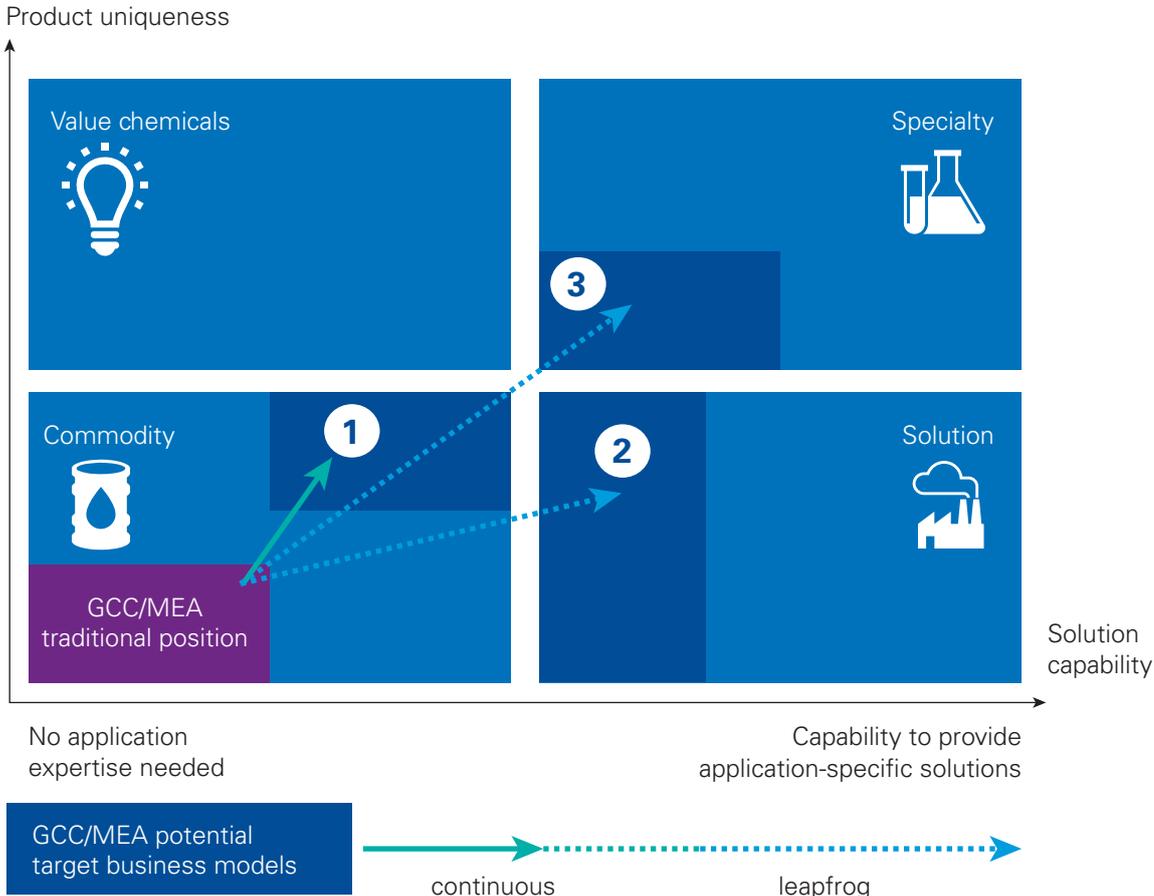
considering a transition to higher-margin specialty chemicals to remain competitive, even as they recognize the enormous challenges in making such a move.

Compared to commodities, the business environment for specialties is often more complex due to the higher knowledge components and higher pace. The commodity business model is based on manufacturing efficiency, volume pricing and capacity utilization. The specialties model involves a greater emphasis on innovation and niche markets. (A reverse problem can arise if a more specialized player is integrating backward into a strict and lean business model for commodities.) Specialty business models also require different skills to understand multiple products and their relevance for client applications,

since price gradually loses its status as the main buying criterion to services the further downstream the chemical producer moves.

With any business model for chemical production, some companies make a decent profit and others do not perform as well. In fact, it is often not the business model per se that drives profitability but rather the way the business is run that determines success. If a viable business is brought into a completely different business model environment, it might soon lose its 'magic touch.' In the event that a commodity player takes over a specialty business, it often makes sense to embrace a new mentality and corporate culture — a change that is always easier said than done.

Transitioning to new business models



Source: KPMG Stratley, Global rules of competitiveness embrace GCC chemicals: competitiveness in times of levelling differentiators, 2016



Deals both East and West

Keeping in mind the challenges involved in adopting a new business model, a number of major GCC chemical producers are planning to diversify their existing model through JVs and other transactions with multinationals.

SABIC has announced plans to study a coal-to-chemicals project in the Ningxia Hui region of China, which has abundant coal reserves, in a JV with Shenhua Ningxia Coal Industry Group, a subsidiary of Shenhua Group. The project is expected to cost between US\$3 to 4 billion and be onstream in 2020.¹⁰

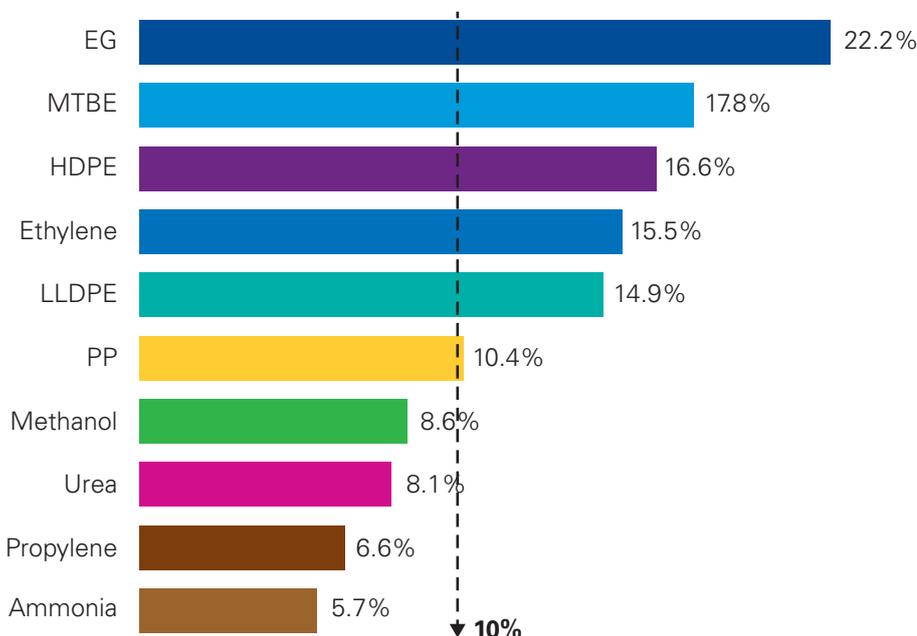
SABIC and ExxonMobil Chemical announced plans in July of 2016 to explore developing a jointly owned petrochemical complex on the US Gulf Coast.¹¹ The proposed complex

would include one of the largest steam crackers, capable of producing 1.8 million metric tons/year (MMt/y) of ethylene that would feed an ethylene glycol (EG) and two PE plants.¹² SABIC is also working on US plans for products such as ammonia, EG and methanol, as JVs and stand-alone facilities.

Overseas companies are also playing a part in this diversification. ChemChina (Beijing) agreed recently to invest in Saudi Arabia's downstream sector. The agreement between ChemChina and Saudi Aramco offers the possibility of future swaps of refined fuel and cooperation in organic silicon and solar photovoltaics, special chemicals and automotive rubber.

“SABIC has announced plans to study a coal-to-chemicals project in the Ningxia Hui region of China, as well as a jointly owned petrochemical complex on the US Gulf Coast.”

GCC share in global production capacity in 2015 for the top 10 chemicals products



Source: ICIS, IFA, GPCA, 2016

¹⁰ Op. cit., Middle East looks to the future

¹¹ Ibid.

¹² Ibid.

Regional developments

Joint ventures between companies within the GCC are helping to create the critical mass needed to benefit from shared services, utilities and procurement as well as innovation efforts and people development.

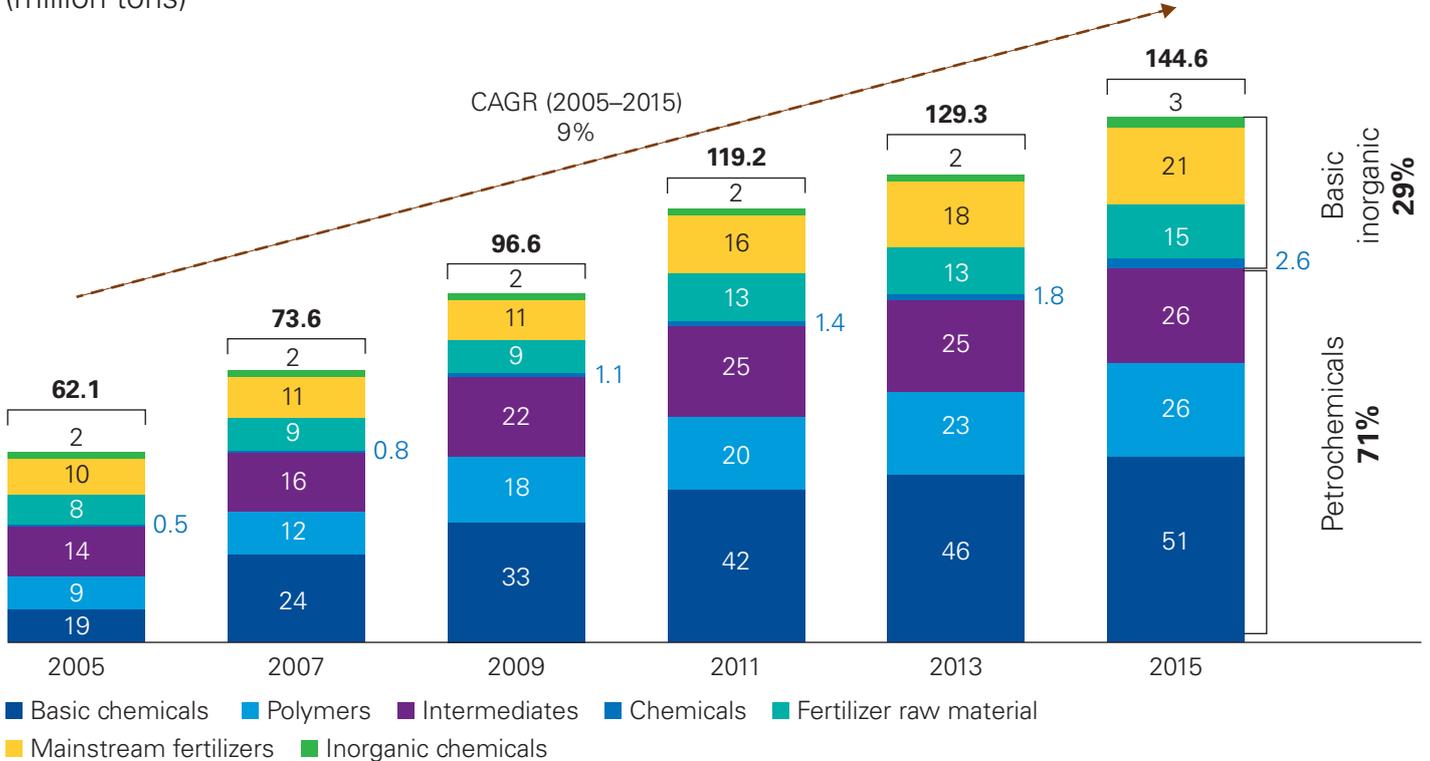
The biggest example of this kind of regional development — and the biggest-ever chemical complex to be built in a single phase — is Sadara, a US\$20 billion petrochemical facility in Jubail, Saudi Arabia, being constructed by Saudi Aramco and Dow Chemical as well as PlasChem Park.¹³ A number of Sadara’s 26 plants will make a combined 2.7 million metric tons of product annually, including PE, propylene oxide, elastomers, glycol ethers, amines, isocyanates and polyether polyols. Many

of these products have never previously been produced in the GCC.¹⁴

Built for today’s volatile feedstock supplies, Sadara will support mixed-feed production. Of the 12 cracking furnaces, seven are designed to crack ethane, five will mainly crack naphtha and three have flexibility to switch between gas and liquid feedstock. The mixed-feed cracker together with the aromatics plant will produce ethylene and propylene together with 280,000 metric tons/year of very high-purity benzene and 134,000 metric tons/year of very high-purity toluene. Sadara will be the first complex in Saudi Arabia to use naphtha as its feedstock, thus sidestepping gas price hikes. Adjacent to Sadara

is PlasChem Park, a 12 square kilometer industrial park dedicated to downstream chemical and conversion industries. PlasChem Park is designed to enable and support downstream opportunities in many market segments, including the hydrocarbon resin cluster, ethylene oxide/propylene oxide (EO/PO) cluster, polyurethane cluster and a plastics cluster. These clusters are attracting diversified investments into PlasChem Park for downstream applications such as the production of oil and gas chemicals,¹⁵ construction materials, auto components, animal feed, paints and coatings, as well as home and personal care products.

GCC chemicals production capacity by product segment (million tons)



Source: GPCA, 2016

¹³ Sadara website, <http://www.sadara.com/en/about/WhoWeAre>. See also, Middle East looks to the future

¹⁴ Sadara website, <http://www.saudiaramco.com/en/home/inaugurations/sadara.html>

¹⁵ www.sadara.com/en/Plaschem_Park



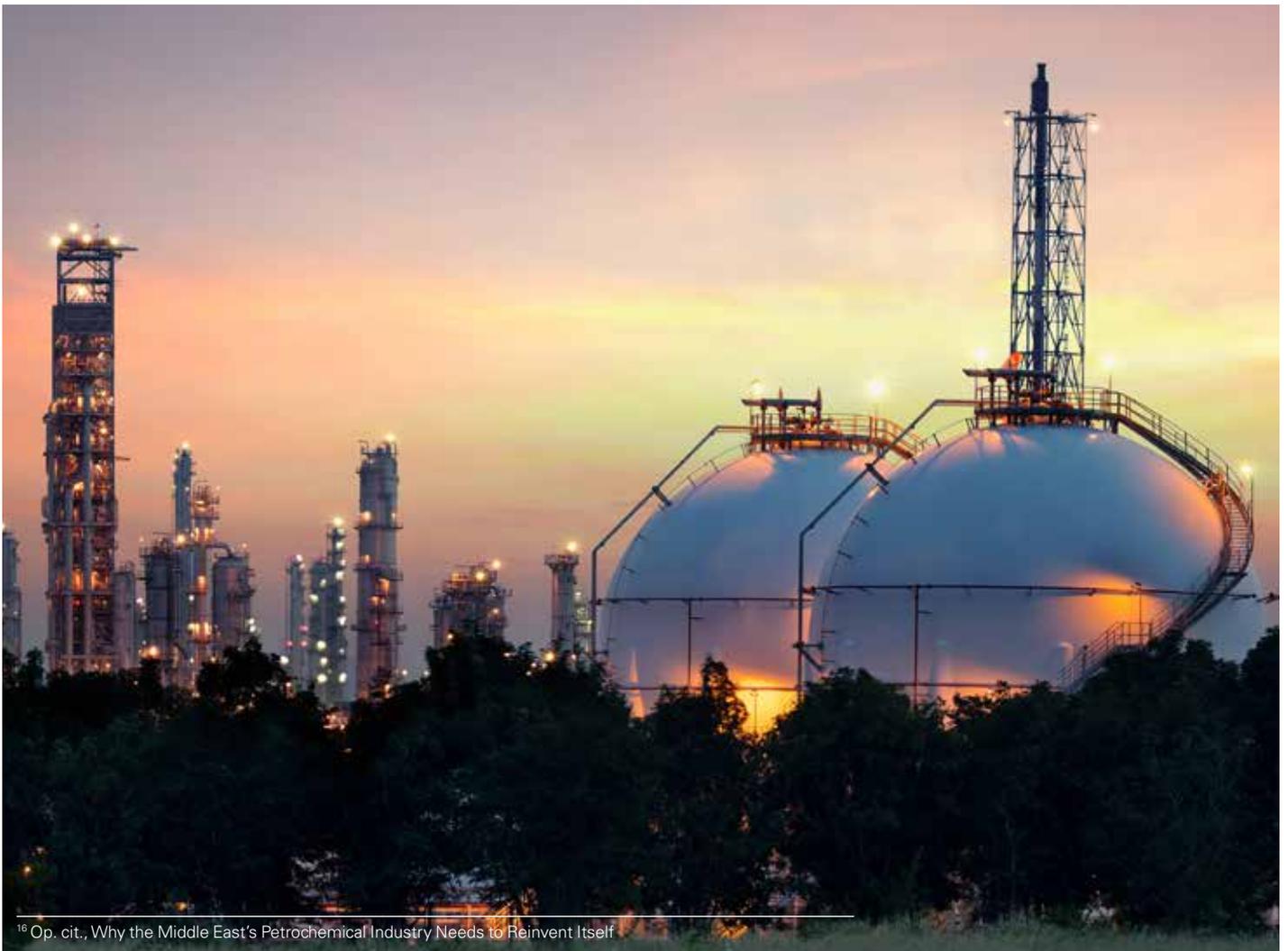
An increased focus on customers

Compared to chemical producers in other regions, GCC producers have invested less in commercial capabilities such as sales and marketing. Instead, they have outsourced many of these functions and relied on traders to carry and sell their products in core markets. Although this arrangement has worked fairly well for years, they have also lost anywhere from 3 to 5 percent of their product value to middlemen.¹⁶

In light of their diminishing feedstock advantage and other factors, many GCC producers are now reducing their reliance on off-takers by delivering greater volume to their markets through their own commercial organization. They are also taking steps to strengthen their sales, marketing and supply chain management capabilities.

In general, GCC companies need to continue analyzing strategic markets, segmenting their customer base and tailoring service levels to each segment. They will have to deepen their understanding of their customers' value chain and identify critical applications for their products, especially if their business models transition toward specialties. Domestic producers should also fine-tune their analysis of major regional markets, such as construction and packaging. With a better understanding of customers and markets both at home and abroad, GCC companies can develop more competitive pricing, helping them to capture more value from their products.

“ Compared to chemical producers in other regions, GCC producers have invested less in commercial capabilities such as sales and marketing.”



¹⁶ Op. cit., Why the Middle East's Petrochemical Industry Needs to Reinvent Itself

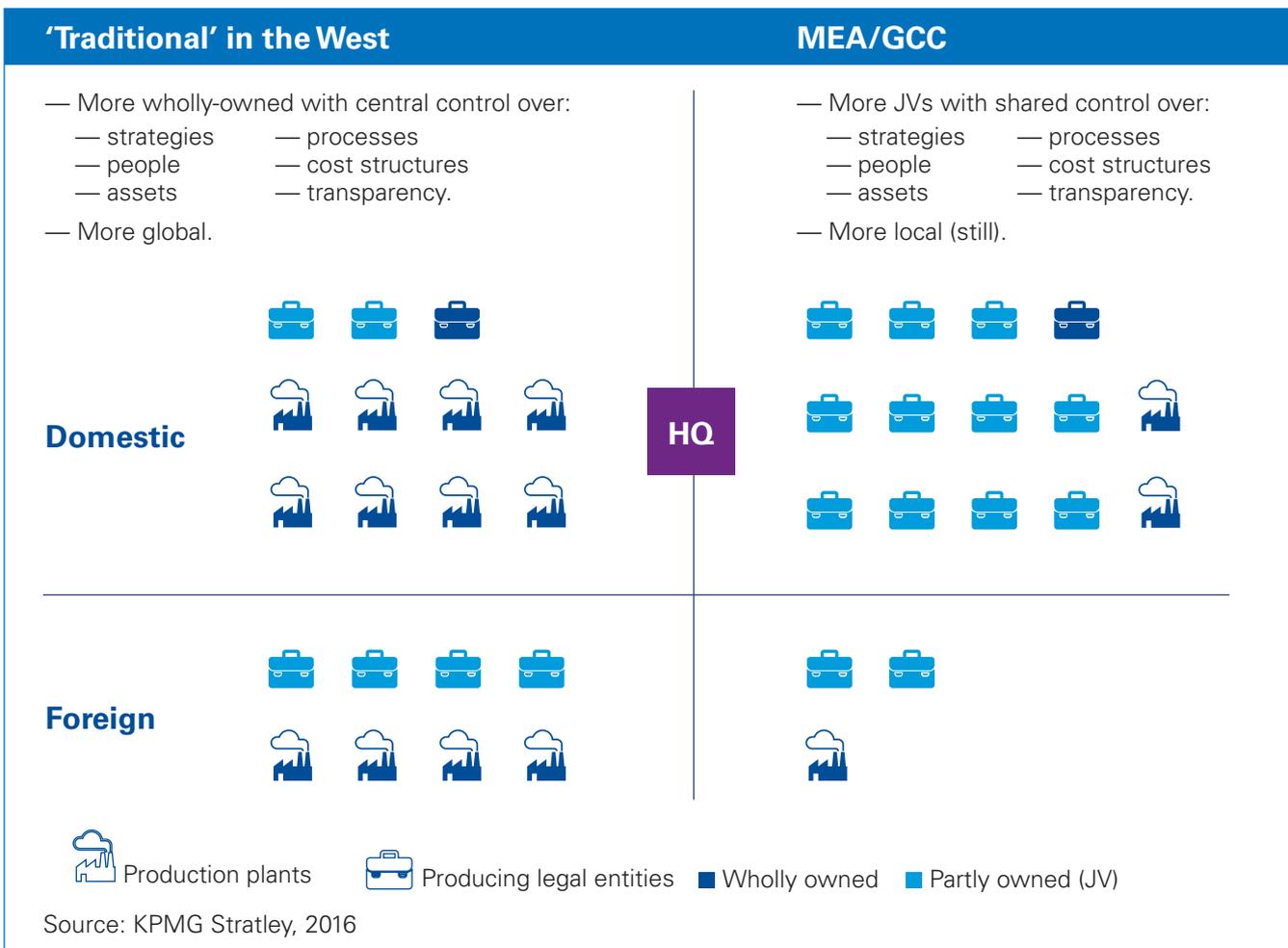
Restructuring and JVs

Historically, most GCC chemical companies have been grown on a project-by-project basis, usually in the form of various JVs with foreign partners. This fact is critical to understanding the structure, culture and very identity of these companies.

In most cases, JV partners have a strong voice in the development and support of operations, pricing, market focus, new product development, governance and transparency. The corporate culture is invariably influenced by multiple international JVs already in the home country, each with their own cultural

blend and ways of doing business. This diversity can add a layer of complexity to any strategic decision making, especially if a company is considering a strategic shift to new markets, processes or business models.

At the same time, these international environments in the homeland can prepare and qualify a company for similar JVs overseas. A collection of best practices across all local JVs can be used for strategic guidance as the company explores opportunities in global markets as well as change initiatives in the future.



Conclusion

Entering a new era, GCC chemical producers will gradually need to resemble other players in the rest of the world. Regional advantages will remain, though not what they have been in the past. For example, feedstock prices for the GCC will still be at the lower end, and companies will still be strategically positioned between major markets in

both Europe and Asia. GCC chemical companies will become more and more subject to the principles of business success that apply elsewhere. With careful guidance and an openness to change, they can maintain and even increase their competitive advantage in today's world markets.

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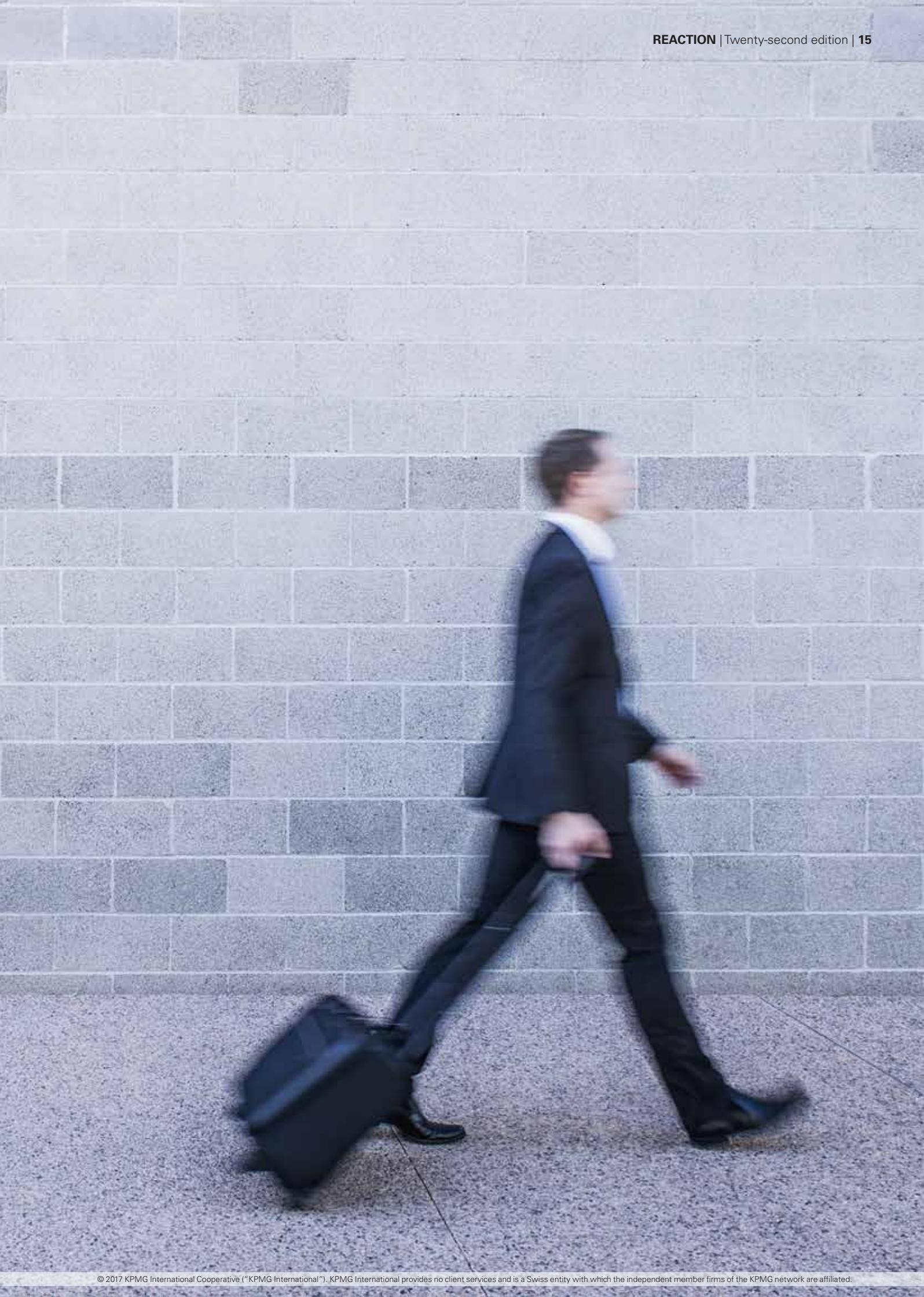


Big deals

set the tone for a steady market in chemical M&A

By Vir Lakshman and Paul Harnick

M&A activity in the chemical industry continues to be robust despite political uncertainty and regulatory concerns. Following 2015's year of the mega deal, chemical M&A remained fairly stable. That said, several mega deals initiated in 2015 and 2016 will, if completed, make 2017 a banner year for transactions. Activity was spread across the value chain with a focus on agrochemicals; private equity (PE) activity was subdued due to high valuations. Overall, KPMG research indicates that the environment for M&A activity will remain encouraging for chemical companies in 2017.



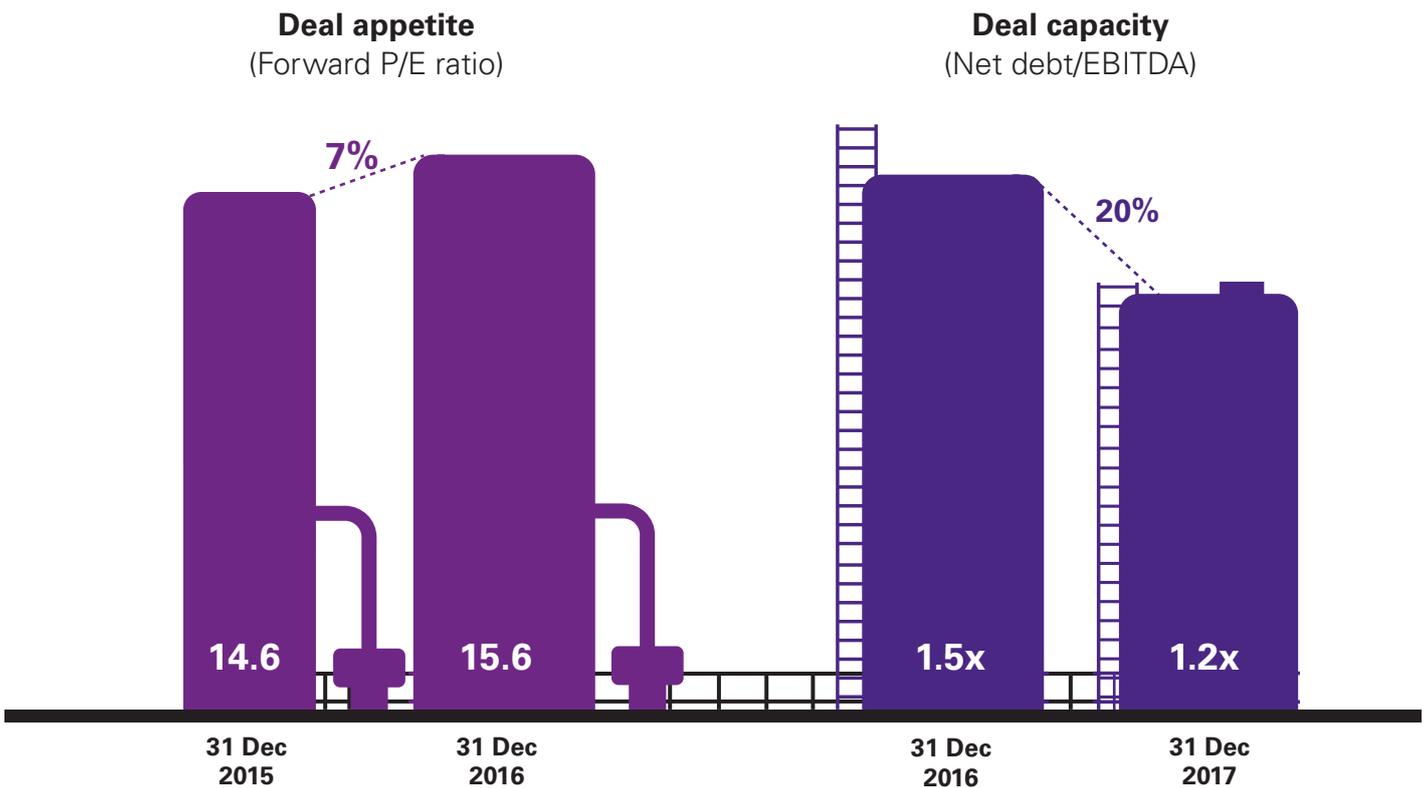


Bigger deals but fewer of them

“ Specialty deal flow is stronger than commodities and activity continues to shift toward Asia. ”

After a rocky start, 2016 saw a solid flow of deals. Chemical indices rose steadily throughout the year. Despite the uncertainty caused by Brexit, Bloomberg Europe 500 (+15.8 percent) outperformed other regional indices.¹⁷ The number of completed deals decreased slightly by 4 percent year-over-year, and total deal value declined from US\$76 billion in 2015 to US\$72 billion for 2016. However, if we look at deals pending, the total amount of deals announced in 2016 is more than US\$180 billion.¹⁸ This would mark the 4th straight year in which deal value has increased.

The US and China led the M&A charge, dominating the landscape both as acquirers and targets (see chart: Top countries in chemical M&A). Specialty deal flow is stronger than commodities, and activity continues to shift toward Asia. Chinese firms accounted for 21 percent of total acquisitions, up from 16 percent last year.¹⁹ Chinese acquirers are looking for outbound targets in response to domestic market consolidation and cooling economic growth in China, despite increases in domestic markets.



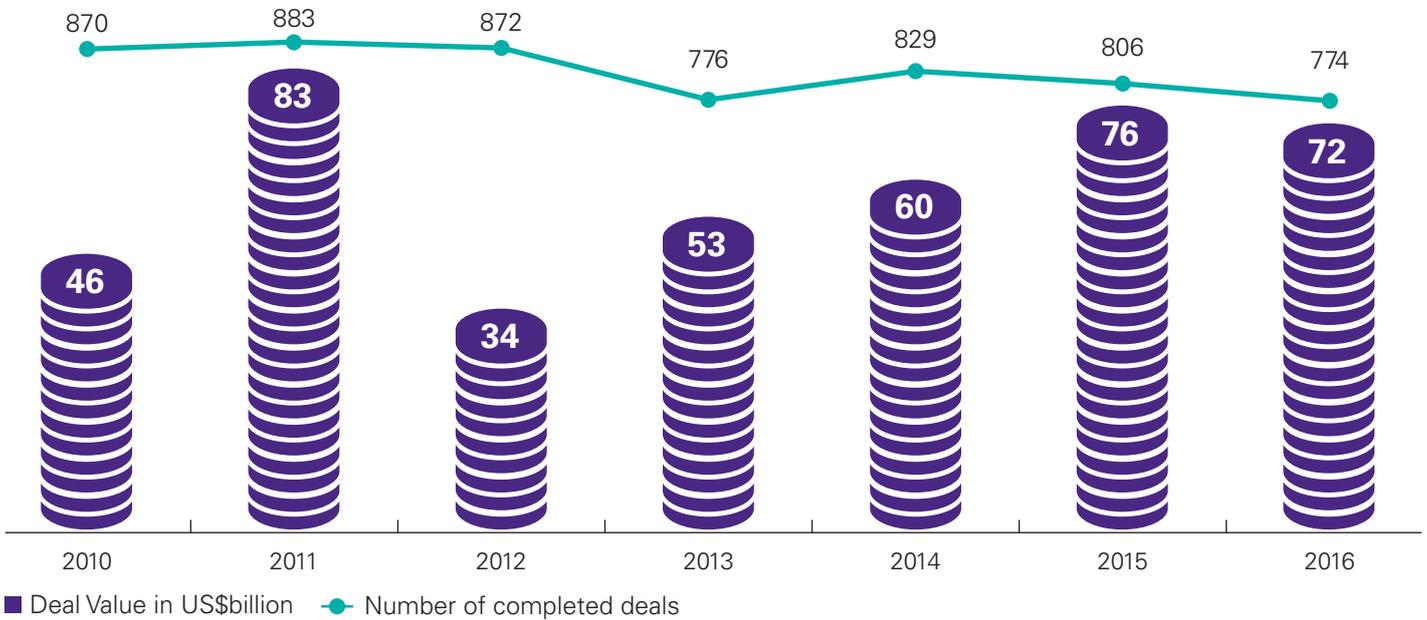
Source: Capital IQ, KPMG Analysis

¹⁷ KPMG Deal Capsule January 2017

¹⁸ Figure does not include Dow/DuPont merger, which was announced in 2015

¹⁹ Op. cit. KPMG Deal Capsule

Deal value and completed deals



Source: Thomson One, KPMG Analysis

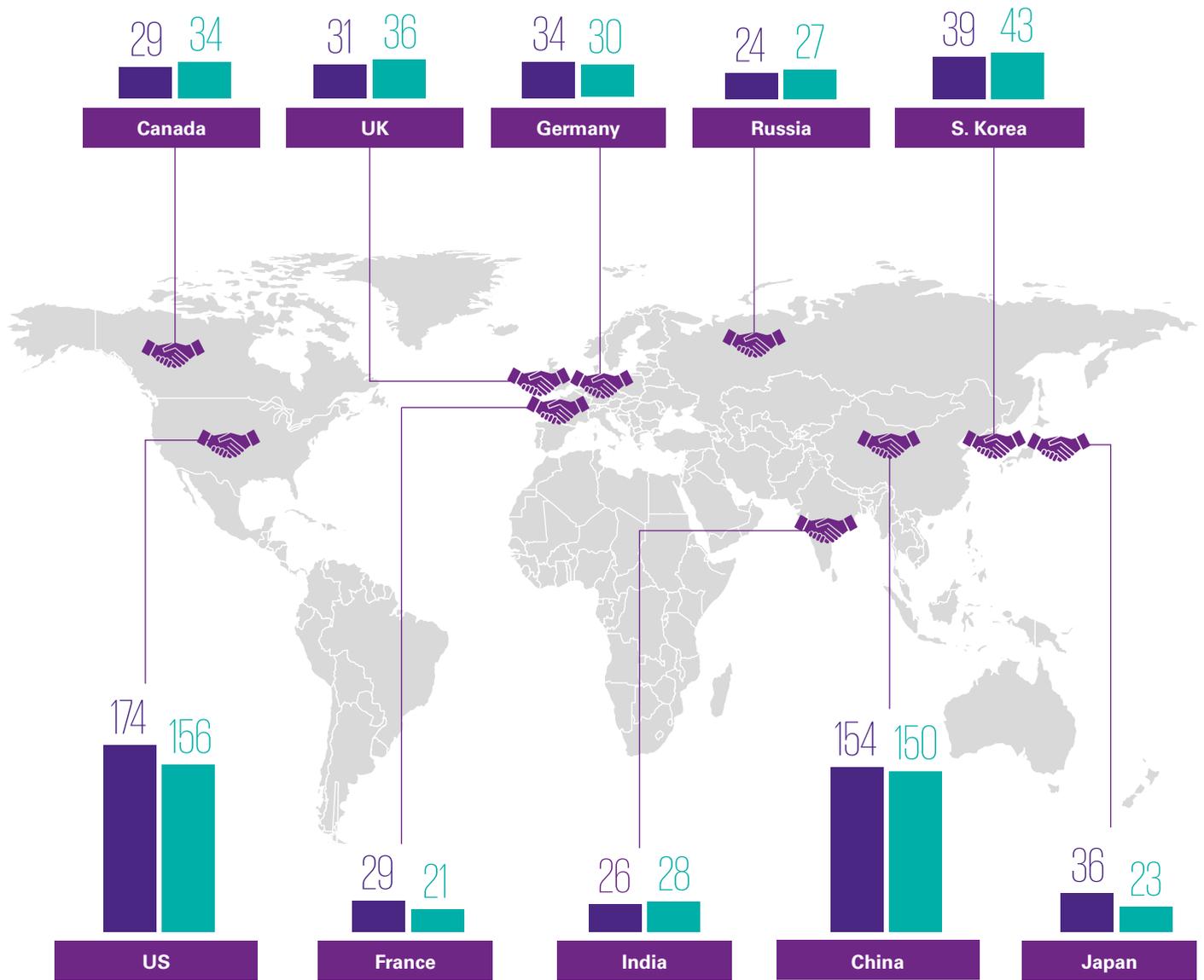
Germany's leading chemical companies were also very active in 2016. In total, they plan to invest around US\$76 billion.²⁰ BASF SE, Lanxess AG and Evonik Industries AG all acquired specialty businesses. Linde AG announced its intention to merge with US rival Praxair Inc. The deal would create the world's largest industrial gases supplier with pro forma revenues of US\$30 billion. Both companies possess complementary strengths and regional footprints. The deal is expected to create annual synergies of US\$1 billion.²¹

“Chinese acquirers are looking for outbound targets in response to domestic market consolidation and cooling economic growth in China.”

²⁰ Op. cit., KPMG Deal Capsule

²¹ Ibid.

Top countries in chemical M&A for 2016



■ As acquirer ■ As target

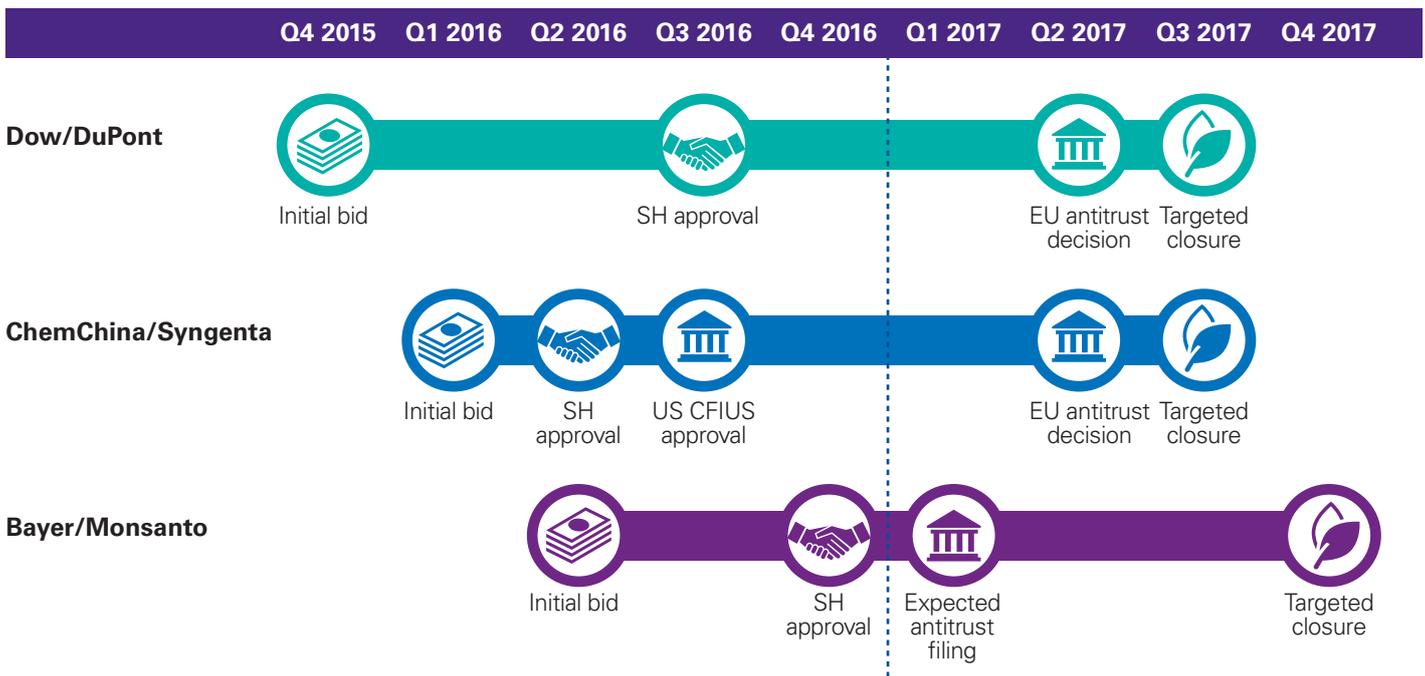
Source: Thomson One, KPMG Analysis

Chemical distribution is another area that experienced a pickup in M&A activity in 2016.²² The structure of the chemicals distribution industry in many respects is similar to coatings — a small number of multinational companies have most of the market, followed by a large number of smaller, specialized or regional distributors that serve local customers and compete by offering value-added services. This kind of industry structure is tailor-made for consolidation.

Activity by financial investors was comparatively low in 2016. The number of completed PE acquisitions declined by 17 percent year-over-year.²³ High price tags for many potential targets discouraged investors, but several PE investors completed a total of four deals worth more than US\$1 billion each.²⁴

“ High price tags for many potential targets discouraged investors, but several PE investors completed a total of four deals worth more than US\$1 billion each. ”

Milestones on path to completion: Top agrochems transactions



Source: EuroChem MCC, KPMG Analysis

²² The Gold Rush: Chemicals M&A 2016 — 2017, Grace Mattheys, <http://gracemattheys.com/DefaultFile/DefaultFile/Public/GM-Chemical-Marketing1/Chemical-Newsletter/ChemicalInsights-Winter2016-17.pdf>

²³ Ibid.

²⁴ Ibid.

Global top deals completed in 2016

	Bidder	Target	Business area	Total value*
 <p>The deal value of the global top 10 completed deals in 2016 was</p> <p>\$34.7 billion</p>	Air Liquide SA	Airgas Inc.	Industrial gases	13.4
	Westlake Chemical Corp.	Axiall Corp.	Chlorovinyls, vinyl building products and aromatics	3.8
	BASF SE	Chemetall GmbH (part of Albemarle Corp.)	Surface treatment	3.2
	CHS Inc.	CF Industries Nitrogen LLC (11%)	Nitrogenous fertilizers	2.8
	Dalian Rubber & Plastics Machinery Co., Ltd.	Jiangsu Hengli Chemical Fibre Co., Ltd.	Chemical fibres	2.8
	Lotte Chemical Corp.	Samsung SDI Co., Ltd. — Chemical business (90%)	Plastics (ABS, PC)	2.0
	CMOC Ltd. (part of China Molybdenum Co., Ltd.)	Anglo American PLC — Niobium and phosphates business	Niobium and phosphates	1.7
	<i>WL Ross Sponsor LLC</i>	<i>Nexeo Solutions Holdings, LLC (TPG Capital, 65%)</i>	Chemicals and plastics distribution	1.7
	<i>Dmitry Lobyak</i>	<i>PJSC Uralkali (part of Onexim Group Ltd., 20%)</i>	Potash	1.7
	Jingyuan Holding Co., Ltd.	Golmud Possession Grid Potash Co., Ltd.	Potash	1.6

Global top deals announced in 2016, yet to close

	Bidder	Target	Business area	Deal status	Total Value*
 <p>The deal value of the global top 10 announced deals in 2016 was</p> <p>\$181.9 billion</p>	Bayer AG	Monsanto Co.	Agrochemicals	Pending antitrust approval	66.0
	China National Chemical Corp.	Syngenta AG	Agrochemicals	Pending antitrust approval	43.0
	Praxair Inc.	Linde AG	Industrial gases	Pending approval to create merged group with combined market capitalization of \$65 bn.	35.2
	Potash Corp of Saskatchewan Inc.	Agrium Inc.	Fertilizers, agrochemical retail	Pending antitrust approval	13.1
	Sherwin-Williams Co.	Valspar Corp.	Paintings and coatings	Pending antitrust approval	11.3
	Evonik Industries AG	Air Products & Chemicals Inc. — performance materials operations	Performance materials	Pending antitrust approval	3.8
	<i>Carlyle Group LP</i>	<i>Atotech B.V. (part of Total SA)</i>	Plating chemicals and surface treatment	Pending antitrust approval	3.2
	The Mosaic Co.	Vale S.A. — fertilizers business	Fertilizers	Pending antitrust approval	2.8
	Lanxess AG	Chemtura Corp.	Lubricant and flame retardant additives	Pending shareholder and antitrust approval	2.4
	<i>Blackstone Group LP</i>	<i>Solvay Acetow GmbH (part of Solvay SA)</i>	Cellulose acetate	Pending antitrust approval	1.1

* All numbers are in US\$ billion

Source: Thomson One, KPMG Analysis

Financial investors are italicized

Figures in green are estimated values



Mega deals in 2016

Three landmark deals in agrochemicals, specialties and commodities have overshadowed other transactions for 2016.

The shareholders of Monsanto Co. agreed to move forward on a US\$66 billion acquisition by Bayer AG.²⁵ If approved, the acquisition would result in a company with combined agrochemicals and seeds revenues of EUR23.1 billion and a combined R&D spend of EUR2.5 billion (2015 pro forma figures).²⁶

The merger of Dow Chemical Co. and E. I. du Pont de Nemours and Co. represents a combined market capitalization of around US\$130 billion, with leading positions

in agrochemicals and seeds, material sciences and specialty polyolefins used in packaging and adhesives.²⁷

China National Chemical Corp. is in the process of acquiring Syngenta AG of Switzerland. The US\$43 billion acquisition recently won approval from the Committee on Foreign Investment in the United States (CFIUS). The deal would be China's largest overseas acquisition to date.²⁸

A key hurdle for all three deals is regulatory approval. The European Commission and regulatory bodies in other countries continue a slow process of review and information gathering.²⁹



²⁵ Bayer clinches Monsanto with improved \$66 billion bid, Reuters, 15 September 2016, www.reuters.com/article/us-monsanto-m-a-bayer-deal-idUSKCN11K128

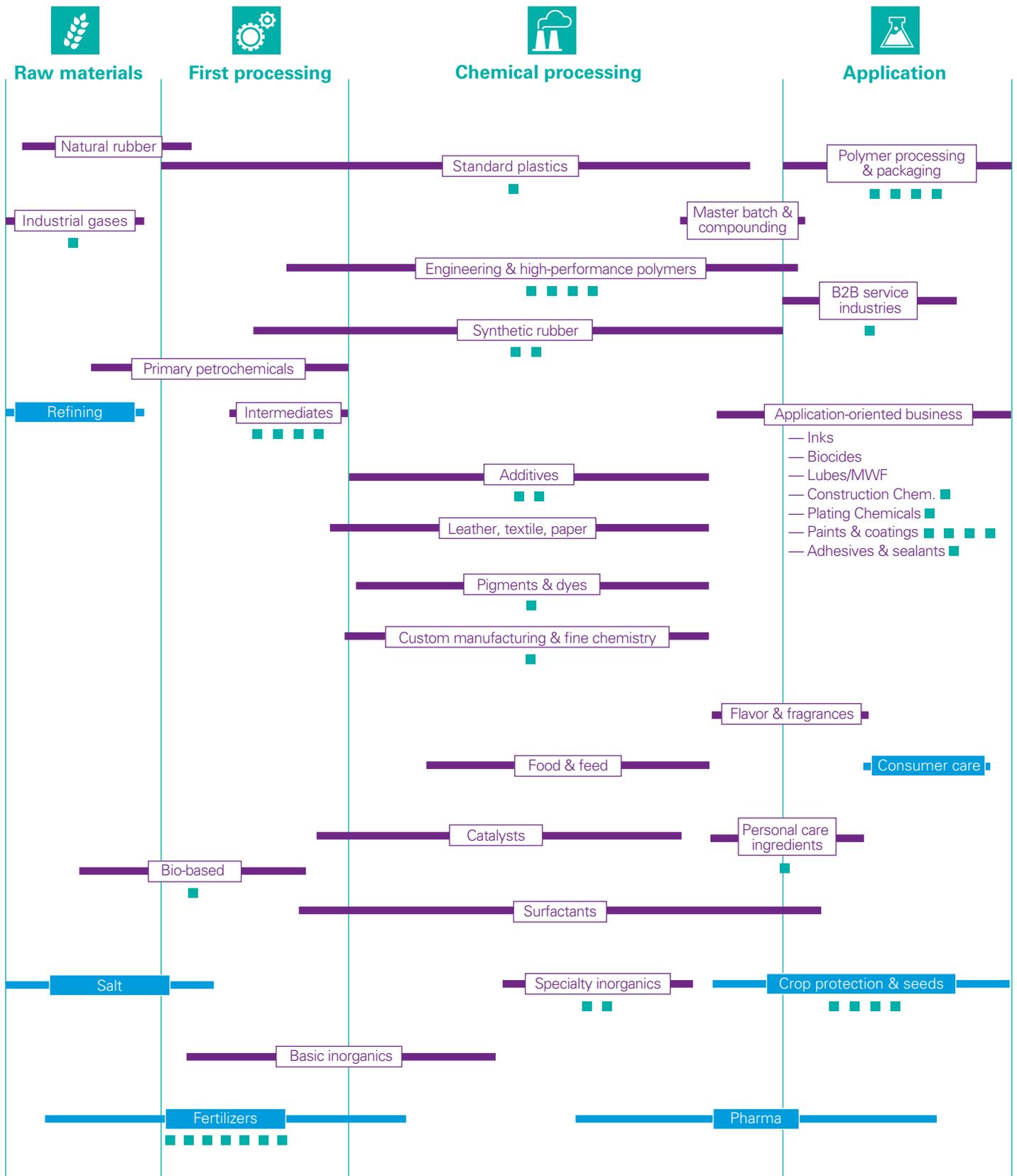
²⁶ Ibid.

²⁷ KPMG Deal Capsule January 2017

²⁸ ChemChina-Syngenta \$43 Billion Deal Approved by US Security, Wall Street Journal, 22 August 2016, <http://www.wsj.com/articles/u-s-security-watchdog-clears-43-billion-chemchina-syngenta-takeover-deal-1471844896>

²⁹ Dow Chemical, DuPont Deal Review Delayed Again, Investopedia <http://www.investopedia.com/news/dow-chemical-dupont-deal-review-delayed-again-dow-dd/#ixzz4XMjsHGpT>

Chemical deals along the value chain in 2016



■ Represents a completed or announced transaction > US\$0.5 billion



Key deal drivers

Lingering effects of the financial crisis of 2008 have almost completely disappeared, and a number of companies are undertaking more aggressive deal strategies based on the following factors.

Cash: Many companies have been steadily building up a war chest of cash for years, and now they have the liquidity they need to make attractive offers to targets, even with today's high valuation levels. In the wake of the financial crisis, companies took a conservative approach to strategy and deferred transformational decisions. Between 2013 and 2015, the world's eight largest chemical companies returned close to US\$55bn of cash to shareholders through dividends and share buy-backs. With more certainty in the market and shareholders now pushing for increased returns aligned to clear long-term strategic direction, that cash is increasingly being diverted to M&A.

A limited number of options:

Traditional ways to increase earnings and valuations such as product development, innovation and organic growth are increasingly limited in their effectiveness. Especially in a weak global economy, a well-structured acquisition is still one of the best ways to increase revenues, sustain growth and enter new markets.

Lower oil and gas prices: Low feedstock prices help petrochemical

players with their costs but exert downward pressure on product prices. Oil field chemical companies are also hurt by the current low price of crude. However, North America's shale revolution has given US chemical producers significant advantages over Western European players, encouraging new deals through at least 2020.³⁰ US Gulf Coast ethylene assets are also attractive to European, Middle Eastern and Chinese chemical companies seeking lower-cost alternatives to naphtha feedstocks.

Restructuring of portfolios: Chemical companies are aggressively reevaluating their portfolios and divesting non-core assets. Consolidations and their associated regulatory divestments encourage more consolidations as companies seek to improve or at least maintain their competitive positions, driving a seemingly endless merry-go-round of deal activity.

Activist investors: Activist investors continue to focus their attention on the chemical industry. Dow and DuPont were the target of activist investors, and other chemical companies have also been pressured to sell off assets. Targets have included companies in both the US and Europe.

“
Chemical companies are aggressively reevaluating their portfolios and divesting non-core assets.”

³⁰ Chemicals Executive M&A Report 2016 — A.T. Kearney, <https://www.atkearney.com/chemicals/chemicals-executive-m-a-report/2016>



Known unknowns for 2017

“

The election of Donald Trump as the US president was one of the big surprises of 2016. He has presented his policies as economically friendly and expansionary.”

Despite generally positive expectations, 2017 presents a number of possible disruptors for the global chemical industry. How these dynamics play out may have a significant impact on the level of M&A activity in the industry.

Oil and gas prices: It's anybody's guess where the price of crude and natural gas will be a year from now or even 6 months down the road. OPEC announcements about reduced production need to be balanced with uncertainty regarding Russia and Iran as sanctions against these two countries are revised, maintained or fully lifted. An OPEC-driven rise in oil price will also bring additional US shale plays back into the money, likely resulting in a rapid ramp up of production. Future developments will affect virtually the entire chemical industry, either directly or indirectly.

Trump: The election of Donald Trump as the US president was one of the big surprises of 2016. He has presented his policies as economically friendly and expansionary. He has promised to slash corporate taxes, roll back environmental regulations, and loosen restrictions on investment, which could spur additional M&A as companies seek to expand their access to a high growth US market.

On the other hand, concerns are raised about his opposition to international trade agreements and the possibility of major tariffs that might trigger trade wars. Anything against free trade is a burden for the chemical sector,

possibly limiting both supply chain efficiency and sales into markets overseas.

Brexit and the EU: In parallel with the new Trump administration, Brexit and a possible realignment of the European Union will also possibly become major disruptors for the global chemical industry. The rise of nationalist movements across the European region might have significant impacts on chemical companies, making it harder to import workers and sell to other countries. This development might discourage deals across national borders within the EU.

Digitalization: Data, analytics and innovations in manufacturing, sales and customer relations will continue to encourage the acquisitions of technology companies by large chemical players. For example, both Monsanto and Bayer are investing in digital service offerings for farmers. Bayer provides a software tool to analyze infection processes of fungal diseases, development and migration of pests and storage risk based on weather information, as well as a geoinformation system designed to analyze field productivity.³¹ In 2016, Monsanto acquired VitalFields, an Estonian farm management software firm. Monsanto has also acquired Climate Corp. the developer of FieldView, a digital agricultural platform that uses in-field sensors, satellite imagery, and other data resources to help farmers increase crop yields and reduce costs.³²

³¹ www.digitalfarming.bayer.com/

³² Monsanto's Climate Corp to Expand Digital Farming Platform, Reuters, 17 August, 2016, <http://fortune.com/2016/08/17/monsantos-climate-corp-to-expand-digital-farming-platform/>



Conclusion

Despite ongoing global geopolitical uncertainties, factors that supported a healthy M&A market in 2016 should remain in place for 2017. Strategic companies have strong balance sheets with high cash balances. Interest rates are still relatively low, although the US Federal Reserve raised its discount rate twice recently and lending rates may increase in 2017 due to an uptick

in the global economy. Company valuations are still reasonably strong. The combination of potentially higher interest rates and relatively high valuations might further boost M&A markets in the short term, since buyers may want to lock-in lower rates and sellers may attempt to cash out while valuations are still high.



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China chemicals

grow profits in a moderate- growth economy

By Norbert Meyring

Even with a gradual decline in GDP growth, China remains the world's second largest economy and a market leader across Asia. As for the nation's chemical sector, profits continue to rise as topline growth levels slow to levels below overall GDP growth. China chemical companies are expected to capture 40 percent of global market share by 2020.³³ Key issues such as overcapacity and debt levels are a concern for much of China's manufacturing industries, but leaders in the chemical sector, especially those in the specialty subsector, have been generally pleased about company performance in 2016, and they remain optimistic about future growth in 2017.

³³ Market Outlook: Thriving in China's competitive chemical market, ICIS Chemical Business, 26 May 2016, <http://www.icis.com/resources/news/2016/05/26/10002360/market-outlook-thriving-in-china-s-competitive-chemical-market/>



A two-track economy

After decades of double-digit increases, China's GDP growth rate in 2016 remained at about 6.7 percent,³⁴ which aligns closely with government objectives. As noted in REACTION Magazine: 15th Edition³⁵ this growth target is expected to help China avoid soaring inflation and market disruptions from an overheated economy. We should also keep in mind that a growth rate of almost 7 percent is still impressive, especially for an economy that tops US\$12 trillion.³⁶ In fact, the incremental economic output generated by China's current growth is greater than in many years when China was experiencing higher growth rates.³⁷

The International Monetary Fund (IMF) expects China to continue being the largest contributor to world GDP growth

in purchasing power parity terms.³⁸ The country is also expected to account for nearly 20 percent of world GDP by 2020, compared to 15.5 percent for the European Union and 14.9 percent for the US.³⁹

Since initiating market reforms in 1978, China has gradually shifted from a centrally-planned to a market-based economy, accompanied by rapid and sustained economic development: the fastest sustained expansion, in fact, by any major economy in history.⁴⁰

However, China is now in the middle of a fundamental and challenging transition: moving from an investment-intensive, export-led model of growth, to a consumption- and innovation-driven one.⁴¹ This transition can be best understood in terms of a

'two-track economy.' The first track — characterized by slowing growth — includes the country's traditional secondary industries such as steel, shipbuilding, mining, construction and basic manufacturing. (Agriculture in China is considered the 'primary' industry.) Companies in secondary industries are now facing multiple challenges like overcapacity, the need for companies to move up the value chain and increased pressure to comply with stricter international and environmental standards.

The other growth track — moving much faster — consists of tertiary industries that support China's growing number of consumers in multiple sectors: retail, health and beauty services, real estate, e-commerce, medical devices and

GDP growth rate, YOY and target



Source: China Report 2016 by KPMG and OECD.Stat

³⁴ National Bureau of Statistics (NBS) of China, KPMG China Outlook 2016

³⁵ Reaction 15, December 2014

³⁶ World's largest economies, CNNMoney, http://money.cnn.com/news/economy/world_economies_gdp/

³⁷ Op. cit., KPMG China Outlook 2016

³⁸ Ibid.

³⁹ IMF Data Mapper: World Economic Outlook (October 2015), quoted in China Outlook 2016, KPMG. See also — China remains largest contributor to global growth, US expert says, State Council, People's Republic of China, http://english.gov.cn/news/top_news/2016/08/30/content_281475429425078.htm

⁴⁰ World Bank, China Overview, <http://www.worldbank.org/en/country/china/overview>

⁴¹ China Outlook 2016, KPMG

Share of GDP per sector in China

2015

Percentage
points change:
2005–2015

Secondary industry		40.5%	↓ -6.4%
	Industry (mining, manufacturing, and production and supply of electricity, gas and water)	33.8%	↓ -7.6%
	Construction	6.9%	↑ +1.3%
Tertiary industry		50.5%	↑ +9.1%
	Wholesale and retail	9.8%	↑ +2.3%
	Transport, storage and post	4.5%	↓ -1.2%
	Hotels and catering services	1.8%	↓ -0.5%
	Financial intermediation	8.5%	↑ +4.5%
	Real estate	6.1%	↑ +1.5%
	Others (e.g. scientific research, services to households and other services, and educational)	19.3%	↑ +2.5%

GDP is often described in terms of primary industries (agriculture), secondary industries (construction and manufacturing) and tertiary industries (services, real estate and consumer retail businesses).

Source: 'Preliminary Accounting Results of GDP for the Fourth Quarter and the Whole Year of 2015; NBS, 21 January 2016; 'China Statistical Database', NBS. The percentages in this table are calculated based on preliminary figures released by the NBS

high-end fabrication, to name a few. These areas have seen impressive growth and are poised to continue this momentum. In fact, the second track is the new engine of China, driving 90 percent of GDP growth in 2015.⁴² Recent economic data shows that the contribution from consumer/retail

consumption as a percentage of GDP in China is rising. Based on data from the National Bureau of Statistics (NBS) of China, KPMG calculates that final consumption accounted for 52.7 percent of China's GDP in 2015, up from 51.4 percent in 2014.⁴³

Equally impressive among tertiary industries is the services sector, supporting robust growth and helping to offset the impact of the manufacturing slowdown. Indeed, the service sector had already surpassed industry as the main driver of China's GDP

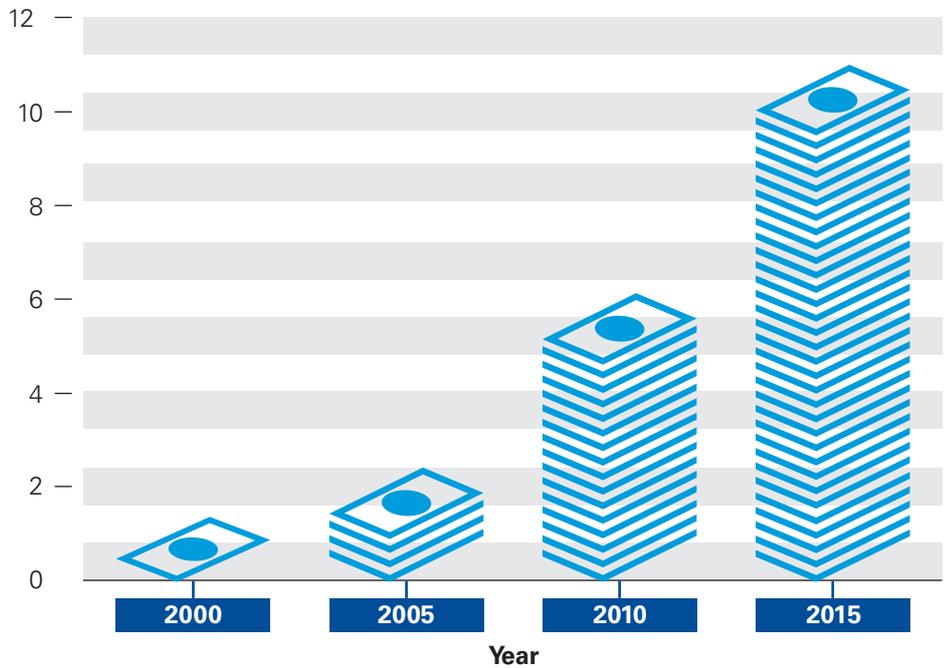
⁴² Ibid.

⁴³ Ibid.

growth in 2012, when it accounted for 56.9 percent of GDP growth that year. This percentage continued to increase over the following years, reaching 87.6 percent in 2015. The resilience that the service sector has shown amid the global and domestic slowdown helps to underline its importance for China's long-term growth.

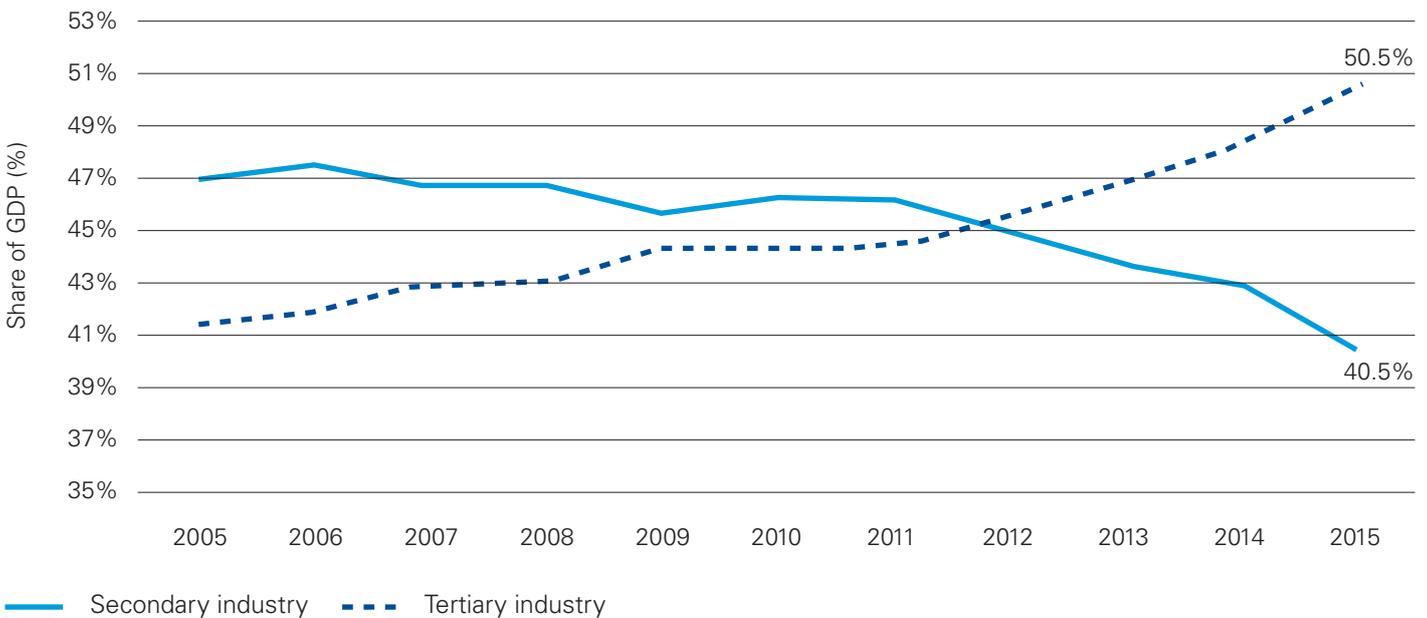
Rapid economic growth always carries with it the potential for cultural disruption and financial stress. Recent concerns about China's economy include a decline in fixed asset investments, rising debt levels, and reduced return from government stimulus programs.⁴⁴ However, China has repeatedly defied predictions over the past several years about a hard landing for its economy. While GDP is likely to continue on its slower growth trajectory, KPMG believes that this is a positive development since it is a necessary condition for China's transition to a high value-added economy.

China — GDP growth (US\$ trillion)



Source: The World Bank <http://data.worldbank.org/country/china>

Share of GDP: Tertiary industry versus secondary industry



Source: 'Preliminary Accounting Results of GDP for the Fourth Quarter and the Whole Year of 2015; NBS, 21 January 2016, http://www.stats.gov.cn/english/PressRelease/201601/t20160121_1307717.html; 'China Statistical Database', NBS. <http://data.stats.gov.cn/english/easvquerv.htm?cn=C01>

⁴⁴ As China's Economy Slows, a Look at What Could Happen, New York Times, 18 October 2016; As China's Economy Slows, Beijing's Growth Push Loses Punch, New York Times, 15 July 2016



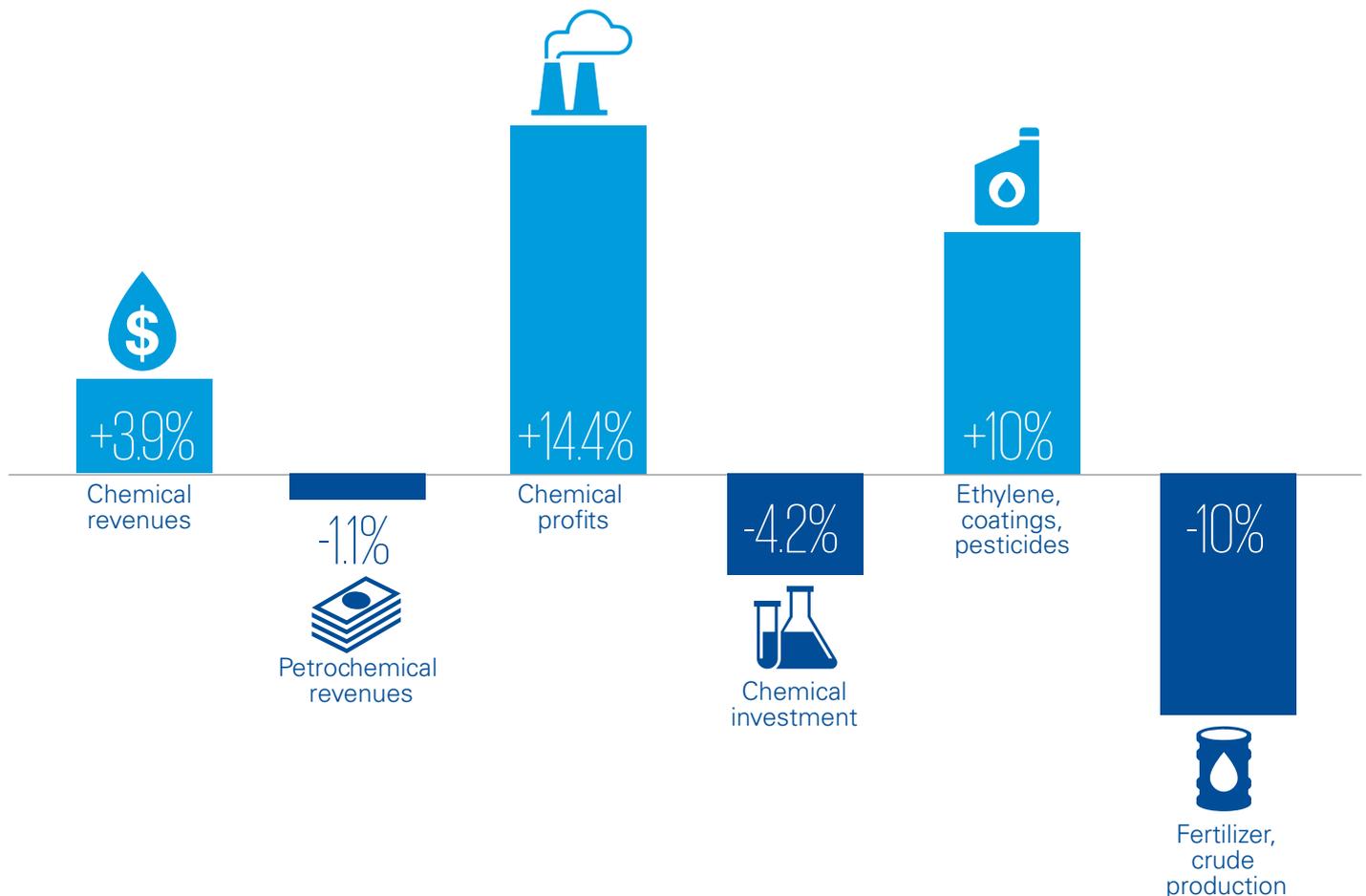
Increased profits for the chemical sector

China remains the most important driver of chemical demand in the world, and this leadership is expected to continue, growing to 40 percent of global market share⁴⁵ and over 70 percent of Asia Pacific production by 2020.⁴⁶ From 2004 to 2013, the industry saw a compound annual growth rate of nearly 23 percent.⁴⁷ The sector has seen foreign direct investment (FDI) worth US\$82.9 billion in chemicals over the last decade.⁴⁸ By 2020, the Chinese

chemicals market is forecast to have a value of US\$2.2 trillion.⁴⁹

Commodities continue to dominate the industry, with over 67 percent of market share.⁵⁰ Growth in specialties will stay on course; most likely at 6 to 7 percent year-over-year in 2017, according to forecasts.⁵¹ Much of this growth is based on domestic investments by Western companies and the acquisition of Western companies. (See more about China deals — Big deals set the tone for a steady market

China chemical industry 2016



Source: China Petroleum & Chemical Industry Federation (CPCIF). All figures Y-O-Y

⁴⁵ Op. cit., Market Outlook: Thriving in China's competitive chemical market

⁴⁶ Presentation, BASF Roundtable Asia Pacific, London, 23 September, 2016

⁴⁷ Measuring China's Importance, CHEManager International, 8 October, 2015, <http://www.chemanager-online.com/en/topics/economy-business/measuring-china-s-importance>

⁴⁸ Cumulative FDI figure for 2005-2014 from fDi Intelligence, a service of The Financial Times

⁴⁹ KPMG estimates

⁵⁰ Chemicals in China, Marketline Industry Profile, June 2016

⁵¹ Healthy growth, China to dominate, ChemWeek, 9 January 2017

in chemical M&A, page 14.) China is currently the second largest consumer of specialty chemicals in the world, with almost a quarter of global demand.⁵²

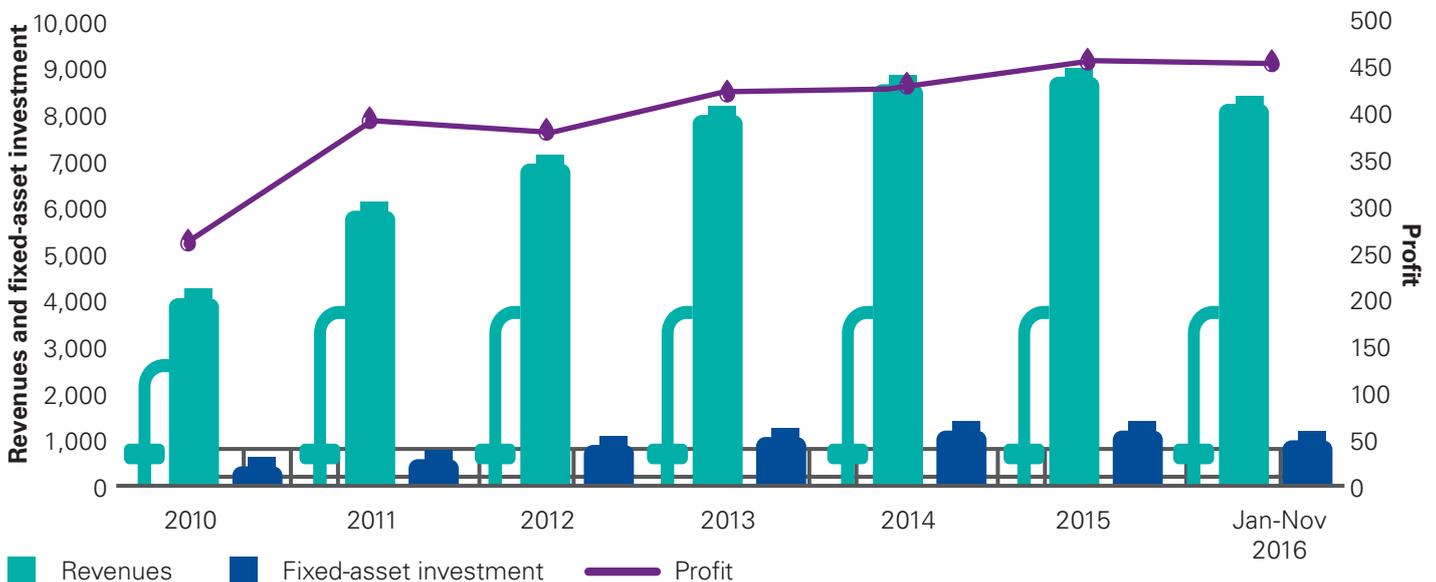
Private companies are increasingly important across all sectors. In 2010, private-sector and provincially-owned companies accounted for 24 percent of domestic production, in 2015 their share had risen to more than 40 percent.⁵³ State-owned companies are losing share to these players.

Economic and demographic growth trends for China continue to support

downstream demand growth for products in the chemicals sector. Now at 1.3 billion, China's population is becoming increasingly urban and middle class, with 70 percent of the nation expected to live in cities by 2030.⁵⁴ Chinese per capita income will double from 2010 to 2020,⁵⁵ although income will vary enormously between rural and urban areas.

A rapidly growing middle class will support growing markets for consumer goods, healthcare, construction and other areas relevant to the chemical sector. For example, the production and sale of automobiles were up 13.8 percent

Performance of China's chemical industry (billion, RMB)



Source: National Bureau of Statistics of China, KPMG analysis

⁵² Ibid.
⁵³ Op. cit. Chemicals in China
⁵⁴ Building the dream, The Economist, 19 April 2014
⁵⁵ NBS

year-over-year for the first 10 months of 2016.⁵⁶ This is good news for chemical companies that produce plastics as well as fuel additives, films, coolants, insulation for noise abatement, airbags, batteries, tires and many other products. Chemicals are also a key ingredient in engine oils and transmission fluids. Construction, another key market for chemical products, will continue to grow through 2019, fuelled by the expanding urban population, continued industrialization, expanding foreign investment and rising personal income levels.⁵⁷ Despite a downtick in the number of large infrastructure projects,

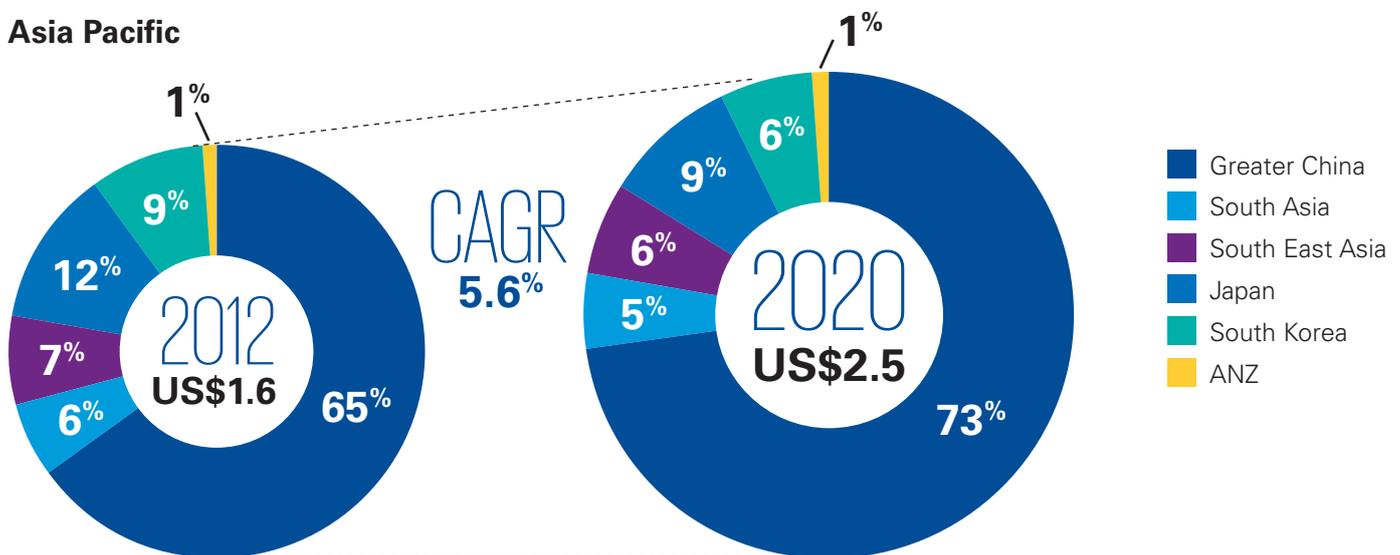
the industry supports steady demand for products such as concrete admixtures, asphalt modifiers, adhesives, sealants, grout and mortar, insulation and protective coatings.

The chemical industry in China remains highly fragmented. The country has about 30,000 chemical companies with annual sales of US\$2 million or above.⁵⁸ In 2013, the biggest 500 chemical companies accounted for only 37 percent of the total market. Market fragmentation exists within both certain product categories as well as different geographical regions.

“Chinese per capita income will double from 2010 to 2020, although income will vary enormously between rural and urban areas.”

Real chemical production (excluding pharmaceuticals)
(in trillion US\$)

Asia Pacific



Source: Presentation, BASF Roundtable Asia Pacific, London, September 23, 2016

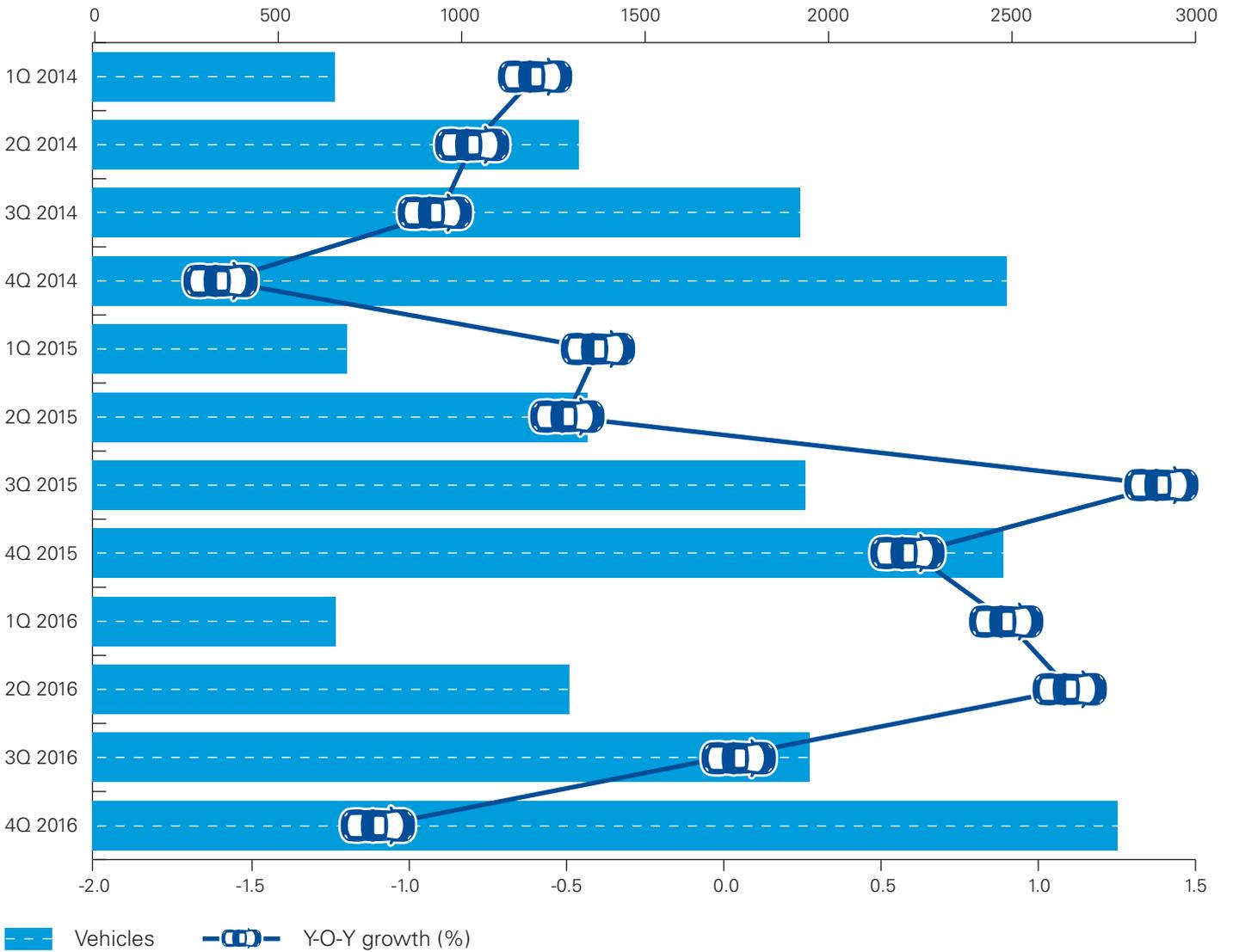
⁵⁶ China Association of Automobile Manufacturers, Automotive Statistics, <http://www.caam.org.cn/AutomotiveStatistics/20161116/0905200990.html>

⁵⁷ Construction Outlook in China, Freedonia, Investor Ideas, 7 August 2015, <http://www.freedoniagroup.com/inthenews/698791/construction-outlook-in-china.htm>

⁵⁸ Statistics from Market Outlook: Thriving in China’s competitive chemical market, ICIS Chemical Business, 26 May 2016

Demand – downstream

Cumulative sales of motor vehicles (10,000 units)

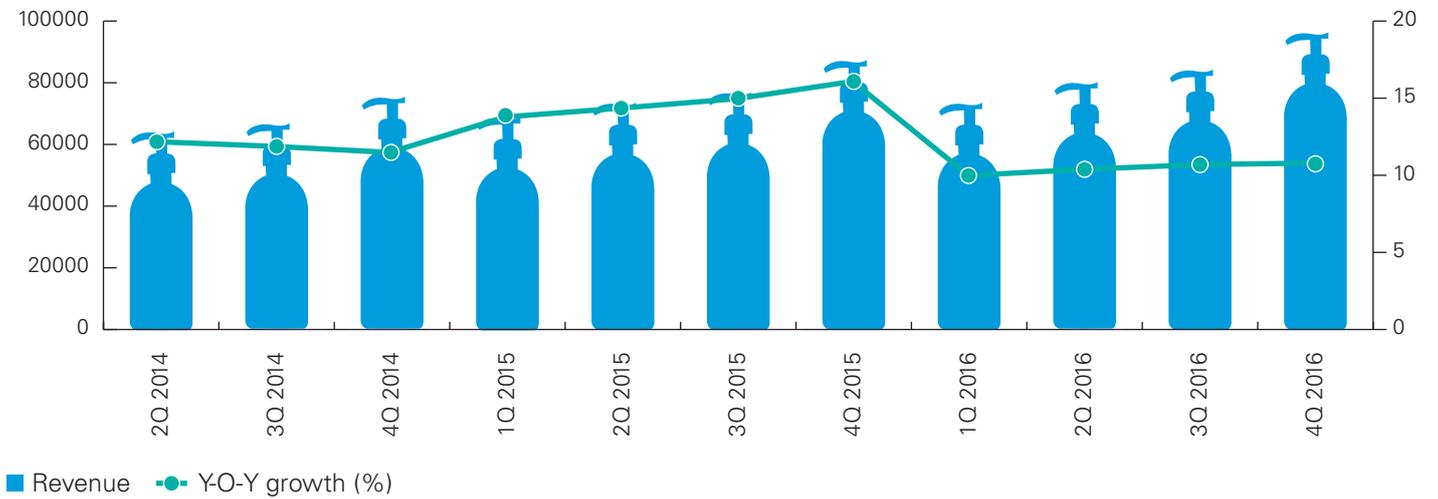


Source: National Bureau of Statistics of China, KPMG analysis

Floor space of buildings completed (10,000,000 sqm)

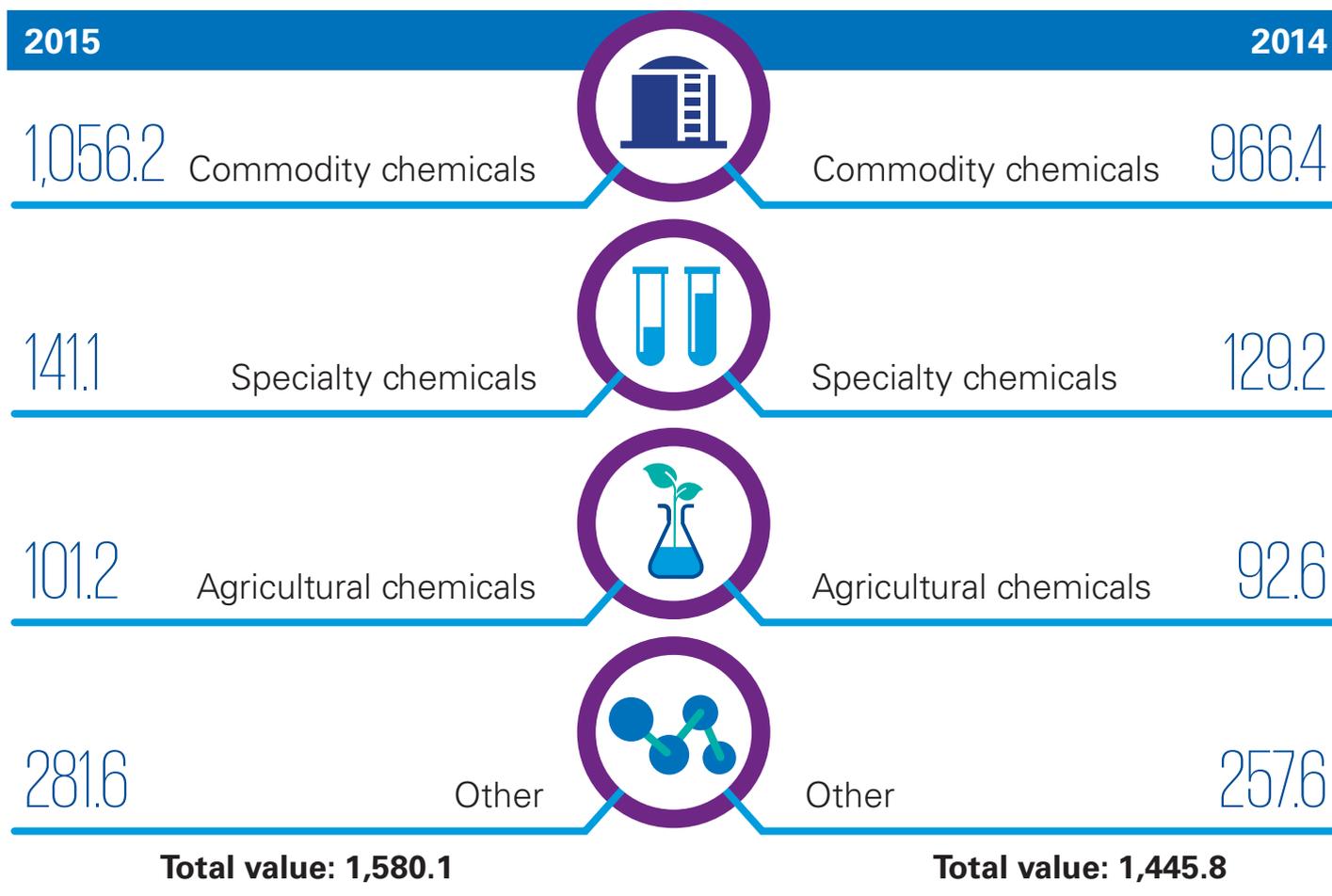


Total retail sales of consumer goods (100 million yuan)



Source: National Bureau of Statistics of China, KPMG analysis

China's chemical segment sales (US\$ billion)



Source: Chemicals in China, Marketline (Datamonitor Industry Profiles), June 2016



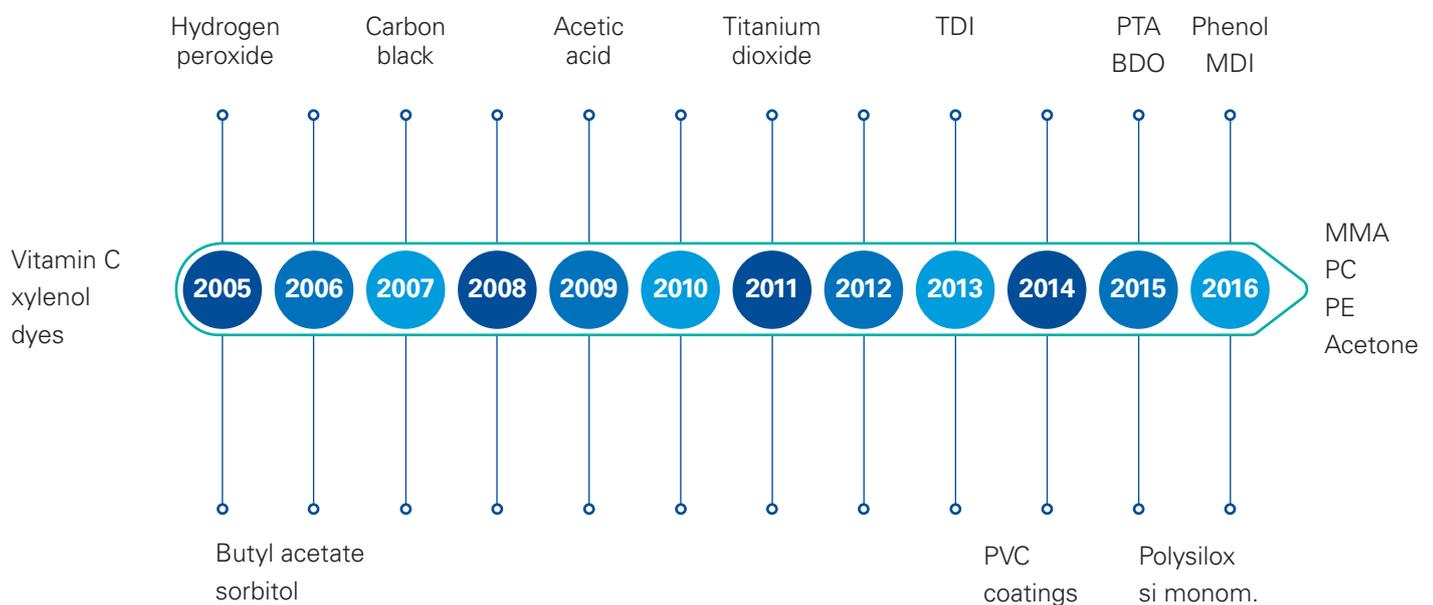


From imports to exports

In the past, China has served as one of the great markets of the world for chemicals produced in the West. However, domestic companies have expanded their capacities and are now focused on products for which China

used to depend on imports. As a result, China is now becoming a net exporter for more and more chemicals. Typically, once this tipping point has been reached for a specific chemical, China remains a net exporter of that chemical in the future.

The year China became a net exporter of specific chemicals



Source: Market Outlook: Thriving in China's competitive chemical market, ICIS Chemical Business, 26 May 2016



Overcapacity subsectors

According to the China Petroleum & Chemical Industry Federation (CPCIF), China in 2014 was the world's leading producer of fertilizer, soda ash, caustic soda, sulfuric acid, methanol, calcium carbide and others. However, the country has significant overcapacities in a number of sectors, especially petrochemicals. For example, the current utilization is well below 50 percent for butanediol (BDO) and acetic acid.⁵⁹ These overcapacities

often coexist with substantial imports such as methanol. Attempts to export have resulted in allegations of dumping, and the 'One Belt, One Road' regions in Asia currently have only a limited potential to accept new capacity.

To address these issues, the petrochemical industry is committed to reduce capacity for multiple chemicals. According to statistics by ICIS China,⁶⁰ in

2015, it eliminated 2.9 million tons/year of urea capacities, 970,000 tons/year of PVC and 1.6 million tons/year of caustic soda. About 4 to 5 million tons/year of PVC will be eliminated in the next 5 years, accounting for 15 to 20 percent of current total capacity. Additionally, about 400,000 to 600,000 tons/year of caustic soda will be eliminated. In addition, new market development will continue in Asia.

Subsector	2012 utilization rate (UR)	2013 UR	2014 UR	Trend of change
PTA	84.3%	68.6%	61.0%	Deteriorating
SBR	80.0%	73.0%	64.0%	Deteriorating
cis-BR	63.0%	52.0%	48.0%	Deteriorating
MAP	80.5%	66.7%	65.8%	Deteriorating
Urea	85.0%	83.1%	81.5%	Deteriorating
Soda Ash	83.0%	77.2%	81.4%	Deteriorating
DAP	78.9%	79.2%	79.2%	Unchanged
Calcium carbide	53.8%	60.7%	62.6%	Improved slightly
PVC	56.3%	61.8%	68.0%	Improved slightly
Methanol	60.2%	59.5%	64.0%	Improved slightly
Acetic acid	50-60%	50-60%	70.2%	Improved slightly
Caustic soda	72.2%	74.1%	81.0%	Improved
n-Butanol	81.0%	71.0%	72.0%	Deteriorating
2-Ethyl hexanol	73.0%	77.0%	76.0%	Deteriorating
Acrylic acid	81.0%	81.0%	66.0%	Deteriorating
Butyl acrylate	92.0%	82.0%	66.0%	Deteriorating

Overcapacity

Balanced

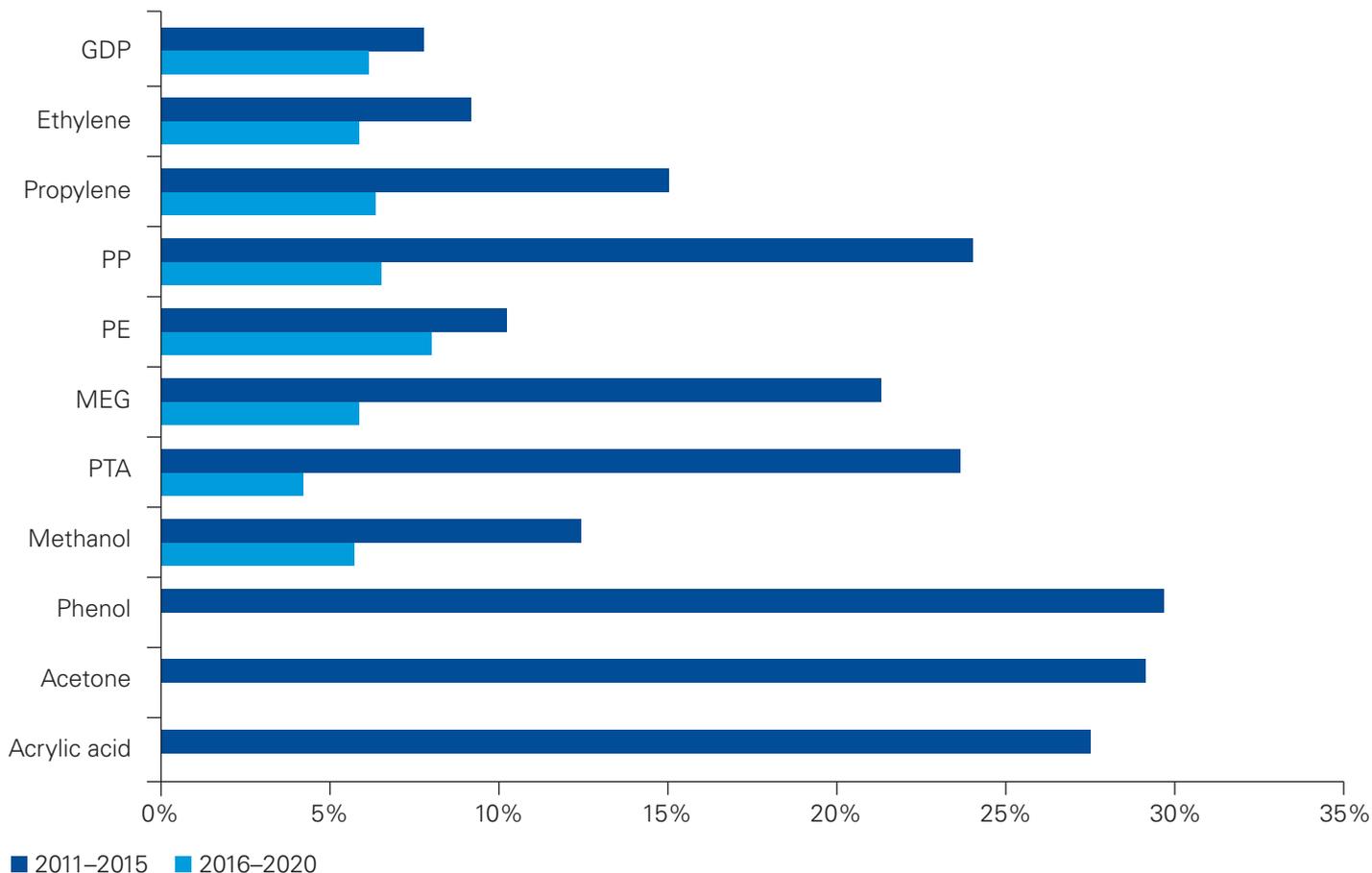
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Source: China Petroleum & Chemical Industry Federation, China Chemical Industry News

⁵⁹ Market Overlook, ICIS

⁶⁰ Statistics quoted from Fourfold path to transformation, page 20-21, Asia braces for China slowdown, Asia Petrochemical Industry Conference, Singapore, 19-20 May 2016

**Annual average capacity growth of major chemicals in China
2011–2015 versus 2016–2020 (estimated)**



Source: Asia braces for China slowdown, Asia Petrochemical Industry Conference, 19–20 May 2016





13th Five-Year Plan



The plan is designed to help improve the quality and efficiency of national development by accelerating the establishment of institutional frameworks and mechanisms, as well as appropriate development paradigms to guide economic growth.

China's 13th Five-Year Plan, a blueprint for China's economic and social development from 2016 to 2020, was approved by the 12th National People Congress (NPC) on 16 March 2016. The plan is designed to help improve the quality and efficiency of national development by accelerating the establishment of institutional frameworks and mechanisms, as well as appropriate development paradigms to guide economic growth.

The plan identifies five underlying concepts for the country's development from 2016 to 2020, with the ultimate objective of achieving a "moderately well-off society:"

- 1 Innovation**, which will be necessary for China to transition into a high value-added economy and, consequently, achieve a higher quality of growth. In line with this concept is 'Made in China 2025,' a national initiative to upgrade manufacturing for products such as performance chemicals.
- 2 Regional development**, which aims to address China's development disparity among regions and between urban and rural areas through infrastructure investment and the stimulation of regional markets.
- 3 Green development**, which places importance on developing China's green economy by tackling pollution and energy efficiency issues through market initiatives. For chemicals, this means stricter management in existing chemical manufacturing parks and more rigorous regulations for approving new chemical products.
- 4 Opening up**, with increased international trade and outbound investment, helping to improve

the efficiency of China's market by further integrating it with the global market.

- 5 Inclusive development**, which aims to ensure that China's development process benefits all individuals at all levels of society. Goals include 80 percent self-sufficiency for key new materials.

We believe that the implementation of the 13th Five-Year Plan will have a positive impact on China's business environment, leading to the emergence of numerous opportunities for both Chinese and foreign companies operating in China, and especially in those sectors such as chemical production that contribute toward the country's economic transformation.

Regarding the chemical industry, the Ministry of Industry and Information Technology of China (MIIT) has issued the Petrochemical and Chemical Industry Development Plan (2016–2020) to guide the petrochemical and chemical industry's development for the 13th Five Year period. This industry-specific plan aims to maintain an annual chemical industry growth rate of 8 percent. Areas given priority include supporting innovation; urging traditional industries to transform and upgrade; developing new chemical materials; promoting smart manufacturing; strengthening the safety of hazardous chemicals; regulating and improving industrial parks/zones; promoting the construction of major projects; and expanding international cooperation.⁶²

This will lead further investment, which aims at developing large capacity, consolidated petrochemical and chemical capacity and infrastructure within China, as well as further opening to imports and international cooperation.



Conclusion

The Chinese economy and the chemical sector remain on a steady growth path despite the 'new normal' of reduced demand across the global economy. As we reported 2 years ago,⁶¹ the news is generally positive for the Chinese chemical sector, and company leaders remain optimistic.

Revenues and profits are on the rise, innovation has led to the introduction of new products, secondary industries such as automotive and construction support continued demand, and tertiary industries ensure the steady growth of markets for services and consumer products.

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⁶¹ Op. cit., Reaction 15, December 2014



KPMG in the Industry

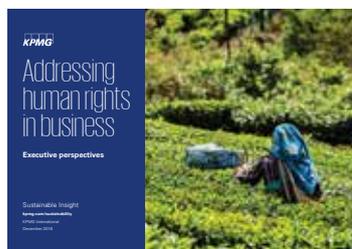


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CIA Annual Dinner

16 November 2016

KPMG in the UK recently hosted a table at the CIA's Annual Dinner in London. It was also an opportunity to meet and have some topical discussions with members of the UK chemicals community.

KPMG Stratley contributed to the **11th Annual Gulf Petrochemicals and Chemicals Association (GPCA) Forum** with the publication, *Global rules of competitiveness embrace GCC Chemicals — Competitiveness in times of levelling differentiators*, co-branded with GPCA. The conference took place in Dubai, UAE, where KPMG in Germany and KPMG Saudi Arabia demonstrated once again their thought leadership capabilities for the global chemicals industry. To read, please visit kpmg.com/chemicals.

Digital transformation in the chemical industry

KPMG in Germany recently launched a ground-breaking study on digital transformation within the chemical industry, together with the market research institute TNS Emnid, where they interviewed 75 senior chemical industry executives. It became evident that the chemical industry recognizes the potential benefits of digitalization but has been slow to implement new ideas. The study indicates that substantial benefits can be achieved through developing proximity to customers using digital platforms and tools. However, success depends on developing in-house resources and skills as well as cultural awareness throughout the whole organization. For more information, please email chemicals@kpmg.com.

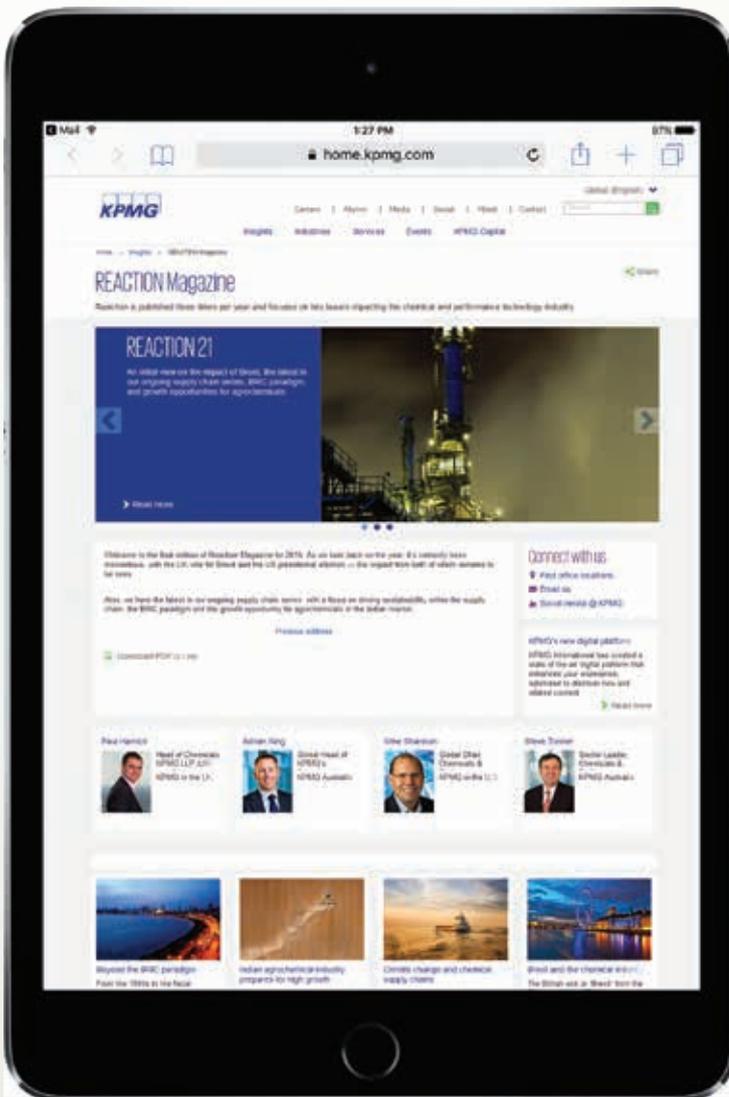
Sustainable Insight: Addressing human rights in business

This issue of Sustainable Insight aims to help executives understand and apply current good practice in identifying and managing human rights issues in business. It brings together the learning and experience of experts at 11 major corporations that are leaders in this field as well as the views of KPMG's own subject matter experts. For information, please email Ellie Austin at eleanor.austin@kpmg.co.uk.

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