



# REACTION

**Chemicals Magazine**

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## **The future of chemical conglomerates and demand-driven supply chains**

KPMG GLOBAL CHEMICALS INSTITUTE

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# Introduction

Welcome to our first edition of Reaction Magazine for 2016. Unfortunately, the mood in the industry and the wider global economy is much more downbeat than when we closed out 2015 with our last edition, just 4 months ago. With continued slowdown in China, the disruption of a US Presidential election, fears over 'Brexit' and stock market volatility around the world, business confidence has been shaken. Our medium-term view is that the fundamentals underlying the global chemical industry remain strong.

In this edition, we bring you a focus on how chemical companies can respond to the ongoing disruption in supply chains brought about by the dislocation of supply and demand in the global industry. We also have a special feature on the DowDuPont transaction and what that means in the context of wider strategic moves within the chemical industry.

We'll be back with our next edition in June with an outlook for a number of the chemical industry's key end markets. If there are any other topics you would like us to cover in future editions of Reaction, please don't hesitate to contact us.

Finally, in light of the recent terrorist atrocities in Brussels, a word for our friends and clients in Belgium — our thoughts are with you all at this terrible time.



**Mike Shannon**  
Global Chair  
Chemicals and  
Performance Technologies

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# Chemical conglomerates

## reshuffle portfolios in a bid to increase strategic growth

The proposed recent merger of Dow Chemical and DuPont is helping to change the face of the industry. In some ways, the DowDuPont deal will have an unprecedented impact on the competitive landscape of multiple sectors. At the same time, it reflects a decade-long trend by chemical conglomerates to make strategic acquisitions while also splitting up large entities, resulting in much more focused businesses.

By **Till Knorr** and **Barry van Bergen**







# The merger of two giants

‘Tectonic’ might describe the recently proposed merger by Dow Chemical and DuPont, two global industry giants, each a leader across multiple sectors.

The transaction will result in a massive conglomerate with a market value of more than US\$120 billion and will reshape the chemical and agricultural

industries.<sup>1</sup> The combined company, known as DowDuPont, is expected to have about US\$90 billion in total revenue.<sup>2</sup>

	Agriculture	Material science	Specialty products
<b>Dow</b>	<b>US\$7 billion in sales</b>	<b>US\$45 billion in sales</b>	<b>US\$2 billion in sales</b>
<b>Key products and brands</b>	Fungicides, herbicides, insecticides, seeds	Acrylic acid, coating resins, elastomers, ion-exchange resins, packaging adhesives, petrochemicals, polyethylene, polyurethanes, Styrofoam	OLED materials, photolithography, planarization pads
<b>DuPont</b>	<b>US\$11 billion in sales</b>	<b>US\$6 billion in sales</b>	<b>US\$11 billion in sales</b>
<b>Key products and brands</b>	Fungicides, herbicides, insecticides, seeds	Bynel adhesive resins, elastomers, ethylene vinyl acetate, nylon, polyacetal, Surlyn ionomer resins	Butanediol, Corian, enzymes, food ingredients, Kevlar, Nomex, OLED materials, photovoltaic materials, probiotics, Tyvek

Source: C&EN, 21 December 2015. Figures based on company data.

<sup>1</sup> DuPont, Dow Chemical agree to merge, then break up into three companies, Wall Street Journal, 11 December 2015.

<sup>2</sup> Ibid.



Shortly after the completion of the proposed merger, the combined entity will be split into three separate firms: one focused on agrochemicals and seeds, the second focused on material sciences and the third one on specialty products including electronics; nutrition and health; safety and protection; and industrial biosciences. The merger is expected to occur in the second half of 2016, followed by the separation 18 to 24 months later.<sup>3</sup>

The new agrochemical business is expected to generate about US\$18 billion in sales, making it the leader in its sector and surpassing even Monsanto, long ranked as number one.<sup>4</sup> The new company will have strong

positions in seeds and chemicals for corn, soy, cotton, and other crops. The business will be number two in seeds and tied for second place with Bayer for crop protection chemicals.<sup>5</sup>

The largest entity created from the merger will be the material science firm, which will have an estimated sales total of US\$51 billion.<sup>6</sup> The integration will include Dow's petrochemical operations and downstream polyethylene and elastomers businesses, along with the acrylic acid and derivatives businesses that Dow acquired from Rohm and Haas in 2009. As for DuPont, the company's engineering polymers business is a major supplier of resins, including nylon

and polybutylene terephthalate for automotive applications.

The specialty products company will combine electronics materials businesses from both parent companies into a US\$13 billion entity. Dow's specialty business is strong in materials for chip production, particularly the chemical mechanical planarization pads used to smooth out silicon wafers. DuPont's biggest specialty strength is in electronics areas other than chip fabrication. It maintains a strong position in materials for solar panels such as encapsulants and metallization pastes along with polyvinyl fluoride film for photovoltaic backsheets.

<sup>3</sup> Dow and DuPont lay out merger plan, C&EN, 11 December 2015.

<sup>4</sup> Ibid.

<sup>5</sup> DowDuPont likely round one of coming ag consolidation, ChemicalWeek, 21 January 2016.

<sup>6</sup> Ibid.

<sup>7</sup> Op. cit. Dow and DuPont lay out merger plan.







# Key drivers for acquisitions

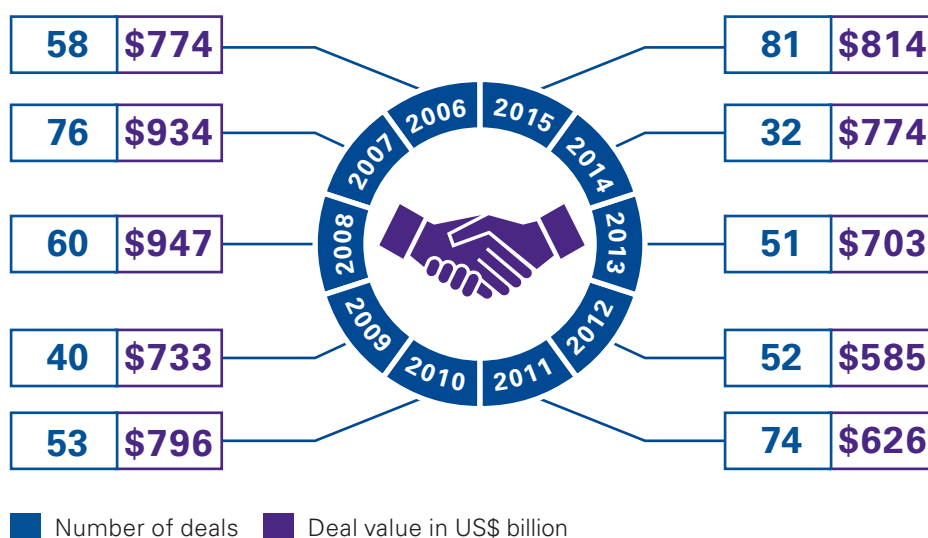
## Acquisitions up the value chain

Unique as it is, the DowDuPont merger reflects a larger, industrywide trend towards increased merger and acquisition (M&A) activity. The top 10 deals in 2015 amounted to US\$51 billion out of a total of US\$74 billion for completed deals.<sup>8</sup> These figures do not exceed 2011 totals, but they still

represent a year-over-year increase since 2012.

Many deals involve strategic acquisitions designed to increase growth. At least for now, global chemical companies can no longer depend solely on organic growth and research and development (R&D) to boost revenues. Due to continued economic uncertainty, global markets remain subdued, and CEOs are looking for new synergies to increase margins.

## Deal activity 2006–2015



Source: KPMG Deal Capsule, January 2016

In many cases, chemical companies are looking for acquisitions to improve their competitive position by moving further down the value chain. This is especially true for Western companies, but chemical manufacturers in the Middle East and China are also acquiring specialty manufacturers to develop their economies, become more self-sufficient and to support domestic job growth.

Among major acquisitions in 2015 by companies in the West, Merck KGaA paid US\$17 billion for Sigma-Aldrich Co., a healthcare and performance materials manufacturer. Albemarle Corp.

acquired Rockwood Holdings Inc., the world's largest lithium processor, for US\$6.2 billion. The acquisition strengthened Albemarle's position in lithium-based energy storage products. Air Liquide paid US\$13.4 billion for Airgas, a retail gas business with its own large-scale gas production plants upstream. The Belgian specialty chemical maker Solvay acquired Cytec Industries for US\$5.5 billion, strengthening Solvay's position in carbon fiber composite materials. Eastman Chemical Company paid US\$2.8 billion for Taminco Corp., a specialty chemical company serving global food, feed and agriculture markets.

<sup>8</sup> Figures do not include the DowDuPont merger, which was announced but not completed in 2015.



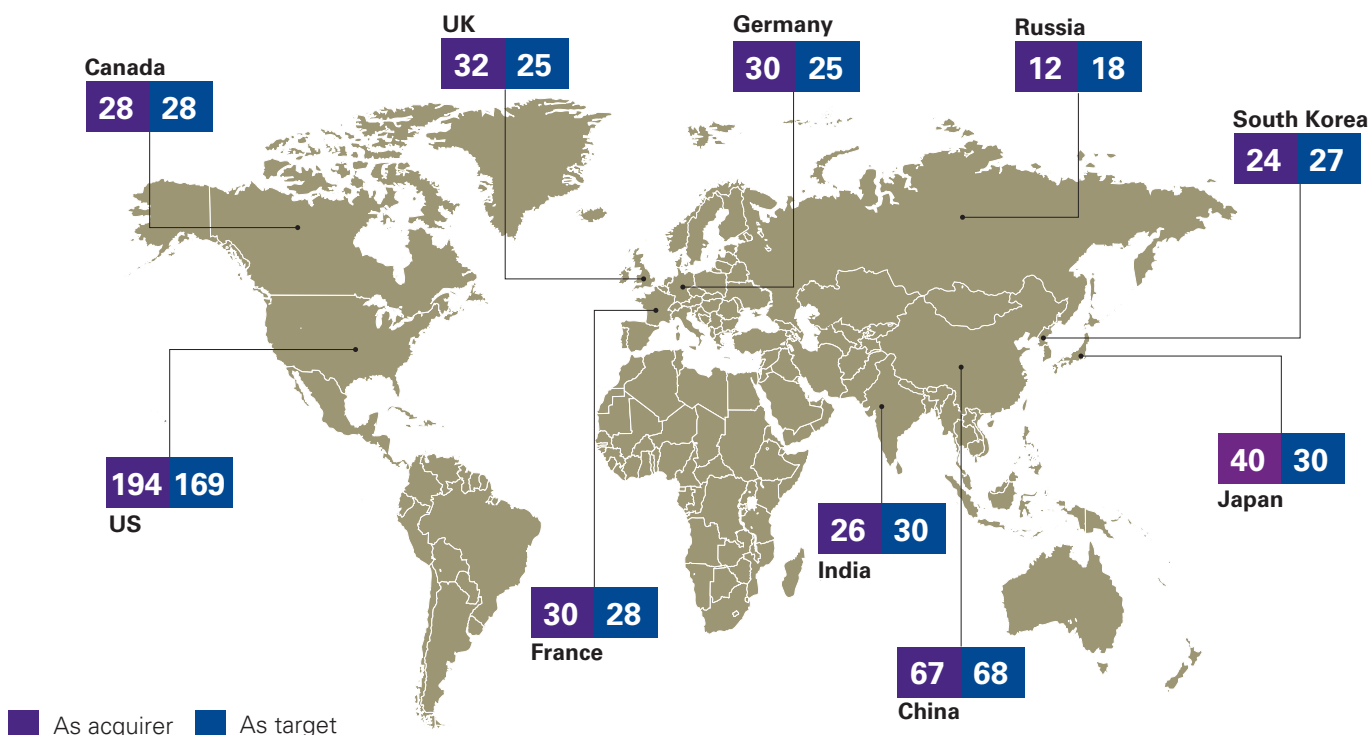
In the Middle East, companies in countries that are heavily dependent on oil revenues (such as Saudi Arabia's SABIC and Aramco) are seeking to expand along the value chain. Aramco has recently entered into a 50/50 joint venture with LANXESS in Germany, with options to buy out LANXESS's portion in 3 years. This move is seen as part of Aramco's stated mission to become "the world's leading integrated energy and chemicals company by the end of the decade."<sup>9</sup>

Asian players have also been focused on advanced chemicals. For instance, the South Korean Lotte Group acquired Samsung's fine chemicals division as well as their battery and electronics chemical segment for US\$2 billion.

Special mention should be made of ChemChina's recent offer to buy Syngenta. If finalized, the US\$43 billion deal will make history.<sup>10</sup> The all-cash deal will be the largest foreign acquisition ever by a Chinese firm, and it marks a massive upgrade to China's crop production potential.<sup>11</sup> Headquartered in Switzerland, Syngenta is the world's leader in agrochemicals, and other agriculture giants like Monsanto have tried and failed to acquire the company. The offer by ChemChina shows both the strength and determination of Asian companies to move from a commodity-centric industry to one that includes a broader range of products, including specialties.

“Many deals involve **strategic acquisitions to increase growth**. Global chemical companies can **no longer depend** solely on organic growth and R&D to boost revenues.”

## Top countries in chemical M&As for 2015



Source: KPMG Deal Capsule, January 2016

<sup>9</sup> M&A poised for big shift in 2016, ICIS, 11–17 January 2016.


<sup>10</sup> Syngenta agrees to ChemChina's US\$43-billion takeover, IPO planned, Chemical Week, 3 February 2016.

<sup>11</sup> Syngenta deal could pave way for biotech acceptance from China users, Reuters, 12 February 2016.

## Global top deals completed in 2015

<p>The deal value of the global top 10 <b>completed</b> deals in 2015 was</p> <p><b>US\$51 billion</b></p> 	Bidder	Target	Business area	Today's value <sup>1</sup>
	<b>Merck KGaA</b>	Sigma-Aldrich Co.	Biochemicals, organic chemicals and lab equipment	<b>17.0</b>
	<b>Olin Corp.</b>	The Dow Chemical Co. — chlor-alkali business	Chlor-alkali and derivatives	<b>7.0</b>
	<b>Albemarle Corp.</b>	Rockwood Holdings Inc.	Lithium, catalysts, bromine and surface treatment	<b>6.2</b>
	<b>Solvay SA</b>	Cytec Industries Inc.	Polymers and additives	<b>5.5</b>
	<b>Platform Specialty Products Corp.</b>	Arysta Life Science Ltd.	Agrochemical and biological products	<b>3.5</b>
	<b>Equate Petrochemical Company (K.S.C.C.)</b>	MEGlobal International FZE	Ethylene glycol	<b>3.2</b>
	<b>Platform Specialty Products Corp.</b>	Alent PLC	Advanced surface treatment plating chemicals	<b>2.3</b>
	<b>Arkema SA</b>	Bostik SA (a part of Total S.A.)	Adhesives	<b>2.2</b>
	<b>Asahi Kasei Corp.</b>	Polypore International Inc.	Lithium and lead-acid battery separators, OEM membranes, etc.	<b>2.2</b>
	<b>FMC Corp.</b>	Cheminova A/S (a part of Auriga Industries A/S)	Crop protein products	<b>1.8</b>

## Global top deals announced in 2015, yet to close

<p>The deal value of the global top 10 <b>announced</b> deals in 2015 was</p> <p><b>US\$149 billion</b></p> 	Bidder	Target	Business area	Deal status	Today's value <sup>1</sup>
	<b>Dow Chemical Co./E. I. du Pont de Nemours and Co. (Merger)</b>		Chemicals	Pending shareholder and antitrust approval	<b>62.1</b>
	<b>Monsanto Co.</b>	Syngenta AG	Agriculture and animal biotechnology	Withdrawn	<b>46.0</b>
	<b>Air Liquide SA</b>	Airgas Inc.	Industrial gases	Pending shareholder and antitrust approval	<b>13.4</b>
	<b>Potash Corp. of Saskatchewan Inc.</b>	K+S AG	Phosphatic fertilizers	Withdrawn	<b>8.7</b>
	<b>CF Industries Holdings Inc.</b>	OCI N.V. — North American, European assets, global distribution business	Nitrogen fertilizers	Pending shareholder and antitrust approval	<b>8.0</b>
	<b>CHS Inc.</b>	CF Industries Nitrogen LLC (11 %)	Nitrogen fertilizers	Pending shareholder and antitrust approval	<b>2.8</b>
	<b>Dalian Rubber &amp; Plastics Machinery Co., Ltd.</b>	Jiangsu Hengli Chemical Fibre Co., Ltd.	Chemical fibres	Pending	<b>2.4</b>
	<b>Lotte Chemical Corp.</b>	Samsung SDI Co., Ltd. — chemical business	Plastics (ABS, PC)	Pending shareholder and antitrust approval	<b>2.0</b>
	<b>Weihai Huadong Automation Co., Ltd.</b>	Jiutai Energy Inner Mongolia Co., Ltd.	Methanol, dimethyl ether and sulfur	Pending	<b>1.9</b>
	<b>Chengzhi Shareholding Co., Ltd.</b>	Wison (Nanjing) Clean Energy Co., Ltd. (a part of Wison Group)	Industrial gases	Pending	<b>1.5</b>

Note: All numbers are in US\$ billion. Figures in blue are estimated values.

Source: KPMG Deal Capsule, January 2016



## From conglomerates to split-ups and back again

Today's M&A activity is a part of a long-standing megatrend, a pendulum swinging back and forth between divestment and consolidation as companies react to changes in global markets, government policies, access to raw materials and credit availability. Equally important have been evolving attitudes about the relative merits of large conglomerates.

After consistent growth and consolidation that lasted until the 1980s, chemical majors began to break into smaller units or spinoffs. For example, Hoechst was the world's biggest chemical company in 1990. When starting the split-up, its main goal was to separate pharmaceuticals and run it successfully as a separate company. In the process, other businesses were made separate legal entities, as well, and allowed to flourish without corporate restraints.

The main idea behind the break-up of these large companies was that large conglomerates could not be steered effectively. Various business models under one roof would inevitably lead to mixed understandings and uncertainty about decision-making. At the same time, financial and human resources went to the best performing businesses, while other businesses were starved. In fact, some companies found that they could not bear the enormous overhead cost of being a large conglomerate, so they turned to carve-outs and IPOs to create smaller, more entrepreneurial businesses.

After the 1990s, the industry saw a wave of M&A activity toward specialties. This activity paused during the Great Recession but resumed and continues with today's move toward more focused consolidation. Specialty

markets in Europe and commodity markets in China are saturated, resulting in an industrywide uptick in acquisitions. In many cases, multiple bidders are approaching the same target, driving prices upward.

At the same time, divestitures continue as a key strategy for chemical companies. The DowDuPont merger is the culmination of portfolio rationalizations going back years, with each company working hard to divest itself of non-core assets and improve performance. Dow has been separating itself from commodity chemicals, including a significant portion of its chlorine value chain (chlor-alkali/vinyl, chlorinated organics, epoxy), although its biggest move in this direction (the divestiture to Kuwait's PIC) had faltered.<sup>12</sup> Divestitures include Dow's US Gulf Coast Chlor-Alkali and Vinyl, Global Chlorinated Organics, and Global Epoxy business units, in addition to 100 percent interest in the Dow Mitsui Chlor-Alkali joint venture.<sup>13</sup> Dow has also sold its global Polypropylene Licensing & Catalysts business to W. R. Grace & Co.<sup>14</sup>

Both Dow and DuPont were the target of activist investors, and other chemical companies have also been pressured by investors, mainly hedge fund managers, to sell off assets. Targets have included companies in both the US and Europe. Air Products is seeking to spin off its chemicals and electronic gases businesses as Versum Materials; Ashland is selling its Valvoline lubricants business; Axiall is exploring options for its vinyl building products unit; and WestRock has announced its intentions to spin off its specialty chemicals unit as Ingevity.<sup>15</sup>

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**After the 1990s, the industry saw a wave of M&A activity toward specialties.**

This activity paused during the Great Recession but resumed and continues with **today's move toward more focused consolidation.**”

<sup>12</sup> Dow closes transaction to separate significant portion of its Chlorine Value Chain, 5 October 2015.

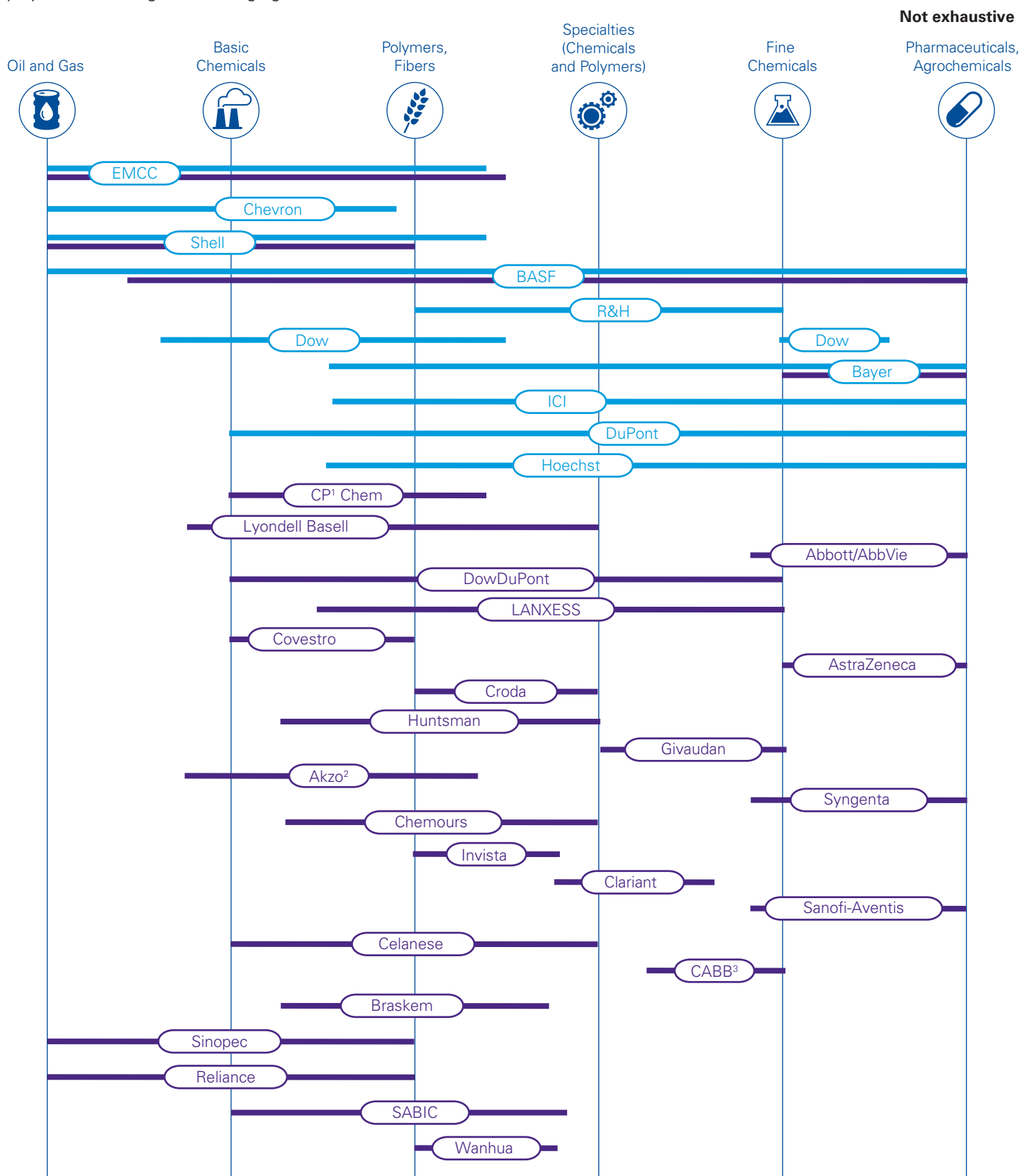
<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

<sup>15</sup> Op. cit., M&A poised for big shift in 2016.

## Changes along the chemical value chain

Major players have restructured to secure more advantageous positions and new players are coming from emerging markets.



— 1990s: high level of integration across the value chain

— Today: more complex landscape, emergence of more focused, as well as diversified, players

- Notes:
- 1) CP Chem = Chevron Phillips Chemical Company
  - 2) Most of Akzo's business is in base chemicals like chlorine, salt, EO hydrogen peroxide, but also significant business in surfactants, catalysts, etc.
  - 3) CABB has significant monochloroacetic business which may be categorized as base chemicals.

Source: Reaction Magazine, KPMG, June 2011 (updated 2016)





# The future of big chemical conglomerates: KPMG's point of view

We believe that the industry will not see any other deals with the same size, scope and structure of DowDuPont. Both companies are big players in agrochemicals, an industry ripe for consolidation as players strive to gain economies of scale and gain complete portfolios that let them act as true solution providers. As such, the merger creates pressure on competitors to make their own acquisitions, the Syngenta deal with ChemChina being a case in point.

However, the industry will also see many more spinoffs like Chemours and Dow's chlorine business even while consolidation continues. In a sense, this activity will resemble the DowDuPont strategy but with significant effort directed toward

carving out businesses, launching IPOs and merging again. The result will be a new generation of large chemical companies that are more focused on specific sectors and subsectors.

This strategy will be essential for Western companies facing increased competition from new players in the Middle East and Asia. The biggest challenge is to make the right cuts at the right time so that the resulting carve-outs and IPOs are competitive and properly positioned for long-term growth in both Western and emerging economies. Companies also need to acquire the right complementary businesses so that economies of scale and scope can be leveraged in specific products, markets and technologies.



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For more than 20 years, Till has helped chemical majors to cope with fundamental changes in the industry. His wealth of experience allows him to critically discuss strategy and setup for upcoming challenges.



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# Demand-driven supply chains 2.0 for chemical companies: built for a rapidly changing global industry

Chemical companies are facing dramatic changes in global markets, feedstock supply, corporate mergers as well as a slowed down global economic situation and increasing price and margin pressure in some parts of the chemical industry. Traditional supply chains based on demand forecasts can limit a company's ability to respond quickly and effectively to new and unforeseen developments. However, a demand-driven, pull approach focused on real-time updates on customer demand and backed by deep visibility across the supply chain can help companies keep pace with change in today's chemical industry.

By **Erich Ludwig Gampenrieder**







## The more things change ...

... the more they stay the same. That commonplace expression might be true in many industries but not for chemical companies over the past year. In fact, the chemical industry in 2015 saw a number of historic contractions, transitions and realignments around the world, with perhaps more to come as the global economy struggles to avoid another downturn in 2016.

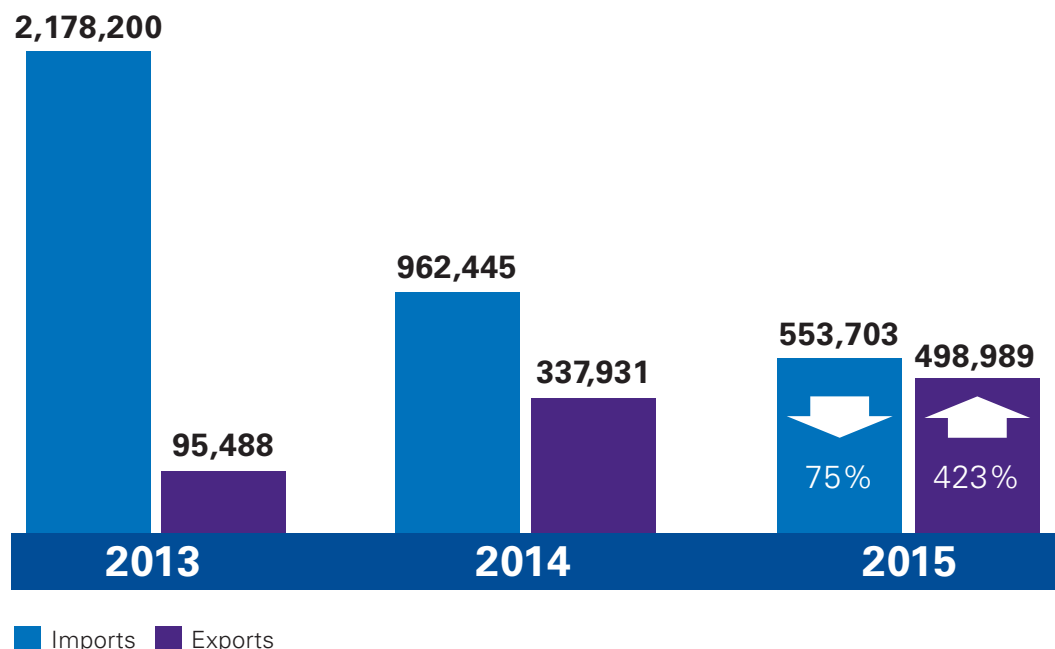
Perhaps the biggest driver of change in 2015 involved China's cooling economy. After decades of expansion, this reversal was not unexpected — current government policies are designed to curb inflation, reduce infrastructure investment and support a gradual

transition away from manufacturing toward consumer markets — but the degree of this cooling caught many by surprise. According to official reports, GDP growth in China has declined to 6.9 percent in 2015, the slowest growth rate in 25 years.<sup>16</sup> Domestic stock market volatility, currency devaluations and high debt levels across industries also increased concern about the world's second-largest economy.

In a similar reversal, China's chemical industry is now marked by lower domestic demand leading to oversupply in many sectors and an increase in commodity exports.<sup>17</sup> For example, China has seen a massive

turnaround in purified terephthalic acid (PTA) imports versus exports from 2013 through 2015. Imports have fallen by 75 percent with exports up by 423 percent<sup>18</sup> (see chart below, China's PTA trade). For overseas chemical producers, major readjustments will have to be made as China increasingly shifts from being a dependable market for commodities to something far more complex and fluid.<sup>19</sup> Chemical companies long dependent on exports to China — those in South Korea being a prime example — are rethinking their business strategies as they adapt to the Chinese new normal.<sup>20</sup>

### China's PTA trade January—September 2013, 2014 & 2015 in tons



Source: China chemicals exports surge as everything changes, ICIS.com, 29 October 2015.

<sup>16</sup> China's economic growth in 2015 is slowest in 25 years, Wall Street Journal, 19 January 2016.

<sup>17</sup> China's rising chemicals supply, lower demand squeeze industry, Wall Street Journal, 9 December 2015.

<sup>18</sup> China chemicals exports surge as everything changes, ICIS.com, 29 October 2015.

<sup>19</sup> Electricity and freight: measuring up to the new China, ICIS.com, 14 October 2015.

<sup>20</sup> Korean chemical industry moves toward growth and diversity, Reaction 18, 2015.



## Brent crude oil prices, January 2014—January 2016



Source: Bloomberg

## Historical front month US natural gas futures prices

US\$ per MMBtu



Source: Bloomberg

Another change for 2015 involved continued low prices for crude oil and natural gas. The drop in crude prices was not unprecedented in a boom-or-bust industry like petroleum and low prices for shale gas were in line with expectations. But oil has remained at low levels far longer than expected, and continued global oil production discourages any significant increase in crude oil prices.<sup>21</sup> Combined with an abundance of North American shale gas, this situation reverses trends that have been in place for years or even decades, creating a ripple effect across the global chemical industry.<sup>22</sup> However, the advantageous circumstances of 2015, like low oil prices and high dollar rates, which supported moderate growth, will not continue forever.

Finally, the past year has seen a surge in M&A and other transactions for the chemical industries as major players acquire, divest and restructure assets to increase profitability and maintain a competitive edge, especially in emerging markets. One of the largest transactions was the historic merger of

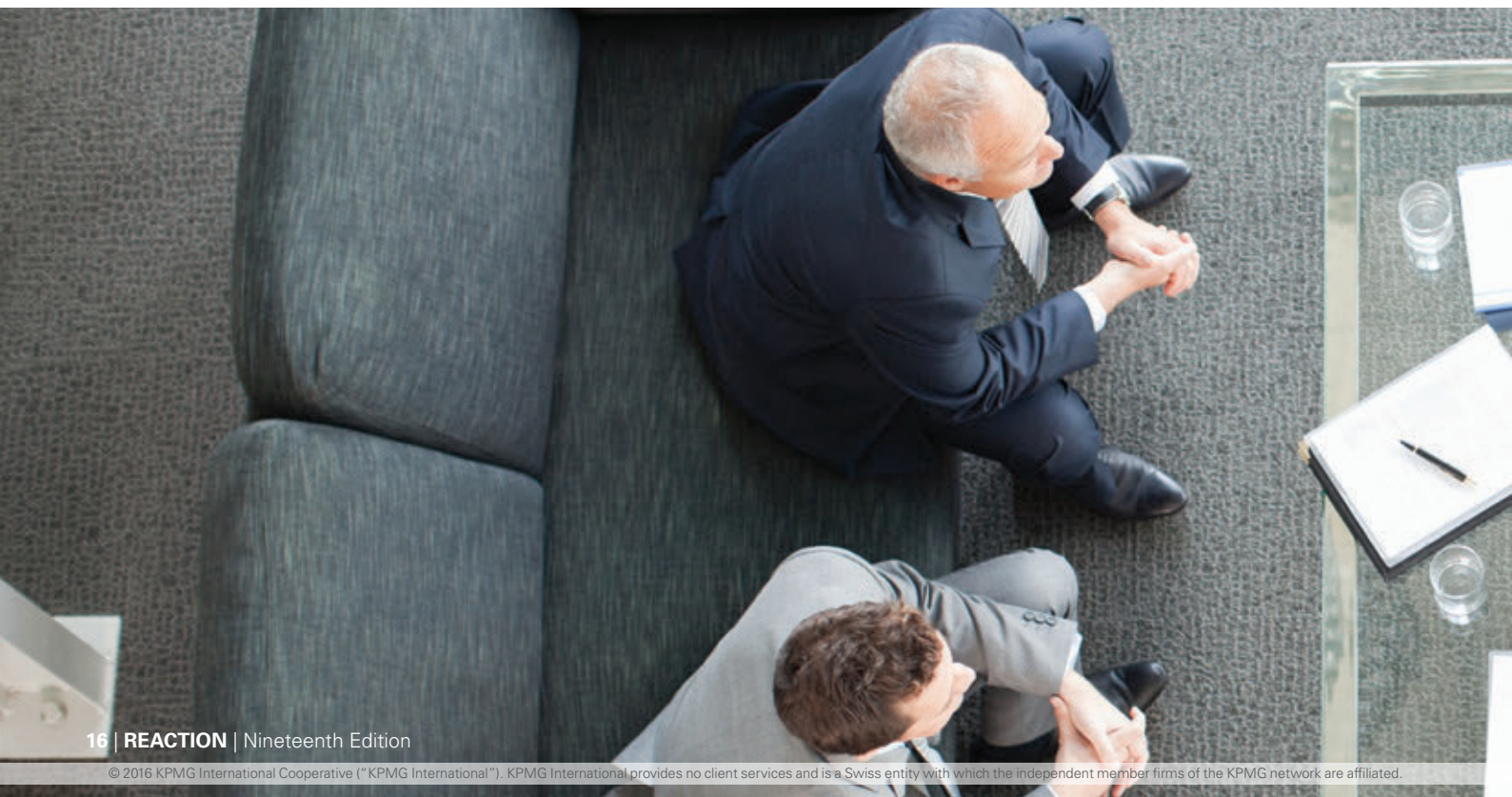
US giants Dow Chemical and DuPont, a US\$130 billion deal (as discussed in our previous article).

In short, 2015 has been a true game changer for the global chemical industry. The chemical companies prognosis for 2016 shows a mixed but not consistent view. For example, in Europe, Evonik and Covestro expect a decrease of their operational profit. So does BASF, where losing in the oil and gas business will cause earnings pressure. In the chemical sector, expect earning decreases in basic products, but increases other product areas. Also, DSM and Solvay have promised increased operating profits to their shareholders recently. But this leads to a question: Have chemical companies developed supply chains with sufficient agility to keep pace with industry changes and to match with shareholders' expectations?

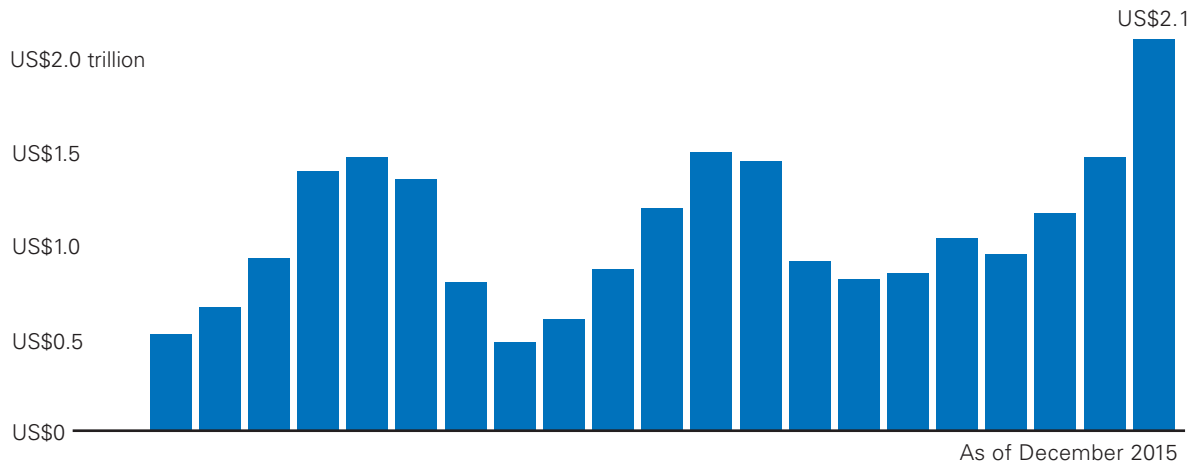
As well as staying efficiency oriented, in today's world, chemical supply chains, should focus on being differentiated, value-driven and flexible and to allow enhanced agility.

<sup>21</sup> Oil falls in volatile trade as glut concerns face OPEC cut uncertainty, CNBC, 6 February 2016.

<sup>22</sup> Gas-powered growth continues for US chemical companies, Reaction 15, 2015.



### Annual M&A value (for deals with US acquirers)



Source: Idealogic; S&P Capital IQ





## Potential benefits with demand-driven supply chains

### Sales levels



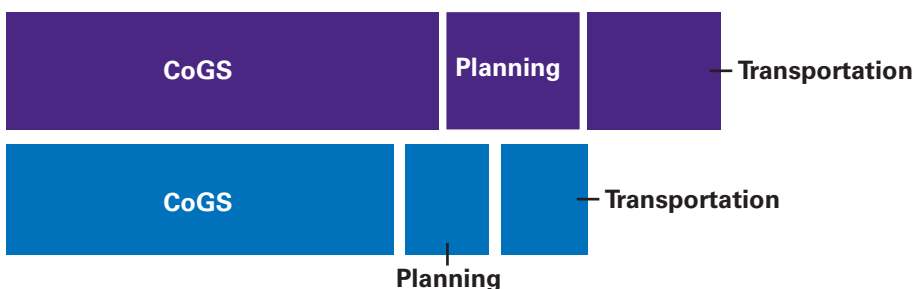
**1–4%**  
improvement



### Expense levels



**5–10%**  
reduction in  
operating  
expenses



### Inventory levels



**20–30%**  
reduction in  
inventory



■ Traditional model ■ Demand-driven

Source: Driven by Demand report, KPMG in the US, 2014

“

**58 percent** of surveyed companies with a network demand-driven supply chain **outperformed their peers on revenue** growth, and **55 percent** of surveyed companies **did so on margin.**”

— Driven by Demand report, KPMG in the US, 2014





# Demand-driven 2.0: a responsive approach to profitability

‘Demand-driven’ has been a part of supply chain thinking for a number of years. For many chemical companies, however, the concept has not been translated into actual supply chain structures, processes and strategies appropriate for today’s rapidly changing business environment.

In a demand-driven supply chain 2.0, as described by KPMG,<sup>23</sup> chemical companies know precisely what clients value and organize their entire operations around satisfying these needs, to create a consistent, excellent customer experience by answering the five most important questions as shown below.

Sophisticated demand planning, inventory management and distribution enable customers to select, receive and return products/services when and where they wish, with an ever-shortening time between order and delivery.

The supply chain flow starts with the buyer, with purchases — and an expressed desire to purchase — providing the demand ‘signal’ that triggers production and replenishment. In a fully networked

model, distributors, manufacturers and suppliers collaborate on how to respond to fluctuations in demand or to adapt to new product requirements.

Properly designed, implemented and managed, this approach reduces unnecessary touch points, thereby reducing operating costs and improving profitability and customer service. Inventory is managed, based on accurate balancing of demand and supply, as well as in alignment to dynamic target operating levels based on segment supply chains (by customer, product, regions, channels and product life cycle stage). Demand/supply continuity issues can be identified before they even impact production and affect customer service.

In addition, the demand-driven approach can achieve balanced cash flow through increased sales, reduced operating expenses and working capital improvements. Improved fill rates and reduced out-of-stocks drive increased revenue and recoverable sales.

For commodity chemical manufacturers, demand-driven supply chains can help

increase efficiency and reduce cost, giving them a competitive advantage in markets where tight margins mean the difference between success and failure. For specialty chemical manufacturers, a demand-driven approach can help improve customer service and provide better support for multiple suppliers, products and buyers.

For almost any chemical company dealing with significant change, the most important benefit is increased agility. A distinction can be made between flexibility — responding to expected issues by executing pre-planned mitigation plans — and agility — responding to unexpected events and unforeseen demand with a high-performing organization. These events include extreme weather, geopolitical disturbances, regulatory changes, market volatility, price fluctuations in raw materials, power outages or changes in third-party suppliers. Demand-driven supply based on real-time sharing of information has both the flexibility and agility to accommodate unforeseen events that might affect demand or the ability to meet demand.

## Key supply chain questions

1

For which part of your product/service portfolio do you have visibility of your total demand and supply picture at any point in time and does this visibility extend beyond your first-tier partners? To what percentage does this visibility extend beyond your first-tier partners?

2

Which percentage of low/middle/high volatile product movements are driven by actual demand or by forecasted demand?

3

What lead time percentage does it take for demand changes to reach second-tier suppliers?

4

How quickly can you identify and respond to a potential supply continuity issue?

5

To what extent does your end-to-end supply chain function as one virtual organization, with everyone working on aligned objectives, measured by synchronized metrics and using shared information?

<sup>23</sup> Demand-Driven 2.0 — a direct link to profitability report being released April 2016.



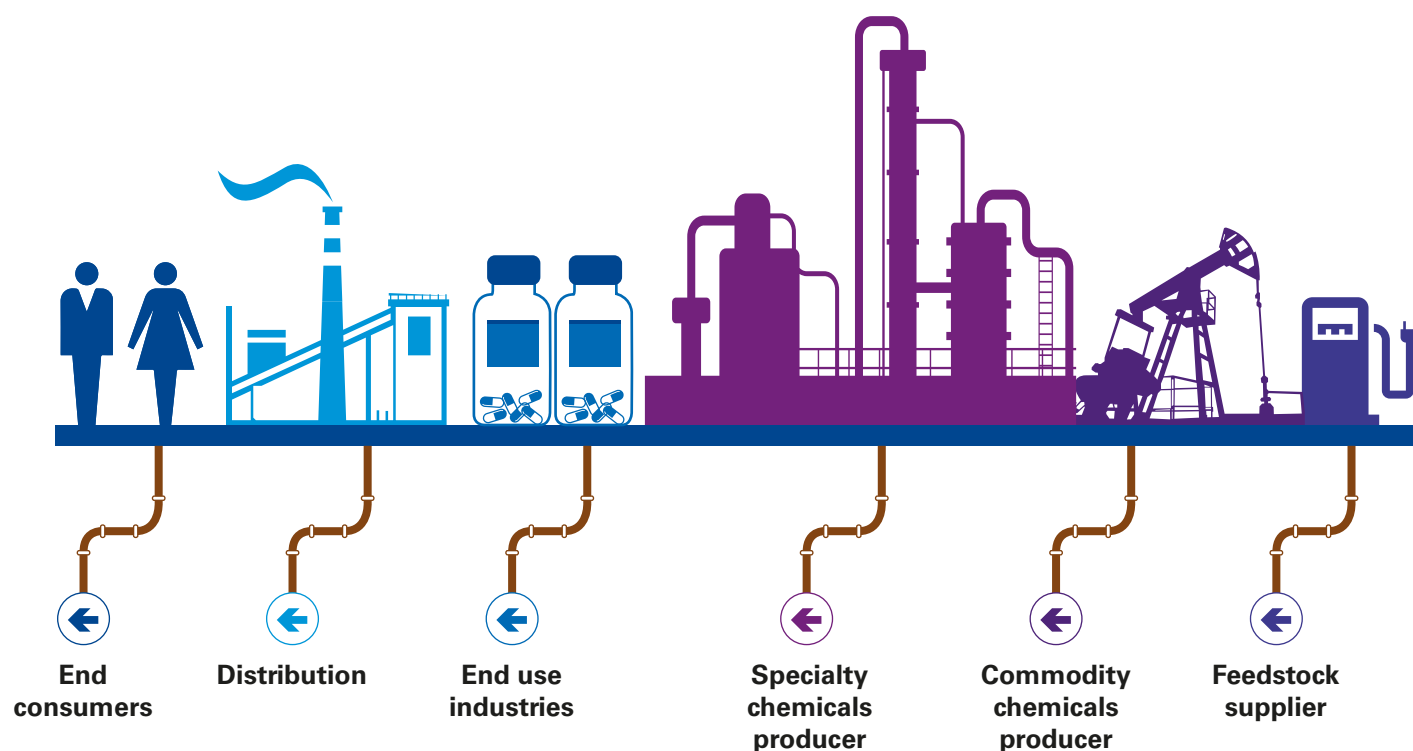
## Information is key

Information technology (IT) is essential for a demand-driven supply chain. Next-generation IT infrastructures, cloud and SaaS platforms help suppliers and

partners to increase the visibility of changes in customer demand. With all parties leveraging a shared platform, information can be synchronized across

partner tiers, providing a real-time view to total demand, supply and capacity information.

### Multi-tier visibility across integrated platforms



“  
**Data is the  
oil of the 21st  
century.**”

Peter Sondergaard,  
Senior Vice President of  
Research, Gartner<sup>24</sup>

Information latency — the time lags that occur in transmitting supply, demand and financial data within the organization and across supplier tiers and customers — can be significantly reduced. All material movements and inventory decisions can be driven by demand signals as close to the customer as possible — capturing actual consumption and changes in demand patterns. This, in turn, reduces the level of inventory that needs to be

carried because demand uncertainty is mitigated. At the same time, real-time visibility into the complete demand/supply picture and continuity issues reduces supply disruptions.

For chemical companies making acquisitions or consolidating assets, a cloud-based SaaS platform can also facilitate the integration, expansion and redesign of IT environments supporting supply chain networks.

<sup>24</sup> Quoted in final thoughts on Gartner's supply chain conference, supply chain management review, 10 May 2015, [http://www.scmr.com/article/final\\_thoughts\\_on\\_gartners\\_supply\\_chain\\_conference](http://www.scmr.com/article/final_thoughts_on_gartners_supply_chain_conference).



# Conclusion: how to change for the better

Why chemical companies need demand-driven, responsive-oriented supply is a matter of record. Benefits involving cost, performance and the ability to respond to change have been realized by chemical industry leaders worldwide. But exactly how a demand-driven supply chain is implemented is a different matter.

Making the transition from a traditional forecast-based supply chain to a demand-driven model involves challenges found with most change management initiatives. Management buy-in is essential, starting with the CEO. Key stakeholders include leaders in IT, sales, operations and HR. Equally important is the need to convince customers and suppliers that they should join the initiative. It is critical that they understand the benefits they can achieve by collaborating. Successful programs establish a shared benefits model

with partners, allowing both sides to provide input to the future-state process and related metrics.

Anticipating potential pitfalls is also important. A demand-driven environment requires all parties to expose more operational data outside their four walls, so data must be clearly defined and integrity is key. Finally, talent management must be fully supported, especially the need to recruit, train and retain supply managers who are comfortable with today's technology.

With the right design, support and management, demand-driven supply chains can help the industry better adapt to today's rapidly evolving global markets, representing a change for the better for manufacturers, suppliers and customers.

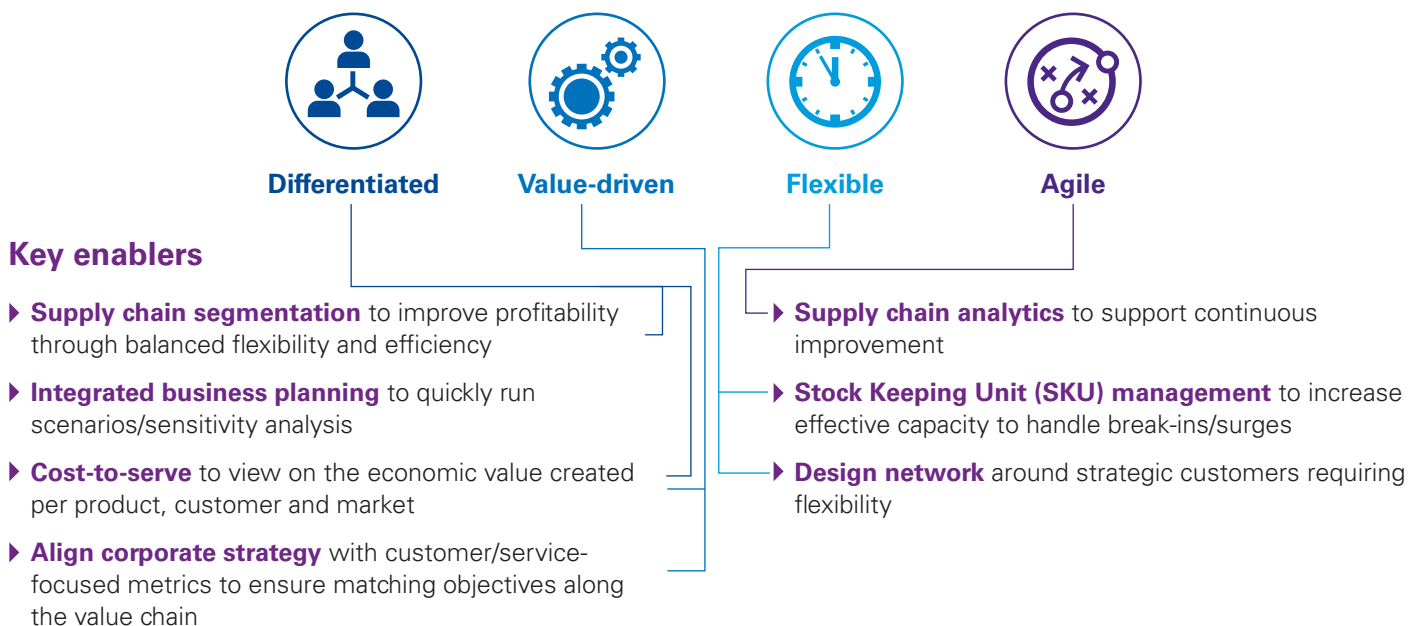
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## A demand-driven, responsive-oriented supply chain



Source: KPMG Research, KPMG Project Experience, under consideration of Gartner: Transform Your Supply Chain to Become Demand-Driven (2014)

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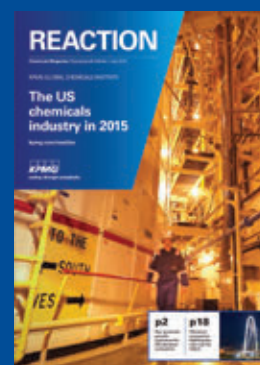
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