



REACTION

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Featured articles:

Adapting to a changing geopolitical landscape

Synergies sought in M&A by industrial gas players

Despite uncertainty, optimism for US chemical companies

A unique approach to innovation with AkzoNobel

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Welcome to the latest edition of REACTION Magazine. I'd like to start by thanking Mike Shannon for his leadership of our Global Chemicals Practice over the last 10 years — it's a real honor to be asked to succeed Mike and I'm glad he's staying on the team as Head of our Americas Chemicals Practice. As we come to the end of the year, it's been another good one for the sector — the long up-cycle in commodities continues and the ongoing wave of M&A continues to transform the shape of the industry.

In this extra large edition, we have four articles, covering geopolitical trends and their impact on global chemical companies, an outlook for the US chemicals industry, a focus on M&A within the industrial gases segment and a look at innovation with AkzoNobel — who I'd like to personally thank for participating in REACTION.

As ever, our global chemicals and performance technologies team remains active in the industry and it was great to see so many of you at the UK Chemical Industries Association Annual Dinner and at the GPCA Forum in Dubai where my colleague Norbert Meyring and I presented on China's Belt Road Initiative — more on that in a future edition.

We'll be back with our next edition in February with an outlook on India's chemical industry. 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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Adapting to a changing geopolitical landscape

By Rohitesh Dhawan

Geopolitical uncertainty is on the rise. Volatile oil and gas prices, shifting alliances in the Middle East, shocks to the European Union (EU) such as Brexit, the expansion of China, the Trump administration in the US, and the rise of nationalism and opposition to free trade — all these developments and more are increasing stress levels across the business world. Traditionally, the chemical industry has been more reactive than proactive about dealing with geopolitical disruptions. However, chemical companies would do well to consider appointing a Chief Geopolitical Officer (CGO) to help them address uncertainties in an increasingly turbulent world.





Regional challenges

Uncertainty has always been a fact of life in the global economy. Until recently, developing countries provided much of this uncertainty because of political upheavals and accelerated growth. Now we find increasing geopolitical uncertainty in the West as well. Leaders in developed countries are questioning or attempting to change multinational agreements, treaties, alliances and business relationships, some of which have been in place since the end of World War II. In many ways, the idea of a multilateral, global economic community is being challenged by an alternative view of trade as a zero-sum game with clear winners and losers.

The current debate in the US about trade agreements reflects this transformation. With an 'America First' attitude, the new Trump administration in the US has backed away from discussions about the Trans-Pacific Partnership. The administration is also questioning the North American Free Trade Agreement (NAFTA) and considering sizeable tariffs on imports designed to favor domestic manufacturing, agriculture and construction.¹ A 20 percent tariff on imports of softwood lumber from Canada has already been imposed.²

Much depends on whether this administration will continue in this direction. For the moment, however, chemical companies are closely watching developments in Washington. According to the American Chemistry Council, the US chemical manufacturing sector is one of the country's largest

exporters, with over US\$184 billion in exports for 2015.³ (see page 18, *Despite uncertainty, optimism for US chemical companies.*)

In the same way, the UK's vote to leave the EU has created uncertainty surrounding future trade negotiations between that country and the EU. For the moment, the impact on the country's chemical companies has not been severe. (see REACTION, Issue 21, *Brexit and the chemical industry.*) But future developments depend on the particular nature of this exit. A 'hard Brexit' could involve leaving the EU without an agreement in place. This might result in questions involving whether regulations and product standards were shared with EU nations as well as possible delays at the border for both import/export goods and workers. A 'soft Brexit' could involve keeping close ties with the EU, possibly through some form of membership in the EU market, in return for a degree of free movement.⁴ Further uncertainty across the EU might come from recent elections in Germany, Poland and other countries where gains by populist parties could change the import/export balance for the chemical sector.⁵ Making ethylene in Europe is at least two times more expensive than in the US.⁶ A strong populist presence might encourage a tariff structure designed to protect European chemical companies. In 2016, chemicals in the EU accounted for 18 percent of goods exported and 11 percent of imports.⁷

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52 percent of CEOs believe that geopolitical uncertainty has a greater impact than before.”

KPMG 2017 Global CEO Outlook

¹ Donald Trump moves towards imposing tariffs on steel imports, Financial Times, 20 April 2017, www.ft.com/content/d8413fe8-25e6-11e7-8691-d5f7e0cd0a16?mhq5j=e5

² President Trump's Tariff On Canadian Softwood Lumber Imports Will Hurt America Most, Forbes, 25 April 2017, www.forbes.com/sites/francescoppola/2017/04/25/president-trumps-tariff-on-canadian-softwood-lumber-imports-will-hurt-america-most/#54f85a452232

³ American Chemistry Council, Trade, www.americanchemistry.com/Trade-Overview/

⁴ Brexit: What are the options?, BBC, 12 June 2017, www.bbc.com/news/uk-politics-37507129. See also Brexit Basics: The Four Freedoms, KPMG, 2017, assets.kpmg.com/content/dam/kpmg/xx/pdf/2017/02/brexit-basics-the-four-freedoms.pdf

⁵ Uncertainty increases in European election year, Atradius, 18 April 2017, group.atradius.com/publications/political-uncertainty-europe-2017.html

⁶ Cefic: Facts and Figures 2016, www.cefic.org/Facts-and-Figures/

⁷ Extra-EU trade in manufactured goods, Eurostat, April 2017, ec.europa.eu/eurostat/statistics-explained/index.php/Extra-EU_trade_in_manufactured_goods



Meanwhile in the Middle East, Saudi Arabia is undergoing a major shift in leadership, with Prince Mohammed on course to succeed King Salman, his 81-year-old father.⁸ The country is strengthening its relations with China and exports to countries like India are on the rise. Saudi Arabia sees Asian markets as vital for its Vision 2030 program of economic reforms, but it will also seek deeper cooperation on security and military issues.⁹ US ties will likely remain strong with the country, even as US dependence on Middle Eastern oil continues to decrease.

The situation in Iran — sitting atop the world's second-largest natural gas reserves¹⁰ — adds its own level of uncertainty. Challenges for foreign investors include questions about US foreign policy under the Trump administration, regulatory restrictions and limited domestic financing options.

Looking to the East, China continues to expand its economic footprint in the region, forcing a realignment of market forces across the region and around the world. Chinese chemical companies are expected to capture 40 percent of global market share by 2020.¹¹ This growth is backed by ambitious government programs such as the Belt Road Initiative (BRI), a massive undertaking designed to connect countries and markets in Central Asia, Southeast Asia and across the Indian Ocean. New roads, buildings, port facilities and other projects will require a variety of chemicals for their construction. Beijing has presented BRI as an example of China's growing economic status. But Chinese chemical companies are currently challenged by overcapacity, debt and slowing domestic demand.¹² In addition, skepticism, particularly in the West, is high and critics have questions about the economic viability of the BRI as well as concerns with China's geopolitical motivations.¹³

Volatile prices

Feedstock prices have created additional uncertainties. The price of crude oil is expected to remain somewhat above US\$50 a barrel with no significant price increases in sight. US shale oil production will continue to press crude prices downward, and US natural gas production will favor US chemical companies, increasing their competitiveness in world markets.

The relative cost and availability of these two feedstocks have created a significant advantage for US ethane-based refineries over European naphtha-based refineries, changing the face of chemical manufacturing in the West. (See page 24, *Oil and gas prices favor US chemical companies.*) However, this situation is subject to change depending on geopolitical change, market fluctuations and other factors.

⁸ Dramatic reshuffle reshapes Saudi Arabia's leadership, 21 June 2017, www.ft.com/content/c8f084b6-5685-11e7-9fed-c19e2700005f?mhq5j=e5

⁹ Saudi Arabia: Geopolitics, Eurasia Group, 17 March 2017

¹⁰ Iran, www.eia.gov/

¹¹ Market Outlook: Thriving in China's competitive chemical market, ICIS Chemical Business, 26 May 2016, www.icis.com/resources/news/2016/05/26/10002360/market-outlook-thriving-in-china-s-competitive-chemical-market/

¹² China/Asia: Geopolitics, Eurasia Group, 12 May 2017

¹³ Ibid.



An industry 'in the background'

Chemical companies have often taken a reactive approach in dealing with many of the geopolitical uncertainties now shaking the world.

As business-to-business (B2B) suppliers, companies usually operate quietly in the background, providing materials and ingredients rather than finished products. Insulation for buildings, plastics in cars and emulsions in cosmetics are virtually invisible to the public, even though chemicals are essential for construction, automotive manufacturing and personal care items. Companies selling end-use products, especially those designed for large consumer/retail markets, require intense marketing and highly visible advertising. In contrast, a chemical company might sell their output to just a handful of companies that use chemicals in their operations and manufacturing. As a result, chemical companies are rarely in the mainstream media, nor do most of them have to be.

In the same way, many current events do not directly impact the chemical industry. For example, the recent

flow of immigrants into Europe has prompted a discussion about how local economies can supply jobs for workers who often have limited skills and experience. Chemical plants employ a relatively small number of workers with specialized skill sets, so chemical companies have not played a role in these discussions as a potential source of jobs for these immigrants.

Finally, chemical companies usually operate in political or regulatory environments that are extensive but relatively slow moving and predictable. A change in national leadership can prompt government agencies to impose new regulations or roll back existing ones, but the complexities of implementing these changes — including possible challenges in the courts — means that chemical companies usually have months if not years to adjust to the new regulatory regime. In addition, many chemical companies have developed strong relationships with governments, helping to mitigate the impact of certain policies.





A proactive approach

Despite operating ‘in the background’, chemical companies need to consider a more proactive approach in addressing today’s geopolitical uncertainties, many of which have the potential to draw chemical executives and organizations into the center of controversy, government scrutiny and criticism — particularly given the fact that the industry is truly ‘global’ in nature and so is exposed to many different geopolitical environments.

Take automation, for example. As robotics and other areas of automation spread, chemical companies might find themselves in the spotlight as examples of successful companies that are profitable but not sharing the benefits of their success with their employees. Critics would be quick to point out that

increases in productivity are not matched by increases in wages, benefits or hiring.

In addition, traditional lines of authority are undergoing dramatic changes. New party leadership in Germany, for example, might impact regulations and other factors affecting chemical companies. After the election, Germany’s chemical trade group VCI expressed concern about a declining euro and possible increases in electricity costs.¹⁴ In the US, along with the uncertainties discussed above, state and local governments are questioning their alignment with the Trump administration. Although President Trump announced the withdrawal from the Paris climate accord, states like California along with several cities have declared that they still support the

Paris Agreement.¹⁵ In fact, California will host its own climate change conference on the Paris Agreement in 2018.¹⁶ Chemical companies might find themselves caught in the middle of this debate and asked to take action or support a position even before the consequences of governmental actions have been fully determined.

Furthermore, established ways of thinking about risk and risk insurance need to be re-evaluated. Previously, a company could apply coverage to a specific event like civil unrest or damage by heavy storms. Now, politicians might slowly apply pressure on a chemical multinational by using a myriad of nationalistic policies that make it increasingly difficult to do business in that country.



Enter the Chief Geopolitical Officer

We believe the following steps should be taken by chemical companies to help them respond successfully to today’s geopolitical uncertainties:

Appoint a Chief Geopolitical Officer

The CGO should be an empowered C-level resource reporting directly to the CEO. Extending beyond the basic duties of public relations or industry

lobbying, the CGO should help develop and maintain a strategy that anticipates current and future geopolitical events and enables the company to react successfully to these events with a minimum of disruption. The CGO should take the lead in ‘telling the story’ about the company and how it provides a sustainable business model that benefits employees, the community, shareholders, the economy and the environment.

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77 percent of CEOs are recruiting new skills/specialists to help better understand geopolitical risks.”

KPMG 2017 Global CEO Outlook

¹⁴ Euro lower on German election, chemicals fear political instability, ICIS, 25 September 2017, www.icis.com/resources/news/2017/09/25/10146135/euro-lower-on-german-election-chemicals-fear-political-instability/

¹⁵ A California-led alliance of cities and states vows to keep the Paris climate accord intact, LA Times, 2 June 2017, www.latimes.com/politics/la-na-pol-paris-states-20170602-story.html

¹⁶ California launches new climate change conference to help fulfill Paris Agreement targets, The Independent, 6 June 2017, www.independent.co.uk/news/world-0/us-politics/california-climate-change-conference-paris-agreement-deal-targets-a7828076.html

Conduct a geopolitical stress test

One of the first tasks of the CGO should be to conduct a thorough geopolitical stress test, asking questions like the following:

- 1 **What business planning assumptions could be derailed by geopolitics?** 
- 2 **Will your corporate structure need to change to take advantage of opportunities?** 
- 3 **Do you have enough visibility over your supply chain to identify threats?** 
- 4 **How quickly can you reduce your supply chain dependency on a market?** 
- 5 **What does increased geopolitical uncertainty mean for availability and cost of capital and resources?** 

These questions and others should be applied to both shorter-term events like Brexit or the potential breakup of NAFTA and longer-term trends having to do with nationalism, populism, globalism or economic megatrends. Ideally this stress test will help develop an events-driven view of the impact of ongoing geopolitical uncertainties.

Develop specialized sources of geopolitical data

In a media-saturated world, companies need to remember

that the quality of information is as important as the quantity. Along with reviewing mainstream and industry news sources on a regular basis, companies should work with consultants who specialize in the kind of geopolitical events that might affect company operations, markets and business relationships.

Armed with the right strategy, analysis and information, an effective CGO can help lead the company toward a more certain path in an uncertain business world.



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Andrew is responsible for leading KPMG's efforts globally to help companies and governments understand the implications of geopolitics on their business. He brings the best of KPMG's geopolitics insights across various sectors, functions and regions.

About Eurasia Group

To help CEOs face an increasingly volatile and uncertain geopolitical environment, KPMG International has joined forces with Eurasia Group, a leading political risk consultancy. The professionals at KPMG and Eurasia Group combine political and business analytical skills to identify both risks and opportunities for businesses and investors around the world.

Synergies sought in M&A by industrial gas players

By Graeme Young

Major industrial gas manufacturers have recently been focused on optimizing and strengthening their positions in core markets, both geographically and by business unit. M&A activity in the sector has reflected this and has been aiming at driving synergies to leverage innovation and technology, improve service, reduce distribution costs, increase efficiency and allow greater access to core markets, as well as divest any non-core businesses. This is a familiar trend that has been seen across the chemical industry.

In this environment, delivering cost synergies through effective integration will be of primary concern for many players, as well as identifying new growth opportunities within core markets.





Snapshot of the global industrial gases sector

Major suppliers

The global industrial gas market was valued at a total of US\$71 billion in 2016.¹⁷ A small number of major players dominate the marketplace, with approximately 80 percent market share controlled by the four largest players.¹⁸ These companies gain competitive advantage over smaller rivals partially due to advanced technology, required for energy-efficient production. In addition, these larger competitors are able to provide customers with more reliable security of supply, by making use of liquid product shipped from their other local facilities.

The primary products in the sector are atmospheric gases such as oxygen, nitrogen and argon, which are purified

from the air. Other products like carbon dioxide, hydrogen helium and specialty gases are purified from other feedstocks coming from sources such as chemical plants, refineries or manufacturing processes, or recovered from underground reserves.

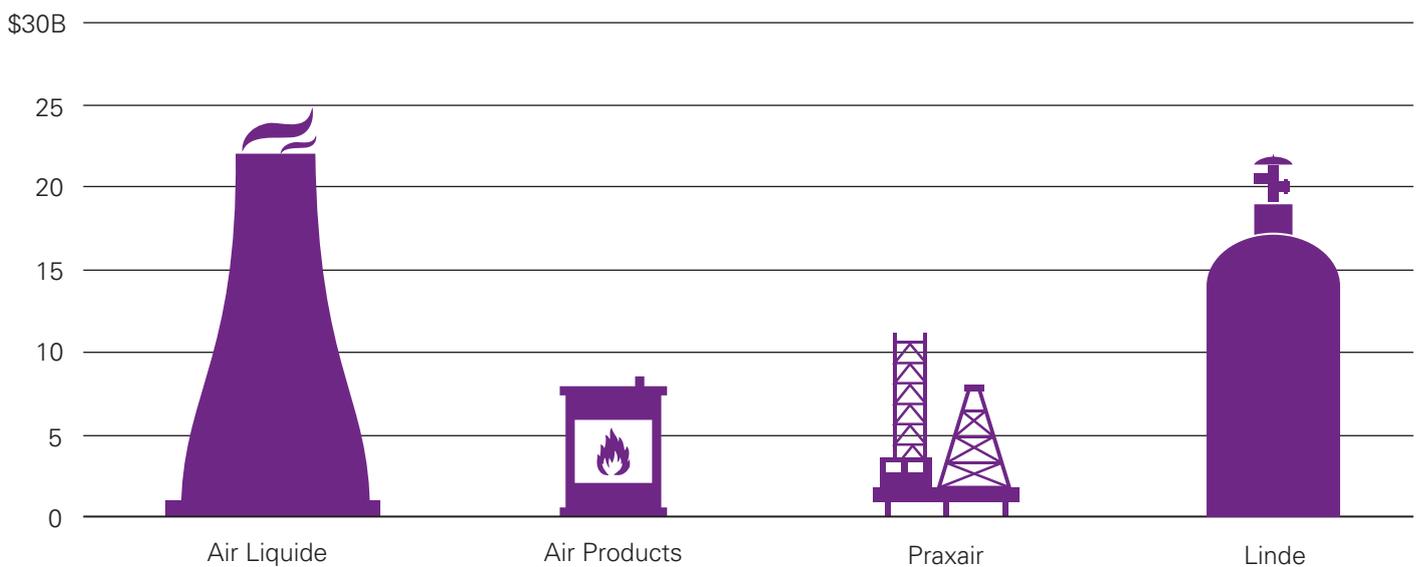
Industrial gases supply essential elements for a host of products and manufacturing processes. Although the sector is a relatively small component of the wider chemical industry, it is essential to a significant part of the global economy. In the US, industrial gases support products for industries that account for 25 percent of the national GDP.¹⁹ Industrial gases have a variety of applications, for example in:

Advanced electronics: Nitrogen is an integral component to the manufacturing of semiconductor chips and cell phones, computers and televisions.

Healthcare: Oxygen and helium support critical medical equipment, pharmaceuticals and procedures.

Energy: Carbon dioxide and nitrogen improve oil and natural gas production, and specialty gases help produce advanced lighting, insulation and photovoltaic cells for solar energy panels.

Air and water treatment: Oxygen and carbon dioxide can improve water treatment, and specialty gases can be used to calibrate air quality monitors.



■ 2017 Estimated Revenue

Air Liquide includes Airgas. Revenue in US\$.

Source: Bloomberg, www.bloomberg.com/gadfly/articles/2016-12-20/praxair-gives-away-too-much-in-deal-with-linde

¹⁷ Gasworld, 2017 Report, www.gasworld.com/gasreport-global-industrial-gas-market-2017/2012957.article

¹⁸ Air Products, Air Liquide, Praxair and Linde 2016 Annual Reports

¹⁹ Industrial Gases, Vital Supplier to the US Economy, American Chemistry Council (ACC), www.americanchemistry.com/Industrial-Gases-Vital-Supplier-to-the-US-Economy.pdf



Strategies for an essential sector

Industry players are increasingly focusing on their core markets and products, best highlighted by Air Products' divestment of its Performance Materials division at the beginning of 2017.²⁰ This divestment has helped the company focus its efforts on its core business, as well as release capital to invest in new opportunities aligned to this focused strategy.

Current sector growth is estimated at a compound annual growth rate (CAGR) of more than 8 percent between 2016 and 2020,²¹ so reliance on organic growth to increase value is a viable option for many companies, especially those focused on consumer product markets.²² However, M&A remains a favored growth strategy across the sector, especially for those companies with the financial resources needed to negotiate a successful deal. M&A can help companies sharpen their business focus, access new technology,

diversify into new product lines, markets or regions, reduce costs, and increase sales.

M&A is especially attractive due to the number of potential synergies that can be leveraged in the industry, allowing the overall value of combined companies to increase. Synergies can lower costs by reducing headcount, consolidating administrative and manufacturing overhead, and gaining greater bargaining power over suppliers. Synergies can also boost revenues by opening access to new markets, providing cross-selling or up-selling opportunities to existing markets, leveraging brand equity to strengthen and expand customer relationships, sharing supply chain and distribution infrastructure, and reducing competition through market dominance.

The acquisition of Airgas by Air Liquide and the proposed merger of Praxair

and Linde offer two recent examples of M&A with significant potential for synergistic value.

Air Liquide, a French multinational, acquired Airgas in 2016. Although Air Liquide was a much larger company than US-based Airgas (US\$21.2 billion in revenues versus US\$5.31 billion for Airgas²⁴), both players brought significant value to the table.

Air Liquide has traditionally specialized in larger customers' process gas needs, and Airgas provides consumables and small packaged gas. With the acquisition, Air Liquide can offer a greater range of offerings, from packaged and bulk gas to on-site supply and hard goods. Air Liquide also brings a global technology portfolio backed by its US R&D center in Delaware, as well as advanced supply chain capabilities.²⁵



Air Liquide acquires Airgas: US market growth plus greater efficiency

Completed in May 2016²³

US\$45 million in synergies achieved in 2016

Estimated **US\$300 million** in synergies by end of 2019

2/3 of value expected to be cost synergies, with the rest sales synergies (growth in markets)

²⁰ Air Products, Air Products Completes \$3.8 Billion Performance Materials Division Sale to Evonik, 3 Jan 2017, www.airproducts.co.uk/company/news-center/2017/01/0103-air-products-completes-sale-to-evonik.aspx

²¹ Global Industrial Gases Market 2016–2020, Technavio, www.technavio.com/report/global-specialty-chemicals-industrial-gases-market

²² Why mergers are a way to grow, and organic growth is far from dead, Gasworld, 19 April 2017, www.gasworld.com/why-mergers-are-a-way-to-grow/2012652.article

²³ Air Liquide Completes Acquisition of Airgas, press release, 23 May 2016, www.businesswire.com/news/home/20160523005856/en/Air-Liquide-Completes-Acquisition-Airgas

²⁴ Air Liquide completes acquisition of Airgas; www.airliquide.com/media/air-liquide-completes-acquisition-airgas

²⁵ Air Liquide 2016 Annual Report www.airliquide.com/media/2016-annual-report

For its part, Airgas has developed the most advanced multichannel distribution network in the US, including e-commerce and telesales capabilities. More importantly, Airgas provides a strong presence in US markets. The deal extends Air Liquide's customer base by more than one million customers. Air Liquide will become the leader in North America for industrial gases. It will also become number one in the industrial merchant, large industries and electronics sectors, and one of the key players in healthcare.

The transaction is expected to generate significant synergies. Through active preparation work prior to the closing, more than US\$300 million of pre-tax industrial, administrative and volume growth synergies have been identified.²⁶ Management expects cost synergies to be realized before the end of 2018. They correspond to the optimization of operations, processes, purchases and back office. Sales synergies will be based on the deployment of Air Liquide

offerings through the Airgas network and Airgas offerings in Canada and Mexico. The majority of these synergies are targeted for delivery within the next 2 to 3 years.²⁷

Compared to Air Liquide's acquisition, Linde's proposed deal with Praxair is designed more as a merger of equals, uniting Linde's leadership in engineering and technology with Praxair's efficient operating model.²⁸

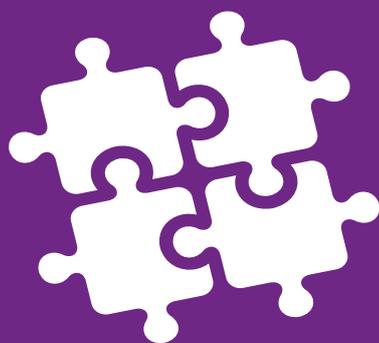
Praxair is a leading industrial gas company in North and South America. The company produces, sells and distributes atmospheric, process and specialty gases, and high-performance surface coatings. Linde is a multinational organization based in Germany, now supplying industrial, process and specialty gases to markets in more than 100 countries.

The combined company will have a strong presence in all key geographies and end markets around the world, which will result in a more diverse and balanced

global portfolio as well as increased exposure to long-term macroeconomic growth trends. The new company will enable the development and delivery of a range of products and solutions to customers and aims to provide enhanced value for its employees, shareholders and communities.

Based on 2016 reported results, the merger will create a company with pro forma revenues of approximately US\$29 billion, prior to adjustments, potential divestitures and regulatory limitations, and a combined current market value in excess of US\$70 billion.²⁹

The stated rationale for the merger is to create significant value for shareholders through the realization of approximately US\$1.2 billion in annual synergies and cost reduction programs. These benefits are forecast to arise from scale benefits, cost savings and efficiency improvements from existing cost reduction programs, realized over a period of approximately 3 years following closing.



Linde's proposed merger with Praxair: new technology combined with operational efficiencies

Proposed 1 June 2017³⁰

Expected to close in second half of **2018**³¹

Estimated **US\$1.2 billion** in annual synergies and cost reductions

²⁶ Op. cit., Air Liquide Completes Acquisition of Airgas, www.airliquide.com/media/air-liquide-completes-acquisition-airgas

²⁷ Ibid.

²⁸ Ibid.

²⁹ Linde and Praxair Sign Business Combination Agreement to Become a Leading Industrial Gas Company, press release, 1 June 2017, www.praxair.com/-/media/documents/news-releases/2017/linde-and-praxair-sign-business-combination-agreement-to-become-a-leading-industrial-gas-company.pdf

³⁰ Linde and Praxair Sign Business Combination Agreement to Become a Leading Industrial Gas Company, press release, 1 June 2017, www.praxair.com/news/2017/linde-and-praxair-sign-business-combination-agreement-to-become-a-leading-industrial-gas-company

³¹ Linde gets 90 percent shareholder backing for Praxair merger, November 2017, www.reuters.com/article/us-linde-m-a-praxair/linde-gets-90-percent-shareholder-backing-for-praxair-merger-idUSKBN1D02DE



Regulatory challenges

Because the industrial gases sector is highly consolidated, M&A negotiations can face significant challenges involving antitrust or anti-monopoly regulations.

This was the case in 2000 with a bid by Air Products and Air Liquide for BOC, a multinational industrial gas supplier.³² On 12 May 2000, the bid lapsed, following the failure to reach a satisfactory agreement with the US Federal Trade Commission, which opposed the proposed division of BOC's assets in the US. In 2006, BOC was instead acquired by Linde.³³

Even in a successful transaction, antitrust laws can play a significant role. Air Liquide and Airgas agreed to divest a number of production and

distribution assets to settle US Federal Trade Commission charges that their proposed merger likely would have harmed competition and led to higher prices in several US and regional markets.³⁴ According to the complaint, the proposed acquisition would eliminate direct competition between the two companies in certain markets that are already concentrated.

Due to the increasingly limited number of players in the sector, antitrust authorities will be more focused than ever on the potential for monopolistic practices. Companies considering M&A will likely divest more assets, focus activity on new geographical regions or decide to adopt other strategies for growth.



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Graeme is a strategy consultant with over 12 years' experience in the chemicals, power and utilities industries. With strong project management and operational capabilities, Graeme has gained significant experience working across Europe, North America, the Middle East and Africa. He completed an MBA with distinction from Warwick Business School and is an accredited Professional Engineer.



Identifying and delivering synergies

KPMG member firms often find value in deals in areas such as procurement, working capital, back office, debt management, debt structuring and core operations, which should be considered when investigating deal value. Using advanced analytics, such as KPMG International's proprietary Target Value Platform (TVP) tool, these can be quickly tested to identify areas of opportunity.

Planning and delivering on deals can be challenging, especially with regulatory and cross-border elements in play. Ensuring that all relevant dimensions are considered is critically important

to have the greatest chance of success. KPMG member firms use the strategic 9 Levers of Value framework to comprehensively understand and break down an organization's financial, business and operating model, helping ensure relevant dimensions are considered and addressed in conjunction with their ability to leverage a global network of M&A, tax, integration, regulatory and other industry specialists. KPMG firms are able to provide deep and meaningful insight to support clients throughout their transactions.

³² Air Products/Air Liquide bid for BOC collapses: 15 May 2000 www.icis.com/resources/news/2000/05/15/114433/air-liquide-and-air-products-joint-bid-for-boc-collapses/

³³ Germany's Linde acquires BOC to create world's biggest gases group, The Guardian, 5 March 2006, www.theguardian.com/business/2006/mar/06/1

³⁴ FTC Requires Industrial Gas Suppliers to Divest Assets as a Condition of Merger, 13 May 2016, US Federal Trade Commission, www.ftc.gov/news-events/press-releases/2016/05/ftc-requires-industrial-gas-suppliers-divest-assets-condition

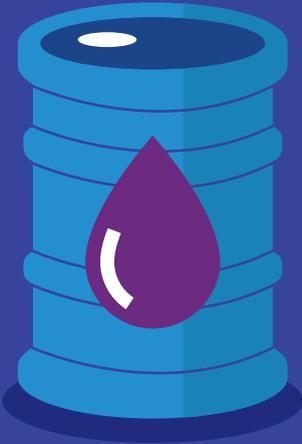
Despite uncertainty, optimism for US chemical companies

By Mike Shannon

Uncertainty is the only certainty for today's US chemical industry. A new administration in Washington, DC, is attempting to loosen regulations, change tax laws and adopt new federal policies designed to promote business growth. At the same time, this administration has suggested that increased tariffs and a renegotiation of international trade agreements would benefit the US economy, even though trade barriers might curtail export/import growth in US chemicals. Nevertheless, the US chemical industry remains greatly favored by low feedstock and energy prices, a strong domestic economy, and a business-friendly government agenda, all of which justify continued optimism about industry revenues and growth.



US chemical sector by the numbers³⁵



US\$768 billion: size of US chemical sector shipments

15 percent: share of world chemical production

25 percent: share of support for US GDP

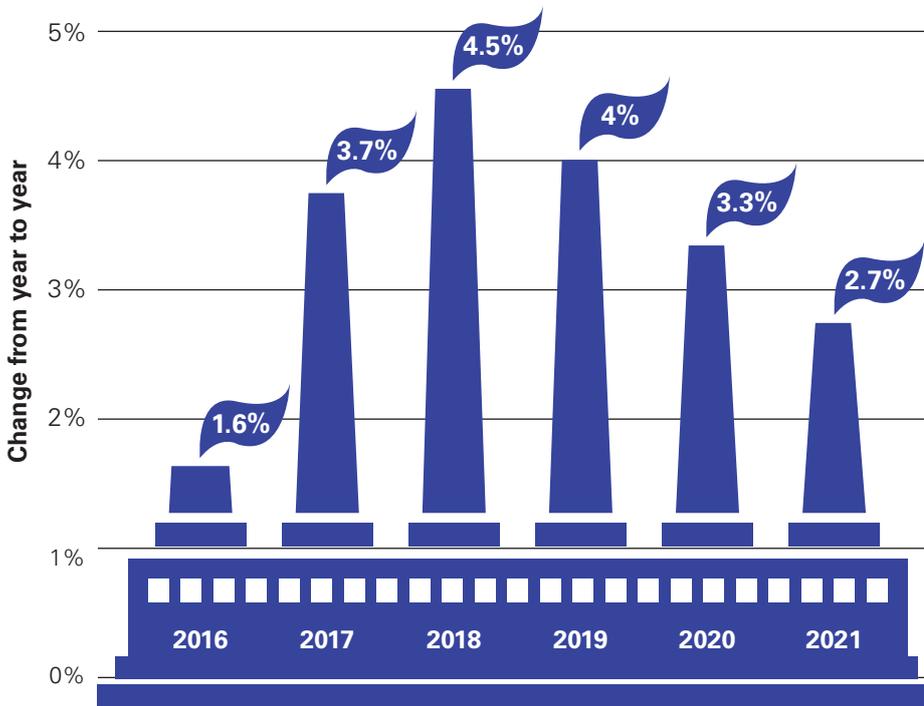
48 percent: share of US construction spending

14 percent: share of all US goods exported

811,000: US workers employed

US\$91 billion: investments for R&D in 2016

Actual and projected annual production growth in the US chemical industry from 2016 to 2021



Source: Statista, www.statista.com/statistics/407803/forecast-for-annual-growth-in-chemical-industry-in-the-us/

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‘The global economy is on a synchronized upswing,’ according to Kevin Swift, chief economist at the American Chemistry Council (ACC), adding that the ACC’s Chemical Activity Barometer (CAB) is projecting growth for US chemicals well into Q4 2017 and Q1 2018.³⁶”

³⁵ Statistics from American Chemistry Council (ACC), Jobs and Economic Impact, www.americanchemistry.com

³⁶ US to ride wave of growth — ACC, ICIS, 7 June 2017, www.icis.com/resources/news/2017/06/07/10113499/us-to-ride-wave-of-growth-acc/



An engine for growth

The US chemical industry remains a steady engine of economic growth for the nation's economy, with 10,000 firms producing 70,000 products.³⁷ According to some analysts, US chemical industry volumes, excluding pharmaceuticals, are expected to rise by 3.7 percent in 2017 and then increase to 4.5 percent in 2018 as new capacity comes online.³⁸ By 2020, the industry is expected to deliver US\$1 trillion in revenues.³⁹

Output gains are led by agricultural chemicals, coatings and other specialties, followed by bulk petrochemicals, organics and plastic resins.⁴⁰ Increased manufacturing activity in the US is expected to support continued demand growth. Much of US production will also be exported, including polyethylene (PE) pellets shipped to Asian markets to satisfy a growing demand for plastics. These exports will lift the US

trade balance in chemicals (excluding pharmaceuticals) from US\$28.2 billion in 2016 to US\$32.5 billion in 2017 and US\$41.1 billion in 2018.⁴¹

Driven by the advent of shale gas, the investment in the US petrochemicals industry since 2010 has been one of the biggest spending increases in a developed country this century.⁴² Capital spending is projected to surge from US\$31.9 billion in 2016 to US\$33.8 billion in 2017 and US\$35.7 billion in 2018.⁴³ A second wave of projects is scheduled to go online over the next 5 years.⁴⁴ In 2017 alone, additional US PE capacity is expected to total 3.5 million tons/year (t/y).⁴⁵

Overall, this impressive growth is driven by three factors: a strong US economy, the continued abundance of natural gas for feedstocks and energy, and a business-friendly government administration.

“ There have been 310 US chemical projects totaling over US\$183 billion announced so far because of competitive shale gas, with 62 percent of this amount representing foreign direct investment (FDI). ”

The second wave of US crackers ('000 t/y)

Company	C2 capacity	Downstream	Location	Status	Startup
Total/Borealis/NOVA	1,000	Borstar PE (625)+ existing PE (400)	Port Arthur, Texas	Final Investment Decision end of 2017	End of 2020
Shell	1,500	HDPE/LLDPE (2x 550), HDPE (500)	Monaca, Pennsylvania	Construction late 2017	Early 2020s
SABIC/ExxonMobil	1,800	PE (2 units), MEG	Corpus Christi, Texas, or USGC	Site selection 2017	TBC
PTT Global Chemicals	1,000	HDPE (700), MEG (500), EO (100)	Belmont County, Ohio	Evaluating	2021

Source: Visibility ICIS, 12 April 2017, www.icis.com/resources/news/2017/04/12/10097296/visibility-clears-on-the-2nd-wave-of-us-petrochemical-projects/

³⁷ Chemical Spotlight, SelectUSA, www.selectusa.gov/chemical-industry-united-states

³⁸ Statista, www.statista.com/statistics/407803/forecast-for-annual-growth-in-chemical-industry-in-the-us/

³⁹ Year End 2016 Chemical Industry Situation and Outlook, ACC, December 2016 www.chemanager-online.com/en/tags/year-end-2016-chemical-industry-situation-and-outlook

⁴⁰ Ibid.

⁴¹ Op. cit., US to ride wave of growth — ACC www.icis.com/resources/news/2017/06/07/10113499/us-to-ride-wave-of-growth-acc/

⁴² Chemical industry split about the case for more US plants, Financial Times, 2 May 2017, www.ft.com/content/28649ac0-2f23-11e7-9555-23ef563ecf9a?mhq5j=e5

⁴³ Ibid.

⁴⁴ Visibility clears on the 2nd wave of US petrochemical projects, ICIS, 12 April 2017, www.icis.com/resources/news/2017/04/12/10097296/visibility-clears-on-the-2nd-wave-of-us-petrochemical-projects/

⁴⁵ A clearer view into the second wave of US petchem projects, Elsevier, 14 April 2017, chemical-materials.elsevier.com/chemicals-industry-news-and-analysis/clearer-view-wave-petchem-projects/



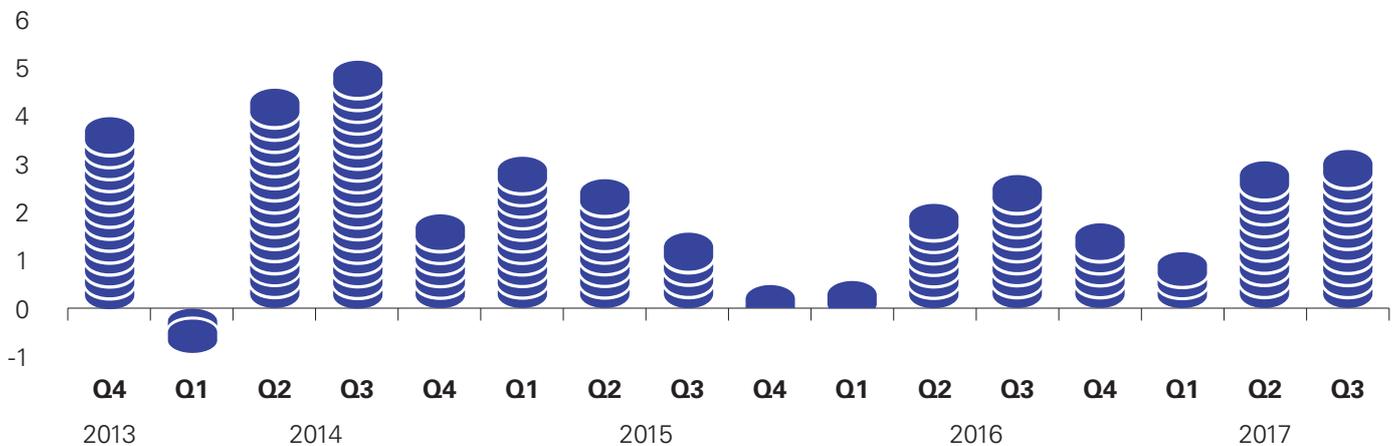
Strong fundamentals across the economy

For 2017, the US economy is in relatively good shape. According to the US Department of Commerce, GDP growth in the US increased at an annual rate of 3.3 percent in the third quarter of 2017, the strongest growth rate in 2 years.⁴⁶ Consumer confidence remains steady and the Purchasing Managers Index (PMI) suggests continued demand.⁴⁷

End markets for chemicals also remain stable. Automotive sales have ticked

downward by a few points in 2017, but with steady consumer confidence, continued low gas prices and the need to replace cars lost in Hurricanes Harvey and Irma,⁴⁸ the number of autos sold for the year will likely total slightly above 17 million in line with record levels set in 2016.⁴⁹ Housing starts show continued volatility, but strong job growth is expected to support the housing market recovery from historic lows during the global recession.⁵⁰

Real GDP annual rate increase: percent change from preceding quarter



U.S. bureau of economic analysis

Seasonally adjusted annual rates

Source: US Department of Commerce

⁴⁶ National Income and Product Accounts Gross Domestic Product: Third Quarter 2017 (Second Estimate): Corporate Profits: Third Quarter 2017 (Preliminary Estimate), Bureau of Economic Analysis, US Department of Commerce, 29 November 2017, www.bea.gov/newsreleases/national/gdp/gdpnewsrelease.htm

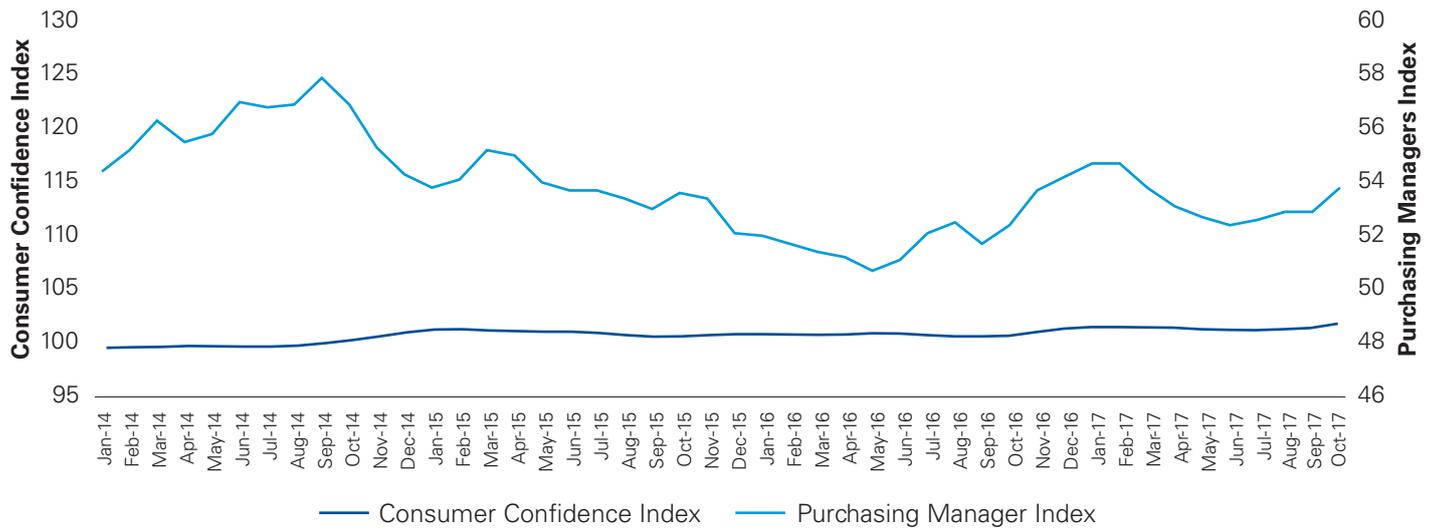
⁴⁷ New Orders, Production, Backlog of Orders and Employment Continue Growing, Manufacturing ISM Report on Business, Institute for Supply Management, www.instituteforsupplymanagement.org/ISMReport/MfgROB.cfm?SSO=1

⁴⁸ U.S. auto sales for Sept to be highest in 2017 — JD Power and LMC, CNBC, 29 September 2017, www.cnn.com/2017/09/29/reuters-america-u-s-auto-sales-for-sept-to-be-highest-in-2017-jd-power-and-lmc.html

⁴⁹ U.S. auto sales receding: Cars ailing, crossovers booming, USA Today, 3 July 2017, www.usatoday.com/story/money/cars/2017/07/03/june-2017-auto-sales/447511001/

⁵⁰ U.S. housing starts fall as multi-family construction slumps, Reuters, 16 August 2017, www.reuters.com/article/us-usa-economy-housingstarts/u-s-housing-starts-fall-as-multi-family-construction-slumps-idUSKCN1AW1EW

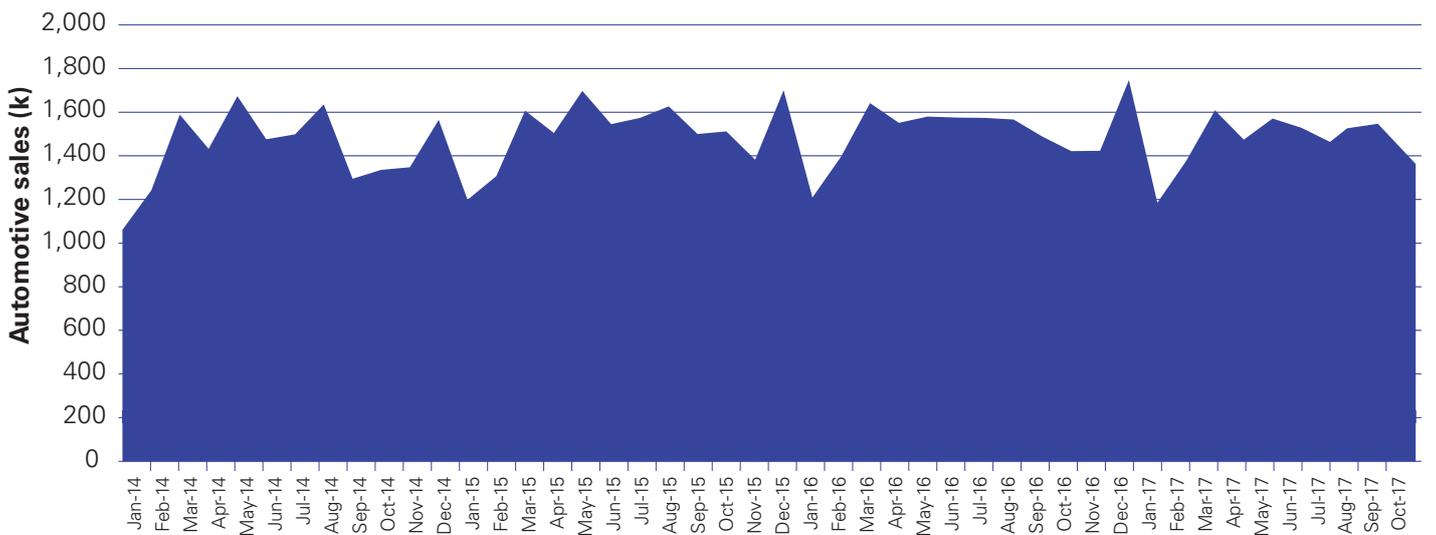
Consumer and business confidence



Note: We have considered an average for 2 days for every month data for Purchasing Managers Index (PMI). For example: PMI for 3 July 2017 was 52.0 and 24 July 2017 was 53.2 => average of 52.6 for July 2017.

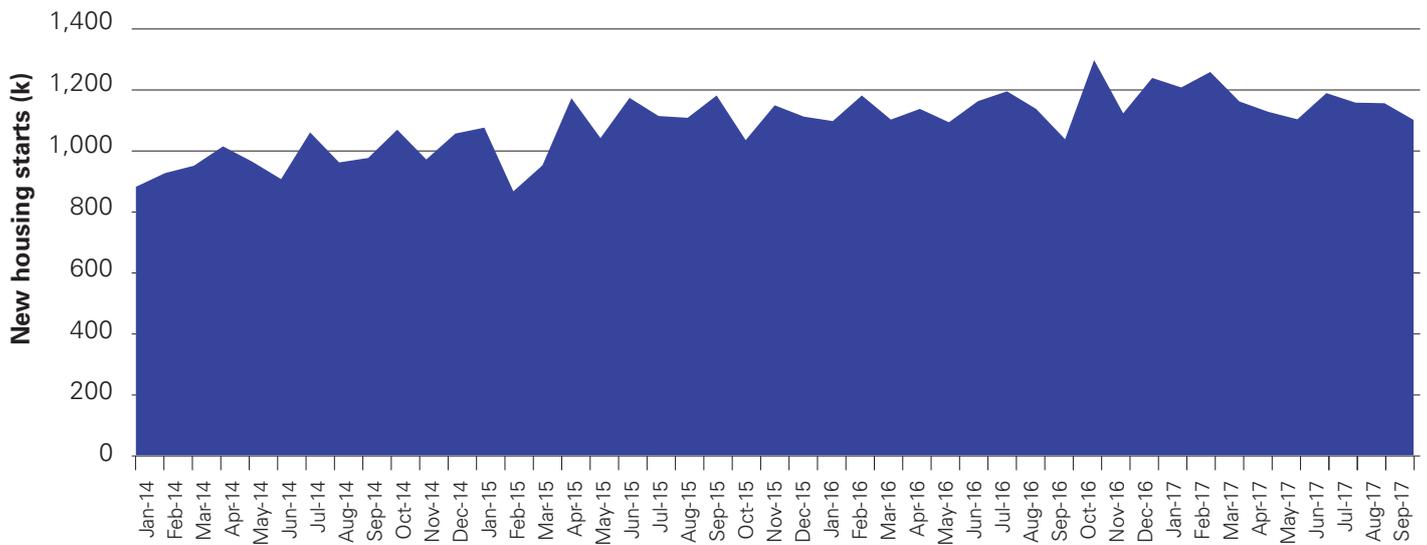
Source: OECD 2017

Automotive sales (in thousands)



Source: Bureau of Economic Analysis, 2017

New housing starts (in thousands)



Source: US Federal Reserve Bank, 2017



Oil and gas prices favor US chemical companies

As of October 2017, most analysts expect oil to remain in the US\$50 to US\$60 a barrel range, about half the price of crude before 2014.⁵¹ Low prices generally benefit chemical producers in the EU because they use oil as a feedstock. If crude prices tick upward, chemical manufacturers in the US will gain more of an advantage because their facilities use natural gas as a feedstock and energy source. The effects of the OPEC production cuts have helped to

buoy oil prices, and that should continue for the remainder of the year. However, rising oil production levels in the US and elsewhere might offset the effect of these cuts and increase downward pressure on oil prices.⁵²

As for natural gas, the continued availability of this resource in the US, mostly from shale deposits, shows no signs of letting up. Competitively priced natural gas and ethane are enabling US

chemical companies to build plants, expand or improve their facilities. Since 2010, over 300 new chemical industry projects due to shale gas have been completed, started or planned.⁵³ The resulting increase in capacity has made the US an attractive investment target and encouraged a number of major chemical multinationals such as BASF and LyondellBasell to invest billions of dollars in the US chemical sector.⁵⁴

⁵¹ Short-Term Energy Outlook, EIA, www.eia.gov/outlooks/steo/report/prices.cfm

⁵² Oil steady after surprising increase in U.S. crude exports, Reuters, 3 October 2017, www.reuters.com/article/us-crude-exports-idUSKCN1C902D

⁵³ Shale Gas Infographic, ACC, 26 July 2017, www.americanchemistry.com/Policy/Energy/Shale-Gas/Infographic-Shale-Gas-and-New-US-Chemical-Industry-Investment.pdf. See also Shale Gas, Competitiveness, and New US Chemical Industry Investment: An Analysis Based on Announced Projects, ACC, 2013, www.americanchemistry.com/First-Shale-Study/

⁵⁴ Chemical Industry Stock Outlook — July 2017, Zacks, 24 July 2017, www.zacks.com/commentary/122699/chemicals-industry-stock-outlook—july-2017



Changes in environmental regulations

During his first 100 days in office, President Trump has rolled back nearly two dozen environmental rules, regulations and other Obama-era policies.⁵⁵ Citing federal overreach and burdensome regulations, Trump and his colleagues have prioritized domestic fossil fuel interests and started the process of reviewing, limiting or reversing measures that the previous administration argued were necessary to protect the environment and limit global warming.

Some of these regulatory actions are already being challenged in the courts,⁵⁶ and state governments such as California

continue to support current environmental standards. However, a sea change has occurred across the US regulatory landscape, and US chemical companies are encouraged by the possibility that many regulations will be modified to both increase their effectiveness and support business growth.

A regulatory case in point is the implementation of the Toxic Substances Control Act (TSCA), which was enacted in June 2016.⁵⁷ Over the next several years, the Environmental Protection Agency (EPA) must evaluate the potential risks of chemicals

in household items and industrial products sold in the US, starting with 10 high-priority substances. The new law gives the EPA the authority to request safety data for such chemicals, as well as to collect fees from the industry to conduct evaluations. The chemical industry claims that the agency's interpretation of the law is slowing down the review of new chemicals and delaying their entry into the US market.⁵⁸ Public health and environmental activists are urging the EPA to continue thoroughly reviewing the risks of all new chemicals.



⁵⁵ 23 Environmental Rules Rolled Back in Trump's First 100 Days, New York Times, 2 May 2017, www.nytimes.com/interactive/2017/05/02/climate/environmental-rules-reversed-trump-100-days.html

⁵⁶ The Battle Against Trump's Assault on Climate Is Moving to the Courts, Yale Environment 360, 2 May 2017, e360.yale.edu/features/stopping-trump-the-battle-to-thwart-the-assault-on-climate-moves-to-the-courts

⁵⁷ For U.S. science policy, big shift ahead, C&EN, 16 January 2017, cen.acs.org/articles/95/i3/US-science-policy-big-shift.html

⁵⁸ Ibid.

Chemical companies show resilience in the face of Hurricane Harvey

Hurricane Harvey will go down as a major event in the history of the US chemical industry. Houston's ship channel and the surrounding area along the Gulf coast represents about 40 percent of US petrochemical manufacturing.⁵⁹ Given the severity of the storm and its proximity to petrochemical ports, refineries and storage facilities, it was inevitable that the normal output and distribution of products would be hampered, resulting in lower revenues.

INEOS reported a reduction in EBITDA of US\$43 million for 3Q17 when a number of its facilities in Texas were temporarily closed due to the hurricane.⁶⁰ AkzoNobel reported a US\$29 million decline in EBIT.⁶¹ Four plants were taken offline ahead of the hurricane and returned to operations in the second week of October.

However, the sector has shown remarkable resilience in the face of this storm. DowDuPont and BASF both stated in 3Q17 that revenue declines from Harvey had been more than offset by increases in other business units.⁶² Other companies also provided encouraging news. Shortly after the hurricane, DowDuPont started its 1.5 million t/y ethane cracker in Freeport, Texas, along with its 0.4 million t/y ELITE PE unit. Its 0.35 million t/y low-density PE (LDPE) unit in Plaquemine, Louisiana, is scheduled to start in 4Q17. Also in September, Chevron Phillips Chemical started two new PE units in Old Ocean, Texas — one a 0.5 million t/y bimodal high-density PE (HDPE) line, and the other a 0.5 million t/y metallocene linear low-density PE (MLLDPE) unit.

In addition, several US chemical companies have seen a healthy increase in stock prices following Harvey.⁶³ Producers of chlor-alkali/vinyls such as Westlake Chemical and Olin both gained over 13 percent; LyondellBasell, the hardest hit by the storm, was up over 10 percent. In comparison, the US stock market, as measured by the S&P 500 index, gained 2.2 percent over the same period.⁶⁴ Analysts suggest that markets expect a prolonged period of continued demand, elevated pricing and strong profits for the US chemical sector.

US chemical stock prices since Hurricane Harvey

Company	25 Aug	27 Sep	Change, %
Westlake Chemical	\$73.27	\$83.35	13.80%
Olin	\$29.99	\$33.91	13.10%
LyondellBasell	\$90.26	\$99.81	10.60%
Methanex	\$46.55	\$51.30	10.20%
Trinseo	\$62.95	\$68.05	8.10%
DowDuPont*	\$64.54	\$68.80	6.60%
Celanese	\$98.00	\$104.32	6.40%
PPG Industries	\$103.72	\$108.00	4.10%
Eastman Chemical	\$84.87	\$87.35	2.90%
Huntsman	\$26.57	\$26.92	1.30%

* Merger closed 31 August. 25 August price was for Dow.

Source: Yahoo Finance. Cited in US chemical stock prices surge on Harvey impact, even with start-ups, Elsevier, 9 October 2017, chemical-materials.elsevier.com/chemicals-industry-news-and-analysis/chemical-stock-prices-surge-harvey-impact-start-ups/

⁵⁹ After Harvey, attention turns to Houston's petrochemical infrastructure, Forbes, 30 August 2017, www.forbes.com/sites/uhenergy/2017/08/30/after-harvey-the-issue-turns-to-houstons-aging-petrochemical-infrastructure/#45c8417c22cc

⁶⁰ Harvey impacts INEOS performance, Hydrocarbon Engineering, www.hydrocarbonengineering.com/petrochemicals/20102017/harvey-impacts-ineos-performance/

⁶¹ Raw materials, Hurricane Harvey, weigh on Akzo Q3 profit, ICIS, 18 October 2017, www.icis.com/resources/news/2017/10/18/10155219/raw-materials-hurricane-harvey-weigh-on-akzo-q3-profit/

⁶² DowDuPont, Third Quarter 2017 Highlights, www.dow-duPont.com/news-and-media/press-release-details/2017/DowDuPont-Reports-Third-Quarter-2017-Results/default.aspx; BASF announce 3Q17 results, BASF sales and earnings grow considerably in third quarter of 2017, 24 October 2017, www.basf.com/en/company/news-and-media/news-releases/2017/10/p-17-343.html

⁶³ US chemical stock prices surge on Harvey impact, even with start-ups, Elsevier, 9 October 2017, chemical-materials.elsevier.com/chemicals-industry-news-and-analysis/chemical-stock-prices-surge-harvey-impact-start-ups/

⁶⁴ Ibid.



Looking ahead

Positioning himself as pro-business, Trump made a number of promises before his election, ranging from infrastructure spending and tax reductions to regulatory change and tariffs. As we approach the first anniversary of his election, the question now is how closely Congress will work with the Trump administration to deliver on these promises.

On the campaign trail, Trump questioned the benefit of NAFTA and free-trade agreements in general, and his actions since then have increased uncertainty in the business community.⁶⁵ If the pressure to keep investments on home soil is successful — as it appears to have been in a few recent cases — it will ratchet up demand for chemicals in the US. That increased demand could absorb a potential glut in the industry arising from an abundance of shale gas as a raw material. The increased capacity brought online from shale gas in the last 4 years is going to continue. If the US economy is unable to absorb all of those chemicals, they will have to be exported.

Chemical companies are also keeping a close watch on proposals to reduce

taxes for multinationals with earnings outside the US. As we know, many global companies, including chemical companies, design their business models to take advantage of lower taxes in overseas jurisdictions. They build supply chains to maximize tax advantages where they can.

Overall, the chemicals industry could be looking at a 'perfect storm' of opportunity in North America — but in some ways, it might also be a 'zero-sum game'. Circumstances that benefit North America may in turn have a negative impact in other markets around the world, which could result in higher prices, tariffs or increased transportation costs. The impact these dynamics could have on trade agreements is still completely unknown.

Chemical industry executives trying to strategize what a Trump presidency means for their company need to be thinking about all these conditions — including how markets interact on a global level — so they can design business models and tax strategies to position their companies to compete with agility in uncertain times.



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Mike has over 25 years of experience serving multinational clients in the chemicals and performance technologies industry. Mike is KPMG's National US Leader for the Chemicals & Performance Technologies practice, as well as the US Audit Sector Leader for the practice. Mike spends all of his time serving multinational clients as one of KPMG in the US's most experienced partners in the chemicals and performance technologies industry.



Read our previous editions of
REACTION magazine
featuring Mike Shannon at
kpmg.com/reaction.



Listen to our latest
REACTION 23 webcast
featuring Mike Shannon, available
at kpmg.com/chemicals.

⁶⁵ On Trade, a Politically Feisty Trump Risks Economic Damage, New York Times, Business Analysis, 30 April 2017, www.nytimes.com/2017/04/30/business/trump-nafta-trade-economy.html

A unique approach to innovation with AkzoNobel

By Ank van Wylick

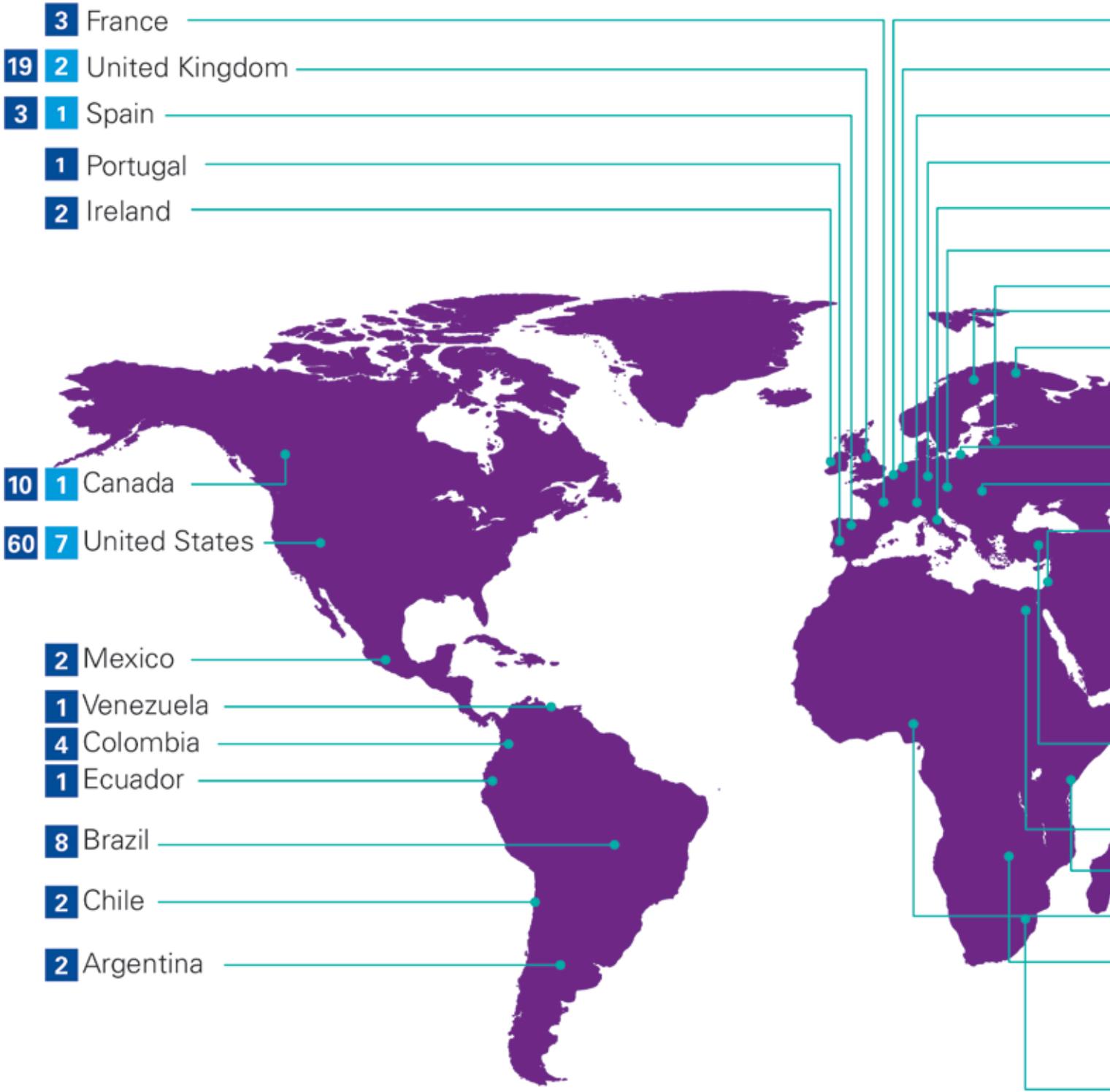
In January of 2017, AkzoNobel launched Imagine Chemistry, a strategic initiative developed in conjunction with KPMG in the Netherlands, to help solve real-life chemistry-related challenges.⁶⁶ A startup challenge for the global chemical industry is at the heart of this initiative. This year's response has been outstanding, with hundreds of ideas submitted by numerous startups along with scientists, research groups and students. In June, the finalists were announced. Each one will work closely with AkzoNobel in a unique approach to innovation based on openness, shared intellectual property (IP) and a highly collaborative process for effective development.

⁶⁶ imaginechemistry.akzonobel.com/

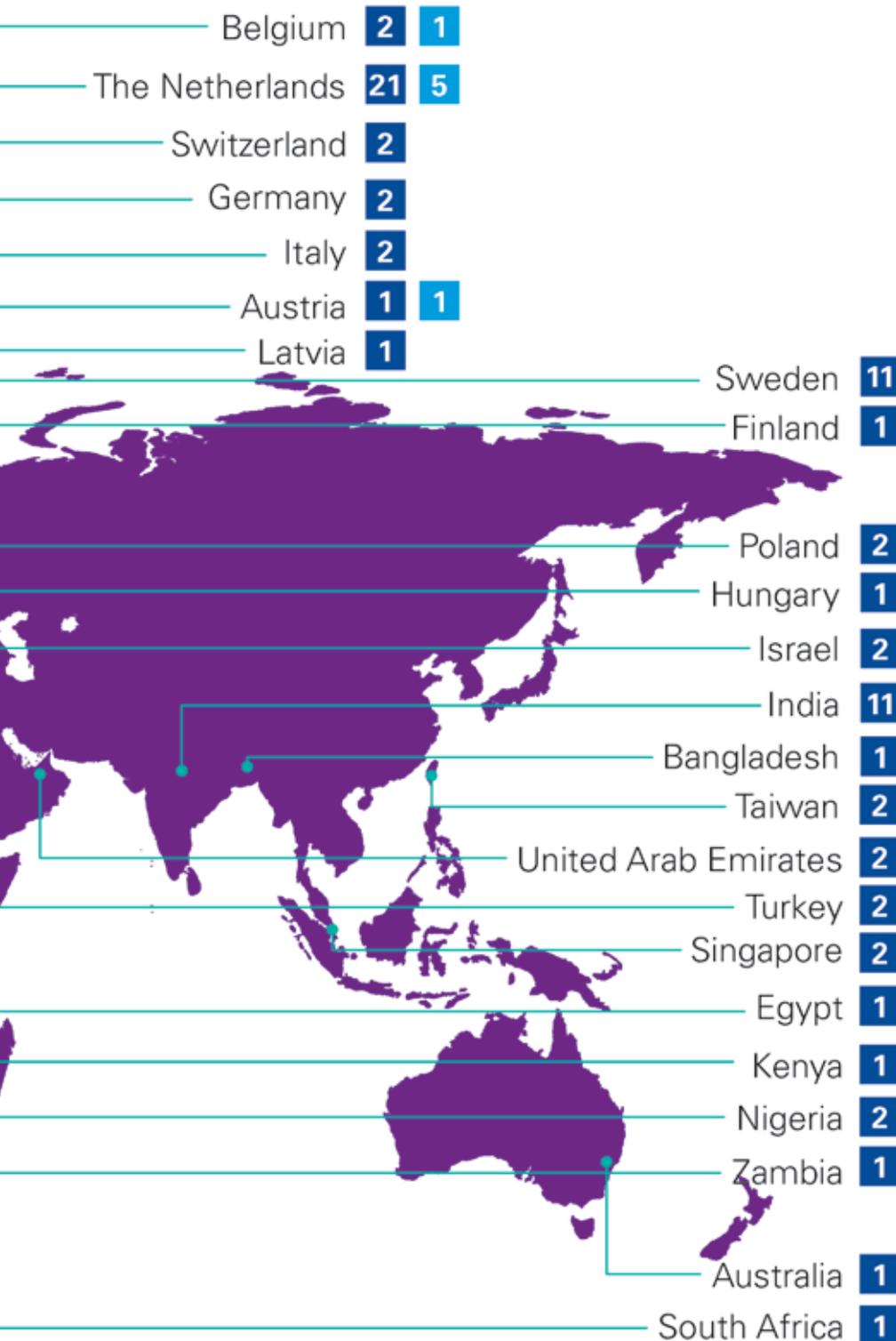




Submissions from around the world



Ideas submitted per country Finalists per country



“

Partnerships with startups and like-minded companies form a key part of our innovation approach and strategy to accelerate growth. These ideas prove that there is tremendous scope for innovations that can revolutionize what many view as a mature industry.”

Thierry Vanlancker

AkzoNobel Chief Executive Officer and Member of the Board of Management

From January to March 2017, participants submitted solutions through a dedicated online challenge platform powered by KPMG in the Netherlands. Special teams of subject matter experts worked with participants to develop their solutions and determine if they were a fit for AkzoNobel's business.

Over a thousand participants from all over the world — from Australia to Brazil and Poland to Nigeria — joined the platform. More than 200 ideas were submitted to the seven challenges by chemistry. A jury made up of AkzoNobel business and R&D leaders and prominent international experts then selected the most promising ideas to join the finals at AkzoNobel's Research, Development & Innovation (RD&I) Center in Deventer, The Netherlands, from 1–3 June 2017.

During the finals, the startups worked closely together with over 90 AkzoNobel experts and partners in R&D, finance, innovation and marketing, as well as senior management and potential investors, to further develop their solutions through 2 days of intensive meetings and workshops.

Challenge areas from AkzoNobel

- **Sustainable small particle technologies**
Do you have small particle technology to us drive performance and sustainability improvements in products that impact everyday life?
- **Wastewater-free chemical sites**
Can you help us make our wastewater organics-free so we can reuse it in production?
- **Intelligent chemical plants**
Do you have the smart technology to make our chemical plants more intelligent, autonomous, and resource efficient?
- **Revolutionizing chlorate production**
Can you help us produce chlorate in a more sustainable, energy efficient way?
- **Sustainable liquid-to-powder technologies**
Do you have a novel, more efficient technique for turning our liquids into free-flowing powders?
- **Zero-footprint surfactant platforms**
Can you help us build a flexible surfactant platform and realize our vision of having a zero-footprint surfactants business?

A jury of experts from inside and outside AkzoNobel then evaluated the startups based on the proposals they submitted as well as feedback resulting from the 2 days of collaboration.



The top finalists for 2017

Three finalists were selected on the basis of technical excellence, sustainability and business objectives:

Ecovia Renewables: developing cost-effective, bio-based chemicals and fuels.⁶⁷ Their challenge proposal offered polyglutamic acid (PGA) as a bio-based and biodegradable alternative to polyacrylates, with a fermentation-based platform that uses microbial communities to produce

thickeners for personal care products and other uses.⁶⁸

Industrial Microbes: upgrading methane to chemicals using synthetic biology. The team proposed using genetically modified micro-organisms to turn CO₂ and natural gas into key chemical building blocks, such as ethylene oxide.⁶⁹

Renmatix: using water-based chemistry instead of enzymes, solvents or acids

for deconstructing plants into sugars and polymers. The company's proposal outlined the use of pressurized water to break down plant biomass into cellulosic products with a range of end-use applications.⁷⁰

In addition, seven other startups were awarded prizes, along with expert advice and several months of support at AkzoNobel's DOIC.

⁶⁷ www.ecoviarenewables.com/news/2017/6/14/ecovia-renewables-awarded-top-prize-at-akzonobel-imagine-chemistry-challenge

⁶⁸ Ibid.

⁶⁹ www.akzonobel.com/generic-content/winners-imagine-chemistry-2017

⁷⁰ www.akzonobel.com/about-us/what-we-do/innovation/imaginechemistry/finalists-2017/soluble-and-insoluble-cellulose-oligomers



Working better by working together

Established chemical companies have always worked with smaller companies to gain new technology, market entry or expertise in highly specialized areas. But AkzoNobel's Startup Challenge is unique in three ways:

Openness: Oftentimes, startups operate in 'stealth mode', striving to keep their ideas and strategies from their potential competitors. At the AkzoNobel Startup Challenge Finals event in June, all presentations were open to all attendees so teams could learn more about the technology and entrepreneurship.

Shared IP: The Challenge respects the IP rights of both parties. What is created together during the event is jointly

owned by AkzoNobel and the startups. As the organizer, AkzoNobel has the first right to use, further develop or exploit this IP together with the startup. If AkzoNobel decides that it is no longer interested in the IP, the startup has the right to use it themselves or with others.

A collaborative approach:

Professionals from AkzoNobel work actively together with the startups. For the finalists, AkzoNobel provides access to customers, investors, subject matter experts, mentorship, an accelerator program and additional support. The collaboration takes on many forms, such as a joint development agreement, having AkzoNobel as a launch customer, organizing partnerships or investing in the startup.⁷¹



Next year in Sweden

Following the success of the first year's Startup Challenge, Imagine Chemistry will be launched again in 2018, when the finals will be held at AkzoNobel's research facilities near Gothenburg in Sweden.

By supporting Imagine Chemistry to help build a foundation of partnerships, sustainability and innovation, AkzoNobel plans to further grow its business while also becoming fully carbon neutral by 2050.

⁷¹ AkzoNobel.com, www.akzonobel.com/about-us/what-we-do/innovation/imaginechemistry/frequently-asked-questions-0

Partners for innovation: AkzoNobel and KPMG in the Netherlands

In a recent conversation with REACTION Magazine, Rinske van Heiningen and Ank van Wylick shared their thoughts about the unique aspects of this year's Startup Challenge. Van Heiningen serves as the Program Manager of Imagine Chemistry on behalf of AkzoNobel. Van Wylick is the Innovation Advisory partner & FinTech lead at KPMG in Netherlands.

Both leaders agreed the Startup Challenge was an excellent mix of partnership and close cooperation. "We were looking for more support than a consulting engagement based on an hourly rate," said Van Heiningen. "Something like this event had never been done before, certainly not in the chemical industry, so we wanted a truly close partnership. KPMG had the kind of startup mentality that we needed to help make everything happen."

Van Wylick was happy to agree. "We felt that working with AkzoNobel was an excellent opportunity to use our Innovation Factory platform for connecting people, knowledge and ideas to help encourage openness and collaboration," she said. "Every startup wanted to be a finalist, of course, but this was not really a 'pitching event'. Instead, it was an opportunity where the startup teams could collaborate with AkzoNobel professionals for 3 days, developing ideas and sharing insights."

Van Heiningen noted that this collaborative approach is ideal for speeding time to market for new products and offerings. "Startups working with larger companies traditionally have to meet with different company teams at each stage of development, which is often a slow-moving process. At this event, everyone met together, and we were able to make progress quickly." She added, "Doing business like this requires a high level of trust with your partners, and that's exactly what we found with the KPMG team."



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Ank has more than 20 years of experience with a focus on business transformations triggered by innovation. As an Innovation Advisory partner & FinTech lead at KPMG in the Netherlands she supports organizations in their ambition to build their innovation capability and be innovative. Innovation Advisory consists of two key aspects: To Organize Innovation and To Execute Innovation. Being able to innovate with startups and build communities is an example of the Innovation Advisory work. Ank has built a career developing, shaping and deploying successful Top Line Growth assignments.





KPMG in the industry

13th Annual Chemicals wine dinner, Shanghai

More than 20 senior executives from leading chemical companies attended the 13th Annual Chemical Sector Wine Tasting and Networking Dinner in Shanghai. This long-standing event always attracts top management from across China to gather and discuss current events and issues in an informal setting. Once again, Mike Shannon, Paul Harnick and Mark Harrison joined Norbert Meyring to bring an international perspective to complement the local knowledge of KPMG China.



Annual GPCA Forum

The Annual Forum, GPCA's flagship event organized in association with ICIS, is the leading networking event for the petrochemicals and chemicals industry in the Arabian Gulf region. At the most recent event, Paul Harnick and Norbert Meyring led a Day Zero seminar focused on China's Belt Road Initiative and impacts on the chemical industry in the Middle East.



CIA Annual Dinner

16 November 2017

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.

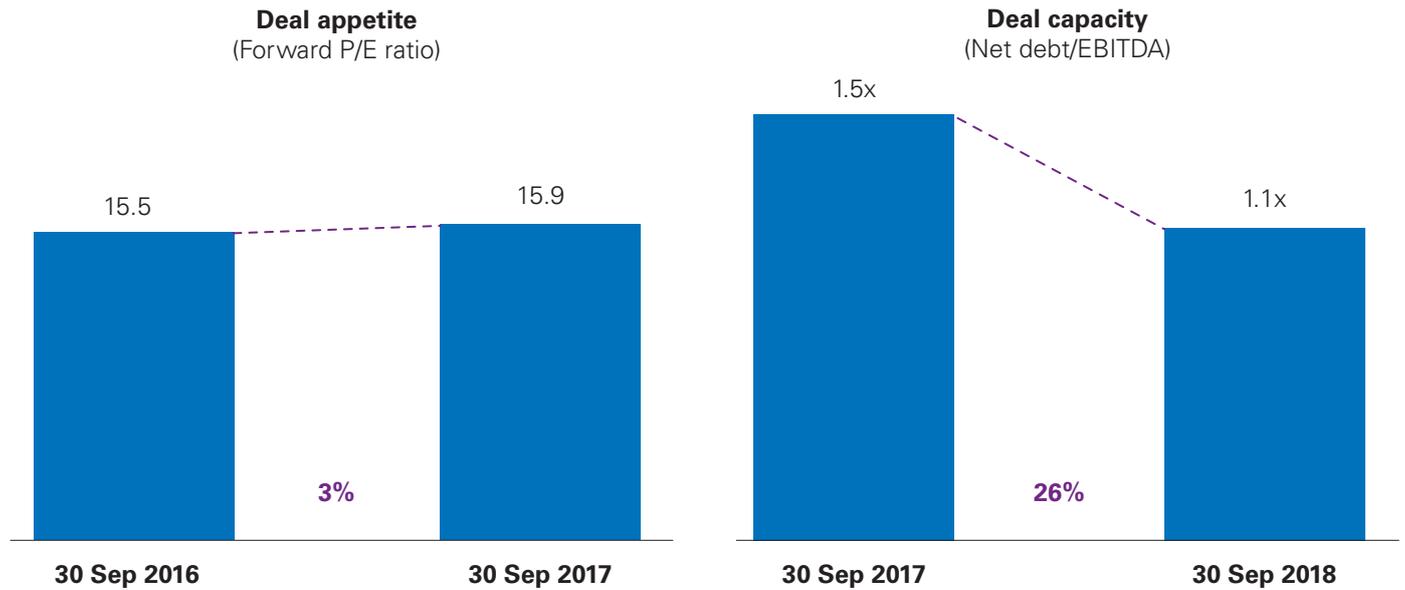
CIA Chemical Industries Association

Working for chemical and pharmaceutical businesses

Deal capsule transactions in chemicals — October 2017

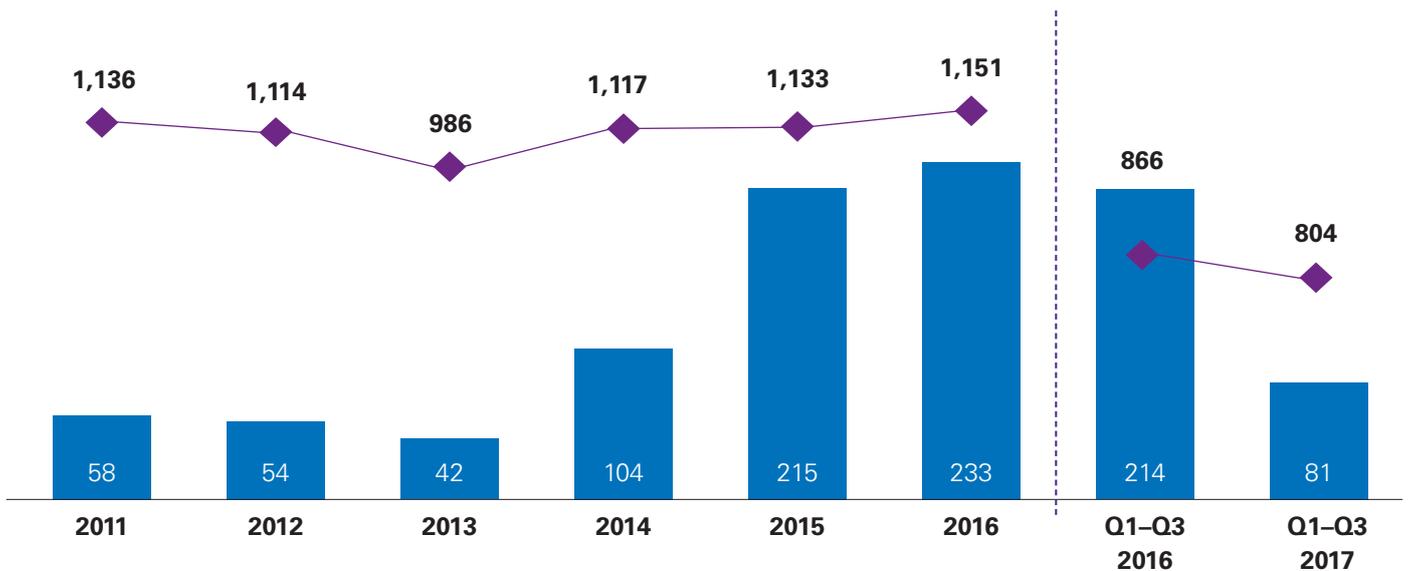
Chemical companies are increasingly focusing their M&A on application industries. Agrochemicals remains an M&A hotspot. The closing of the DowDuPont merger brought with it a spate of antitrust divestments. The US and China remain the most active countries in the chemicals sector.

Chemicals



Source: Capital IQ, KPMG Analysis

Trends in chemicals M&A



■ Deal value in US\$ bn. ◆ Number of announced deals

Source: Thomson One, KPMG Analysis

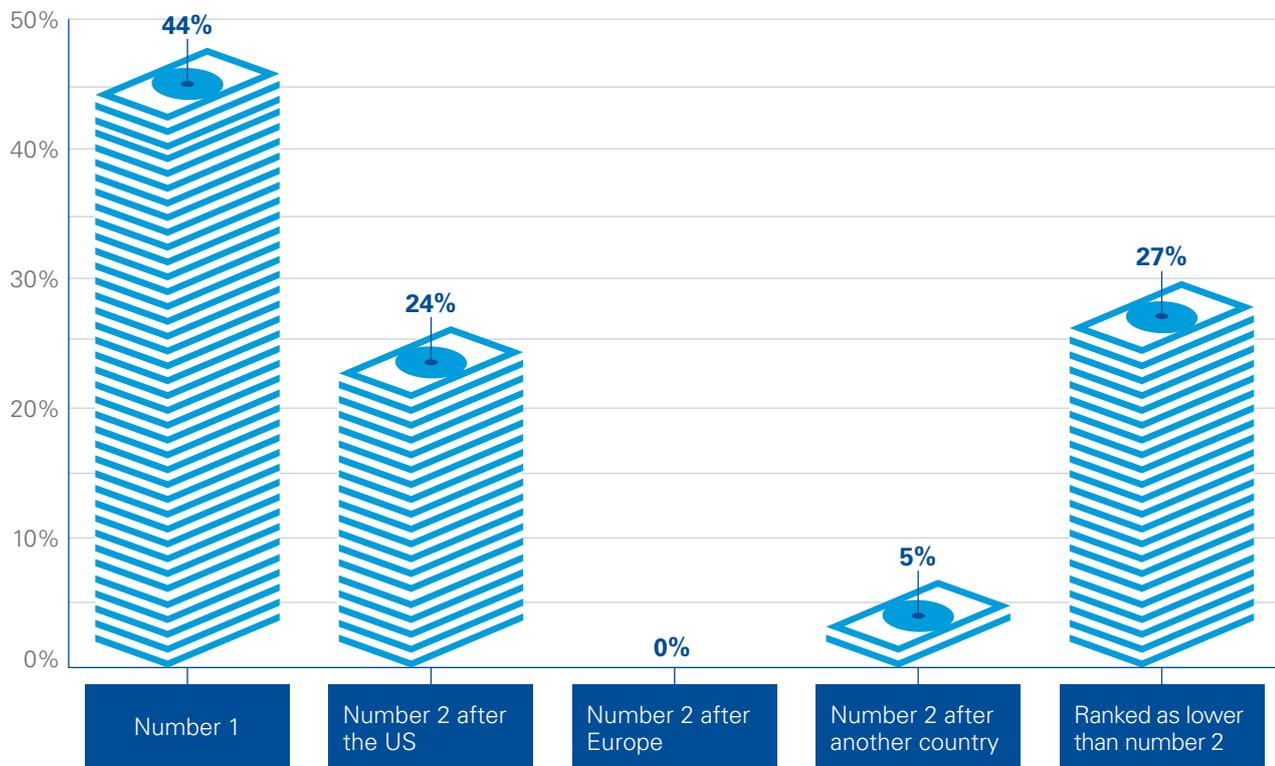


Global Chemicals: Key industry trends and opportunities webcast highlights

During our first roundtable global chemicals webcast, Paul Harnick, KPMG in the UK, Mike Shannon, KPMG in the US, and Norbert Meyring, KPMG China, discussed the key challenges and opportunities for global chemical companies in today's dynamic and increasingly complex world.

Throughout the webcast, participants provided their feedback on key industry issues with the results shown below:

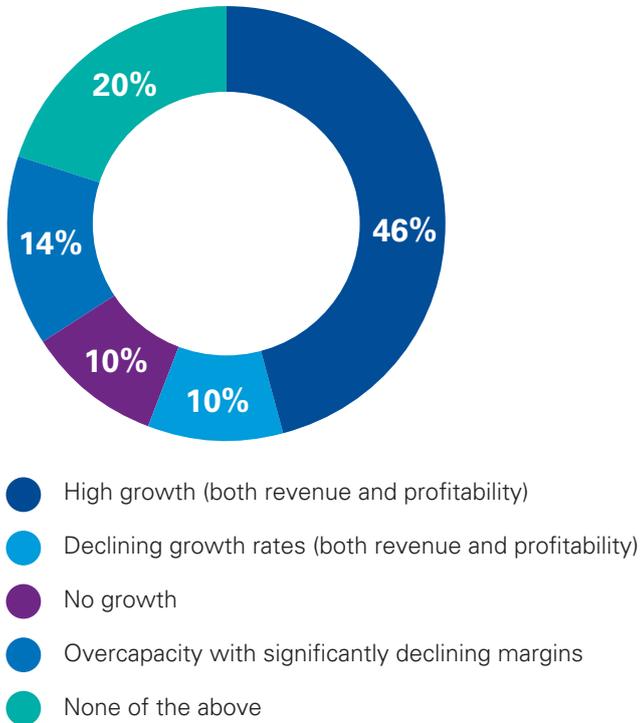
Over the next 3 years, as a location for investment (both capital and M&A) within my organization, China is likely to be ranked as:



Number of respondents = 62*

*Source: Key industry trends and opportunities, Global Chemicals Institute webcast, KPMG International

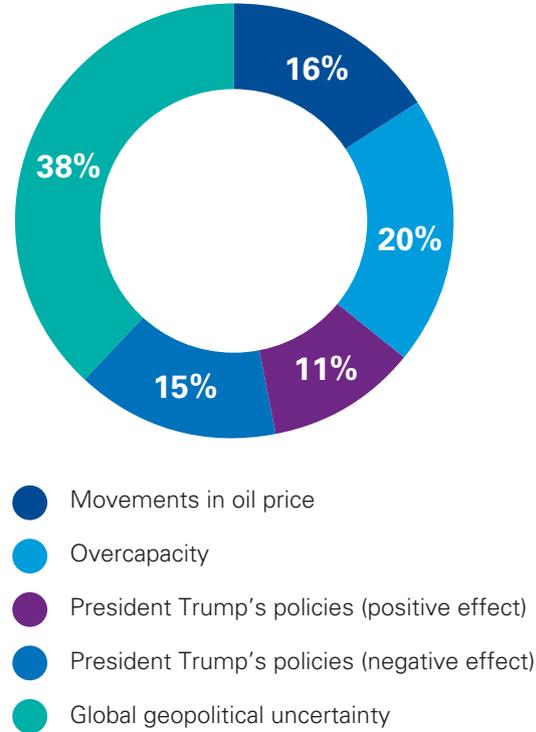
The segments my company serves in China are currently characterized by:



Number of respondents = 65*

*Source: Key industry trends and opportunities, Global Chemicals Institute webcast, KPMG International

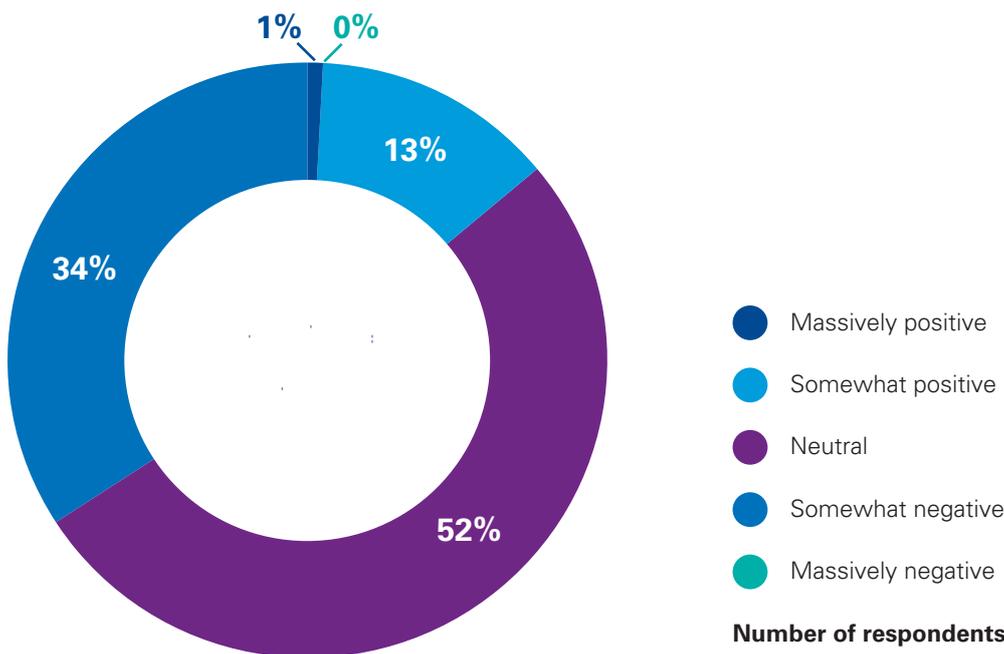
The biggest impact on my business in the US over the next 3 years is likely to result from:



Number of respondents = 61*

*Source: Key industry trends and opportunities, Global Chemicals Institute webcast, KPMG International

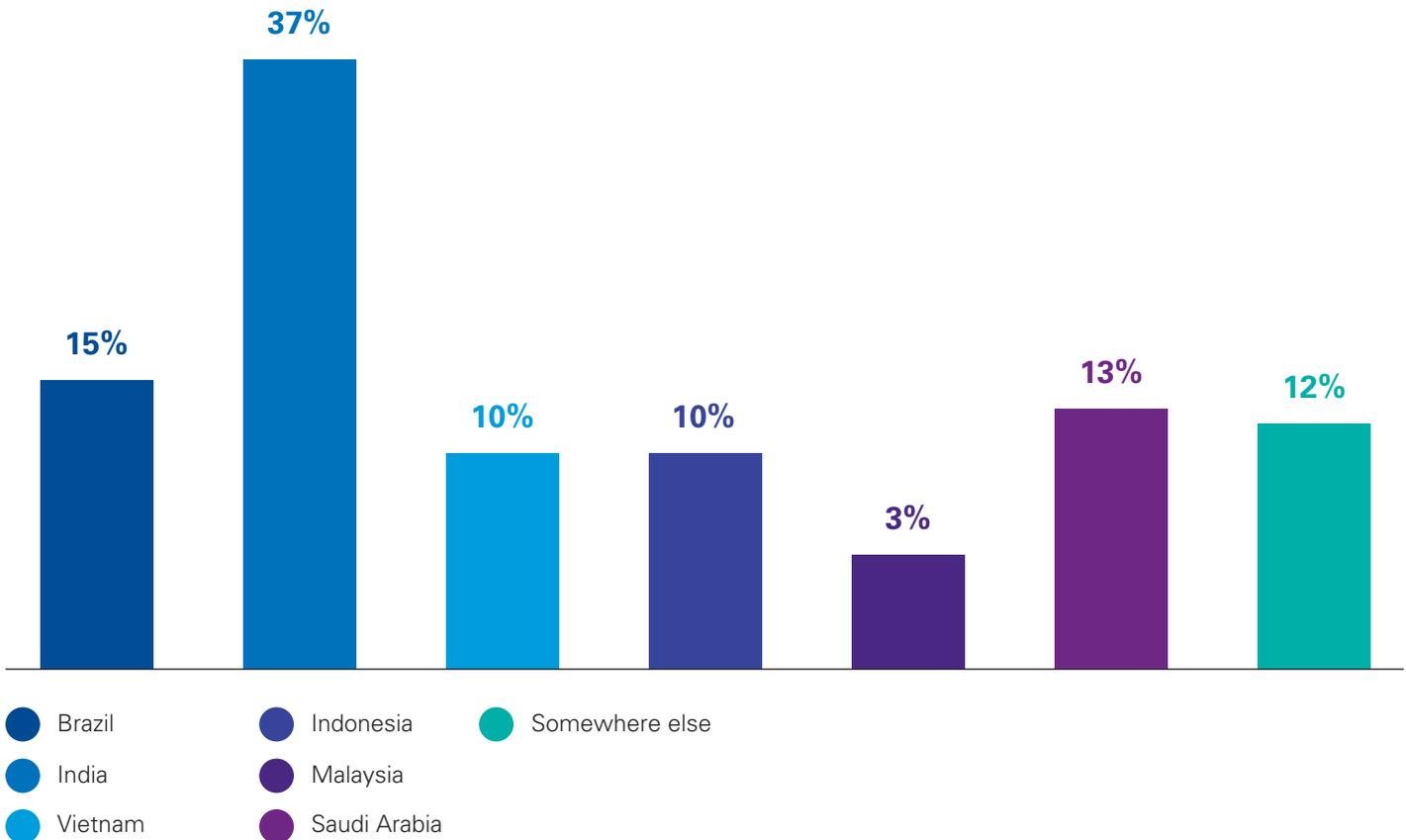
The impact of Brexit on my business is likely to be:



Number of respondents = 56*

*Source: Key industry trends and opportunities, Global Chemicals Institute webcast, KPMG International

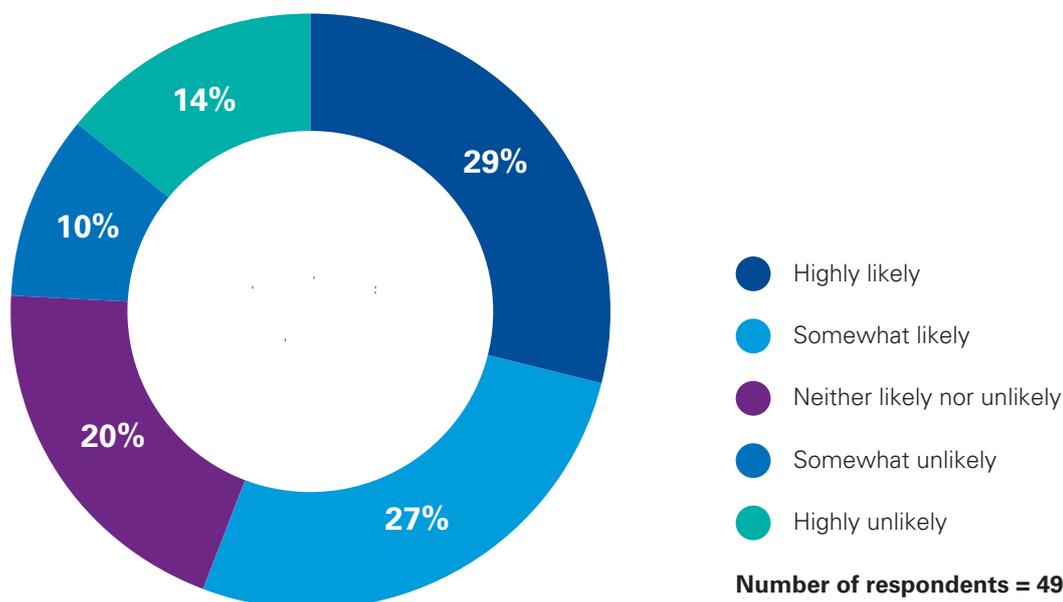
Outside of China, the biggest emerging market opportunity in the chemical industry is in:



Number of respondents = 52*

*Source: Key industry trends and opportunities, Global Chemicals Institute webcast, KPMG International

How likely is your company to deploy M&A as the principal means of growing the business over the next 3 years?



Number of respondents = 49*

*Source: Key industry trends and opportunities, Global Chemicals Institute webcast, KPMG International

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