



REACTION

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Articles include:

Getting up to speed on the
new mobility

Brexit update

New deals for Japanese chemical
companies

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Introduction



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Welcome to the twenty sixth edition of REACTION Magazine. Growth continues to be strong across most market segments and geographies; and the seeming never-ending wave of M&A continues at pace. But with multiples rising and an increasing amount of cash chasing an ever-decreasing pool of quality assets, how long can that last? More on that in future editions.

In this edition, KPMG chemicals professionals are focusing on Mobility 2030 and how changing demand patterns in the automotive industry are likely to drive fundamental change into the chemicals supply chain over the coming years. We've also got an update on Brexit — while the politics remain unclear, the likely impact on the chemical industry is all too apparent and most companies are now well under way with impact assessments and contingency planning. Finally, KPMG professionals in Japan offers an outlook for the industry there and draws some interesting parallels with the restructuring and reshaping undertaken by the chemical industry in Europe over the last 20 years.

We'll be back with our next edition in November with an in-depth feature on China's Belt Road initiative and the opportunities that may present for global chemical producers. If there are any other topics you would like us to cover in future editions of REACTION Magazine, please don't hesitate to contact us.

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Getting up to speed on the new mobility

By Charlie Simpson and Christoph Domke

The automotive industry is speeding toward a new era marked by electric-powered vehicles, autonomous vehicles and shared mobility. Even as global sales tick downward,¹ individual vehicles will be used more intensively, spending less time parked and more time on the road, transporting people and goods in a growing number of ways. For automotive chemical companies in particular, the new mobility will mean a dramatic shift in product portfolios, clients, end users and business models to address an industry ecosystem that's becoming larger, more dynamic and far more interconnected.



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How far, how fast, and in what direction?



Half of the car owners today will no longer want to own a personal vehicle by 2025, according to a recent KPMG survey of auto executives.”²

Are we there yet? The signs of a revolution in the global automotive industry are unmistakable. The rise of electric vehicles, autonomous vehicles and shared mobility services cannot be denied. The only question is how and where these developments are taking us in an increasingly urbanized, technology-dependent and mobile world.

On the one hand, sales of electric and alternative fuel hybrid vehicles are expected to steadily increase,³ especially in China where tougher regulations are creating huge markets for low-emission transportation. Global automotive OEMs have already pledged a total investment of US\$90 billion for electric vehicles, and that figure continues to rise.⁴ Ford Motor plans to double its electrified vehicle spending as part of a major investment initiative for batteries and electric cars.⁵ Daimler has said it will spend at least US\$11.7 billion to introduce 10 pure electric and 40 hybrid models, and that it intends to electrify its full range of vehicles, from commuter vehicles to heavy-duty trucks.⁶ Volvo will electrify its entire vehicle line by 2019, with five all-electric models scheduled to roll out from 2019 to 2021.⁷

On the other hand, we need to keep in mind that these growth rates are calculated from a relatively small base. Yes, over two million electric vehicles are on the road today, but that still makes up less than one percent of the total number of vehicles in use worldwide.⁸

The rise of autonomous and shared vehicles will be equally disruptive and complex. In KPMG’s 2018 global survey of automotive executives, over 70 percent of respondents said that traditional public transport solutions could be replaced by on-demand autonomous capsules within 10 years.⁹ In the US alone, vehicle ownership could drop as much as 43 percent due to the rise of self-driving cars, and US auto sales might drop by 40 percent over the next 25 years with the growth of shared-driverless cars.¹⁰

However, as with electric vehicles, consumer adoption rates for autonomous and shared vehicles can differ significantly according to demographics, region, economic factors and culture. For example, car-sharing start-ups in emerging markets are growing at a faster rate than their predecessors in established markets, with services now available in 41 cities.¹¹ But in the US, a recent survey of car owners showed that 67 percent of respondents prefer driving their own cars over using ride-hailing apps, and 63 percent are not interested in trading their vehicles for shared-mobility rides — even if the rides are free.¹²

So are we there yet in terms of electric, autonomous and shared vehicle revolution? No, not yet. As with most revolutions, the first steps are small. But clearly it’s only a matter of time, and as this revolution gathers speed, chemical manufacturers need to keep pace with industry changes — or be left behind.

¹ Worldwide premium light vehicle sales growth rate from 2011 to 2020, Statista, <https://www.statista.com/statistics/570438/premium-light-vehicle-sales-growth-rate-worldwide/>. See also Global Automotive Industry Massive Disruption and Unprecedented Uncertainty — Winners and Losers, Riedel Research, [www.riedelresearch.com/files/picks/4/64/64_Global_Auto_Industry_Outlook_3_16%20\(1\).pdf](http://www.riedelresearch.com/files/picks/4/64/64_Global_Auto_Industry_Outlook_3_16%20(1).pdf)

² KPMG Global Automotive Executive Survey 2018

³ Global electric vehicle sales are booming, Business Insider, 22 January 2018, <https://www.businessinsider.com.au/the-rapid-growth-in-global-electric-vehicle-sales-in-4-charts-2018-1>

⁴ Global carmakers to invest at least \$90 billion in electric vehicles, Reuters, 15 January 2018, <https://www.reuters.com/article/us-autoshow-detroit-electric/global-carmakers-to-invest-at-least-90-billion-in-electric-vehicles-idUSKBN1F42NW>

⁵ Ibid.

⁶ Ibid.

⁷ Volvo cars to go all electric, Volvo Car Group, 5 July 2017, www.media.volvocars.com/global/en-gb/media/pressreleases/210058/volvo-cars-to-go-all-electric

⁸ Global EV Outlook, 2017, IEA, www.iea.org/publications/freepublications/.../GlobalEVO Outlook2017.pdf

⁹ KPMG Global Automotive Executive Survey 2018

¹⁰ Global Automotive Industry Massive Disruption and Unprecedented Uncertainty — Winners and Losers, Riedel Research

¹¹ Global Automotive Industry Massive Disruption and Unprecedented Uncertainty — Winners and Losers, Riedel Research

¹² How shared mobility will change the automotive industry, April 2017, <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/how-shared-mobility-will-change-the-automotive-industry>

Mega-trends in the new mobility ecosystem¹³



Up to **50 percent** of consumers will not want to own a car, as new mobility services begin to meet consumer needs.



Miles traveled per vehicle could increase fivefold as fleet services use vehicles more efficiently.

Passenger miles will increase **10 percent**, in line with the steady growth of mega-cities and their suburbs.



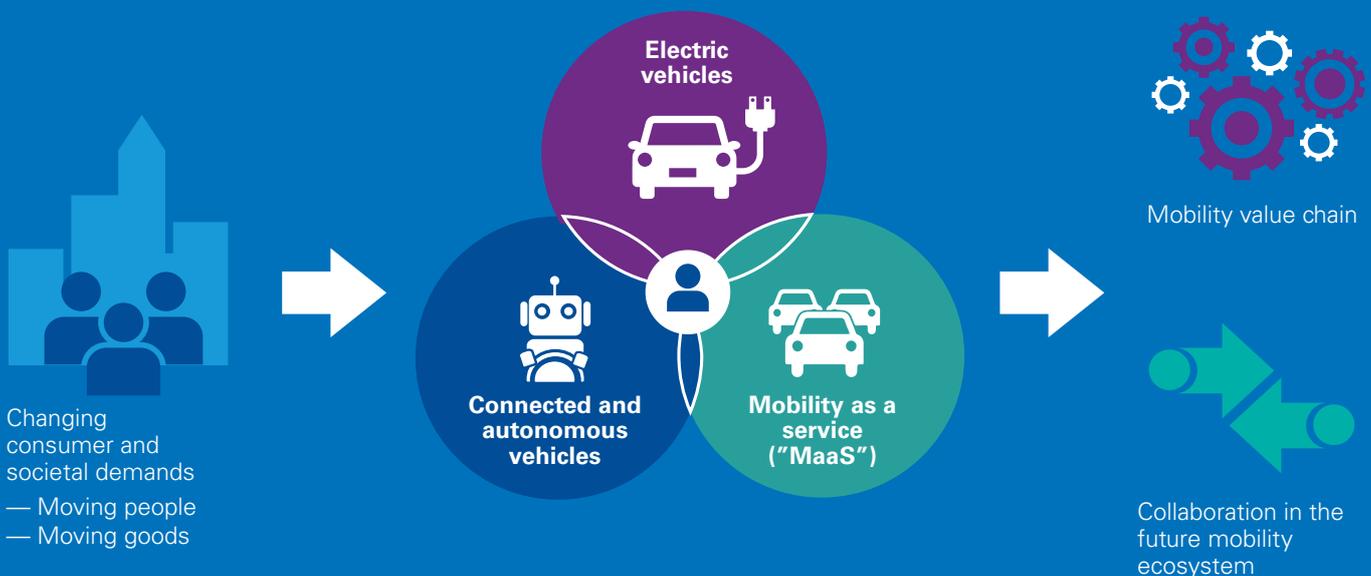
The number of major ecosystem players may decline as sector convergences lead to consolidation.



Cost per mile of moving people could decrease by **40 percent** due to reduced driver costs, longer vehicle lives, fewer accidents, new technologies and mobility scaling.



Three potentially major disruptors transforming how people and goods are moved in the future



Source: KPMG UK Mobility 2030 analysis

¹³ KPMG research and KPMG Global Auto Executive Survey 2018



What this means for the chemical industry



The growing adoption of electric autonomous and shared vehicles will affect the number, type and amount of chemicals required by automotive OEMs, not to mention supply chains, aftermarkets and market structures.”

The growing adoption of electric, autonomous and shared vehicles will affect the number, type and amount of chemicals required by automotive OEMs, not to mention supply chains, aftermarkets and market structures.

Consider the electric vehicle. Almost everything is simpler compared to a vehicle powered by an internal combustion engine (ICE). With a single-gear transmission, fewer moving parts and a simpler bill of materials, an electric vehicle requires little or no coolants, oil additives, rubber tubing made of synthetic elastomers or polymers developed to handle the higher heats typical in ICE engines. Except for tire rotations and cabin air filters, an electric vehicle might well require little or no preventive maintenance for the effective life of the vehicle.

At the same time, electric vehicles will remain a strategic market for plastics and other lightweight materials. Just as traditional OEMs have long been committed to reducing vehicle weight for increased gasoline mileage, OEMs for electric vehicles will want the same weight efficiencies to help extend the range of an electric vehicle per charge. Many plastic components can weigh 50 percent less than similar components made from other materials.¹⁴

With autonomous vehicles, research suggests that driver-assist technologies such as stability control, automatic braking and lane centering can decrease the number and severity of some types of accidents. This could significantly impact demand for materials related to repair, replacement and repainting, but autonomous vehicle technology might require that cars and trucks are more visible on the road, with surfaces that are reflective across

a broad range of wavelengths and weather conditions. This could open up new markets for innovative paints and coatings.

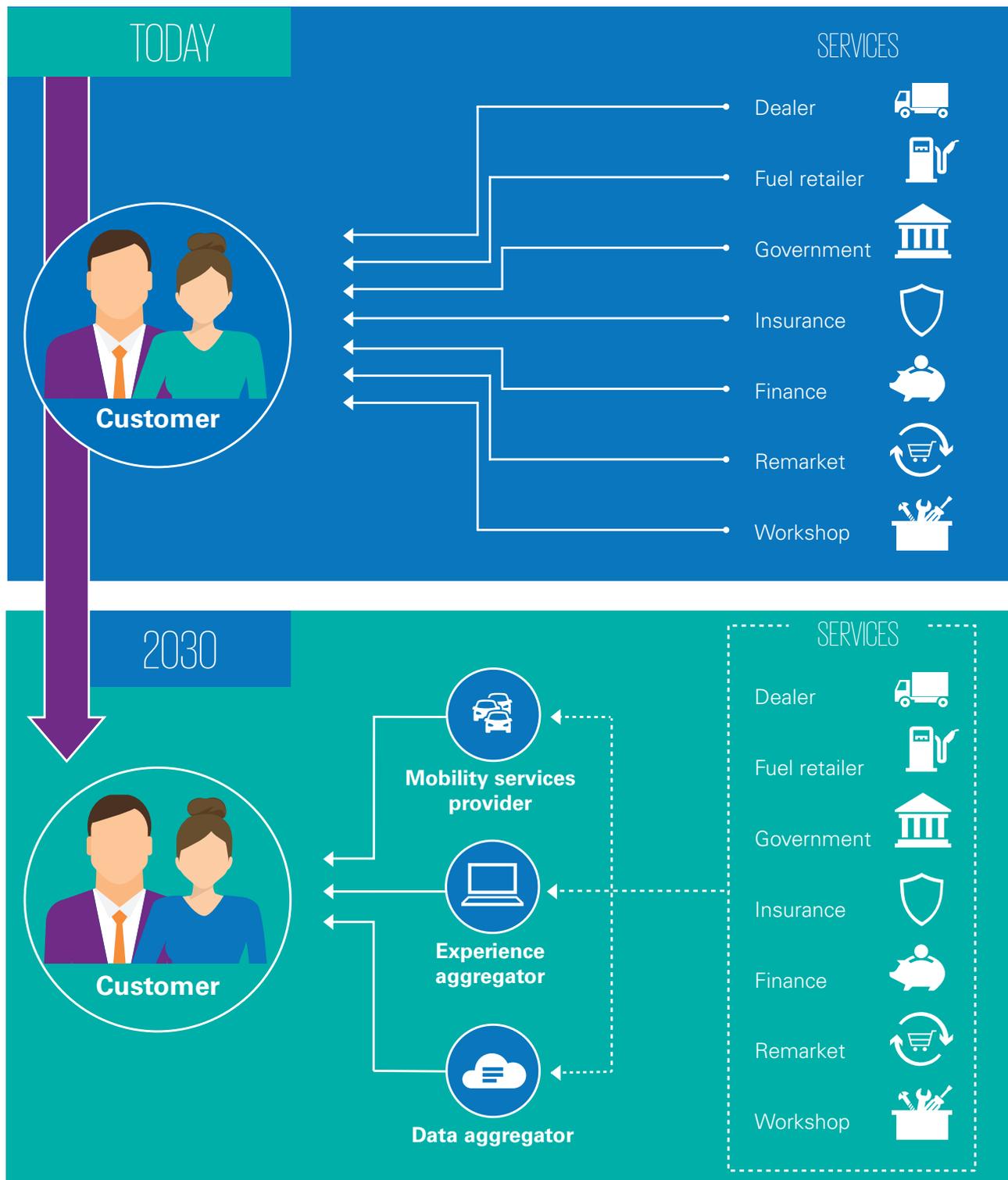
In addition, autonomous vehicles operating in dense urban areas may never travel faster than 25 miles per hour, leading to a re-evaluation of strict crash-test requirements for vehicles. These trends could drive the greater adoption of even lighter weight vehicles with advanced composites and aluminum alloys.

Vehicle exteriors and interiors could also change in a shift from private to public vehicles. As with today's urban transportation systems, the surfaces of a shared vehicle need to be aesthetically pleasing but also resistant to a heavy volume of passengers as well as potential vandalism. Vehicles in shared fleets could be increasingly modular, with future designs focused on replacing interior components that fail from increased wear and tear before the rest of the vehicle. The interior could be completely reconfigured for both commuting and entertainment, creating new demands for the materials needed to enable that experience, such as high-definition touchscreens and molded instrument panels.

The growing adoption of autonomous and shared vehicles will also disrupt traditional, OEM-centric business models for chemical manufacturers. In the future, large fleet operators will likely represent a greater share of the automotive market, and chemical companies might find that their primary customer is no longer the OEM and end user. These fleet managers will bring different perspectives on vehicles and supplies as well as different expectations about volume pricing for vehicles and maintenance supplies.

¹⁴ American Chemistry Council, <https://plastics.americanchemistry.com/Market-Teams/Automotive/>

New service aggregator business models will replace the customer's self-aggregation activity



Source: KPMG in the UK Mobility 2030 analysis



How is your organization structured and what governance is required going forward to deliver mobility solutions?"



Questions to consider for automotive chemical companies

Now is the time to question long-held assumptions regarding your financial model (value and investments), your business model (markets, propositions, brands, customers and channels) and your operations model (core business

processes, technology and operations infrastructure, organizational structure, governance and risk controls, people and culture, and measures and incentives).

What does it mean for the automotive chemicals players?

Impact on...



Profit pools

EVs' single-gear transmissions, fewer moving parts and simpler bills of materials mean **different product demand**

- ▲ Battery chemistry and circuitry components
- ▲ Plastics and other lightweight materials
- ▲ Innovative paints and coatings
- ▼ Oils and lubricants, fuel additives and coolants
- ▼ Synthetic tubing catering for high-heat of ICE
- ▼ Maintenance and repair-related parts



Customers

New ecosystem players will bring with them **new priorities, expectations and business models**

- ▲ Large fleet operators replacing OEMs and end users as primary customers
- ▲ Importance of partnerships with volume-driving key fleet providers
- ▲ New customer expectations of end-to-end vehicle and maintenance supply and volume pricing
- ▼ Customer interface opportunities with decrease in SMR requirement



Business and operating models

Addressing a new, larger, more dynamic and interconnected ecosystem will require **radical business and operating model rethinking**

- ▲ Agility in face of disruptive tech developments and competing business models
- ▲ Preparedness to service shifting product portfolios, clients and end users
- ▲ New market and expansion strategies and need to improve operational efficiencies
- ▼ Need for ICE-related capabilities, replaced by EV and AV capabilities

Questions you should be asking yourselves:



Finance

What should I aim for?

- Where do the major value pools lie?
- What level of investment should you commit?



Business

Where do I play?

- Which markets will be early adopters of future mobility?
- Which part of the mobility value chains should you play in?
- What mobility products/services will resonate with customers? What will your future customers value?
- Which of your customer segments are likely to move first, and how can you support?



Operations

How do I execute and win?

- How do you ensure provision of quality mobility services?
- Do you have the operational infrastructure and technology platforms to deliver?
- How is your organization structured and what governance is required going forward to deliver mobility solutions?
- Does your organization have the right leadership and capabilities in place to navigate the advancement of electric, autonomous and shared vehicles?
- What are the right measures and incentives for a business operating in the wider mobility space?



Outlook

Massive, disruptive and permanent change is underway in the automotive industry, affecting chemical companies at multiple levels. Traditional distinctions are likely to be minimized or even erased between passenger vehicles and trucks, public and private modes of transportation and different drivetrain technologies. Aftermarket value might be based more on software updates than replacement parts.

In the face of these changes, chemical companies may have to rethink their business models, reconsider key markets and recalculate the value propositions for every product in their

portfolio. As with any disruption, there will be winners and losers. Companies that provide engine coolants, general lubricants, fuel additives and multi-gear transmission fluids for ICEs might have to prepare for the possibility of slowing demand. Manufacturers of battery materials and high-performance polymers might plan for increased competition in growing markets. As always, chemical companies will also have to continue their efforts in enhancing regulatory compliance, improving operational efficiencies, identifying new markets and mapping their long-term expansion strategies.



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Brexit update

By Paul Crayford

The clock is ticking for Brexit. The UK has voted to leave the European Union (EU) on 29 March 2019, and a third of UK-based companies are now actively organizing or planning to move some of their operations out of the country because of regulatory uncertainty and other factors.¹⁵ Almost half of these companies are in the chemical industry.¹⁶ Certainly the potential disruption caused by Brexit cannot be denied. At the same time, the UK exit from the EU can serve as a catalyst for needed change in the chemical industry, impelling companies to introduce new efficiencies, renegotiate contracts and question long-held assumptions about the best way to do business in today's global economy.





Concern on both sides

“The UK’s decision to exit the European Union presents a political and economic challenge that creates significant uncertainty for companies and their employees.”¹⁷

This assessment comes from a joint statement issued in 2017 by the UK’s Chemical Industries Association and the European Chemical Industry Council or Cefic, reflecting deep concern on both sides of the Channel about tariffs, regulations, finance, legalities, personnel and other issues affecting the chemical industry.

This concern is based on close and well-established relationships between the UK chemical industry and European businesses and markets that go back for decades. The UK chemical industry represents about 7 percent of total EU-28 sales,¹⁸ with over 60 percent of exports and 70 percent of imports tied to the EU.¹⁹ Brexit will certainly impact cross-border trade volumes, production costs, tariff structures, regulatory compliance requirements, access to skilled personnel, financial agreements and chemical markets across the region and around the world.



Suppliers might find themselves at odds with clients or cut off from sources of raw materials or components.”



Now is the time to act

As of April 2018, a 21-month transition period for Brexit has been agreed upon between the UK and the EU. This will provide critical time for chemical companies, their suppliers and their customers to adapt. However, the deal is by no means certain and depends on a broader agreement on the UK’s withdrawal, which is to be finalized later this year.²⁰

In any case, the time for chemical companies to start preparing for Brexit is now. Brexit touches everything. A chemical manufacturer might be prepared but then find that its suppliers — or its suppliers’ suppliers — have failed to make necessary changes.

Suppliers might find themselves at odds with clients or cut off from sources of raw materials or components.

Now is the time to act. Inventory levels might need to be adjusted, contracts rewritten, personnel reorganized, supply chains restructured and prices changed. Even a company’s basic business plan needs to be reviewed in the light of potential events such as delays at ports, currency fluctuations, shifting legal liabilities and regulatory changes. To be frank, accidents are waiting to happen. Every company should ask the hard questions and make the sometimes difficult decisions to help ensure their continued success.

¹⁵ Brexit uncertainty forcing UK-based firms to act, Chemical Watch, 22 March 2018, <https://chemicalwatch.com//65318>

¹⁶ Ibid.

¹⁷ European Chemical Industry Joint Statement On Brexit And The Future, CIA and CEFIC, November 2017, <http://www.cefic.org/Documents/RESOURCES/PositionPapers/Cefic-CIA-joint-statement-on-Brexit-and-the-future-November2017.pdf>

¹⁸ Ibid.

¹⁹ The Chemical Industry — Brexit priorities for UK growth, Chemical Industries Association, July 2017, <https://www.cia.org.uk/LinkClick.aspx?fileticket=Yk3TeFj0MP4%3D&portalid=0>

²⁰ U.K. Reaches Brexit Transition Deal With E. U., New York Times, 19 March 2018, <https://www.nytimes.com/2018/03/19/world/europe/uk-brexit-eu.html>



Never waste a good crisis

And even if Brexit were not an issue, the companies would be well advised to take many of the steps outlined above. A thorough and rigorous review of strategies, operations, financial strength and other areas can be a valuable health check for any company, revealing weak points and identifying opportunities for improvement.

In some ways, Brexit resembles similar circumstances after the global financial crisis in 2008. Chemical companies in the UK recognized the need to explore downstream markets for specialized products, support innovation, and

consider restructuring and new business alliances. Belt-tightening, divestments, layoffs and other rigorous measures were the norm in more than a few companies. At the same time, these companies were often the ones that emerged from the crisis leaner and more competitive.

The same can be said for today with Brexit. As we know, a business crisis can present both risk and opportunity. Leaders should be seeking to manage risk while also using Brexit as an opportunity to help their company not only survive but even thrive in the years ahead.



Leaders should be seeking to manage risk while also using Brexit as an opportunity.”



Questions that chemical manufacturers should ask their suppliers



What action have you taken to protect your finances over the past 2 years? Do you have credit insurance and access to working capital?"



Risk analysis: Have you done a Brexit risk analysis and devised a comprehensive response plan? Have you conducted any other due diligence regarding Brexit?



Opportunities: Have you looked for potential opportunities that Brexit might create for your organization?



Service: Can you continue to support your current supply contract or SLA? Have you applied for Authorized Economic Operator (AEO) status to help avoid holdups at the ports? Are your IT systems up to the job? Are you thinking about extra warehousing space?



Supply guarantees: Would you be willing to negotiate a longer-term deal so that I can be confident of my continuity of supply?



Repair: If you provide on-site repair with response teams and spare parts that are currently sourced from the EU, can you source that support elsewhere?



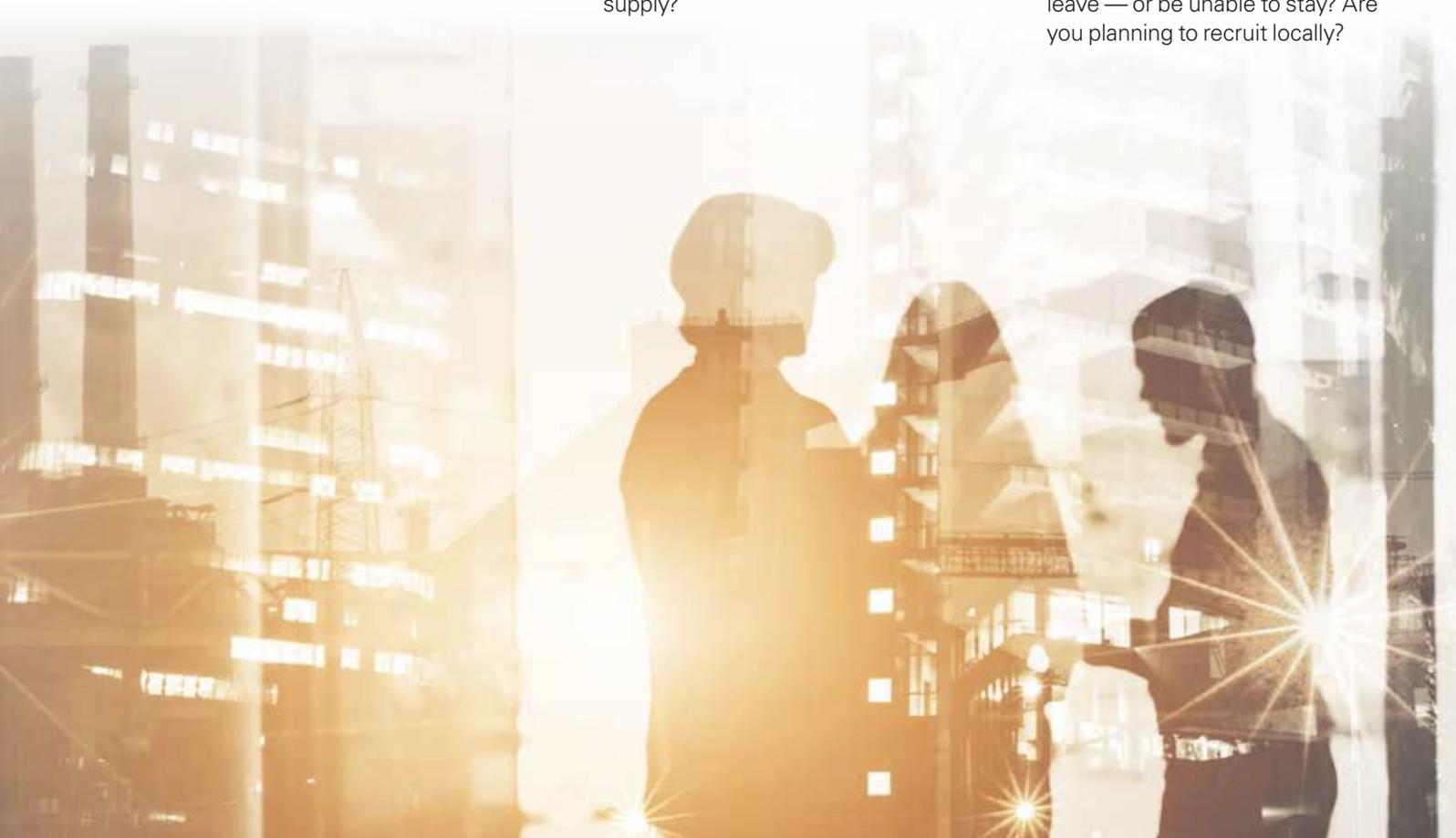
Finance: What action have you taken to protect your finances over the past 2 years? Do you have credit insurance and access to working capital?



Data: My business currently outsources to your data center in the EU. But if General Data Protection Regulation (GDPR) adequacy status is not agreed post-Brexit, what alternative solutions are you considering?



Personnel: Do you know how exposed you and your tier-two suppliers are in terms of EU nationals on the payroll? Which of those employees might decide to leave — or be unable to stay? Are you planning to recruit locally?





Questions that chemical suppliers should ask their clients



Relationship: How secure is my future relationship with you as a client? What guarantee can you give me that you'll carry on using my business as a supplier?



Service levels: Because of the tougher circumstances we may face post-Brexit, can you revise your expectations so that we can continue to meet our SLA?



Collaboration: Can we work together collaboratively on solutions? If steep new import tariffs are introduced, it may no longer be profitable for my business to supply you according to previous pricing and service agreements. How can we work together to address these new circumstances?



Added costs: My business may well face extra costs to fund labor, warehousing or alternative transport. Would you be willing to help underwrite those costs?



Inventory: Are you able to help carry more inventory, to make things more cost-efficient and help protect us both against any delays or shortages? Can we explore alternatives together if no trade deal is agreed upon?



Cash and finance: If I find I have cash flow problems due to circumstances beyond my control, would you consider some kind of strategic merger or other arrangements to help tide things over?



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New deals for Japanese chemical companies

By Kaoru Mano and Yoshihiko Sakamoto

Japanese chemical companies showed strong performance in 2017, driven by export growth focused on technologically advanced materials.²¹ It is also recognized that strong performance was driven by temporary high utilization of facilities caused by a global shortage of petrochemical products.

However, the nation's chemical industry faces serious challenges ahead, from low-growth domestic markets to increased competition in ethylene and ethylene derivatives from North America and the Middle East. In response, a growing number of Japanese chemical companies are undertaking overseas expansions or acquisitions. Looking to the future, the Japanese players might consider European chemical companies as a model for transitioning to a more consolidated industry focused on specialty products.





Japan's chemical industry



The industry provides employment for 860,000 people, which equals about 12 percent of Japan's manufacturing-related workforce."

The Japanese chemical industry is the country's second largest manufacturing industry, following transportation. Chemicals provide over 14 percent of all output value in Japanese manufacturing. The industry provides employment for 860,000 people, which equals about 12 percent of Japan's manufacturing-related workforce.²²

The industry is made up primarily of organic chemicals (42 percent) and end products (49.9 percent). Fertilizers and inorganic chemicals make up 8.2 percent.

Organic chemicals include basic petrochemicals (9.4 percent), aliphatic

intermediates (4.8 percent), cyclic intermediates, dyestuffs and pigments (7.5 percent), plastics (12.7 percent), synthetic rubbers (2 percent) and other organic chemicals (5.5 percent).

End products include oil and fats, soap, detergents and surfactants (3.9 percent of the total), paints (3.5 percent), drugs and medicines (27.8 percent), agricultural chemicals (1.1 percent), cosmetics and toothpaste (4.8 percent), gelatins and adhesives (1.1 percent), photosensitized materials (1.1 percent), and other chemical end products (6.5 percent).



²¹ C&EN World Chemical Outlook, <https://cen.acs.org/articles/96/i2/world-chemical-outlook-for-2018.html>. See also Japan chemical makers on track for profit boom, Nikkei Asian Review, 9 February 2017, <https://asia.nikkei.com/Markets/Tokyo-Market/Japan-chemical-makers-on-track-for-profit-boom>

²² Industry statistics from The Japanese chemical industry, Japan Industry News, 12 July 2015, <https://www.japanindustrynews.com/2015/07/japanese-chemical-industry/>

By any metric, Japan is a major player in the global chemical industry. In 2017, five Japanese companies ranked in the world's top 30 chemical companies as measured by chemical sales:²³ Mitsubishi Chemical Corp. (US\$23.4 billion), Toray Industries Inc. (US\$15.5 billion), Sumitomo Chemical Co. Ltd. (US\$13.4 billion), Mitsui Chemicals Inc. (US\$11.6 billion) and Shin-Etsu Chemical Co. Ltd. (US\$9.8 billion). In terms of global sales, Japan ranked fourth, following China, North America and the European Union (EU).²⁴

That said, the industry faces a number of challenges today, some of them shared by chemical sectors in other developed regions such as the EU.

First and foremost, Japan has a declining population and a slowing economy. The population of Japan reached its peak in 2008, at just over 128 million, and has declined in the years since, a trend that is anticipated to continue for the next four decades. The population is expected to shrink to 108 million by 2040 and drop further to 88 million by 2060.²⁵ Such a decline would further limit

domestic organic expansion opportunities for Japanese corporations in already saturated domestic markets. Government projections forecast overall economic growth to remain around 0.9 percent for at least the next decade.²⁶

In addition to these national mega-trends, the chemical sector is dealing with serious challenges from overseas. Traditionally, China has been a strong market for Japanese ethylene and ethylene products, but now Japanese manufacturers face stiff competition from US ethylene suppliers benefiting from the North American shale revolution as well as companies from the Middle East backed by low-cost feedstocks. China is also relying more on domestic, coal-based chemical manufacturing, reducing import demand from suppliers in Japan. Finally, China's recent environmental inspections across multiple industries have led to capacity closures and reduced demand over the past year, a trend that is expected to continue through 2018.²⁷



The population of Japan reached its peak in 2008, at just over 128 million, and has declined in the years since, a trend that is anticipated to continue for the next four decades.”

²³ C&EN's Global Top 50 2017, C&EN, 24 July 2017, <https://cen.acs.org/articles/95/i30/CENs-Global-Top-50.html>

²⁴ Ibid.

²⁵ National Institute of Population and Social Security Research (IPSS), Japanese government, <http://www.ipss.go.jp/index-e.asp>

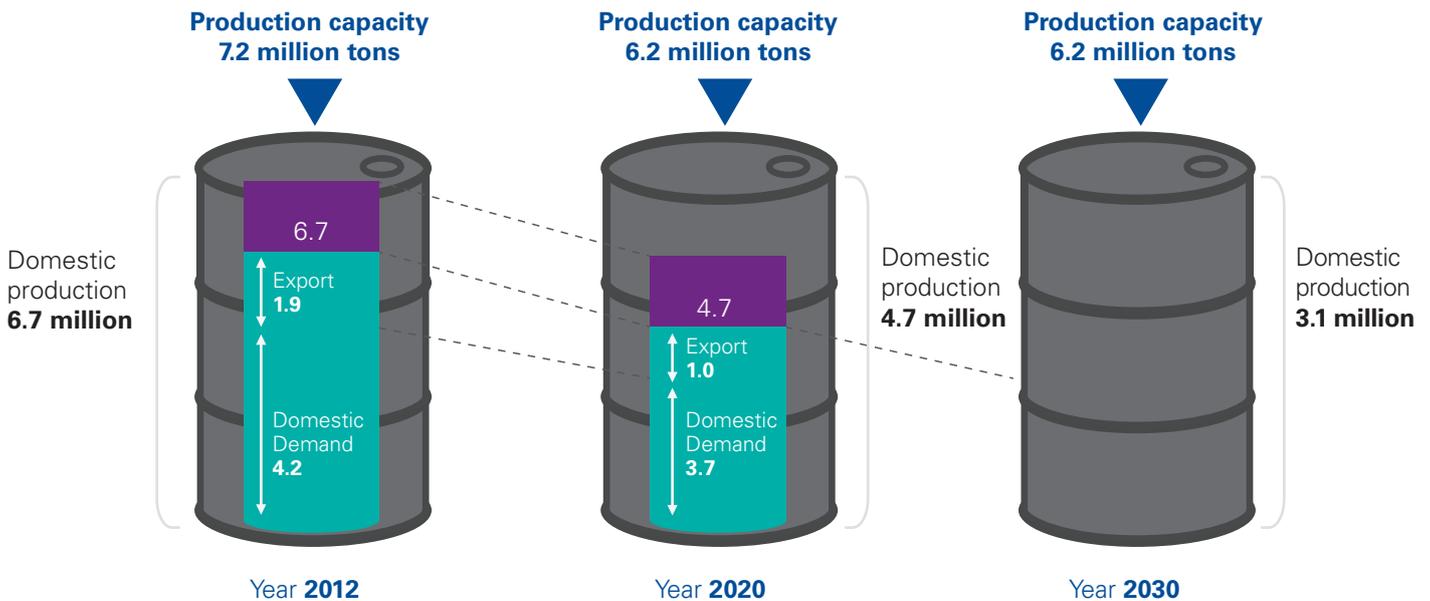
²⁶ IHS Market, cited in Japan Cross-Border M&A 2017, JPMorgan

²⁷ China chemical closures send ripples around the world, ICIS, 11 January 2018, <https://www.icis.com/resources/news/2018/01/11/10182191/china-chemical-closures-send-ripples-around-the-world/?redirect=english>



Challenges for a developed economy

Japanese ethylene production



Production Capacity



Domestic production (Domestic demand + Net Export)

Source: METI "Report on the Research Results concerning the Market Structure of the Petrochemical Industry"

The Japanese chemical industry has downsized facilities by about 10 percent over the past 5 years, helping companies to remain competitive.²⁸ However, ethylene production in Japan may drop to 4.7 million tons by 2020 due to the increased production of cheaper ethylene overseas and a steady decrease in domestic demand. As a result, overproduction capacity in 2020 may reach 1.7 million tons per year.

²⁸ Japan's chemical sector wary of US-driven headwind, Nikkei Asian Review, 24 May 2017, <https://asia.nikkei.com/Business/Japan-s-chemical-sector-wary-of-US-driven-headwind>



New attitudes, new directions

To address these challenges, Japanese companies are acquiring greater market share by entering new markets, divesting assets or expanding into new growth areas. Relying purely on in-house R&D and organic growth from the domestic market alone is insufficient to achieve growth objectives. For this reason, many companies now seek to supplement internal efforts with M&A and other transactions overseas.

These new M&A strategies require significant, even historic, changes in

attitudes in the Japanese business world. Traditionally, many Japanese companies have been uneasy with transactions that involve being acquired or divesting businesses that are no longer worth keeping.²⁹ A cultural aversion to job cuts and a desire for harmonious labor relations have made managers reluctant to pursue large mergers. In addition, shareholders in Japan are not advocating strongly for M&A.³⁰ Equally important, a consensus-based style of decision-making has been the norm for companies, resulting in a deliberate approach to expansion

that is sometimes at odds with the fast pace now required in today's global markets.

However, corporate Japan's attitudes toward M&A are slowly but surely changing.³¹ At the very least, the need to change is now recognized by many of the nation's corporate leaders. They stress a more Western approach to business based on a customer-first attitude, faster decision-making, greater flexibility in dealing with suppliers, and a better understanding of markets and regulations in other countries.³²



Funding advantages

Armed with a more aggressive and proactive attitude toward M&A, Japanese companies can benefit from a number of funding advantages through the country's financial institutions and national government.

Funding costs remain low, with near-zero interest rates and supportive bank lending. The Bank of Japan has implemented a number of monetary easing policies with the objective of lowering borrowing costs for Japanese corporations to encourage expansion of investments.³³

In addition, the Japanese government has introduced a number of initiatives and policies to support strategic investments, both domestically and overseas. The Development Bank of Japan (DBJ) provides numerous financial services, including financing, co-investing and advisory services, to help Japanese corporations expand their businesses and achieve their strategic goals, such as acquiring overseas companies.³⁴

The Innovation Network Corporation of Japan (INCJ) is a public — private

partnership that promotes innovation and enhances the value of businesses in Japan.³⁵

The Japan Bank for International Cooperation (JBIC) encourages and supports Japanese corporations in their pursuit of cross-border investments. It provides overseas investment loans to Japanese companies, overseas Japanese affiliates (including joint ventures) and foreign governments or financial institutions that are investing in or providing loans to Japanese businesses.³⁶

²⁹ Japan Inc loosens grip on once-sacred noncore assets, Financial Times, 27 February 2018, <https://www.ft.com/content/e85c2d26-1b6c-11e8-aaca-4574d7dabfb6>

³⁰ Rethinking Megamergers in Japan, C&EN, 5 February 2018, <https://cen.acs.org/articles/96/i6/Rethinking-megamergers-Japan.html>

³¹ Japan Cross-Border M&A 2017, JPMorgan. See also Why M&A Is Different in Japan, Columbia Business School, 5 January 2015, <https://www8.gsb.columbia.edu/articles/chazen-global-insights/why-ma-different-japan>

³² Japan business leaders urge real globalisation, Financial Times, 11 January 2016, <https://www.ft.com/content/80bb0344-78d6-11e5-a95a-27d368e1ddf7>

³³ Japan Cross-Border M&A 2017

³⁴ Development Bank of Japan, <https://www.dbj.jp/en/>

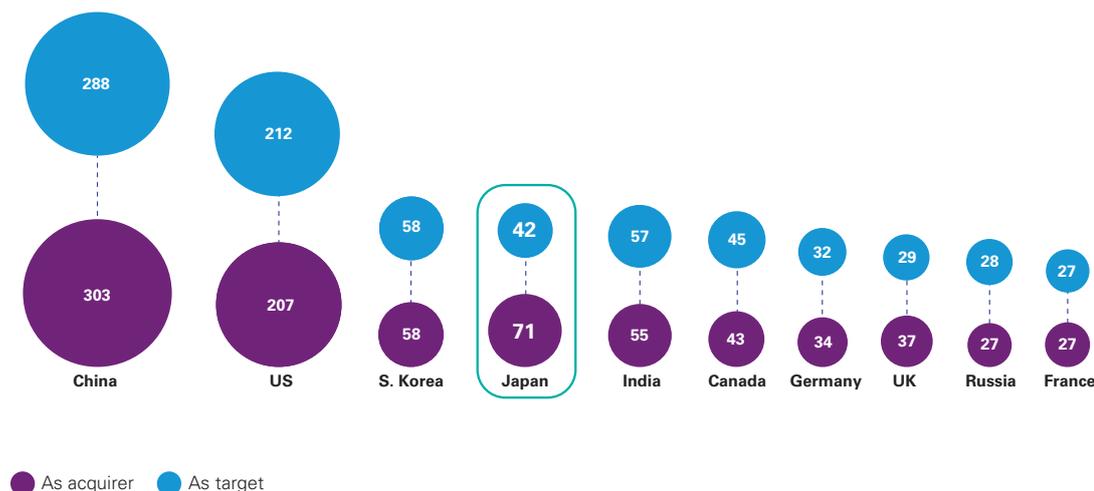
³⁵ Innovation Network Corporation of Japan (INCJ), <https://www.incj.co.jp/english/about/about/index.html>

³⁶ Japan Bank for International Cooperation, <https://www.jbic.go.jp/en/about/>



Deals for growth and improved margins

Top countries in 2017 for announced chemical M&A



Source: KPMG Deal Capsule, January 2018

Several Japanese chemical manufacturers have been moving into downstream businesses in an effort to provide top-line growth and capture value by expanding the range of products offered, including base chemicals, parts, equipment and service for a number of end markets.

Toray has announced the purchase of TenCate Advanced Composites Holding B.V., a Dutch carbon fiber composite material manufacturer.³⁷ In a similar move, Mitsubishi Chemical acquired a carbon fiber plant in the US run by Germany's SGL Group, adding 1,000 tons of annual output capacity in the hopes of capturing growing demand related to wind turbines

and cars.³⁸ Mitsubishi Chemical also acquired Dutch Filaments B.V., a leading manufacturer of 3-D printing filaments in Europe.³⁹ Kuraray Co. Ltd. acquired the world's largest activated carbon company, US-based Calgon Carbon Corp., and aims to achieve a synergy with its own activated carbon business.⁴⁰

Japanese chemical companies are also restructuring or selling non-core businesses. During 2017, Asahi Kasei sold its thermoplastic styrene elastomer business to Mitsui Chemicals,⁴¹ and Nippon Shokubai sold its friction-cutting construction material business to an investment group.⁴²

Mitsubishi Chemical is supporting a long-term strategy of divesting low-profit ventures while consolidating operations.⁴³ In late 2016, the company divested its Chinese and Indian operations in purified terephthalic acid because the product became increasingly commoditized. Over the past decade, the company has divested over 400 billion yen worth of sales in operations, including fertilizers and vinyl chloride. In 2017, the company consolidated the three units — Mitsubishi Chemical, Mitsubishi Rayon and Mitsubishi Plastics — under the Mitsubishi Chemical name.⁴⁴ Mitsubishi Chemical has 400 companies in its group but plans to reduce that number to around 300 within 3 years.⁴⁵

³⁷ Toray to Purchase TenCate Advanced Composites Holding B.V., press release, 14 March 2018, <http://www.toray.com/ir/news/index.html>

³⁸ Mitsubishi Chemical to acquire US carbon fiber plant from German firm, Japan Times, 1 January 2017, <https://www.japantimes.co.jp/news/2017/01/10/business/corporate-business/mitsubishi-chemical-acquire-u-s-carbon-fiber-plant-german-firm/#.WsezBC7waM8>

³⁹ Acquisition Of Dutch Filaments B.V., A Filament Manufacturer For 3D Printing, press release, 2 March 2018, https://www.m-chemical.co.jp/en/news/2018/1203927_7663.html

⁴⁰ Kuraray Completes Acquisition of Calgon Carbon, businesswire.com, 9 March 2018, <https://www.businesswire.com/news/home/20180309005513/en/Kuraray-Completes-Acquisition-Calgon-Carbon>

⁴¹ Mitsui Chemicals buying Asahi TPS business, RubberNews, 14 November 2017, <http://www.rubbernews.com/article/20171114/NEWS/171119976/mitsui-chemicals-buying-asahi-tps-business>

⁴² <http://www.mgb.gr.jp/gohda/>

⁴³ Mitsubishi Chem averts profit slide as big reshuffle pays off, Nikkei Asian Review, 13 May 2017, <https://asia.nikkei.com/Editor-s-Picks/Japan-Update/Mitsubishi-Chem-averts-profit-slide-as-big-reshuffle-pays-off>

⁴⁴ Mitsubishi Holdings Group, Sustainability Report 2017, https://www.m-chemical.co.jp/en/csr/pdf/sr_mcc_2017.pdf

⁴⁵ Mitsubishi Chem averts profit slide as big reshuffle pays off, Nikkei Asian Review, 13 May 2017, <https://asia.nikkei.com/Editor-s-Picks/Japan-Update/Mitsubishi-Chem-averts-profit-slide-as-big-reshuffle-pays-off>



A European strategy?

Consolidation of chemical players in the West compared to Japan

The Japanese chemical industry can look to the West and the EU in particular as a possible model for strategic development. In the late 1990s, major European chemical companies were able to improve their revenue by shifting from basic chemicals to specialty and fine chemicals. Most are now focused on a specific area through a process of elimination and consolidation.

For European chemical majors, the material for the end product and the client's needs for each chemical product were identical. Each chemical product's market size was large enough for multiple chemical manufacturers to survive. Since the requirements for chemical products from the end market were not that complex, entry barriers were low. The key for success was to possess large-scale production facilities for general purposes.

After 2000, the client's needs for each end product material and the chemical product have become diversified, leading to the segmentation of chemical products. Now, the market for a specific chemical product is not large enough to support multiple chemical manufacturers. The end market user's requirements are very specific and technologically demanding, resulting in a high-entry barrier. Today, the key for success is to limit R&D areas in order to meet specific customer demands.

In short, the chemical industry in the West has been able to remain competitive in a large part through consolidation and specialization. For the moment, the possibility of a similar level of consolidation in the Japanese industry is limited. Ethylene crackers in Japan are not concentrated in a particular area but spread across the country, and each facility is shared by multiple companies. Consolidation is also problematic given the opposition to large mergers of any kind in Japan. In fact, no major chemical industry mergers have occurred in the country in decades.⁴⁶

Meanwhile, the Japanese chemical industry remains highly fragmented, although many companies have found success in niche markets requiring specialized products. To give just two examples, the liquid crystal display sector is dominated by Japanese manufacturers that supply 100 percent of cellulose triacetate (TAC) film, 50 percent glass substrates, 60 percent of polarizers, 70 percent of black resists and 70 percent of color resists. For lithium-ion batteries, Japanese companies provide 30 percent of positive electrode material, 50 percent of negative electrode material, 50 percent of separators and 40 percent of electrolytes for the devices.⁴⁷



The key for success is to limit R&D areas in order to meet specific customer demands.”

⁴⁶ About Business Restructuring, January 23, Heisei, 29 METI https://www.kantei.go.jp/jp/singi/keizaisaisei/miraitoshikaigi/suishinkaigo_saihen_dai4/siryu2.pdf

⁴⁷ Rethinking Megamergers in Japan, C&EN, 5 February 2018, <https://cen.acs.org/articles/96/i6/Rethinking-megamergers-Japan.html>

Japanese companies are behind European/US competitors in consolidation in specialty areas to be competitive

Major chemical manufacturers in Europe and the US

Business portfolio	AlkoNobel	Arkema	BASF	Bayer	Dow*	DuPont*	DSM	Ecolab	Evonik	Honeywell	3M
FY17 revenue (US\$ million)	11,172	9,677	74,936	40,696	62,484		10,033	13,838	16,758	14,779	31,657
Oil & gas			Withdrawal or reduction			Withdrawal or reduction		Continuing operations	Withdrawal or reduction		
Basic/Intermediate raw material			Continuing operations	Withdrawal or reduction	Continuing operations		Withdrawal or reduction		Withdrawal or reduction	Continuing operations	
Petrochemical	Withdrawal or reduction		Withdrawal or reduction								
Fertilizer			Withdrawal or reduction				Withdrawal or reduction				
Fiber	Withdrawal or reduction			Withdrawal or reduction	Continuing operations	Withdrawal or reduction					
Inorganic chemical	Continuing operations			Withdrawal or reduction	Withdrawal or reduction	Withdrawal or reduction			Withdrawal or reduction	Withdrawal or reduction	
Catalyzer	Withdrawal or reduction		Continuing operations	Withdrawal or reduction							
Urethane			Continuing operations	Continuing operations	Continuing operations						
Plastic			Continuing operations		Continuing operations						
Engineering plastic		Withdrawal or reduction	Withdrawal or reduction	Continuing operations	Continuing operations	Withdrawal or reduction	Continuing operations		Withdrawal or reduction	Withdrawal or reduction	
Paint/Coating	Withdrawal or reduction	Withdrawal or reduction	Continuing operations		Withdrawal or reduction	Withdrawal or reduction				Continuing operations	Withdrawal or reduction
High function fiber					Withdrawal or reduction	Continuing operations	Continuing operations				
Electrical machinery/ Electron	Withdrawal or reduction		Continuing operations	Continuing operations	Withdrawal or reduction	Continuing operations				Continuing operations	Withdrawal or reduction
Automotive			Withdrawal or reduction	Continuing operations	Withdrawal or reduction	Continuing operations		Withdrawal or reduction		Continuing operations	Withdrawal or reduction
Water treatment		Withdrawal or reduction	Withdrawal or reduction		Withdrawal or reduction			Withdrawal or reduction			Withdrawal or reduction
Architecture			Withdrawal or reduction		Withdrawal or reduction				Withdrawal or reduction		Continuing operations
Energy			Withdrawal or reduction		Withdrawal or reduction	Continuing operations		Withdrawal or reduction	Withdrawal or reduction	Withdrawal or reduction	Withdrawal or reduction
Agriculture			Withdrawal or reduction	Withdrawal or reduction	Continuing operations	Withdrawal or reduction					
Bio			Withdrawal or reduction		Withdrawal or reduction						
Bioplastic		Withdrawal or reduction	Withdrawal or reduction		Withdrawal or reduction	Withdrawal or reduction					
Nutrition	Withdrawal or reduction		Withdrawal or reduction		Continuing operations	Withdrawal or reduction	Withdrawal or reduction		Withdrawal or reduction		
Personal care/ Consumer			Withdrawal or reduction	Withdrawal or reduction	Withdrawal or reduction			Withdrawal or reduction	Continuing operations	Continuing operations	Withdrawal or reduction
Healthcare			Continuing operations	Withdrawal or reduction	Continuing operations			Withdrawal or reduction	Continuing operations	Continuing operations	Withdrawal or reduction
Pharmaceuticals			Withdrawal or reduction	Withdrawal or reduction			Withdrawal or reduction				



*Dow and DuPont merged on September 1, 2017

Source: Direction of functional material industry policy, June, Heisei 20, METI Ministry of Industry and Industry Chemistry Division Functional Chemicals Room http://www.meti.go.jp/policy/mono_info_service/mono/chemistry/downloadfiles/kinouseikagaku/150619kinousei-seisaku.pdf

Major chemical manufacturers in Japan

Business portfolio	Asahi Kasei	Fujifilm	Hitachi**	JSR	Mitsubishi**	Mitsui**	Nissan**	Nitto Denko	ShinEtsu**	Sumitomo**	TEIJIN	Toray
FY17 revenue (US\$ million)	16,888	20,827	4,970	3,503	30,279	10,872	1,617	6,885	11,098	17,527	6,648	18,175
Oil & gas												
Basic/Intermediate raw material	Withdrawal or reduction				Continuing operations	Continuing operations				Withdrawal or reduction	Continuing operations	Continuing operations
Petrochemical	Continuing operations			Continuing operations	Continuing operations	Withdrawal or reduction	Continuing operations		Continuing operations	Continuing operations		
Fertilizer						Continuing operations	Withdrawal or reduction					
Fiber	Continuing operations				Withdrawal or reduction							Continuing operations
Inorganic chemical					Continuing operations					Continuing operations		
Catalyzer	Continuing operations				Continuing operations	Continuing operations				Continuing operations		Continuing operations
Urethane						Continuing operations						
Plastic	Continuing operations			Continuing operations	Strengthened by large-scale acquisition, etc.	Continuing operations				Continuing operations	Continuing operations	Continuing operations
Engineering plastic	Continuing operations		Continuing operations	Continuing operations	Continuing operations	Strengthened by large-scale acquisition, etc.	Continuing operations		Continuing operations	Continuing operations	Continuing operations	Continuing operations
Paint/Coating												
High function fiber					Strengthened by large-scale acquisition, etc.						Strengthened by large-scale acquisition, etc.	Strengthened by large-scale acquisition, etc.
Electrical machinery/ Electron	Continuing operations		Strengthened by large-scale acquisition, etc.	Continuing operations	Strengthened by large-scale acquisition, etc.	Strengthened by large-scale acquisition, etc.	Continuing operations	Strengthened by large-scale acquisition, etc.				
Automotive			Strengthened by large-scale acquisition, etc.		Strengthened by large-scale acquisition, etc.	Continuing operations		Strengthened by large-scale acquisition, etc.	Strengthened by large-scale acquisition, etc.			
Water treatment				Continuing operations	Continuing operations		Continuing operations	Strengthened by large-scale acquisition, etc.			Continuing operations	Strengthened by large-scale acquisition, etc.
Architecture	Continuing operations		Continuing operations		Continuing operations	Continuing operations	Continuing operations		Strengthened by large-scale acquisition, etc.			
Energy	Continuing operations		Strengthened by large-scale acquisition, etc.	Continuing operations	Continuing operations					Strengthened by large-scale acquisition, etc.	Continuing operations	Strengthened by large-scale acquisition, etc.
Agriculture						Continuing operations	Continuing operations			Strengthened by large-scale acquisition, etc.		
Bio		Strengthened by large-scale acquisition, etc.		Strengthened by large-scale acquisition, etc.	Strengthened by large-scale acquisition, etc.			Strengthened by large-scale acquisition, etc.		Strengthened by large-scale acquisition, etc.		
Bioplastic					Continuing operations							
Nutrition					Strengthened by large-scale acquisition, etc.		Continuing operations			Continuing operations		
Personal care/ Consumer	Continuing operations	Continuing operations			Continuing operations	Strengthened by large-scale acquisition, etc.			Continuing operations			Continuing operations
Healthcare	Strengthened by large-scale acquisition, etc.	Strengthened by large-scale acquisition, etc.	Continuing operations	Strengthened by large-scale acquisition, etc.	Strengthened by large-scale acquisition, etc.	Strengthened by large-scale acquisition, etc.	Continuing operations	Strengthened by large-scale acquisition, etc.			Strengthened by large-scale acquisition, etc.	Continuing operations
Pharmaceuticals	Continuing operations	Strengthened by large-scale acquisition, etc.		Strengthened by large-scale acquisition, etc.	Strengthened by large-scale acquisition, etc.		Continuing operations	Strengthened by large-scale acquisition, etc.		Continuing operations	Strengthened by large-scale acquisition, etc.	Continuing operations



**Chemicals



Conclusion



Uncertainties remain for the Japanese chemical industry. A strengthening yen in 2018 might lead to decreased overseas earnings.”

Uncertainties remain for the Japanese chemical industry. A strengthening yen in 2018 might lead to decreased overseas earnings.⁴⁸ The flow of shale gas-based chemical products into Asian markets and rising costs for raw materials will continue to create competitive pressures.

However, high levels of M&A activity are expected to continue among Japanese chemical manufacturers. Many companies in this industry view M&A as a key tactic for achieving growth and enhancing their corporate value in their mid-term business plans. These companies will most

likely continue to search for potential acquisition targets in line with recent historical trends.

However, further change may be required in order to remain competitive on the global stage in an increasingly competitive and technologically demanding chemical world. If Japanese chemical companies are able to break their decades-old aversion to consolidation, the transformation of the European chemical industry over the last 20 years may offer a path to a more competitive future.

⁴⁸ Chemical Industry Grapples With Rising Yen, Shale Influx, Japan Chemical Daily, 4 April 2018, <https://www.japanchemicaldaily.com/2018/04/04/chemical-industry-grapples-with-rising-yen-shale-influx/>

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Kaoru has provided advisory services related to M&A strategic planning, business due diligence and execution of post deal integration to create values for under-performing companies. He has worked with a wide range of Japanese and foreign corporations including the chemicals industry.

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Yoshihiko is a Partner with the KPMG Deal Advisory practice in Japan with over 20 years of experience. He has been advising multinational clients in various complex M&A deals in broad sectors including the chemical industry.

International women's day activities

This year in celebrating International Women's Day (IWD), KPMG member firms participated in many initiatives to raise the volume and visibility on the role women play in society and the energy industry.

KPMG's 16th Annual Global Energy Conference



Regina Mayor, Global Sector Head of Energy & Natural Resources, hosted the 16th Annual KPMG Global Energy Conference which took place June 6–7, 2018. In attendance were senior energy executives and luminaries to share ideas and gain insights on the current issues and emerging challenges that are shaping the energy industry. This year's agenda was designed to provide attendees with critical insights to help navigate the structural shift in commodity prices and focus on the role disruptive forces are playing in transforming the energy industry.



Women in energy executive breakfast

Using the #MeToo era as a catalyst for creating a safer workplace environment, this panel brought together a mix of senior leaders to discuss what actions are being implemented to ensure employees feel safe in their work environment. As part of the discussion, we discussed how it is the responsibility of senior leaders to put tough issues on the table that address how we treat each other at work, no matter what our differences — including race, gender, orientation, creed and every attribute that makes our workforces unique.

Angie Gildea, Americas Oil and Gas Co-Leader, KPMG in the US, discusses these issues with panelists.

KPMG in India

Regina Mayor speaks at our KPMG in Mumbai office



In May, Regina Mayor, Global Sector Head of Energy & Natural Resources was at the KPMG in Mumbai office to discuss the importance of Inclusion and Diversity, which she is very passionate about and how she feels it contributed to her own personal journey and being a leader today. Today, she leads KPMG's Global Energy & Natural Resources practice, a sector that typically does not have many women in leadership positions. As stated by the women who attended her talk, her discussion around how she manages personal and professional commitments was inspiring, in addition as to how her diverse background and experience have contributed to her being a top leader in the industry today.

KPMG in the UK

KPMG in the UK hosted a collaborative event with Baker Hughes GE (BHGE) and Shell where HERWorld 18 was live streamed. This gathering provided an excellent opportunity for networking between our organizations, with the future of females in energy being the main focus

point. Representatives from Shell, BHGE and KPMG in the UK provided an update on their female-focused initiatives. KPMG in the UK also leveraged their newly formed Women in Energy group to bring along 20 members of their team.

KPMG in the US

HERWorld 18

The New Energy Playbook: GRIT — Growth, Resilience, Innovation & Transition

herworldenergyforum.com

The 3rd Pink Petro HERWorld Energy Forum addressed the energy transition, digital technology, workforce needs and opportunities, and the gender gap. KPMG presenters included:



KPMG's Angie Gildea on building value for your company — and yourself.
KPMG in the US



KPMG's Emma Wild on the exciting uncertainty of energy.
KPMG in the UK

KPMG in Germany



Paul Harnick
Global Chair, Chemicals and Performance Technologies



Vir Lakshman
Head of Chemicals and Pharmaceuticals, KPMG in Germany



Norbert Meyring
Asia Pacific Head of Chemicals and Performance Technologies

KPMG in Germany held their annual Chemicals Roundtable ‘Strategies for sustainable growth: M&A, digitalization and innovation’ in Düsseldorf on 19 June 2018. With an assembled panel of experienced speakers, including Paul Harnick Global Chair, Chemicals and Performance Technologies, Vir Lakshman, Head of Chemicals and Pharmaceuticals, KPMG in Germany and Norbert Meyring, Asia Pacific Head of Chemicals and Performance Technologies, they discussed global growth opportunities such as China’s Belt and Road Initiative and global industry trends. Speakers from leading chemicals companies provided insights on the driving forces of technology transformation, new approaches to innovation and how M&A is transforming the industry.

Deal Capsule, April 2018

As featured within KPMG in Germany's, April 2018 issue of Deal Capsule, chemicals saw one of the largest financial investor deals and digitalization, in particular, within driving transactions and cooperation with technology players. In Q1 2018, both US and China were the most active countries in chemicals.

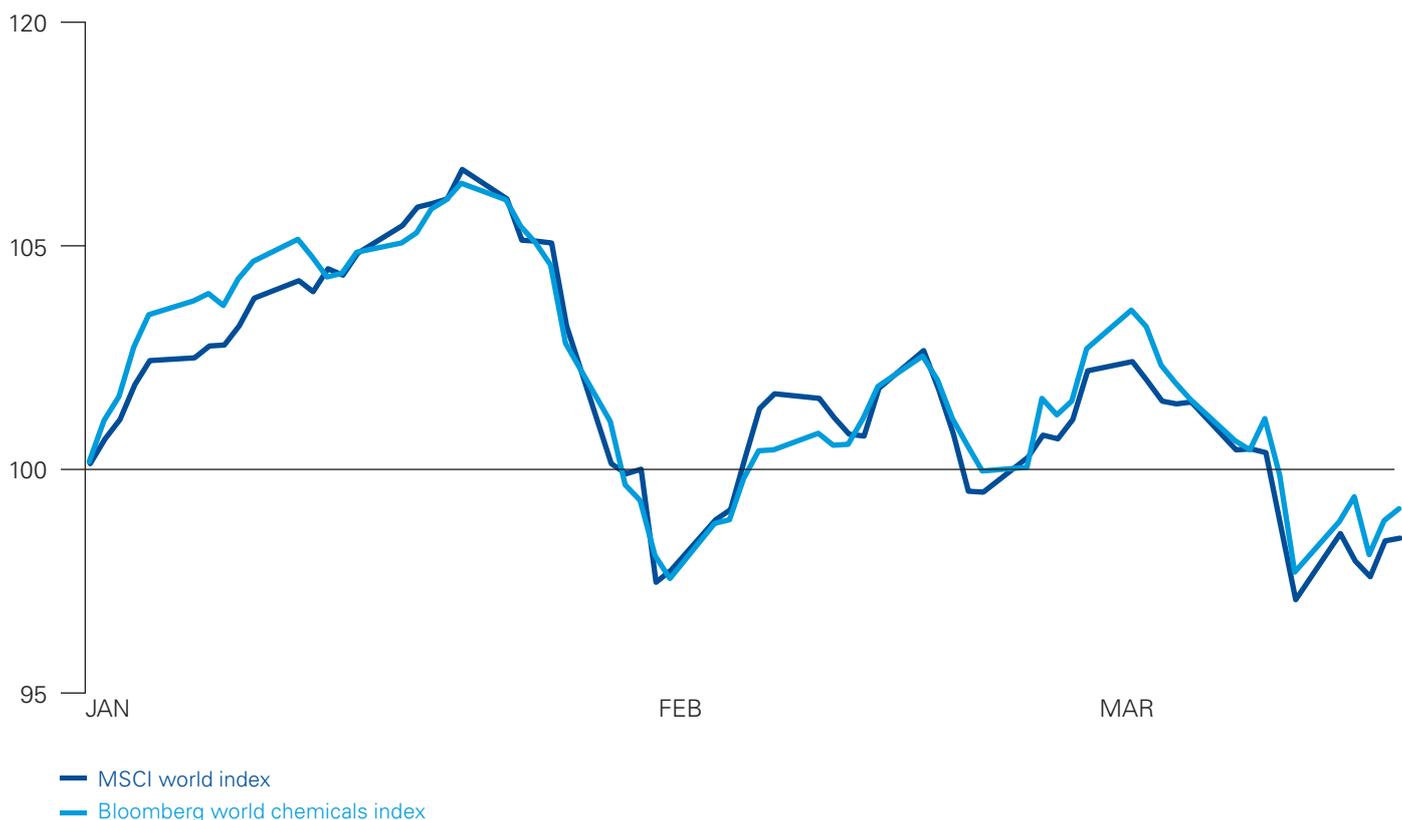
Deal Capsule is a KPMG in Germany publication on current M&A activity in chemicals and life sciences markets. In addition, the number of Q1 2018 announced deals remained constant in comparison to Q1 2017. Chemical deals are spread across the value chain with a PE investor topping the deal list within the specialty space. Chemicals supplying the automotive industry have attracted interest within the sector. Especially German chemical players are keen to invest in technology-based collaborations, including autonomous cars, e-mobility and 3-D printing.

Figure 1: Trends in chemical mergers and acquisitions by financial investors



Sources: Thomson One, KPMG Analysis

Figure 2: Development of chemical share prices Q1 2018



Sources: Bloomberg, KPMG Analysis

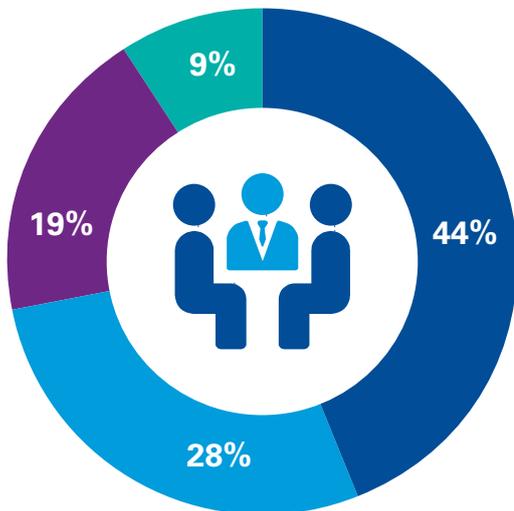


REACTION 24 webcast highlights

During our REACTION 24 webcast, **Rohitesh Dhawan**, Director, Geopolitics Center of Excellence, KPMG in the UK, and **Andrew D. Bishop**, Deputy Director of Research, Eurasia Group, discussed the rise of geopolitical uncertainty.

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

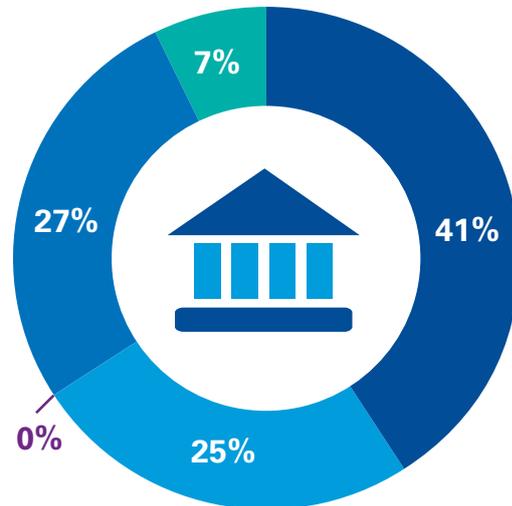
The impact of politics on the business environment in the country I currently live in today is:



- A** Positive
- B** Negative
- C** Neutral
- D** Ridiculous, out-of-control, totally mad

Number of respondents = 43*

What current geopolitical issue will have the biggest impact on global politics in the next 12 months?

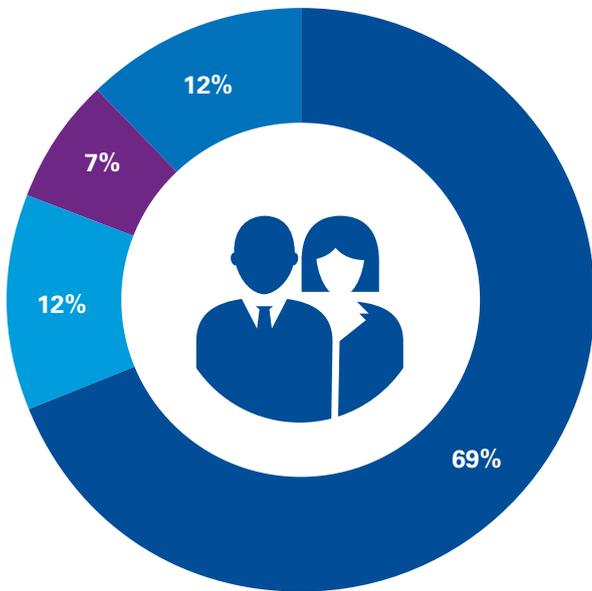


- A** Tension in North Korea
- B** Brexit
- C** Iran nuclear deal
- D** Renegotiation of the North American Free Trade Agreement (NAFTA)
- E** Something else/not covered above

Number of respondents = 44*

*Source: REACTION 24: Adapting to a changing geopolitical landscape, Global Chemicals Institute webcast, KPMG International

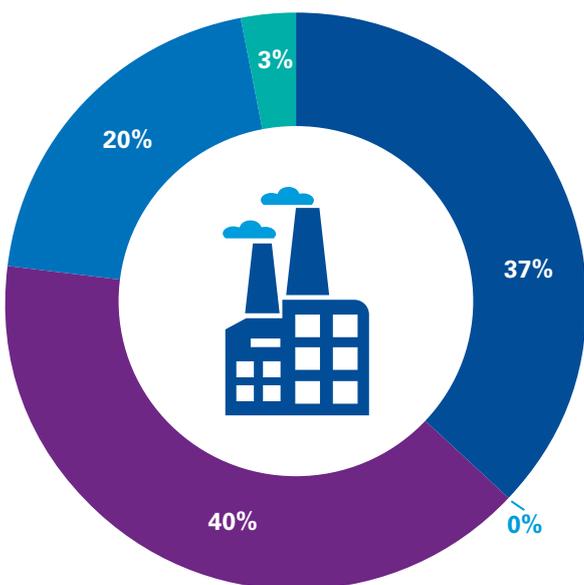
Purely based on current politics, I would rather:



- A** Continue living in the country I currently am
- B** Move to another country
- C** Not answer this question because politics does not affect my decision of where to live
- D** Go hide under a rock while the world sorts itself out

Number of respondents = 42*

Compared to 12 months ago, geopolitics as an issue for the chemicals sector is:



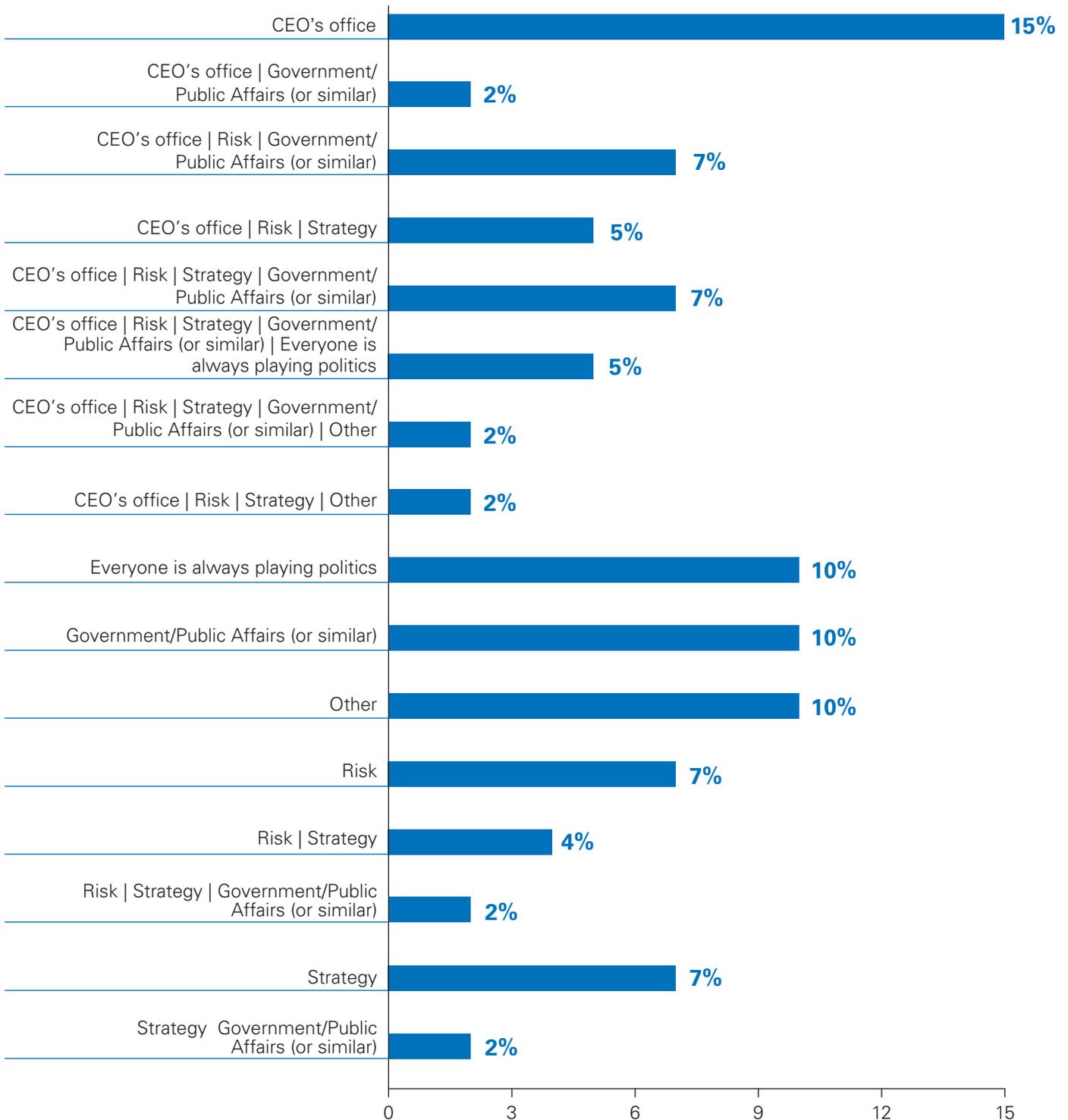
- A** More important
- B** Less important
- C** The same
- D** Hard to judge
- E** Fantastic entertainment value

Number of respondents = 40*

*Source: REACTION 24: Adapting to a changing geopolitical landscape, Global Chemicals Institute webcast, KPMG International

In my company, political matters are dealt with by the following team(s): Tick all that apply

- ✓ CEO's office
- ✓ Risk
- ✓ Strategy
- ✓ Government/Public Affairs (or similar)
- ✓ Other
- ✓ Everyone is always playing politics



Number of respondents = 41*

Note: Percentages might not add up to 100% due to rounding.

*Source: REACTION 24: Adapting to a changing geopolitical landscape, Global Chemicals Institute webcast, KPMG International



Global Chemicals Institute webcasts

Chemistry 4.0: Reinventing the chemical company with digital transformation

Digital transformation has become a part of the fourth and latest industrial revolution. Although many industries are making great strides in digital transformation, the chemical industry has been more a laggard than a leader. However, to remain competitive and explore new opportunities, many chemical companies are using digital technology for smarter manufacturing, stronger customer relationships and faster innovation. In the front ranks of digital transformation are companies that are no longer selling chemicals; they're selling solutions to customers' problems through new business models for the delivery of enhanced services and customized specialty chemicals. Listen to **Dr. Bernhard Kneissel**, Director, Deal Advisory, Strategy, KPMG in Germany, discuss Chemistry 4.0.

REACTION 24 webcast: Adapting to a changing geopolitical landscape

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. Listen to **Rohitesh Dhawan**, Director Strategy and Alliances Eurasia Group, and **Andrew D. Bishop**, Deputy Director of Research, Eurasia Group, discuss these issues.

Global chemicals: Key industry trends and opportunities

China's growth... Indian development... US shale... European recovery... Trump... Brexit... South China Sea... With all of these and other issues affecting the global chemical industry, it's a great time to make sense of what's really happening. Join our three most senior industry leaders, **Paul Harnick**, **Mike Shannon** and **Norbert Meyring**, for a roundtable webcast where they discuss the key challenges and opportunities for global chemical companies in today's dynamic and increasingly complex world.

REACTION 22 webcast: GCC chemical companies on the move as global competitors

Following the release of REACTION 22, **Oliver Gawad**, Senior Director, Deal Advisory, Strategy, Industrials & Chemicals for KPMG in Saudi Arabia, recently hosted the latest REACTION webcast. The webcast featured Oliver's latest article in REACTION 22, which discussed GCC chemical companies on the move as global competitors. He covered key topics such as the shift in the chemical industry's competitive landscape, the challenges associated with the changing chemical industry, and the strategies GCC chemical companies have been exploring, which have been demonstrating strong potential for sustainable growth.

Visit kpmg.com/chemicals to learn more about KPMG's Global Chemicals Institute and to listen to our webcasts.

KPMG Global Chemicals Institute bookshelf

**A selection of relevant KPMG global chemicals magazines and insights.
To access these, please visit kpmg.com/reaction.**



REACTION 25 Magazine

In this edition, we take a look at the progress chemical companies have made to close the gender gap. We investigate and explore the growth of the Indian chemicals market. In addition, we also delve into the consolidation of the paints and coatings sector.



REACTION 24 Magazine

This edition explores geopolitical trends and their impact on global chemical companies, synergies within the industrial gases market, an outlook for the US chemicals industry and a look at innovation with AkzoNobel.



REACTION 23 Magazine

In this edition, we take a look at the ongoing digital transformation changing the face of the global chemical industry. We also investigate and explore what chemical companies need to do to be successful in supporting human rights. Last, but certainly not least, we examine the increasingly uncertain world trade environment global chemical companies are facing.



REACTION 22 Magazine

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

KPMG's Global Chemicals Institute

These are exciting times for the global chemical industry, and KPMG member firms are proud to support such a vital part of modern life. KPMG clients produce components in phones and tablets, the majority of non-metallic automotive parts, paints, coatings, personal care products, packaging, water treatment products, agrochemicals and a multitude of other products around the world. Equally as important, we are committed to helping the global chemical industry maintain its unwavering focus on sustainability and products designed to improve our lives and make the planet healthier.

We also recognize the challenges involved with running a global chemical organization today. The advent of US shale gas has led to a major decline in natural gas prices and a major shift in investments for US companies. The global industry's 'center of gravity' is shifting from the west to emerging economies in Asia. The industry continues to go through widespread transformation through M&A. Key industries for chemical demand such as automotive manufacturing and construction are rethinking how they do business and what they need from their suppliers. New tax, regulatory and tariff arrangements are impacting the structural and operational value chains of chemical companies.

Innovative technologies such as the Internet of Things, advanced analytics, and Big Data are changing the face of manufacturing, marketing and customer relationships.

KPMG member firms help chemical organizations to compete and thrive in this rapidly evolving business environment. Backed by a global network of over 1,000 professionals, KPMG global chemical practices provide tax, audit and advisory services, as well as a range of information resources and thought leadership to help industry executives stay informed and up-to-date on recent developments in their sector. The KPMG Global Chemicals Institute enables more than 7,500 members across 67 countries to share their knowledge, discuss recent events and collaborate on innovative projects.

With KPMG member firms, chemical organizations can develop new ways to create robust, sustainable and flexible strategies, teams and operating models that quickly adapt in a dynamically unfolding future.

For further information, please visit us online at kpmg.com/chemicals or contact:



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