

Chemicals trends 2019

Transformation and sustainability
may be the new watchwords

Part of PwC's 22nd Annual Global CEO Survey trends series



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Shrinking optimism over the longer term

Just a short time ago, there was a notable dose of optimism evident in the chemicals sector. Having confronted extraordinary pressures for more than a decade — chiefly from product commoditisation, raw materials volatility, fluctuating markets and rapidly expanding competition — 2018 initially delivered some strong results. Profits were up, capacity was tight and global demand was on a positive trajectory.

With these results in hand it is perhaps not surprising that, according to PwC's 22nd Annual Global CEO Survey, more than 90% of chemicals companies' CEOs said they were bullish about their organisation's 12-month revenue growth prospects, the highest level in five years (see Exhibit 1).

But when CEOs were asked to consider their company's position over a longer period of time, their enthusiasm markedly waned. According to the survey, the CEO three-year growth outlook is actually at its lowest point in five years. Indeed, it would seem that it is hard to maintain an upbeat attitude when economies around the world are signalling a slowdown and trade tensions are worsening. According to the *Financial Times*, the Organisation for Economic Cooperation and Development has flagged the risk that the interaction of a sharp deceleration in China's economy, volatility in oil prices, Brexit uncertainties and the fragility of some eurozone banks could lead to "a harder than expected landing." And already some chemicals companies are cutting earnings outlooks in the face of retreats in key markets, such as automotive.

EXHIBIT 1

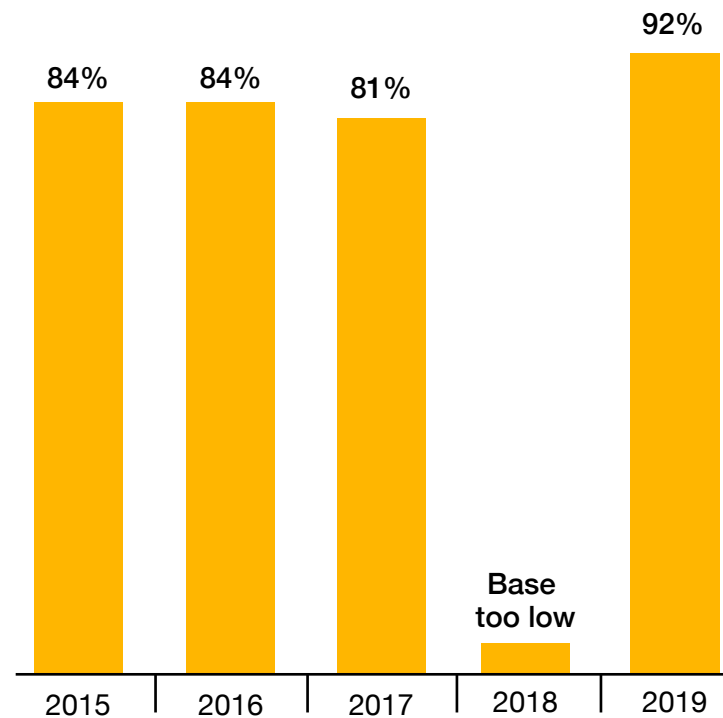
CEOs' optimism shrinks for longer-term outlook

QUESTION

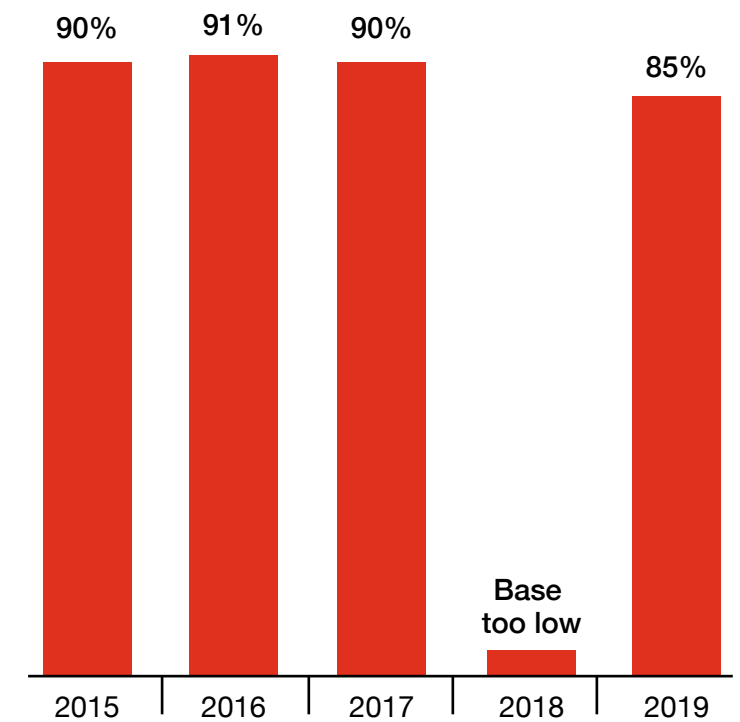
How confident are you about your company's prospects for revenue growth over the next 12 months, and over the next three years?

(Showing only those who responded 'very/somewhat confident')

Confidence in short-term growth (next 12 months) is at its highest level in five years...



...but the longer-term three-year growth outlook is at its lowest level



Source: PwC's 22nd Annual Global CEO Survey
Base: Chemicals CEOs (48)

Strikingly, these global headwinds are not the primary reason for the longer-term wariness of chemicals company CEOs. Instead, concerns about a number of wider 'sustainability trends' surpass nervousness about economic conditions. Among these worries: the impact of resource and materials substitution, decarbonisation, renewable energy and waste elimination (see Exhibit 2). These are serious issues, particularly for the chemicals industry, which is at the tip of the spear of questions surrounding the role that fossil fuels and new forms of energy will play in the future, including in the mitigation of climate change and pollution. How chemicals companies address these concerns will ultimately affect their licence to operate, their marketplace status, their relationships with customers and, as the CEOs seem to be keenly aware, their ability to grow over the coming years.

EXHIBIT 2

Sustainability impacts outweigh macroeconomic concerns

QUESTIONS

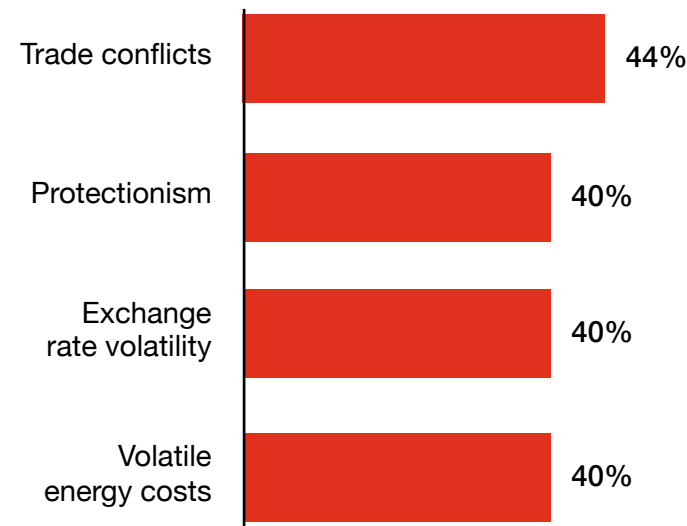
A. How concerned are you, if at all, about each of these potential economic, policy, social, environmental and business threats to your organisation's growth prospects?

(showing only 'extremely concerned')

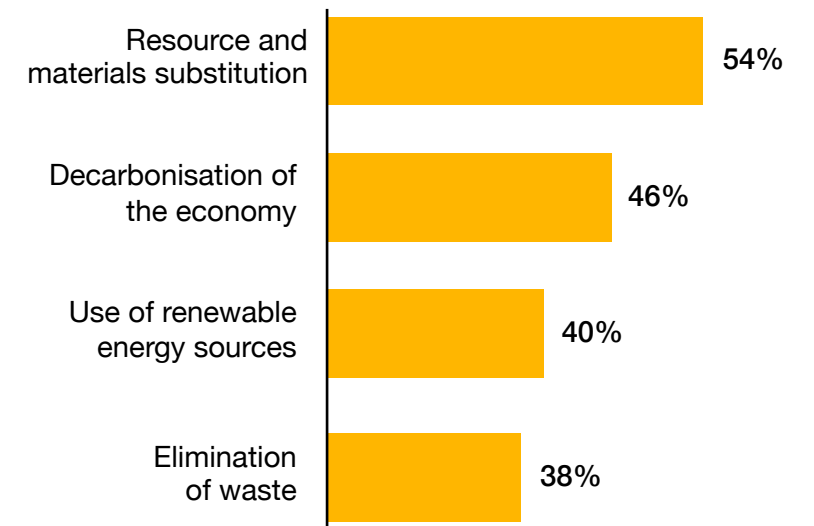
B. Of the following potentially transformational impacts on the way you do business and deliver growth, please rate their expected impact on your business over the next five years.

(showing 'very high/high' impact)

A. Top four macroeconomic concerns



B. Top four transformational factors



Source: PwC's 22nd Annual Global CEO Survey
Base: Chemicals CEOs (48)



The greater focus on sustainability trends presents new growth opportunities for chemicals companies that were not possible before. The industry can be a significant player in developing materials that contribute to energy efficiency and greenhouse gas reduction in other sectors, improving the sustainability of downstream energy chains.

In the energy sector, for example, chemical products are commonly used in solar generation, and in new lighter and longer thermoplastic blades that offer the promise of greater wind power stability and efficiency. In transportation, lightweight materials could be critical for improvements in vehicle fuel efficiency

and in the development of electric cars and trucks. Reducing the average weight of passenger cars from 1,380kg currently to 1,000kg by 2050 could lower emissions by 40%, according to a 2017 study by the International Transport Forum. SABIC and BASF are among the chemicals companies that are targeting this potential revenue stream by developing high-performance polymers to replace metal parts and trim back vehicle weight.

And although strides are being made in industrial materials, packaging remains a conundrum for chemicals companies — and another potential revenue channel if addressed correctly. Pressure is growing in many of the world's largest markets

to replace plastic in packaging with alternative materials and move closer to so-called cradle-to-cradle manufacturing, in which every ingredient in the process is recyclable. As products emerge to satisfy recycling requirements, chemicals companies engaged in traditional plastic packaging value chains could find that a big part of their cash flow is affected. In fact, nearly one in three chemicals company CEOs expects cradle-to-cradle developments to have a high or very high impact on their business within the next five years.

To avoid hemorrhaging revenue in the plastic packaging side of their business, chemicals companies should begin to



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rethink the types of plastics that they are using and the production processes employed to manufacture packaging. New additives, such as antioxidants, can produce higher yields of plastics from less material with less waste and fewer carbon emissions. Although much research is still needed to develop and perfect these new additives, companies that can pioneer improvements in the financial and environmental costs of plastics manufacturing will find themselves in a strong position in the coming years.

Also leading the industry will be companies that take an active role in expanding the reach of recycling, in part by helping develop new methods for mechanical and chemical recycling programs that at their zenith reprocess plastic items back to raw material, or feedstock. At least

65%

Chemicals CEOs pursuing a new product or service to drive revenue growth

two chemicals companies — Borealis and LyondellBasell — have made strides in this direction primarily by acquiring companies with advanced recycling expertise. Demeto, a European consortium of 13 chemicals and non-chemicals companies, is working on a technique for depolymerising plastics to break them down into biodegradable components for recycling. And more than 25 global companies, including four of the five largest chemicals makers, have pooled US\$1bn in the Alliance to End Plastic Waste to reduce the amount of plastic that ends up as garbage in the environment.

An innovation path

Chemicals companies have long accepted the need to shift from being ‘product sellers’ to being ‘solution providers’ in the customer-facing aspect of their business. But this is easier said than done. To drive sustainability initiatives, chemicals companies will have to collaborate with their customers. Purchasers will increasingly demand bespoke and innovative answers that transform their products to meet specific weight, waste and functionality metrics.

Our survey indicates that chemicals executives have not yet fully embraced the idea of open innovation. We found that although chemicals CEOs are slightly more focussed on new products than CEOs globally, they are less likely to be collaborating with startups and entrepreneurs. And they are much less likely to be pursuing new strategic alliances and joint ventures. Indeed, only 27% of chemicals CEOs are planning such initiatives within the next 12 months as a route to growth, compared with 40% of CEOs globally.

Making the move from ‘solution providers’ to ‘transformation deliverers’ requires CEOs to be sure their company has a clear and realistic lens through which to assess which markets offer the greatest potential for transformation. A disciplined portfolio approach is needed by which expansion into new areas can be weighed against returns from current activities. In turn, this will help companies articulate coherent portfolio strategies that can be readily explained to investors and that can drive merger, acquisitions and divestments, research and development, and other growth

To drive sustainability initiatives, chemicals companies will have to collaborate with their customers.



strategies. Many companies already use portfolio management to inform investment, but they don't necessarily incorporate all the external forces, including sustainability trends, that will drive future transformation of target markets. Such transformation may be key to determining priorities for investment and divestment.

Delivering transformation also entails that chemicals companies become materials-agnostic. This is particularly the case in the specialty segment of the market. In this segment, companies don't necessarily have to own the plastics they put together and assemble into composites. Instead, the focus should be on having the capabilities, insight and relationships to provide a best fit for the customer's needs. For example, UK-based Ineos recently announced a new thermoplastic composite, called StyLight, that combines the company's traditional high-tensile product line with proprietary glass or carbon fibre from external chemicals industry sources to meet higher requirements for strength and durability in design and performance. In the agrochemicals arena, materials-agnostic partnerships are developing around the

use of a mixture of fertilisers, herbicides and pesticides from different chemicals providers to more precisely address each farmer's unique growing needs.

Work to be done

As chemicals companies become central figures in sustainability initiatives for their customers, they will have to clean up their own act as well. In order to burnish their reputations as true innovators in a world of advanced materials and ecologically sound solutions, chemicals companies must prove that they take the issue seriously enough to transform themselves. Just as there is already increased public and government focus on, for instance, single-use plastics and recycling, similar scrutiny could turn to the industry's role in fossil fuel consumption.

A recent analysis by the International Energy Agency (IEA) points out that petrochemicals are rapidly becoming the largest driver of global oil consumption. They are set to account for more than a third of the growth in oil demand to 2030, and nearly half to 2050, ahead of trucks,



aviation and shipping. But the picture is a bit more complicated than that data point lets on. The same IEA analysis points out that despite being the largest industrial energy consumer, the chemicals sector ranks third among industrial CO₂ emitters. This is because the carbon contained in chemicals feedstocks is mostly locked into final products such as plastics and released only when the products decompose or are burned.

The considerable store of CO₂ from feedstocks contained in products highlights the importance of the increasing attention being paid by chemicals CEOs to renewable or green feedstocks and to waste and recycling strategies. As part of its annual reporting, for example, BASF publishes the proportion of its raw materials

that come from renewable resources. And it has committed itself to decoupling organic growth from greenhouse gas emissions with an ambition to become stronger than the market in the period to 2030 while keeping its emissions flat at 2018 levels. And recently biodegradable plastics received a shot in the arm when Bill Gates invested \$US14m in Renmatix, whose Plantrose technology converts biomass to cellulosic sugars, which in turn can be used to produce biochemicals and biofuels.

Given that much of the industry's CO₂ emissions come from energy rather than feedstock inputs, decarbonisation of energy sources presents the greatest opportunity to reduce CO₂ impact. Moves to decarbonise energy inputs on a large scale are some way off but, as the cost of

renewable energy falls, there are signs that companies are recognising the advantage of supplementing fossil fuel sources with renewable generation. In early 2018, for example, Shell began the development of a solar power plant at its Moerdijk chemicals site in the Netherlands. Once complete, the project will provide an approximate peak capacity of 20 MW of renewable power. In the US, Johnson Matthey's platinum group metals refinery and chemicals plant at West Deptford, New Jersey, sources 17% of its electricity from an adjacent solar photovoltaic plant.

The strategic direction for the chemicals industry is clear but the roadmap to navigate it is uncertain. The coming decade is likely to see the sector come under increasing pressure on a range of

sustainability measures. The good news for CEOs is that the window of opportunity will remain open for some time for companies to show they are part of the solution, rather than the problem. As many companies are beginning to demonstrate, there is considerable opportunity for innovation – rather than regulation – dictating the pace, and the future.

Strategy made real

What concrete steps should chemicals companies undertake to prepare for the future's increasingly unfamiliar business environment – and to exist in a volatile present?

In the past, chemicals companies have relied on spin-offs, mergers and acquisitions and, when possible, product innovation to deal with big challenges. That was fitting for the challenges of recent years, which primarily have been the commoditisation of products or competition from lower-cost players in emerging nations.

But today's greatest challenge is an economic and geopolitical business environment that is out of the normal range and defies normal responses. This environment combines thorny elements that much of the industry has not had to deal with before: trade wars, perplexing regulatory policies, demand shifts in huge markets like China, the weakening of the European Union, increasing risks to global supply chains and the accelerating impact of digitisation. All of this is forcing chemicals companies to reconsider their approaches to growth obstacles and how they formulate strategy for the short and long term – not knowing from which direction and when the next challenge will arise.

Perhaps the most important thing chemicals companies can do in this environment is a bit contrarian: rather than reacting to today's shifting conditions, think more broadly and more long term. Simply put, take a 'true north' approach to strategy development. Start with a clean slate and imagine how customer needs and the value of products that serve these needs will change in the coming years. Understand the driving forces behind these changes, and most important, answer the question of what factors will remain relevant in any future scenario. Then, critically reflect on what few critical capabilities will be necessary for success and be honest about the gaps. Only then can the company start the transformation journey of, for example, establishing new business models, developing products and services, restructuring business units, and building talent pools and innovation teams to target these new potential revenue streams.

For instance, agrochemicals should focus on secure and sustainable food supplies and a new type of farmer persona; infrastructure materials on smart cities; and packaging on zero-carbon footprint protection. In other words, determine what you want your company's identity to be when the volatility becomes less imposing and even transforms into an opportunity.

This approach affords chemicals companies the chance to revisit their operating models with the benefit of imagination. By visualising the organisation in a market with different contours and requirements than today's, the company examines its ability to operate in that unfamiliar landscape. Its capability shortcomings are highlighted and the coherence of its product portfolio is revealed. In turn, the skills, behaviours and processes supporting legacy assets that may be valuable down the road as the market shifts can be nurtured.

From this process, likely outcomes for chemicals companies include:

- complementary existing business models with new customer-centric or data-driven ones
- more localisation of operations and reconfigured supply chains to be nearer to customers
- drastic reduction in product volumes to be compensated with new monetisation models
- more partnerships and a larger ecosystem of companies to share developmental risk and to add technological capabilities and bridge the gap in the value chain with end-users
- greater leveraging and adoption of technology – particularly AI
- a transformative shift in identity and culture to realise the new set of opportunities.



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About PwC's 22nd Annual Global CEO Survey

PwC conducted 3,200 interviews with CEOs in more than 90 territories. There were 48 respondents from the chemicals sector, and 33% of chemicals CEOs reported an annual revenue greater than US\$1bn.

Notes:

- Not all figures add up to 100%, as a result of rounding percentages and exclusion of 'neither/nor' and 'don't know' responses.
- We also conducted face-to-face, in-depth interviews with CEOs and thought leaders from five continents over the second half of 2018. The interviews can be found at ceosurvey.pwc.
- Our global report (which includes responses from 1,378 CEOs) is weighted by national GDP to ensure that CEOs' views are fairly represented across all major regions.
- The research was undertaken by PwC Research, our global centre of excellence for primary research and evidence-based consulting services: www.pwc.co.uk/pwcresearch.

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