



## On track for a strong recovery

The US chemical industry has witnessed a strong recovery since the beginning of 2021, with demand increasing from the major end markets such as construction and health and safety. This was driven partly by a rebound in US GDP, which will likely grow between 6.0% and 6.5% during 2021 after declining by 3.5% in 2020.<sup>1</sup>

During the first half of 2021, the industry experienced supply chain disruption caused by extreme weather events when significant chemical capacity along the US Gulf Coast went idle. With supply chain challenges easing, idled capacity should come back online and support inventory buildup. In fact, some commodity chemicals have already achieved prepandemic sales levels in Q3 2021 on a year-over-year basis.<sup>2</sup>

2022 could mark the full recovery for the US chemical industry postpandemic. As the industry moves into 2022, strong demand for both commodity and specialty chemicals should keep prices robust throughout the year. The industry should also experience increased capital expenditure as leading industry players focus on building capacity and expanding into growing end markets through both organic and inorganic routes. However, the industry could face margin pressures amid raw material cost inflation, which will likely remain

high through the first half of 2022. Also, industry margins could come under increased pressure toward the end of 2022 as pent-up demand starts to clear out.

A key thought on the minds of many chemical leaders in 2022 will be returning employees to work. While the industry quickly implemented the required safety standards, the transformed talent landscape likely requires chemical companies to adapt further. Changing demographics and skills requirements should draw a more diverse workforce to chemical companies than ever before.<sup>3</sup>

One of the critical areas of focus for most US chemical companies in 2022 will likely be sustainability and decarbonization. Many chemical companies are expected to increase investment in research and development (R&D) capabilities and leverage advances in decarbonization and recycling technologies to lower their and their customers' carbon footprint, as well as reduce plastic waste. 2022 should see more industry players create goals and plans around abatement of emissions and monetization of waste.



### About the Deloitte survey

To understand the outlook and perspectives of organizations across the energy, resources, and industrials industries, Deloitte fielded a survey of more than 500 US executives and other senior leaders in September 2021. The survey captured insights from respondents in five specific industry groups: chemicals and specialty materials, engineering and construction, industrial products, oil and gas, and power and utilities.





## End-market growth

### Positioning for a strong rebound in key end markets amid rising costs

The US chemical industry is poised for a strong recovery in 2022 as economies reopen and restrictions are lifted, which should drive up plant utilization rates that were hit hard by the pandemic. Industrial production in the United States is expected to grow by 5.5% during 2021 and by 4.3% during 2022.<sup>4</sup> US chemical volumes are expected to grow around 1.5% in 2021 and 3.0% in 2022, while shipments will likely increase by 8.0% in 2021 and 2022, following a 13.5% decline in 2020.<sup>5</sup>

As 2022 approaches, various end markets should be watched.

- **Construction:** The strength in the construction industry has been a key growth driver for chemical sales; housing starts in the United States are expected to reach 1.6 million in 2021,<sup>6</sup> as organizations across industries have migrated to work-from-home, which led to increased investments in homes by consumers as a medium to invest their discretionary income. This trend is expected to continue, with housing starts expected to remain robust at more than 1.5 million in 2022.<sup>7</sup> Low benchmark interest rates and normalizing lumber prices should support housing starts. Strong construction activity will likely keep the demand for chemical products, such as polyvinyl chloride and methanol, strong. For example, methanol producers experienced about 2% growth in contract prices between January and July 2021.<sup>8</sup> Moreover, the recently approved Infrastructure Investment and Jobs Act, with investments across health care, public safety, and other public infrastructure, as well as increased industrial spending, bodes well for demand for chemical products from the nonresidential construction segment.
- **Automotive:** The rebound in the automotive industry is another growth driver, as auto sales are expected to cross 17 million in 2021 and 2022 despite the production constraints caused by shortages of key input materials such as semiconductor chips.<sup>9</sup> Growth in the automotive sector should drive the demand for base chemicals and performance plastics in 2022. Our assessment of the quarterly performance of major chemical companies revealed that supplies to the

automotive industry clocked strong sales growth during the first two quarters of 2021, and this trend is likely to continue well into 2022, driven strongly by the robust recovery of auto sales globally.

- **Health and safety:** As the threat from coronavirus still looms based on variants, demand for personal protective equipment such as masks, gowns, and gloves should remain high, driving ethylene and propylene sales. The industry could still pivot some of its production capacity toward the products and materials needed to combat the pandemic, such as isopropyl alcohol and ethanol. Industry players are likely to ensure a strong supply of chemicals required to produce antibacterial wipes, disinfectants, and surfactants for soaps and hand sanitizers.

US chemical exports are also expected to grow significantly as major economies reopen and import demand in partner economies improves, especially with trade between the United States and China returning to business as usual. The rapid recovery in the automotive sector in China is expected to keep chemical imports high in 2022. After declining 7.6% in 2020, chemical exports are expected to grow between 5.5% and 6.0% in 2021 and reach pre-COVID-19 levels by the end of 2022.<sup>10</sup>

One of the risks for this strong recovery is inflation. For example, Brent crude oil spot prices rebounded strongly and remained at an average of \$74 per barrel in September 2021.<sup>11</sup> In a recent survey (see "About the Deloitte survey"), 60% of the chemical industry respondents saw volatile costs as the biggest risks facing their respective companies in 2022.

The September 2021 inflation figures provide further evidence that the supply of raw materials and labor is struggling to keep up with resurgent demand. Central banks in the United States and Europe expect supply bottlenecks and inflation to ease in 2022 once the global recovery finds firmer footing and government support programs are unwound.



## Shifting demand

### Transforming asset portfolios to help weather volatility

Chemical companies are entering 2022 after overcoming challenging market conditions in 2020 and 2021, with COVID-19 adding volatility to an already volatile decade. The pandemic led to divergent demand for plastics and specialty materials, testing the resilience of companies' asset portfolios. The shifts in chemical spending partially reflect commodity price volatility, but are more driven by longer-term trends, including petrochemical expansion in the US Gulf Coast and the buildout of Asian chemical production capacity. 2022 will likely see similar price and demand volatility, and the chemical sector will need to adapt, particularly as the energy transition accelerates. Companies should decide today how to best position themselves for growth despite continued volatility and uncertainty.

Chemical companies are likely to focus on repositioning their asset portfolios and balancing trade-offs between different strategic options with critical considerations such as scale, the scope of products, and growth opportunities. To deliver stronger growth and improve financial performance, firms should consider honing their product and services portfolios further, evaluating several areas:

- **Investing in higher value-added opportunities.** Companies need to explore not just divesting noncore assets, but also investing in higher value-added opportunities. This means drilling down into key end markets and products where technical and market know-how can be combined with economies of scale to drive margins higher. Per a recent Deloitte survey, 45% of the chemical industry respondents expect the electronics end market to experience the fastest growth in the United States during 2022.
- **Anticipating consumer preferences.** Technological progress and consumer preferences may shape how chemical companies evaluate potential higher value-added

opportunities and how they will likely invest in them to transform their portfolios over the long term. Those that can balance their future-focused investments with their existing core-focused assets could be better positioned to tackle any potential challenges. To that end, companies should identify how to commercialize new opportunities such as zero-waste technologies while optimizing their existing, more conventional asset portfolio. Specifically, companies should position their existing portfolio to align to higher-growth end markets.

- **Divesting noncore assets.** Some chemical companies could pare back investments in traditional products and services to free up capital for more future-oriented projects in 2022. Some companies are shifting investments from gas to liquids and refining projects to developing differentiated applications for performance chemicals. Many other companies will likely face similar decisions in the near future, though the range of opportunities will continue to change as technologies and markets evolve.

Over the past two years, the industry's financial performance had flat-to-declining return on capital. To overcome potential headwinds, companies should identify how they can strengthen their portfolios through mergers and acquisitions (M&A) and organic investment by balancing the trade-offs between scale, scope, and growth. As companies transform their asset portfolios, they should strengthen their existing products and services while expanding into new areas, whether that means new regions, end markets, or technologies. Companies that better leverage their existing competitive positioning, as well as opportunities to innovate, could grow sustainably through 2022 despite volatility and uncertainty.





## Sustainability

### Climate change driving sustainability efforts

In 2022, the chemical industry will likely have a sharper focus on decarbonization strategies due to increased attention from stakeholders, regulatory change, and technology innovation.

The chemical industry is responding with its commitments to decarbonization, recycling, and resource recovery. For instance, as part of the European Union Green Deal, the European chemical industry has committed to carbon-neutrality by 2050 as a part of its contribution to achieving the COP21 climate resolution.<sup>12</sup> As the global energy industry continues to shift from fossil fuels to renewables and the “Green Deal” gains steam, this momentum is expected to continue into 2022. Specifically, industry players may show a heightened focus on new and innovative technologies such as carbon capture and utilization (CCU), for which pending government proposals could allocate additional funding and focus. In addition, companies continue to advance work on steam cracker electrification, advanced and chemical recycling, green hydrogen, and carbon capture and storage (CCS). In a recent Deloitte survey, 90% of chemical industry respondents said they will focus on improving resource and energy efficiency in the production of chemicals and materials to drive decarbonization and sustainability in 2022.

These developments will likely help grow renewables, improve energy efficiency, reduce emissions, and create new markets for carbon and other byproducts as part of an increasingly circular economy. As a result, this could foster collaboration that gives rise to new business models and helps advance the energy transition. For example, large-scale waste-to-fuels projects, often undertaken in partnership with others in the value chain, are also becoming commonplace.

While carbon emissions are hard to abate in the chemical industry due to reliance on process heat, advances in decarbonizing chemical production could have a profound impact globally. The benefits of decarbonizing chemical companies could spread beyond the industry itself, since chemistry provides the building blocks for many value chains. Given chemicals’ interconnectedness to different end markets and value chains, addressing this complexity will likely require the industry to have a clear road map. However, pathways to decarbonization, such as increased electrification, wide-scale use of renewable energy, and intensifying energy efficiency measures, pose certain unique challenges. While many chemical companies have publicly declared their intention to become carbon-neutral by 2050, the challenge lies in the immediate future. Often, companies may need more clarity on the material impacts that their stated goals will have on their operations, markets, and business valuation.

Another issue is whether demand for many conventional plastics and chemicals could wane as the public becomes more educated about the environmental impacts of end products and ready to accept eco-friendly substitutes. As in 2021, the market could show that people are willing to switch to more environmentally friendly substitutes, even if they cost slightly more or function less effectively.



# 4

## Digital transformation

### Accelerating business transformation through digital technologies

There remains an immense but relatively unexplored potential for advanced data analytics and digital technologies to transform the chemical industry. Today, digital tools and technologies present an economically feasible solution for extracting more efficiencies from incumbent processes and designing novel products and processes. Due to the convergence of accelerating improvements such as advances in sensors, cognitive computing, and analytics, significant progress can be expected in three areas in 2022: data availability, data processing, and engineering and materials research.

In the past, chemical businesses have typically implemented advanced data analytics and digital initiatives in silos, resulting in slower processes, higher costs, and uncertain benefits. However, chemical firms are now increasingly realizing that digital transformation is about implementing more and better technologies and involves aligning culture, people, structure, and tasks. To tackle the issues of tomorrow more holistically, Deloitte believes that advanced data analytics and digital technologies have the potential to create the most impact along five dimensions in 2022:

- **User experience:** Designing and responding to customer interactions to meet or exceed customer expectations and thus increase customer satisfaction, loyalty, and advocacy
- **Talent enablement:** Delivering value through human-machine pairing, where robots assist humans in manual tasks, and employees use digital technologies to support productivity and effectively complete tasks
- **Asset reliability and performance:** Strengthening asset dependability using advanced digital technologies such as IoT (Internet of Things) and remote monitoring
- **Material system innovation:** Leveraging digital transformations to enhance R&D activities

- **Ecosystem collaboration:** Partnering with multiple entities (such as companies, universities, and national labs) to better serve customers and markets through solving complex problems

By leveraging advanced data analytics and digital technologies, chemical companies can become more agile, innovative, responsive, and efficient. Per a recent Deloitte survey, 62% of the chemical industry respondents believe that advanced data analytics and digital technologies will potentially create the most impact when it comes to delivering a better user experience in 2022. The journey will likely pose various challenges, but how companies respond to these challenges can determine the winners and losers in 2022 and beyond. A properly designed and optimally deployed data and digital strategy may represent one of the biggest-ever opportunities for the chemical industry in the post-COVID-19 world, primarily when a clear business strategy drives it. In deciding where to play and how to win, industry leaders should ask five important questions in 2022:

1. What are the new growth markets, and how can we best serve them using digital technologies?
2. How can digital tools help strengthen existing customer relationships and build new ones?
3. What new digital capabilities (such as advanced analytics) are needed to increase brand value?
4. How should we leverage digital technologies to accelerate the commercialization of innovation?
5. How can digital tools help attract, recruit, and retain the best talent?

# 5



## Customer-centricity

### Embedding customer-centricity to create differentiation in the marketplace

Customer expectations and behaviors have changed dramatically over the past decade, and more so in the wake of COVID-19. Chemical businesses today are expected to meet customers' needs and expectations at every interaction in return for customer loyalty. The ability to deliver this could depend on the extent to which customer-centricity is embedded within every link in the value chain in the chemical business.


Especially in light of the convergence of many industries that are rebranding and repositioning themselves, customer-centricity should play an instrumental role in staying a step ahead of the competition. Chemical companies are likely to leverage digital technologies to enable automated trend sensing and social media scanning (using text analytics) to identify broader market trends and customer requirements. This customer-centric innovation, which solicits real-time feedback through customer engagement tools, could help improve the scope, scale, and returns of R&D efforts.

Chemical companies could consider changing their approach to innovation to better respond to current, unique disruptions more effectively. As companies from outside the industry enter the fray and compete with established industry leaders and end-market demand shifts due to consumer preferences, businesses should focus on realigning their innovation strategy and efforts. To address the still-prevalent disconnect between the accelerating pace of change in the marketplace and inertia of the innovation process, chemical companies are likely to collaborate with new startups and platforms that can accumulate vast amounts of material knowledge from varied sources into a single, reliable, searchable format and leverage machine learning algorithms to develop innovations quickly and efficiently.

Chemical companies should consider these five areas when placing the customer at the heart of their business:

- 1. Understand customers:** Customer profile data allows companies to gain deep insight into the varying needs of different customer segments to tailor product requirements for each segment.
- 2. Design the customer experience:** Understanding what the customer's journey looks like across the product life cycle allows empowerment of people who are serving customers at each of the key touchpoints along the journey. In our recent survey, 50% of the chemical industry respondents said designing the customer experience is their primary focus area to build a customer-centric culture in 2022.
- 3. Empower frontline employees:** Many decisions, whether queries or customer complaints, require immediate consideration to be resolved promptly. Removing the need to escalate decision-making and empowering the front line to make decisions can improve the customer experience when issues arise.
- 4. Engage supporting operations:** Support functions such as Procurement, IT, HR, and Finance own processes and relationships that directly affect the customer, and it is important they adopt a customer-centric approach in carrying out their duties.
- 5. Use customer feedback to drive real-time improvements:** To be a leading-edge, customer-focused organization, chemical businesses should define a customer insight and feedback strategy that allows them to identify and prioritize customer feedback from social media channels quickly. This will allow feedback to be passed to key leaders to make operational changes in near-real time.





## Visibility could be the key to industry resilience

For chemical companies, the past two years' events may be a warning that better systems are needed for navigating disruption. Visibility is likely to become the most critical capability for the industry in the coming year. Increasing visibility (including costs and prices) depends on how a company is experiencing disruption, and digital technologies could be essential enablers. For example, companies experiencing a surge in demand should ensure visibility across their supply network as they ramp up production. As supply shortages

could derail production flow, chemical producers in this scenario could consider multisourcing strategies. Moreover, companies experiencing shifts in demand may want to increase visibility into operations to help them focus on cost-cutting opportunities. They can use the visibility gained to create flexibility across their production environment to quickly take down costs to weather suppressed demand and more quickly respond to an eventual uptick in demand.



# Let's talk



**David Yankovitz**  
US Chemicals Consulting Leader  
Deloitte Consulting LLP  
[dyankovitz@deloitte.com](mailto:dyankovitz@deloitte.com)  
+1 216 589 1305



**Amy Chronis**  
Vice Chair – US Oil, Gas &  
Chemicals Leader  
Deloitte LLP  
[achronis@deloitte.com](mailto:achronis@deloitte.com)  
+1 713 982 4315



**Kate Hardin**  
Executive Director  
Deloitte Research Center for  
Energy & Industrials  
Deloitte Services LP  
[khardin@deloitte.com](mailto:khardin@deloitte.com)  
+1 617 437 3332

## Key contributor

**Aijaz Hussain**, senior manager, Deloitte Research Center for Energy & Industrials, Deloitte Services LP

# Endnotes

1. American Chemistry Council, "[Mid-Year Outlook: U.S. Chemical Industry Rebounds as Global Recovery Continues](#)," accessed June 24, 2021; US Energy Information Administration (EIA), "[Short-Term Energy Outlook](#)," accessed September 8, 2021.
2. Deloitte analysis based on data from DuPont de Nemours, Inc., [Q2 2021 Earnings Call](#), 2021, p.6.; Eastman Chemical Co, [Q2 2021 Earnings Call](#), 2021, p.3; Dow Chemical Company, [Q2 2021 Earnings Call](#), 2021, p.3; and LyondellBasell, [Q2 2021 Earnings Release](#), 2021, p.1.
3. Deloitte, [The future of work in chemicals](#).
4. Deloitte analysis based on data from American Chemistry Council, "[Mid-Year Outlook](#)."
5. Ibid.
6. Ibid.
7. Ibid.
8. Bloomberg Intelligence, "Methanol Contract U.S. Gulf Coast Non-Discounted Ref. Price," accessed September 8, 2021.
9. Deloitte analysis based on data from American Chemistry Council, "[Mid-Year Outlook](#)."
10. Ibid.
11. [countryeconomy.com](#), "[Crude Oil Brent US Dollars per Barrel](#)," October 1, 2021.
12. European Commission, "[Climate Action: 2050 long-term strategy](#)," June 22, 2020.





#### **About this publication**

This publication contains general information only and Deloitte is not, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your business. Before making any decision or taking any action that may affect your business, you should consult a qualified professional adviser. Deloitte shall not be responsible for any loss sustained by any person who relies on this publication.

#### **About the Deloitte Research Center for Energy & Industrials**

Deloitte's Research Center for Energy & Industrials combines rigorous research with industry-specific knowledge and practice-led experience to deliver compelling insights that can drive business impact. The Energy, Resources, and Industrials industry is the nexus for building, powering, and securing the smart, connected world of tomorrow. To excel, leaders need actionable insights on the latest technologies and trends shaping the future. Through curated research delivered through a variety of mediums, we uncover the opportunities that can help businesses move ahead of their peers.

#### **About Deloitte**

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. In the United States, Deloitte refers to one or more of the US member firms of DTTL, their related entities that operate using the "Deloitte" name in the United States, and their respective affiliates. Certain services may not be available to attest clients under the rules and regulations of public accounting. Please see [www.deloitte.com/about](http://www.deloitte.com/about) to learn more about our global network of member firms.