

**Chandrawat
& Partners**

THE CHEMICAL SECTOR

A guide on the global chemical sector.



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PREFACE

Chemical products make up one of the world's largest industries, partly because of the ubiquity of chemicals in the products used in everyday life, in addition to the breadth of chemical products that exist.

Although the chemicals industry has developed alongside the world's industrial development, this established industry is undergoing a period of change. The global chemical industry is a complex and important part of the global economy and supply chain network. The production of chemicals involves converting raw materials such as fossil fuels, water, minerals, metals and so on, into tens of thousands of different products that are central to modern life as we know it. In 2021, the total revenue of the global chemical industry amounted to over 4.7 trillion U.S. dollars.

A wide variety of products are classified as chemical products, which can be categorized into the following segments: basic chemicals, pharmaceuticals, specialities, agricultural chemicals and consumer products. Products such as plastic resins, petrochemicals, and synthetic rubber are included in the basic chemicals segment and products such as adhesives, sealants and coatings are among the products included in the speciality chemicals segment.

The sector's substantial energy consumption is propelled by demand for a vast array of chemical products. Demand for primary chemicals – which is an indication of activity in the sector overall – has increased strongly in recent years. The Covid-19 crisis caused a year of stagnation, but the sector fully recovered with high growth rates in 2021.

To summarise **key demand areas:**

Ammonia: forming the basis of all synthetic nitrogen fertilisers, ammonia has seen relatively modest growth over the past decade (1.6% annually). China is the largest producer today (28% of global production).

High-value chemicals: being key precursors to most plastics, high-value chemical demand has grown 3.2% annually over the past decade but its growth slowed down in 2020 due to the Covid-19 crisis. The United States, China and the Middle East are the largest producers today, together accounting for 54% of global production.

Methanol: the main end uses are for formaldehyde, fuel applications and intermediaries to produce high-value chemicals replacing oil as feedstock. Its demand has grown very fast in the last decade (7.2% annually). China, being the largest methanol producer, accounts for 57% of the world's production.

Oil and gas are the main feedstocks used in the chemical sector and their use is set to grow to meet material demand.

Material efficiency measures – including increasing plastics recycling, more efficient nutrient use in the case of ammonia fertiliser use and reducing the use of single-use plastics – are important in the Net Zero Scenario to reduce the growth in chemicals demand relative to baseline trends. Recycling, in particular, will be important to reduce the need for primary production. Recycling rates vary widely, but globally only about 10% of plastic is recycled. While the share is increasing, progress needs to accelerate.

ECONOMIC OVERVIEW

With the performance of the chemical sector generally tracking that of GDP, the outlook for the industry is therefore tightening too.

Not long ago, the COVID-19 pandemic brought a big part of the economy to a halt and while the recovery has been relatively swift once restrictions were lifted, its strength has varied across countries.

With all the new challenges this year, it is easy to forget that the virus has not yet disappeared. We could see a rise in infections over the colder months, including more disruptions to production in China due to the zero-COVID policy. The impact on labour supply and the health service is also likely to linger, causing a tighter labour market and an additional burden on public finances in the medium term.



5 Key Highlights from the Global Market Model's Forecast for the chemical industry -

- **Market Value:** The global chemicals market was valued at \$4726.1 billion in 2022. The market accounted for 4.6% of the global GDP.
- **Expected Growth Rate:** The market is expected to grow at a compound annual growth rate (CAGR) of 8.8% from 2022 to 2032.
- **Largest Segment:** The ethyl alcohol and other basic organic chemical market was the largest segment of the chemicals market in 2022, accounting for 25.4% of the total.
- **Leading Market:** China was the leading market in the chemicals market in 2022, accounting for 22.8% of the total.
- **Market Driver:** The increase in demand from various applications, such as packaging and the automobile industry, is expected to drive the market during the forecast period.



SUPPLY CHAIN AND GEOPOLITICAL PRESSURES

The chemical industry is facing disruptions to oil, gas and feedstock due to a new era marked by instability, characterized by weaknesses in global governance, conflict and backlashes to multilateralism and free trade. The global pandemic and the war in Ukraine have accelerated the rise of a multipolar, less globalized world. While global supply chains have eased since their peak, they remain at historically high levels, contributing to the rise in costs experienced by many producers. The weakening of global economic activity may ease the pressure on supply chains in the short term, but other factors could work in the opposite direction. With growing geopolitical tensions, more friction in supply chains could become the norm and labour costs in less developed economies may decrease, causing globalization to retreat.

This could result in higher inflationary pressures over the longer term. Some domestic producers may benefit from governmental efforts to localize and subsidize production in strategically strategic sectors, such as the chemicals industry. The scarcity of workers has contributed to supply bottlenecks and elevated inflationary pressures.

ENERGY PRICES STOKING INFLATION

Inflationary pressures increased as economies reopened from COVID, with the Russian invasion of Ukraine adding to the strain. Commodities exported by the region saw significant price rises. Although oil prices have moderated, they remain volatile. The conflict in Ukraine has heavily impacted gas prices, with European and Asian gas prices spiking due to the rush to secure LNG shipments. The uncertainty of sufficient gas supply could impact European economies, which rely heavily on the Russian supply.



WAY FORWARD: 2023

Inflation is expected to moderate significantly from mid-next year, with the global energy shock expected to subside. However, production costs, including materials, energy and labor, could lead to a structurally more inflationary environment. Central banks are concerned that inflation expectations will remain high while their credibility in fighting inflation is lost. This could cause more inflation in the medium term, placing fiscal policy actions at odds with central banks' mandates. Depreciating currencies and rising borrowing costs have exposed vulnerabilities and increased the risk of contagion.

Central banks are likely to be more hawkish in their response to a short-lived burst in inflation, with aggressive rate rises in the coming months. If inflationary pressures become embedded, interest rates may remain at higher levels than in the past decade, indicating a significant shift in monetary policy in a short time.

Rising costs are affecting consumers, reducing their purchasing power and causing overall economic growth to weaken. Global companies reliant on foreign energy and feedstock inputs, like the chemicals industry, will need to invest more money and brain power to boost productivity, develop new technological solutions, and build supply chain resilience to protect margins against inflation, deglobalization, and a more unstable geopolitical environment. The global economy is forecasted to moderate to 1.9 per cent in 2023, with inflation moderate to 4.7 per cent in 2023.

EMERGING TRENDS

SUSTAINABILITY AND INNOVATION

Global chemical producers need to focus on their stated objectives of emissions reduction to meet their 2030 goals, starting with Scope 1 and 2 emissions and, in many cases, driving noticeable reductions across Scope 3 as well. And to impact the larger ecosystem, these efforts should reach beyond abatement to harness material or product alternatives on a larger scale. Achieving desired outcomes and results, however, will likely require additional capabilities and approaches beyond those necessary for the invention of new materials.

PORTFOLIO TRANSFORMATION

Heading into 2023, the chemical industry is in a strong financial position. The year ahead could be a turning point when companies emphasize the long-term viability of product portfolios in the context of sustainability in a move toward asset-oriented deal-making. This trend will take longer to scale, given the uncertainty around feedstock prices, energy demand, supply chain and end-market demand, affecting the appetite for strategic buyers. But the foundations for this shift are being laid in the current environment.

SUPPLY CHAIN

Over the coming year, reevaluating supply-chain structures will be critical for producers to meet the scale of changes required for the next decade. Overall, supply chains will need to balance costs and carbon footprint while managing resiliency—a tough act that will require companies to consider strategies markedly different from those of the past three decades.

DIGITAL

Digital implementation is changing the decision-making landscape of chemical producers. However, the near-term focus will be on stabilizing current platforms and capabilities, with the intent to monetize the current investment pool before expanding to newer areas. Producers may increasingly use digital technologies to empower materials innovation and expedite low-cost formulations by evaluating, optimizing and assimilating ingredient recipes and domain knowledge.

MAJOR INVESTMENTS

As a whole, the global chemical industry consists of many companies but is dominated by a handful of top players. These companies have secured the top five places in the chemistry business worldwide. Accounting for more than one-tenth of global chemical exports, Germany has always been a stronghold of the global chemical industry, thus, it is no wonder that BASF, a German company, ranks as the number one chemical company worldwide based on revenue. Two United States-based companies – Dow and LyondellBasell – are also among the world's top five chemical companies based on revenue. This top five ranking is completed by LG Chem from South Korea and Mitsubishi Chemical Holdings from Japan.

- **BASF** made some 78.6 billion euros of revenue in 2021, making it the world's largest chemical company based on revenue. German chemical and pharmaceutical company **Bayer** had 44 billion euros of revenue in 2021 but was not included in the ranking due to the pharmaceutical aspect of the business. **Dow**, the second largest chemical company to be included in the ranking based on revenue reported around 55 billion U.S. dollars of total revenue that year. The third, fourth and fifth leading companies had relatively close revenues: **LyondellBasell** with 46.2 billion U.S. dollars, **LG Chem** with 34.4 billion U.S. dollars and **Mitsubishi Chemical Holdings** with 32.2 billion U.S. dollars.
- The largest chemical company in Saudi Arabia, **SABIC** is majority owned by Saudi Aramco, the most profitable company in the world. SABIC is considered to be one of the most valuable chemical brands in the world.
- Founded in 2000, **Sinopec** has quickly climbed its way to the top of the chemical industry. Recently, COVID threw the company for a loop as most of its operations are based in China, which was impacted first during the pandemic. Over time, as chemical compounds proved necessary in chemical manufacturing, they were able to mostly bounce back in the latter half of the year. They are mainly involved in producing organic chemicals, synthetic resin, synthetic fibre monomer and polymer, synthetic fibre, synthetic rubber and chemical fertilizer, but also have small operations in other compounds.
- Chemical company **Dow** was the leader in the ranking of the leading global chemical companies based on net income, generating some 6.4 billion U.S. dollars of net income in 2021. In second place, BASF, the world's largest chemical company based on revenue, generated 5.5 billion euros in net income in that year, after registering a net loss of 1.06 billion euros in 2020.

HOW WE CAN HELP?



MARKET STUDY AND SELECTION

For individuals willing to set up business locally and companies that have ambitions beyond their local market, Chandrawat & Partners offers a diverse range of market entry consulting services, including a wide range from implementing impactful market entry strategies to setting up a complete business and industrial operations.

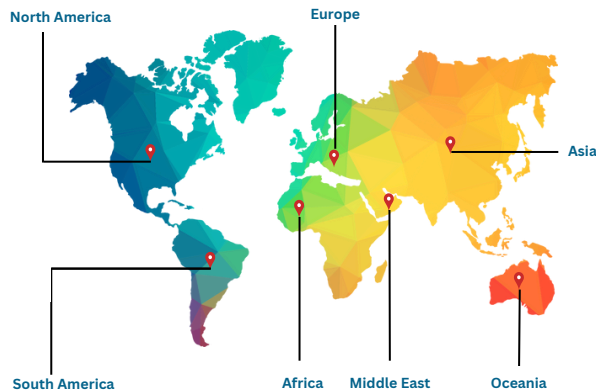
SETTING-UP OF BUSINESSES

We support our clients throughout all stages of the market entry process, day-to-day operations and setting up the balance between risks and opportunities. Our multicultural team of advisors with diverse backgrounds and experience including mergers and acquisitions, tax, accounting and auditing, legal, payroll and consulting are always up to date with the latest developments in their region and can add value to our client's expansion plans. With a universal professional network having a solid knowledge of international and cross-cultural issues, our team offers an organised approach to market entry for successfully doing business.

CONSULTING SERVICES

Our market entry experts help companies to assess, recognise and grab new market opportunities. We strive to bring expert insights into market entry developments like market sizing, competitor analysis, post-entry growth opportunities, supply chain structures and talent landscape mapping. Our strategists also provide valuable recommendations on what type of market entry tracks will yield the best results.

SERVING CLIENTS WORLDWIDE



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