

STATXO

powering smarter decisions



Key Trends: Chemical Industry

Key Chemical Industry Trends [1]: Increased Focus on Sustainability



Investment Towards Decarbonization

Demand for green products is increasing, and as the chemical industry provides the building blocks for many value chains, investment in the decarbonization of operations is crucial. Lowering carbon emissions is an opportunity, potentially opening pathways for chemical companies to capture additional value. Embracing a low-carbon future also assures their long-term viability.

In October 2021, **Dow Chemicals** planned to spend **\$1 billion** per year, about a third of its capital budget, on decarbonization. Investment in this level will continue until they attain **2050** carbon neutrality goals.

According to **Bloomberg NEF 2022 report**, the petrochemicals sector will need to outlay a total of **\$759 billion** by **2050** to nearly eliminate carbon emissions.

Technology Usage

With the use of the technologies, such as the **Industrial Internet of Things (IIoT)**, **sensors**, and **smart devices** to gather data and employees do not need to risk their safety by monitoring tank levels, temperature, etc. **Artificial Intelligence (AI)** and **Machine Learning (ML)** enable predictive analytics to spot anomalies that may indicate a human error is leveraged in the Chemical Industry.

In 2021, **BASF** reduced its GHG (*Greenhouse Gases*) emissions by almost **50%** over the last three decades, despite doubling its production volumes, largely thanks to patented catalysts to lower Nitrous Oxide (N₂O) emissions as well as increasing efficiency in its plants.

Innovating Ahead Regulatory Requirements

Climate and environmental legislation are placing new demands on the chemical industry and creating a situation for companies in the industry to leverage innovation and position themselves as the leading sustainability transformation partners. Many players in the industry are going beyond regulatory requirements and are producing environment-friendly solutions to meet their own ambitious ESG targets.

In May 2021, **BASF**, a chemical company, and **RWE**, an electricity generation company, signed a cooperation agreement to develop a two (2) gigawatt offshore wind farm. Green energy from this farm will power the world's largest integrated chemical complex in Germany and enable the emissions-free production of hydrogen. The aim is to remove fossil fuels from the production processes for basic chemicals, utilizing CO₂-neutral technologies such as electrically heated steam cracker furnaces.

Building an Ecosystem

Collaborative ecosystems for innovation are growing large and more dynamic as specific capabilities like different types of chemical solutions or technological systems cannot always be found within a company and are difficult to acquire. Such an approach requires significant investment, but for which returns are uncertain and may be realized in the future. Many governments are providing financial support and other incentives to encourage these efforts, and companies should also seek them out.

Battery materials supplier **Umicor**; having expertise in the fields of material science, chemistry and metallurgy; is collaborating with mining companies **China Molybdenum Company (CMOC)**, **Eurasian Resources Group (ERG)**, and **Glencore** to pilot **RelSource**, a solution to track responsibly produced cobalt from the mine to electric car batteries.



Key Chemical Industry Trends [2]: Embracing Digitalization



Production Optimization

Digitalization supports the optimization of production processes using **Data Science** (DS) (for improved data management) and **ML** techniques. Digital transformation means that plants can leverage data and analytics to predict **low demand** and **push lower-margin volumes into the market to fill capacity** and **mitigate fixed costs or reallocate demand more effectively** across the plant.

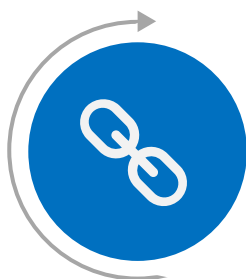
Navigance is a German start-up that offers an **AI-driven SaaS platform** that collects data from chemical plants and applies **rapid cloud computing using AI** and **advanced analytics** to spot anomalous patterns. Based on this data, it sends **predictive alerts** and **automatic recommendations, improving process efficiency** and **production output while reducing energy consumption**.



Research and Development (R&D)

More developed plants are using digital technologies to unlock new growth opportunities and design new products & processes. Expert systems are applied to chemical research to provide innovative materials or chemical structures. Automation is speeding up R&D for new products.

Since May 2022, **SP Chemicals'** styrene plant, is smoothly using **BASF's** styrene catalyst Industry 4.0 solution '**StyroSimTM**'. Technologies utilized include process modeling and optimization, Big Data analysis, and automated data transfer – the combination of these can effectively optimize plant operational efficiency and maximize production.



Improved Visibility in the Supply Chain

Chemical industry plants are implementing digitalization to access a unified view of the entire supply chain, from raw materials to production, helping them respond more swiftly to changes and complications. A seamless digital supply chain with complete data sharing facilitates the companies to develop and manufacture the right products that align with the demand and available materials.

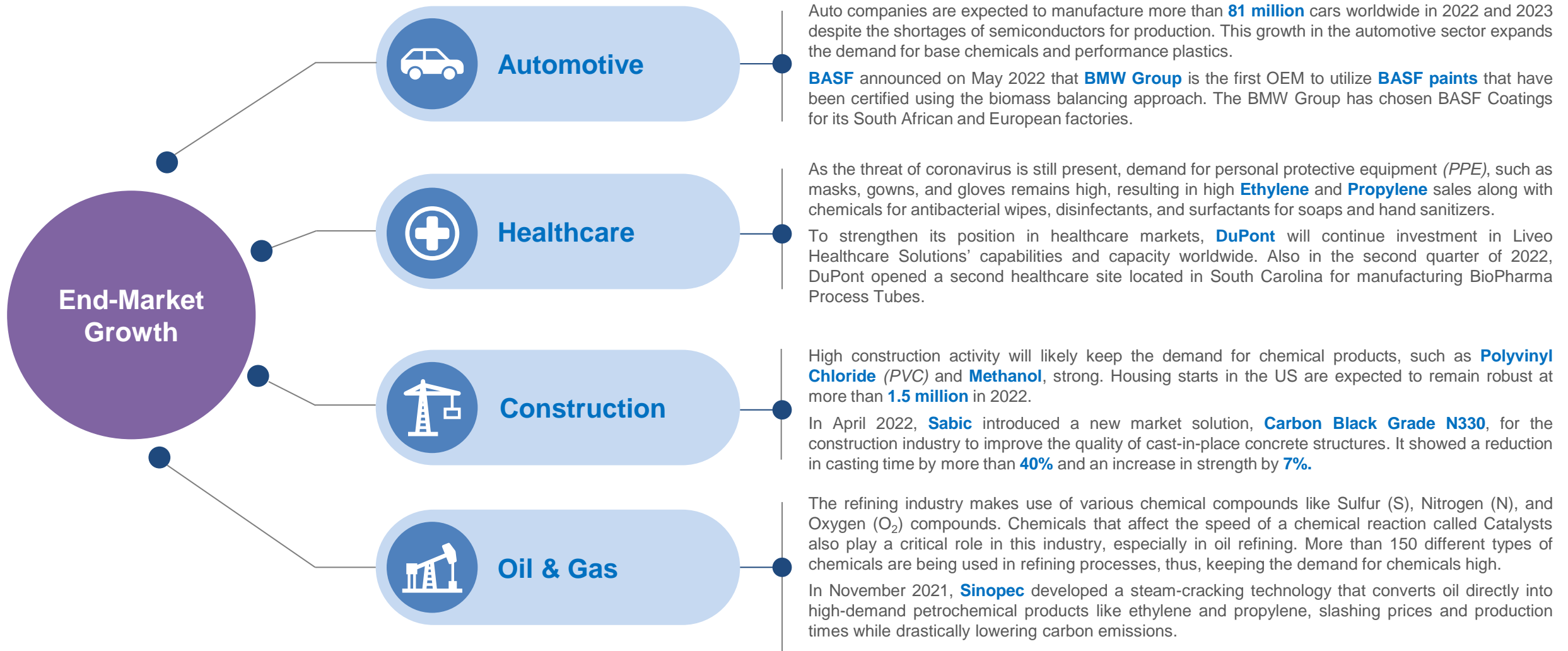
In May 2021, **BASF** implemented a project to develop **smart intermediate bulk containers (IBCs)** in collaboration with Hesse Lignal and Packwise. These IBCs were designed to provide information about the product throughout the supply chain.



Control Wastage

Early alerts using AI about inefficiencies and potential part failures enable maintenance teams to carry out repairs before huge damages occur, thereby extending the equipment life cycle. The more efficient the processes, the lower the energy consumption, and the fewer raw materials are wasted along the way. Hence, minimizing unnecessary expenses.

Sinopec, a petroleum refineries company, has worked with **Siemens** to apply advanced process control (APC) methods using model-predictive control in the sulfur recovery unit. The daily alarm volume has been cut by **80%**, and the improved condition monitoring provided by **Simatic PCS 7** facilitates the early detection of equipment damage and abnormal situations. The preventive maintenance approach has helped cut fuel gas consumption, reduce maintenance costs, and avoid risks & unplanned facility downtime.





Key Chemical Industry Trends [4]: Becoming Customer-centric

Understanding Consumers' Needs

Chemical companies use customer profile data to gain deep visibility into their varying needs to adjust product requirements for each segment and deliver appropriate products.

In 2019, **3M**, an American multinational conglomerate, opened innovation centers in Mumbai, India, where customers can visit, collaborate on design, and test out new products. Via this research method, the company ensures the relevancy of its products. They have other innovation centers located in the US and Poland.



Developing Supporting Operations

The role of support functions, such as Procurement, IT, HR, etc., include processes and relationships like finding & solving product discrepancies, hiring personnel that is well versed with chemical know-how, etc. These operations have direct impacts on the ease of operations of chemical companies. These departments and professionals must adopt a user-oriented approach while carrying out their duties.

ExxonMobil Chemical announced in January 2022 that it is streamlining its business structure by integrating chemical & downstream companies and centralizing technology & engineering along with other support services. This will enable it better serve customers and improve performance.



Focus on Client Experience

Chemical corporations are focusing on strategic marketing, application engineering, and technology services to identify and create means for enhancing their overall user experience.

In a Deloitte survey, **50%** of the chemical industry respondents said designing the buyer experience is their primary focus area to build a customer-centric culture.



Make Improvements Based on Feedback

Chemical businesses define a consumer insight and feedback strategy that allows them to identify and prioritize views & responses from social media channels quickly. This will let feedback be passed to the key leaders to make operational changes in real time.

Covestro, a materials company, started a digital customer journey program that ensured a continuous feedback loop with its purchasers, which helped it to prioritize any future feature developments.





Key Chemical Industry Trends [5]: Altering Asset Portfolios



Reducing Investment in Non-Core Assets

Some chemical companies are cutting down investments in traditional products and services to accumulate capital for more future-oriented projects. Such companies are shifting finances from gas to liquids and refining projects to developing applications.

Solvay, a chemical company, picked **Bank of America** to advise on the potential sale of its oilfield chemicals business in July 2022 as it continues to restructure its operations by divesting non-core assets.

Funding High-Value-Added Opportunities

Chemical companies are paying attention to the end markets and products where technical and market knowledge and experience can be combined with economies of scale to drive margins higher.

BASF announced in July 2022 that it is expanding its market position in vitamin A by extending its global formulation capacity at its Verbund plant in Germany. The cutting-edge facility is fully integrated into the site's vitamin manufacturing and supports & expands the production of high-quality vitamin A powder products for the animal nutrition industry.



Diversified Portfolios

It is a strategic imperative for all chemical companies to actively assess their portfolios and decide if a change in direction is required. Companies determine that due to an increase in portfolio diversification, they can better protect themselves from potential future external shocks and become more resilient.

In May 2022, **Johnson Matthey PLC**, a chemical company, invested **€20 million** to take a **4.3%** stake in **Enapter AG**, an energy technology company, as part of a collaboration on Enapter's technology that produces green hydrogen for accelerating the mass production of the anion exchange membrane (AEM) electrolyzers.

Anticipating Demand

Technological progress and consumer preferences structure the way chemical companies evaluate potential openings in the market and set the course of action followed to capitalize on them to transform over the long term. Companies are identifying means to commercialize new prospects, such as zero-waste technologies while optimizing their conventional offerings.

Answering Beijing's call for energy companies to raise production, **Sinopec** has planned the highest capital investment in its history. It expects to spend **\$31.10 billion** in oil and gas in 2022.



About STATXO

STATXO is a global Market Intelligence and Advanced Analytics company with expertise in transforming data into forward-looking actionable insights and empowering companies to make smarter & proactive decisions.

Our approach driven by domain expertise + data science + AI has successfully enabled various businesses to mitigate challenges, leverage their growth potential, outperform competitors, and significantly reduce costs.

We support a range of corporate & professional services companies – from Fortune 500 to high-potential start-ups across various industry verticals, such as Energy, Retail, Healthcare, Cosmetics, Automotive, Professional Services, Telecom & Technology, Industrial Goods, Travel, Chemicals, and others.

We are helping Clients to do the Right Thing, at the Right Time.



Make Smarter Decisions Faster



Drive Efficiency & Reduce Costs



Gain Competitive Edge



Achieve Tangible Results

