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Chemical Industry: On the Pathway to Net Zero, Decarbonization in Process Industries, Bioplastics for a Circular Economy, Update on the European CSDDD

Chemical Distribution

Key Trends and Strategic Imperatives, How Companies Add Value to the Supply Chain, Next Level Chemical Distribution: Survey among Industry Experts

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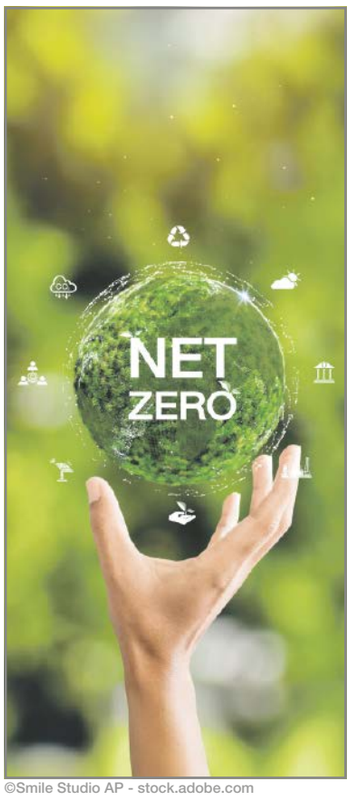

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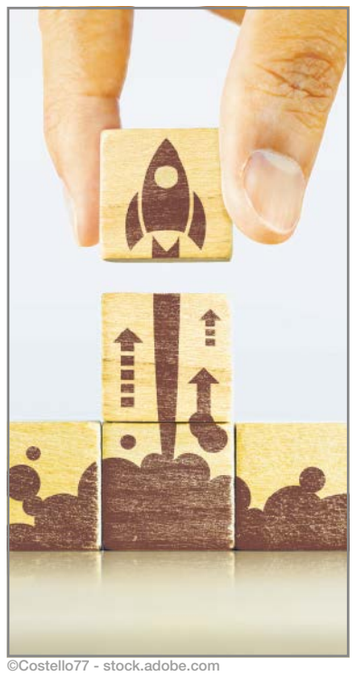
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Innovation

Breaking Barriers

From Competition to Collective Action for Circular Solutions

The path to a sustainable, net-zero future for the chemical industry is paved with challenges — and also opportunities. At the recent Sustainable Chemicals Expo & Conference in Cologne, leaders from BASF, LyondellBasell, Covestro, and the Global Impact Coalition (GIC) discussed how collaboration among competitors can drive the sector toward circularity and reducing carbon emissions.

The panel, moderated by Charlie Tan, CEO of the Global Impact Coalition, emphasized the transformative potential of industry-wide cooperation, the role of innovation, and the systemic changes required to achieve lasting impact.

Four Challenges to Overcome

Matthias Scheibitz, Head of Sustainability Strategy at BASF Performance Materials, outlined four major challenges facing the chemical industry on its journey to net zero: investment, renewable energy, legal frameworks, and collaboration.

"The green transformation will not come for free," said Scheibitz, highlighting the significant capital expenditure required for new technologies such as water electrolysis to produce CO_2-free hydrogen, electrically heated steam cracking furnaces or industrial-scale heat pumps. "We also need renewable energy at competitive prices to decarbonize these technologies, particularly in Europe, where availability in sufficient quantities is a major issue."

> *"Companies trying to 'close the loop' alone will not scale. We need peers on every step of the value chain to work together. "*
>
> Matthias Scheibitz, BASF

He emphasized the urgency of regulatory clarity, especially for chemical recycling and its acceptance as a contribution to recycled content quotas, which is critical to closing the loop on plastic waste. "Our customers won't buy chemically recycled products unless there is certainty in the legal framework," he noted.

Collaboration, Scheibitz added, is the fourth pillar for overcoming these barriers. "Companies trying to 'close the loop' alone will not scale. We need peers on every step of the value chain to work together to create sufficient sustainable material flows that enable competitive solutions."

Collaboration across Competitors: a Balancing Act

The idea of working alongside competitors is not new, but in a sector driven by proprietary innovation, it remains complex. Erik Licht, Director of New Business Development APS EU at LyondellBasell, acknowledged the tension between competition and the shared urgency to address global challenges.

"There's a big competitive part, but this is one of the most critical decades in human history. If we don't act now, the burden on future generations will be immense," Licht explained. "Collaboration allows us to scale solutions faster than any company could achieve alone."

© Global Impact Coalition

Amanda Martin, Global Impact Coalition

Peter Schwarz, Head of Sustainability Technologies EP at Covestro, echoed this sentiment: "Driving circularity is not something a single company can do — it's a societal task. Collaboration across the entire value chain, from waste collection to sorting and recycling, is essential."

> *"Collaboration allows us to scale solutions faster than any company could achieve alone."*
>
> Erik Licht, LyondellBasell

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Tan underscored the importance of moving beyond theoretical discussions: "We've had many conversations, but the focus now is on action. Success hinges on balancing the inherent competition among companies with the shared ambition of safeguarding our planet."

"Our mission is to tackle what cannot be done by any single company alone," Tan explained. "Through the Global Impact Coalition, we create the conditions for cross-sector collaboration, accelerating projects that integrate value chains and drive new business models."

Scaling Innovation through the Global Impact Coalition

Founded by seven leading chemical companies within the framework of the World Economic Forum (WEF), the Global Impact Coalition has grown globally and evolved into a powerful

platform for transformative collaboration. Established in November 2023 as an independent entity, GIC unites industry leaders and stakeholders to address the pressing challenges of achieving net-zero emissions and promoting circularity within the chemical sector.

"Driving circularity is not something a single company can do — it's a societal task."

Peter Schwarz, Covestro

Charlie Tan, CEO of GIC, highlighted its mission: "The Global Impact Coalition is not about reports and discussions. It's about tangible action — getting projects off the ground and moving them toward commercialization. Our mission is to create frameworks and partnerships that allow companies to develop and scale innovations that benefit the entire industry."

At its core, GIC focuses on enabling cross-sector collaboration to tackle systemic barriers and unlock innovative solutions. Through regular executive-level engagement and a hands-on approach to project development, the platform ensures that ideas evolve into measurable outcomes. Key areas of focus include reducing carbon emissions, scaling-up alternative feedstocks, and the development of circular business models.

Transforming the Automotive Plastics Value Chain

The Automotive Plastics Circularity project is one example of this approach in action. This initiative brings together players across the automotive value chain — from dismantling and shredding to advanced chemical recycling — to recover and reuse the 200 kilograms of plastic found in an average car.

"Today, most automotive plastic waste is burned or landfilled," said Schwarz. "By building a comprehensive value chain, we can create sustainable feedstocks for the chemical industry while reducing environmental impact."

Considering the EU's draft of the new End-of-Life Vehicle (ELV) Directive, which will require 25% of recycled plastic in new vehicles, and over 6% of "closed-loop" recycled plastic (plastic coming from ELVs), there is an urgent need to transform the automotive plastic value chain.

© Global Impact Coalition

The panel at the recent Sustainable Chemicals Expo & Conference (from left to right): Charlie Tan, CEO, Global Impact Coalition; Erik Licht, Director of New Business Development APS EU at LyondellBasell; Peter Schwarz, Head of Sustainability Technologies EP at Covestro; and Matthias Scheibitz, Head of Sustainability Strategy at BASF Performance Materials.

Licht added: "This project exemplifies the power of the Global Impact Coalition. By gathering all stakeholders around one table — chemical companies, recyclers, and automotive manufacturers — we can turn waste into valuable inputs and close the loop at scale."

"With the Global Impact Coalition, we have the power to convene the entire value chain, from automotive manufacturers to waste management companies, around one table. Together, we identify shared priorities, align resources, and deliver solutions that no single company could achieve alone," said Tan.

"The Global Impact Coalition is not about reports and discussions. It's about tangible action."

Charlie Tan, Global Impact Coalition

Beyond driving recycling rates in automotive plastics, GIC supports numerous other initiatives, such as looking at new routes to sustainable olefins, advancing research on direct conversion into C2+ monomers, and improving the standards and investment in pyrolysis as a viable chemical recycling solution. These projects not only advance technological innovation but also set a new standard for collaborative leadership in the chemical sector.

From Waste to Value

Transforming waste into a resource is central to achieving net zero. However, maintaining the quality of recycled materials remains a challenge.

"Waste is no longer waste; it's a resource," said Schwarz. "But achieving consistent quality requires innovation and engagement throughout the value chain."

Scheibitz agreed, highlighting the need to partner with specialized waste collectors and sorters to ensure reliable feedstocks for large-scale chemical recycling. "Our expertise is chemistry, not waste management. Collaboration with value chain experts is essential for scaling sustainable solutions," he noted.

Licht emphasized that the GIC's efforts are grounded in action, not just dialogue. "We're showing that these processes are possible. It's about doing, learning, and scaling."

The Path Forward

While the challenges are significant, the potential for impact is equally vast. The panelists expressed optimism about the industry's ability to meet the challenges through collaboration, innovation, and shared purpose. Licht summed up the discussion: "To go far, we need to go together. Partnerships are not just beneficial — they're essential."

Scheibitz envisioned a future where collaboration yields competitive, sustainable products for customers, supported by integrated value chains and scalable innovation. Schwarz added that finding the right balance between competition and cooperation is key: "Sometimes, stepping back from competition for a greater goal is worth it — saving the planet."

Tan concluded with a call to action: "The chemical industry stands at a crossroads. By embracing collaboration, investing in innovation, and accelerating action, we can redefine what is possible — not just for our industry, but for the world."

This panel at the Sustainable Chemicals Conference delivered a resounding message: the journey to net zero is a collective effort. By breaking barriers and fostering partnerships, the chemical industry has the opportunity to lead the transition to a sustainable future for generations to come.

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CSDDD: The Formula for a Sustainable Chemical Industry?

EU Directive Presents both Challenges and Opportunities for Chemical Companies

The EU's Corporate Sustainability Due Diligence Directive (CSDDD) is reshaping the chemical industry's approach to environmental and social responsibility. A close look at the requirements reveals significant changes to supply chain oversight, risk management, and sustainability reporting. Chemical companies must implement new strategies to ensure compliance, drive innovation, and adapt to evolving regulations.

As awareness of environmental and social issues grows, regulatory bodies are introducing measures to ensure corporate accountability. The European Union's CSDDD is a central plank of this movement, which aims to enforce sustainable business practices across various sectors. The EU developed the directive in response to rising concerns about the environmental and social impact of corporate activities. It requires companies to identify, prevent, and mitigate adverse effects on human rights and the environment throughout their supply chains. The directive underlines the necessity for businesses to integrate sustainability into their core operations.

The CSDDD's primary objectives are promoting responsible corporate behavior, protecting human rights, and enhancing environmental stewardship. The directive presents both challenges and opportunities for the chemical industry, which is characterized by intricate supply chains and its substantial environmental impact. While compliance will demand significant operational adjustments, it also creates conditions for the industry to advance sustainable innovation and demonstrate leadership.

Unique Challenges and Responsibilities

One of the primary reasons the CSDDD significantly impacts the chemical industry is the sector's reliance on raw materials sourced from various parts of the world. For instance, the extraction of minerals and chemicals often occurs in regions with varying environmental regulations and labor standards. Companies involved in producing specialty chemicals or industrial gases must now ensure their sourcing practices align with the directive's requirements.

Another challenge stems from the industry's heavy environmental footprint. Chemical manufacturing processes can produce substantial greenhouse gas emissions and other pollutants. The CSDDD mandates that companies implement robust environmental management systems to mitigate their impact. For example, producers of plastics or fertilizers must adopt cleaner production technologies and enhance waste management practices to comply with the directive.

Moreover, the CSDDD strongly emphasizes human rights, which is crucial for an industry that often operates in regions with variable and sometimes poor labor conditions. Ensuring fair labor practices and safe working conditions throughout the supply chain is a significant focus. Companies must conduct thorough due diligence to identify and address potential human rights violations. This may involve auditing suppliers, providing training on labor standards, and implementing corrective actions where necessary.

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Robert Kammerer, PwC Germany

Enhancing Reputation and Competitiveness

The CSDDD outlines several core requirements that companies must adhere to, spanning due diligence, reporting, and accountability. These involve regularly assessing potential risks in their supply chains, such as environmental degradation or labor rights violations. Companies must implement measures to prevent identified risks, such as adopting sustainable sourcing practices or improving working conditions in supplier factories. Additionally, they must take corrective action to address any adverse impacts, including providing remedies for affected communities or workers.

"The CSDDD's primary objectives are promoting responsible corporate behavior, protecting human rights, and enhancing environmental stewardship."

The directive also mandates that companies enhance their reporting on sustainability practices. This includes regularly publishing reports detailing their due diligence processes, identified risks, and measures to address them. Stakeholder engagement, including employees, suppliers, and local com-

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Substantial Progresses in Sustainability Focus Areas

Olon Releases Annual ESG Report Detailing Commitment to People, Planet, and Communities

The Italian Olon Group, a leading international supplier of active pharmaceutical ingredients (APIs), presents the 2023 Corporate Sustainability Report and confirms the sustainability journey toward energy transition, investments in alternative energy sources, social and economic involvement and support for the communities in which it operates.

The annual sustainability report of the contract development and manufacturing organization (CDMO) details the global company's commitment to the people, planet, and communities in which it operates. The report outlines the substantial progress achieved in the focus areas—to reduce the footprint on the environment, to create a sustainable global supply chain, to include people diversity, to engage communities and stakeholders, and to promote the most advanced and sustainable manufacturing processes. Olon joined the United Nations Global Compact initiative, a voluntary leadership platform for the development, implementation, and disclosure of responsible business practices.

The most significant trend, which certainly marked the year 2023, was the Group's significant progress in terms of energy transition, with the switch to renewables, particularly solar power. The metrics published in this report clearly show the concrete steps taken in this direction: during 2023, the energy produced internally increased by more than 100% compared to 2022.

Investments in the installation of renewable energy plants have continued as planned. Olon finalized the installation of a photovoltaic system of 5 MW in the Rodano (Milan) Olon site. This is one of the major steps forward along the transition to sustainable energy sources.

With an estimated production capacity of 6.5 GWh/year, the photovoltaic system will allow the generation of clean electricity with ZERO CO_2 emissions. This achievement will significantly reduce the ecological footprint of our operations, allowing us to yearly save the emission of tons of CO_2—3,200 t/y (market-based). This initiative marks our concrete commitment to the decarbonization of production.

Continuing the established trend, in 2023 the group again reported a reduction in CO_2 emissions, measured per ton of product.

"Despite the backdrop of the early achievement of the 2018/2025 targets, we set new long-term environmental targets 2020 – 2030; these represent highly challenging and ambitious goals to minimize our environmental impact according to company ESG strategy" commented Paolo Tubertini, CEO.

Olon also contributes to the creation of value and economic growth in the social and environmental contexts in which it operates. Continuing a firmly established trend that represents the very identity of the company, in 2023 Olon confirmed its economic growth and the generation of greater economic and social value. In terms of supporting communities, the economic value of donations has increased by 74% since 2022.

"Our social responsibility roadmap is focused on human rights throughout the value chain. The roadmap brings together our principles and progress in terms of social responsibility", Tubertini explained.

Download the full report here: https://olonspa.com/Sustainability_Report.pdf

olon
Sustainable technologies delivering science

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munities, is essential for ensuring operational transparency and accountability.

The directive introduces mechanisms for legal accountability to ensure compliance. Companies that fail to meet the directive's requirements may face sanctions, including fines and other penalties. Underscoring the importance of robust due diligence processes, businesses can be held liable for damages resulting from failing to prevent or mitigate adverse impacts. By adhering to these requirements, companies can not only comply with the directive but also strengthen their sustainability practices, thereby enhancing their reputation and competitiveness.

Transparency and Communication are Key

Strategically, the CSDDD will push companies to integrate sustainability into their core business models. This means developing long-term plans that prioritize sustainable growth and innovation. Companies must set clear sustainability targets and measure their progress towards them. The directive's transparency and reporting requirements necessitate improvements in how companies communicate their sustainability efforts. Such communication may involve adopting new reporting frameworks or enhancing existing ones to provide more detailed and accurate information about their environmental and social impacts. In the chemicals industry, product stewardship is well established, and such programs, as well as Responsible Care Management Systems, can provide a solid foundation for transparency and meeting due diligence requirements.

By investing in advanced data management systems, companies can efficiently collect, analyze, and report on sustainability metrics across their operations. This may involve integrating existing environmental management systems with new software solutions designed specifically for CSDDD compliance. Developing clear, standardized reporting templates aligned with the directive's requirements will ensure consistency and completeness in disclosures.

"... producers of plastics or fertilizers must adopt cleaner production technologies and enhance waste management practices to comply with the directive."

Finally, it is crucial to establish a dedicated cross-functional team responsible for overseeing CSDDD compliance across the organization. This team should develop comprehensive risk assessment protocols, focusing on human rights and environmental impacts throughout the supply chain. Additionally, they should conduct regular supplier audits and implement risk mapping exercises to identify potential issues before they escalate.

Improving Stakeholder Involvement

Establishing regular communication channels and feedback mechanisms can help companies anticipate and manage potential issues while demonstrating their commitment to responsible business practices. Additionally, companies should develop comprehensive training programs to ensure all employees, especially those in key roles such as procurement and operations, understand the CSDDD requirements and their role in ensuring compliance.

Strengthening legal and compliance teams allows them to navigate the complex regulatory landscape effectively. This may involve hiring environmental experts and specialists in human rights or partnering with external experts. These teams should collaborate closely with operational units to develop and implement policies that ensure compliance while maintaining operational efficiency.

"Stakeholder engagement, including employees, suppliers, and local communities, is essential for ensuring operational transparency and accountability."

Finally, companies should consider establishing a board-level sustainability committee to oversee CSDDD implementation and broader sustainability initiatives. This committee can ensure that sustainability is intrinsic to high-level strategic decisions and that the company remains proactive in addressing emerging regulatory challenges. By focusing on these governance and reporting strategies, chemical companies can build a strong foundation for CSDDD compliance while positioning themselves as responsible industry leaders.

Robert Kammerer, Partner, Sustainability Services, PwC, Munich, Germany

■ www.pwc.de

Austria: A Hotspot for Life Sciences

An Attractive and Highly Sought-after Business Location

The life sciences sector, encompassing biotechnology, pharmaceuticals and medical technology, is developing rapidly in Austria. The country has evolved into one of the most important international centers in this field, featuring world-renowned, cutting-edge research as well as a large number of SMEs and start-ups complemented by multinationals and industry leaders.

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More than 60,000 employees in close to 1,000 life sciences companies generate revenue of about €25 billion annually. 24,000+ researchers work at 55 research institutions. According to Statistics Austria, the overall research ratio in Austria will be 3.34% in 2024, the third highest in the EU. The life sciences sector itself has an R&D to revenue ratio of 20.5%, one of the highest in the country.

The diversity of the industry in Austria is also reflected in the approx. 750,000 different medical products originating in Austria, ranging from the simplest aids to highly complex devices. Numerous companies are expanding their life sciences R&D and production capacities in Austria.

Boehringer Ingelheim's Regional Center Vienna, with more than 3,000 employees, serves as the company's global hub for cancer research and coordinates business operations in over 30 countries in Central and Eastern Europe and Central Asia. One of its key future-oriented investments is the new Angelika Amon Research Building, opened in late September 2024 at a cost of €60 million. It offers an ideal working environment and state-of-the-art facilities for 150 researchers focusing on promising therapeutic approaches against cancer.

Novartis operates two development and production centers in Tyrol, which will be expanded by 2025 at a total cost of €500 million. Over the past ten years Novartis, which produces monoclonal antibodies used to treat autoimmune and rheumatic diseases as well as cancer, has invested more than €2 billion in Austria.

Takeda is investing a three-digit million Euro amount to build a "laboratory of the future" for some 250 researchers in Vienna's Seestadt district by 2026. The focus will be on biotech drugs and gene therapies. Moreover, it is committing approx. €100 million by 2025 to strengthen its long-term focus on the production of biologics at its Linz site. In September 2024, Takeda announced that it developed an innovative medicine at its Viennese facility against the ultra-rare disease cTTP, a blood clotting disorder, and is now producing it there for the global market.

The medical technology company Syntropic Medical has developed a type of eyewear using flashes of light to improve the brain's neuroplasticity. Syntropic is a spin-off of the Institute of Science and Technology Austria (ISTA) in Klosterneuburg, close to Vienna. ISTA is dedicated to basic scientific research and postgraduate education. By 2026, it will have 1,000 employees and around 90 research groups.

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Novartis plant in Tyrol, Austria

ABA Advises and Supports Companies

Austria's life sciences sector is supported by a strong national and international research network, the close cooperation between universities, research institutions and companies and attractive funding programs.

Anyone considering setting up or expanding a life sciences company in Austria is welcome to contact the Austrian Business Agency, which provides free assistance on issues such as financing and funding opportunities or finding qualified staff and suitable premises. ABA's services also include market and industry research, networking with research institutes and tax advice.

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Doppelganger Plastics: A More Desirable Alternative?

Transitioning from PET to PEF for a Greener Future

The problem with plastics — aside from all the environmental issues they entail — is that they are excellent. It wouldn't be a problem to wean ourselves off them if they weren't great at what they do. Take PET for example — good barrier properties, crystal clear transparency, and high recyclability, all at a low price point. Hard to beat — yet unfortunately also made with oil and gas-based feedstock and carrying intercontinental shipping emissions. The ever-increasing demand for this handy material means plastic production will account for 20% of global oil and gas consumption by 2050, creating a much rockier path to net zero.

It is clear as plastic to see this is a problem that is going to get bigger unless we come up with a solution. So, what are the alternatives?

The Realists in the Room

Consumer behavior is well-entrenched and collective preference for plastic is rational due to its well-known advantages to maintain the integrity and quality of consumer goods, especially food and drinks. And it is not defeatist to say so, rather it is astute and respectful of the fact that consumers are responding to the legitimate advantages these materials and purchase models offer them.

So, what about a different approach? One which substitutes the material for a near-identical alternative with preferable environmental performance. Like the 'evil twin' trope in a movie, this is a doppelganger that looks, sounds and behaves like the main character in all the obvious ways, but aims at a very different goal. In this scenario though, it is not the evil twin we're looking for, but the good one.

What if there is a new process to find this good twin, a bioplastic alternative, which happens to be more sustainable and better performing than oil-based plastic? Enter PEF (polyethylene furanoate). Just one letter different from oil-based PET, with game-changing potential for the plastics industry.

Sweeten the Offer

The true Eureka moment was the realization at Stora Enso that we don't need the concept others copied from the oil-based route because there is in fact a more elegant way to get to FDCA (2,5-furandicarboxylic acid), a crucial component in PEF, specifically the 'F' part. Taking a step back for a leap forward always carries risk, but it has proven to be worth it. Now there is a more controlled, highly customizable, yet less energy-intensive process that can bring high-quality, cost-effective FDCA and PEF a step closer to commercial development at scale.

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Dirk den Ouden, Stora Enso

The advantages begin before even getting into the process, because PEF can be made out of biobased feedstocks, namely: sugar derived from industrial starch. Sugar is the simple but super-powered ingredient that is the basis for a major move away from the well-trodden path of oil-based feedstocks. This means it is possible to create a more sustainable drop-in replacement for PET that doesn't require polymer manufacturing, converting or recycling equipment to be changed.

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Cosmetics packaging using PEF.

"Enter PEF. Just one letter different from oil-based PET, with game-changing potential for the plastics industry."

A Bioplastic above the Rest

In the recent Euros 2024, the England team's performance was drowned out by the fans who managed to drink two months' worth of beer in one German restaurant over the course of 36 hours. An impressive feat, but one made easier by the reassurance those drinks remain highly carbonated to retain their flavor. If the beer that restaurant was serving was flat, one can be sure it would not have been able to shift such large quantities. And it's not just beer where this matters. There is a huge range of oxygen-sensitive drinks that need effective bottles to preserve the integrity of the product, whether that is juice or vitamin drinks. This is where

FuraCore, furandicarboxylic acid (FDCA), for PEF production of water bottles.

FuraCore, furandicarboxylic acid (FDCA), for PEF production.

PEF comes in a cut above the rest—its gas barrier properties are many times better than PET, which makes it a particularly appealing option for brands who want to improve the sustainability of their products while increasing performance.

And, as pressure to be more sustainable increases, the appeal of PEF will likely expand to those products not traditionally associated with plastic where there are future-proofing challenges. The overwhelming majority of champagne and sparkling wines are currently served in heavy glass bottles that weigh more than the drinks they contain, adding hugely to transportation costs and emissions. Imagine a much lighter sustainable alternative that preserves that all-important cork-popping ability, with an enhanced protection of the carbonated element of the drink, so consumers can get the full enjoyment from their products.

"Looking to the future, it is continuous innovation with bioplastics that provides our best bet for a truly circular economy."

The applications for PEF are by no means limited to bottles. There is every form of tray and jar traditionally produced with PET that could benefit from the recyclable nature, strength, heat resistance, protective barrier properties, and transparency of packaging that consumers have come to expect, and PEF can provide.

Looking to the future, it is continuous innovation with bioplastics that provides our best bet for a truly circular economy. This is the PEF-based products themselves, but also those desirable side products of its chemistry that have a promising future of their own.

Creating a Circular Economy

With the use of selective chemistry, the key intermediate HMF (hydroxymethylfurfural) can be synthesized from sugar feedstock, which can turn into a desirable end product through further sophisticated processes separate to the creation of PEF. HMF can be isolated and deployed in applications such as glues and paint, and its potential is vast. For example, there is already work being done to use HMF as replacement for formaldehyde and to combine it with other biomaterials such as lignin, derived from wood, to create binders for the construction industry.

This potential increases even more when expanding beyond sugar, to include a range of sustainable sources such as agricultural waste, recycled fibers and trees, and avoid an over-reliance on the starch needed for global food supply. A combination of those sources at scale can be empowered to deploy HMF derivatives as a fuel additive in areas of transport proving difficult to electrify such as shipping, long-distance trucking and aviation. It is possible to plug that biofuel gap and reap the sustainability benefits, while gaining the enhanced performance that can already be seen in bioplastic packaging. For those with the vision, HMF is not just a side product, or even a side product that can be turned into a tool, but a whole toolbox to be applied to sustainably serve a variety of humanity's needs.

Imagine that world of a truly circular economy where you make a paper cup from tree fiber, it gets recycled and turned into a carton box used by Amazon to ship goods and then gets recycled again until the point the fiber starts to break down. Now we don't need to leave it there. These fibers can be broken down into sugar molecules, then transform it into bioplastic and start the process all over again in a way that is sustainable and performance-enhancing. It serves as a reminder that the race to create a doppelganger plastic began as a step in the right direction, but now we see that the process itself could precipitate a giant leap forward for the circular economy.

Dirk den Ouden, Vice President of Circular Chemicals, Stora Enso, Stockholm, Sweden

■ www.storaenso.com

Navigating the Future of Chemical Distribution

Key Industry Trends and Strategic Imperatives that Shape the Sector

In 2024, the chemical distribution industry is at a pivotal moment, navigating both challenges and new opportunities. As distributors grapple with a landscape shaped by shifting global trade routes, demand constraints, and digital disruption, their roles are evolving far beyond traditional bulk breaking. Going forward, distributors are positioning themselves as critical value-added partners, vital to the success of the global supply chain.

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Adam Rothman, BCG

This article highlights current industry trends and strategic imperatives that will shape the future role of 'next level distribution'.

Understanding the Current Market Context of the Chemical Distribution Industry

Circling back to 2023, five core beliefs were articulated by The Boston Consulting Group regarding the future of chemical distribution: an expected market softness in the short-term before growth picks up again at ~2.5% CAGR, increased reliance on outsourcing by principals, the diversification of distributor portfolios, the rising importance of performance delivery, and the increasing emphasis on value-added services. While the decline in demand and revenues, particularly in Europe, was more severe than expected over the past year, these beliefs still largely hold true. However, the context in which distributors operate in 2024 has changed.

In recent years, the chemical market has experienced significant upheaval. Prior to the pandemic, the industry enjoyed steady demand, globally intact supply chains, and predictable growth. Chemical distributors acted as general partners for the longtail. However, the combination of Covid-19 supply chain disruptions, prolonged destocking and unsustainably high margins elevated the position of chemical distributors and fundamentally altered the paradigms under which the industry operates.

Today, players along the chemicals value chain are operating in a 'new normal'. In Europe, regulatory scrutiny, high energy costs and inflation have eroded competitive advantages and placed a squeeze on margins, prompting many companies to rethink sourcing strategies. Geopolitical uncertainties, environmental challenges, deglobalization trends and protectionist policies are reshaping the business landscape further, pushing many toward more localized or regional supply chains. As a result, principals have increasingly turned to distributors, not only for the longtail, but mor and more also the midtail and application-specific services to ease their P&Ls.

In addition, the global trade landscape is expected to undergo significant changes, reshaping competitive dynamics for principals and distributors as projected until 2032. Amongst others, a further decoupling and de-risking of key international trade relationships, particularly between the US and China, as well as Europe and Russia is expected. While these shifts introduce new challenges, they also open up new growth opportunities in emerging markets such as Southeast Asia, Latin America, and Africa. Moderate growth is expected between the EU and Africa, while trade between the US and Mexico, and China and ASEAN, is projected to experience robust growth. Regionalization of trade will be a major focus area.

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As global trade routes shift, distributors must rethink their supply chain strategies and their role, leveraging new opportunities and new principals in these (emerging) markets to maintain their competitive edge.

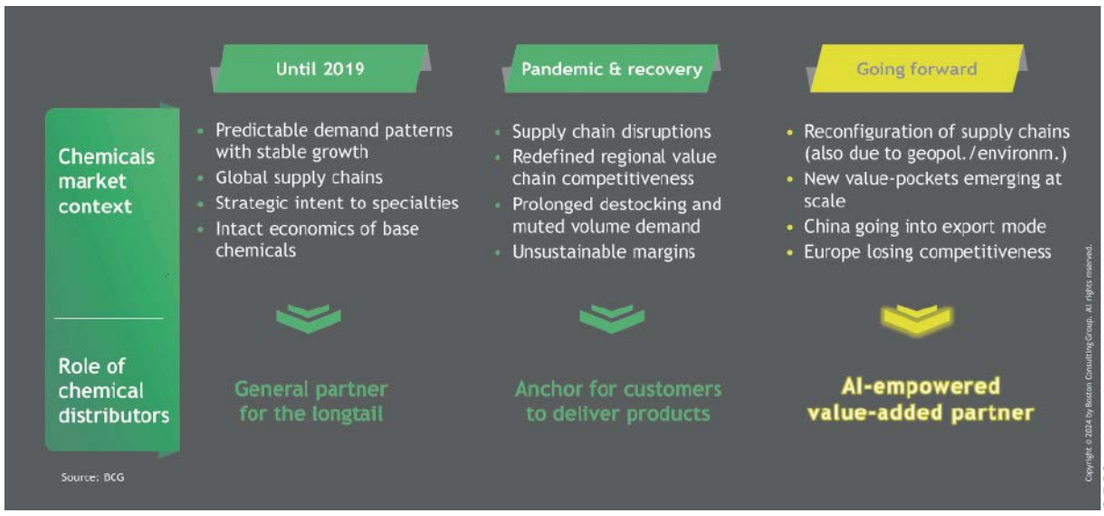
Navigating this multipolar world will require flexibility and strategic thinking. 'Next-level chemical distributors' will need to take three key actions to ensure success:

1. Performance through Digital Capabilities

Digitalization is a pivotal enabler of performance improvement in chemical distribution, forming the foundation for growth and efficiency. Digital tools and platforms will be essential for driving top-line growth and cost efficiency, enabling distributors to respond more effectively to market changes. Distributors who have invested early in building digital capabilities are now reaping measurable benefits, with leading

companies reporting gains of 2–5 percentage points in gross profit margins and 1.5–3 percentage points in EBITDA margins vs. laggards.

For distributors still in the early stages of digital transformation, now is an ideal time to build capabilities that will not only enhance their digital muscle but also align with evolving market demands. With advanced technologies, digital tools, and service providers more accessible than ever, distributors can focus on platforms, AI, and automation to boost their performance significantly—at greater speed of transformation.



The context is changing — shift from supply to demand constraints.

2. Align Portfolio with Future Market Demands

Distributors need to reassess their portfolios, focusing on building relationships with suppliers that align with future market demands while evaluating their value-added services and capabilities. In this regard, mergers and acquisitions (M&A) will remain crucial for strengthening distributors' portfolios, while they should simultaneously conduct a thorough evaluation of which elements to exclude from their future offerings that will not act as a key differentiator for them.

"Regionalization of trade will be a major focus area."

M&A activity is expected to have reached new heights by the end of 2024 with 35+ deals by the top 50 global distributors, particularly in regions like Asia-Pacific and Latin America. Analyzing the strategic intent of those acquisitions, more than 50% have focused on expanding regional reach, while 30% concentrated on expanding application breadth.

Beyond regional expansion and portfolio diversification as the main strategic rationale for M&A, deals are increasingly focused on enhancing supply chain and service capabilities. Distributors are looking to acquire infrastructure, such as transport hubs and application-specific services, that can help them build more resilient supply chains and improve service quality.

Additionally, strategic partnerships are becoming a critical enabler of growth, particularly in areas like AI, sustainability, and customer experience—especially for those companies who cannot or do not want to host specific capabilities in-house through targeted M&A. In fact, over the past 18 months, there is an increase in announced alliances of >20%. By leveraging these strategic partnerships, distributors further differentiate their portfolios.

3. Optimize Core Processes with AI

Finally, the advent of generative artificial intelligence (GenAI) opens new opportunities for efficiency and effectiveness increases. Over 70% of chemical distributors have started to experiment with GenAI, both in front-end and back-end applications, yet, full-scale deployment is pending. In specific instances, AI is already empowering distributors to deliver more personalized interactions by identifying customer patterns and prioritizing leads through predictive insights. However, distributors ought to focus on deploying AI on a large scale to realize its full potential and optimize their core processes, from forecasting, sales and operations planning (S&OP), and inventory management to route optimization and sales acceleration. This is when the investments into GenAI will positively influence the P&L and distributors can achieve substantial cost savings and operational efficiency, securing a lasting competitive advantage.

Strategic Imperatives for the Future

As the chemical distribution industry continues to evolve, three key strategic imperatives have emerged as critical to long-term success:

- ***Monetize digital investments***: Distributors must focus on converting their digital investments into measurable performance improvements. Digital tools can help distributors drive cost efficiency, improve service levels, and maintain a competitive edge in an increasingly crowded market.
- ***Future-proof the portfolio***: Distributors need to ensure that their portfolios align with future market demands—in terms of their principals, product and services portfolio. M&A and strategic partnerships will continue to be a key strategy for portfolio enhancement. At the same time, distributors should take a hard look at what will not be part of their future portfolio.
- ***Leverage AI to optimize core processes***: AI offers the potential to revolutionize core processes, but it must be deployed at scale in core processes to unlock its full value. Distributors must move beyond isolated experiments and integrate AI across all operational areas, to drive efficiency and scalability.

The future of chemical distribution will be shaped by distributors who successfully deploy their value-adding capabilities to navigate an uncertain market environment.

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“Quo vadis, Europe?”

The Role of Chemical Distribution in VUCA Times

The past four years of unprecedented challenges have left their mark everywhere — in society as well as in the industry. Since the start of the pandemic in the first quarter of 2020, the European chemical value chain has been undergoing an almost continuous stress test.

It all started with the pandemic and the associated politically imposed lockdowns and border closures in Europe—in this dimension unprecedented until 2020. When everyone thought that Covid-19 had been overcome to some extent, Russia’s invasion of Ukraine followed, which also heralded a kind of turning point in the sense that since then peace and a stable world order can obviously no longer be taken for granted. In the meantime, the range of challenges seems to be ever-increasing, with various factors not only adding up, but also reinforcing each other, for example, the politically motivated attacks by Houthi rebels in Yemen on ships in the Suez Canal. However, all challenges have one thing in common: they demonstrate the vulnerability of our value chains in the wake of globalization.

Traditional patterns of demand and supply have also changed remarkably over the past four years: Everything has become noticeably more hectic, less predictable and somehow moving.

All these developments have also an impact on the definition of competitive factors. Economic success is now depending more than ever before on delivery capability and reliability, or to say it differently: company resilience. Supply chain excellence, diversification in terms of suppliers, customers, sales channels, regional activities and logistics plus constant, solid scenario planning have become core competencies that lead to success and differentiate market participants from others.

Supply and Demand

As far as demand is concerned, the upturn previously expected for 2024 will now come with a significant delay and possibly not until autumn 2025. At least there are first rays of hope on the horizon, although the intensity of these varies from one EU Member State to another. Unfortunately, Germany, Europe’s largest chemicals market, is still lagging behind the general trend, with the lowest growth rates of all EU countries. The government, at the latest the one incoming in spring 2025, must urgently do something to ensure that Germany does not continue to lose ground.

On the supply side, there are also a number of challenges to overcome, particularly in the commodity chemicals supply chain, which has to deal with a sharp rise in imports, especially from China. Fortunately, inflation has fallen and subsequently also the interest rates. This brings some welcome relief and makes investments at least a little more attractive, if they are made in Europe at all.

And this is precisely the core of the problem: Europe is no longer seen as the attractive economic and industrial location it was in the past. At the same time, economic strength and success are still decisive for the standard of living of the domestic population and for political influence in the world. In the case of Europe, minimum the latter is already in the process of decline due to demographic changes and the emergence of new economic powers in other parts of the world—plus now, additionally, obviously also by homemade issues.

Moreover, we could observe an increasing polarization in the world, particularly in the wake of the Russian invasion of Ukraine, which previously did not exist like this—at least not to this extent. This development is also impacting international trade, which is becoming more fragmented and increasingly geared towards a kind of “friend-foe differentiation”, unfortunately in conjunction with increasing protectionism in many parts of the world.

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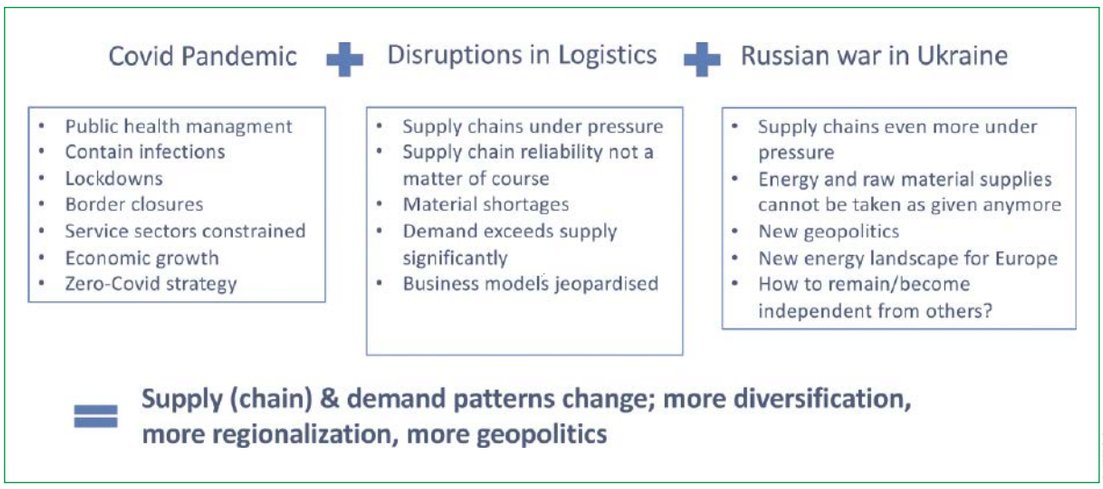
Challenges and Opportunities

In this generically mixed situation, European chemical distributors naturally face similar challenges as all the other market participants in the chemical industry. At the same time, however, there are also some opportunities for them to demonstrate in practice what is already in the DNA of every chemical distributor: making the qua-

“We need to return to the openness to technology that used to be the norm.”



More than 3 years of unprecedented challenges: 2020–2023—now even in combination.

si-impossible possible. This includes, for example, being able to procure or supply products even with extremely short lead times, thus maintaining their customers' ability to supply their own clients at any time, exploring new markets or preparing the entrance into new markets in close liaison with their principles, or offering services that the partners on the producers side cannot provide in this form or maybe do not wish to perform any longer, for example, for cost reasons.

In general, service offerings of all kinds are not only in the DNA of chemical distributors, but also one of their top priorities. This implies also a kind of "first-responder mechanism" to support manufacturers, who wish to outsource certain supply chain functions or customer segments to reduce the complexity of their business models. Looking back far beyond the last four years, distributors have always proven to be very reliable business partners at any time.

More Pragmatic Solutions are Needed

In view of the situation as described beforehand, there is clearly an urgent need for action for all politicians in Europe. As European association, which is meanwhile representing the entire chemical value chain and consisting of many small and medium-sized enterprises (SMEs), we set high hopes in the new EU Commission and the newly elected EU Parliament. We can only continue to appeal to them to take greater account of the industry's needs as the fundamental backbone of the European economy and society in their political decision-making processes and to find more pragmatic, cost-efficient solutions. What we have been observing in the past five years was actually more of the contrary: an unprecedented legislative tsunami with excessive bureaucracy and micro-management. New laws and regulation in general should not only be well-intentioned, but also well-made. The question in a globally competing world shall always be whether the same targets—which we fully support—can also be reached with less costs for European businesses and less administrative burden for everyone.

"As the fundamental backbone of the economy and society, industry needs more pragmatic solutions."

At the same time, Europe needs to return to the technological open-mindedness, which has made it so strong and autonomous in the past, rather than prescribing certain processes or technologies that are not always mature enough to ensure market success. Recent times have provided some evidence that imposing certain products or lifestyles far away from the consumers´ reality is usually meant to fail. New products or technologies must be measured by their compatibility with the everyday lives of consumers and their financial, organizational or other practical implications. This is another reason why Europe's competitiveness has declined.

Against this background, it comes as some relief that the issue of competitiveness is now much higher on the EU agenda than in recent years. However, experience shows that this does not necessarily mean that a higher priority automatically translates into more pragmatic legislation.

As representatives of the chemical value chain, we all have a role to play here. We must not cease to encourage politicians that the European environmental agenda (the so-called Green Deal) will only develop into a successful model, if it enables the industry and does not weaken it. At the same time, this is the only way that Europe and its vision for the future will continue to be taken seriously in the world.

Topics along the Entire Value Chain

All of these topics were also on the program of the FECC Annual Congress 2024 under the motto "Quo vadis, Europe?". Once a year our flagship event brings together the entire chemical value chain: from producers and, of course, distributors, logistics and packaging companies plus other service partners to brand owners. In just under three days, all relevant topics for the entire chemical industry are enriched with new facts and then commented on and categorized by top managers from various areas of the value chain. This year's topics included general industry development, geopolitics, energy scenarios, regulation and consumer trends. Questions such as: What are success factors and where are the opportunities for Europe in comparison with other continents? Or: What makes Europe strong and what can we learn from other continents?

Additionally, we dedicated the entire second conference day to the topic of innovation, examined from all angles: from prospects for new chemicals (do they exist and if so, where?), a business case for the practical implementation of an innovative idea, plus the expectations of well-known brand owners towards their chemical suppliers. And, of course, in general: how can the entire supply chain work together better and more effectively on issues such as sustainability and innovation?

"Economic success is now defined by a different perception of delivery capability and delivery reliability."

The feedback was overwhelmingly positive and we stay committed to make also the next FECC Annual Congress with its unique set-up a big success. It will take place in Hamburg, Germany from September 10 to 12, 2025; registration will be possible in the course of April 2025.

Dorothée Arns, Director General, European Association of Chemical Distributors (FECC), Brussels, Belgium

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Next Level Chemical Distribution

Contributing to Innovation and Sustainability besides Adding Value in the Supply Chain

After the FECC Annual Congress, we discussed key topics and outcomes regarding the current situation of the European chemical distribution industry with Dorothee Arns Dorothee Arns, Director General of FECC — the voice of the chemical distribution industry in Europe.

CHEManager: What do you see as the main challenges but also advantages of the role that chemical distributors play in the chemical value chain?

Dorothée Arns: Well, also most distributors find it challenging to navigate the current so-called VUCA times, which are marked by 'volatility, uncertainty, complexity and ambiguity' and require a lot of scenario planning for ever-changing conditions. In comparison to chemical manufacturers, distributors are fortunately less asset-heavy and, hence, suffer less from the high energy prices here in Europe. However, if the entire domestic chemical value chain is under continuous structural pressure, this is also impacting the distribution sector in the sense that the European suppliers and customers might become fewer.

On the other hand the current competitive disadvantages that Europe's chemical manufacturers are faced with since a while are also offering certain business opportunities for distributors.

Many producers are currently looking to diversify and to simplify their business models to save costs by outsourcing various supply chain functions—for example warehousing—, certain applications or customer segments. In all cases, chemical distributors stand ready to help, in close partnership with the producers, because supply chain excellence, huge networks and a profound know-how about customers, markets and value chains are the business essence of any distributor. This way, both parties can thrive to mutual benefit.

Another challenge for the entire chemical value chain is the quantity and complexity of European regulation over the past years, which coincided to additionally create a lot of additional bureaucracy, whenever it entailed substantial reporting obligations. In the vast majority of the cases, small and medium-sized enterprises—or SMEs—have to comply with the same regulation as big companies, but there is a big inherent difference: where big multinationals can usually rely on their own in-house product stewardship or regulatory affairs departments, SMEs have only limited or no resources at hand to fall back on. In practice this means in most cases that SMEs need to make heavy investments in employing consultants to ensure compliance—money that is afterwards missing for other areas, for example when it comes developing new products.

This cannot be the purpose of regulation, and the key question is how to reach the same targets in terms of health, safety and environment with a more pragmatic, cost-efficient regulation to safeguard Europe´s competitiveness in the fierce global competition. Definitely, hopes are very high for the new European Commission to change their approach towards enabling Europe's business rather than impeding it.

> *"The topic of sustainability in all its facets will remain high on Europe´s political agenda."*

Those distributors who are navigating the regulatory challenges successfully, have possibly a good chance to develop business opportunities out of it, because many SMEs on the customers' side are also looking for practical advice and guidance.

Europe is still a leader in many sustainability initiatives. For example, European chemical companies are driving the development of more sustainable products and processes, but the regulatory environment is also strongly geared towards sustainability. How are chemical distributors adapting to these trends?

D. Arns: Chemical distributors have started working actively on this topic already at a very early stage. Background is that they are placed in a kind of 'sandwich position' in the chemical value chain, connecting producers on one hand and the downstream customers on the other hand. It goes without saying that they can only support their business partners in the long term, if they anticipate the trends way in advance, spearhead developments—for example, chemical waste as a resource—to gather experience to advise their clients on both sides very well and, in general, to help their business partners to be successful. As many of today's consumers pay specific attention to sustainable products, this also creates business opportunities.

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Dorothee Arns, Director General of FECC, at this year's FECC Annual Congress

Looking to 2025 and beyond: Do you see the supply chains for Europe remaining vulnerable in the future—or are there strengths that the sector can leverage here?

D. Arns: In an era of ever-increasing geopolitical tensions, it is very likely that Europe's supply chains remain vulnerable. Unfortunately. Additionally, it is evident that the more Europe's industrial backbone is getting weaker due to the said competitive disadvantages, the more Europe is giving away its economic autonomy, which formerly made it strong, also politically.

If more goods need to be imported from elsewhere, the more exposed we are to any disruptions or other developments worldwide.

Import/export is another characteristic of the distribution sector, so distributors will most likely always be capable to help bringing the desired good into Europe, thanks to their extensive worldwide networks, track records of supply chain excellence and profound know-how on almost all value chains. These are certainly strengths that the sector can leverage on.

The motto of this year's FECC Annual Congress, which took place in September in Sitges, Spain, was "Quo Vadis Europe?". What were the key topics this year—and which main insights did you take away from this event?

D. Arns: Indeed, the FECC Congress has meanwhile established itself as one of the leading industry events in the chemical world, also thanks to its unique set-up.

The event itself always brings together all parts of the chemical value chain, including the brand owners, to practically discuss all issues with relevance for the entire sector in a very interactive, engaging format. The congress motto this year was "Quo vadis, Europe?" to explore and evaluate all relevant trends of the future from all sides. It is clear that the current issues are so big that one part of the chemical value chain alone cannot solve them. Instead, we all need to work together to make things happen.

Various industry leaders from the entire value chain—from small businesses to multinationals—shared their experiences and observations, offering a lot of food for thought. And on the second congress day we took a deep dive into consumer trends 2030, how innovation could eventually be accelerated and new chemicals commercialized more quickly, before brand owner champions provided their input on what they are expecting from their chemical suppliers.

The discussion is set to continue in our next Annual Congress for the entire chemical value chain, which will take place in Hamburg, Germany, from September 10 to 12, 2025.

■ www.fecc.org

Transforming Distribution Strategies

Enhancing Offerings and Embracing Sustainability for Long-Term Success

The chemical distribution business is a diverse industry that provides customized solutions for important sectors such as pharmaceuticals, paints & coatings, agriculture, cosmetics, food & feed, and automotive. At the center of the supply chains of these sectors, distributors are critical partners for global corporations as well as for SMEs. But distributors also face many challenges in the current political and economic environment.

A recent BCG survey of companies operating in this sector revealed the need for adaptable chemical distributors (cf. pages 12/13). By enhancing offerings, ensuring performance, managing costs, and embracing sustainability, distributors prove as essential partners for long-term success amidst evolving challenges.

CHEManager asked executives and industry experts from a broad range of chemical distributors to share their views on how their companies are dealing with this changing economic environment and the resulting opportunities and challenges. We proposed to discuss the following aspects:

- Which developments, both among your customers and the distributors themselves, do you see as challenges for the sector—and which as opportunities?
- Amid economic and geopolitical challenges, chemical distributors face investment uncertainties. In which areas do you think investment is nevertheless essential?

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- Innovation is a key growth driver in the specialty chemicals market. How can distributors effectively support innovation on both the supplier and the customer side?

Read the insightful answers of the chemical distribution industry's experts on the following pages.

Deep Expertise Drives Innovation

Michael Friede, CEO, Brenntag Specialties

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"We leverage our product, technical and regulatory expertise as well as our global network in the markets to understand the needs and strategies of our principals."

A chemicals and ingredients distributor is the connecting element, the go-between from producer to the end-markets and back. While in industrial chemicals topics of pricing, volume and delivery time are key, in specialty chemicals the role in addition requires a very different expertise, a much more value-add-focused and consultative approach for both customers and supply partners.

We leverage our product, technical and regulatory expertise as well as our global network in the markets to understand the needs and strategies of our principals and their products on a very deep level. We are the extended arm of their sales efforts, representing their product basket to our global customer base. We also play a key role in providing crucial feedback to our principals in terms of market trends and innovation we see with the many smaller, innovative customers we cater to worldwide. We know the needs and requirements of our customers in their markets very well, and where innovation is evolving or where it is lacking. Our customer base comes to Brenntag for support and advice, not just to source an individual product.

We at Brenntag leverage our expertise to find, develop or recommend a solution from our diversified supplier portfolio that fits the customers' needs and applications, or facilitate the joint development of something new in our global network of Innovation and Application Centers. And we do this in a fast and agile manner. We do not just provide the most affordable solution or just one particular chemistry base, but the one that incorporates innovative approaches, sustainability components, best-practice results, and application grade quality. In addition, we play a key role in supporting our broad customer base in navigating the ever-increasing regulatory environment in chemistry.

Last, but surely not least, we run a comprehensive innovation program extending into our digital offerings of Brenntag, in order to become the easiest to do business with and to thereby innovate in the way we interact and provide best services all around.

Digitalization Boosts Demand for Distributors

Lars Wallstein, Managing Director, IMCD Germany

© IMCD

"Digitalization is a great opportunity to boost demand, if your offering is broad and complex, which is true for many distributors."

Rapidly changing demand patterns are affecting customers and distributors alike. De-globalization, demographics and digitalization are driving this.

Global demand is very different across world regions, hence customers and distributors with global footprints have an edge. De-globalization will make sourcing more complex and supply chain security is top of mind again.

Aging populations have a growing demand of for example, pharma or personal care whilst they simply consume less goods, so a relevant life science position is essential for distributors. Some customers in automotive and construction related areas are struggling, especially in Germany.

Digitalization is a great opportunity to boost demand, if your offering is broad and complex, which is true for many distributors. Customers want to experience seamless self-service and be inspired by new concepts and explore our best-in-class product portfolio online.

IMCD is asset light, certainly compared to many of our peers and our supply chain partners up- and downstream. We are investing globally in the best people and are proud of our expert teams. Our global digital ecosystem has been a considerable investment too but is paying off nicely—its boosting leads and sales yet offers efficiency gains through process automation at the same time. Last but not least, IMCD is a consolidator through M&A in our space, and those investments add to our organic growth.

Innovation is a combination of expertise and knowledge with new ways of working to address next challenges. Sustainability and the decarbonization of entire formulations are key. We work very closely with our customers on an individual expert basis or through seminars and industry workshops. We develop a solid grassroots understanding of what the market needs. Our experts in our network of over 70 labs and tech centers worldwide are addressing those needs.

Agility Key to Success in Distribution

Stephan Glander, CEO, Biesterfeld

"Overall, distributors need to become much more adaptable and agile."

The framework conditions in the chemical industry and therefore also in distribution are changing drastically: volatile and structurally changing markets in conjunction with geopolitical challenges, an increasing number of regulatory requirements and rising opportunities in sustainability and digitalization. As a result, we expect an increase in acquisition activities, primarily driven by high investment requirements to master those changes. An accelerating market consolidation seems inevitable! On the other hand, consolidation can also be observed on the supplier side, as well as a trend towards regional or even global distribution partners.

However, the challenges are also associated with opportunities. Challenges for chemicals manufacturers, for example, could potentially lead to a disproportionate growth of the relevant market for distributors. Increasing regulation and sustainability also offer opportunities for growth. Distributors who have the expertise to help customers to navigate through the complexities and—for example—to provide their customers with comprehensive advice in areas such as decarbonization can gain long-term competitive advantages, in specialty segments. Overall, distributors need to become much more adaptable and agile. An improved offering of products and services, efficient cost management and higher investments in sustainability and digitalization are essential. More strategic marketing and an even more targeted focus on customer value are more crucial than ever for us at Biesterfeld. Added to this is our DNA as a family business. The way we do business on an increasingly global scale enables us to differentiate ourselves from our competition as a long-term partner for our customers and suppliers.

Investing in Digital Connectivity

Ewout van Jarwaarde, CEO, Brenntag Essentials

"We are committed to investing in digital, data and technology projects that seamlessly connect our processes with our supply partners and customers."

The chemical industry is facing one of the most challenging periods, which require a willingness to embrace change and also invest in fundamentally improving our business. At Brenntag, our mission is to become the easiest to do business with—for our customers, our suppliers, and our employees, in our industry and beyond. We started several years ago to invest in strengthening our business foundations, our sustainability agenda and our digital, data and technology capabilities.

We are committed to investing in digital, data and technology projects that seamlessly connect our processes with our supply partners and customers. A perfect example of our data-driven approach, leveraging our insights, is our awarded customer Growth Engine. This AI-driven tool provides our sales teams worldwide with recommendations to be there, right when our customer needs us. It supports our product managers in their procurement decisions by using predictive intelligence to forecast demand. We use our various purchasing and sales data and enrich it with external information to predict how much of each product we should buy to optimize inventory.

We have a dedicated team working on many AI use cases, some of which are already in place. For example, we leverage AI in our customer service, our sales and our supply chain and sourcing processes. We are for example the first in Germany to implement their autonomous AI agents in our Salesforce platform to simplify tasks in services, sales, marketing, and commerce.

Through our investments, we strive to become a stronger data- and technology-driven company, leading our industry in terms of digitalization and data utilization.

Overcoming Recession through Customer Focus

Mehmet Tolga Tuncel, Managing Director, Ataman Chemicals

"As a chemical distributor company, we aim to spend this period thinking about long-term strategy, spending more time with our customers, and learning more."

In recent years, new business models and strategies provided by digitalization have also had to act together with new global economic imbalances. Aggressive policies of expanding geographical borders and trade of world countries are causing more polarization on Earth. Changing technology and the commercial pressure of new powerful warrior and producer countries on Europe and its immediate surroundings are essential factors in this recession.

The slowdown in regional production is causing economic activities to decline, and the decrease in business opportunities manifests as a significant recession in our region. As a chemical distributor company, we aim to spend this period thinking about long-term strategy, spending more time with our customers, and learning more. If we can spend the time we gain with total factor productivity listening to our customers' demands, we can overcome the recession and competition.

Sustainability Fuels Green Innovation

Laurens Muijs van de Moer, Managing Director, BÜFA Chemicals

"Our focus on sustainability stimulates innovation in green chemicals and processes, aligning with growing market demand and regulations."

We believe innovation is still strong in Europe, and these small and medium-sized businesses require tailor-made supply chain solutions or smaller volumes that we can provide. These companies are often the driving force behind innovation in certain niches.

At BÜFA, we actively support innovation on both the supplier and customer sides through various strategies. Our state-of-the-art application laboratories enable us to develop and test new formulations, offering innovative solutions to our customers and providing valuable feedback to our suppliers. Additionally, we create a feedback loop for suppliers, sharing valuable market insights to guide their R&D and purchasing process.

BÜFA's portfolio is growing, and we pride ourselves on the fact that we can provide specialist support on every product if needed. This lateral value chain approach offers synergistic products that help our customers meet the most stringent market demands. By proactively following market trends and offering formulation solutions, we significantly shorten our customers' R&D cycles and time-to-market.

We create transparency for our customers on regulations and how to adapt their portfolio to remain compliant. Our focus on sustainability stimulates innovation in green chemicals and processes, aligning with growing market demand and regulations.

Also, digitalization plays a crucial role in our innovation strategy. We invest in digital (customer) platforms that enhance collaboration between suppliers, distributors, and customers.

Even in the current difficult economic and political environment, we are an intrinsic part of the innovation ecosystem. We add substantial value through our expertise, network, and innovative approaches. By really tuning in to what our customers and producers are saying, and getting to the heart of what they need, we have become a kind of super-charger for innovation in the chemical distribution world. We are pushing the industry forward and making sure everyone wins and grows in the process.

Opportunities in Circular Economy Transition

Robert Spaeth, Managing Partner, CSC Jaeklechemie

"The circular economy allows distributors to improve brand perception and assume social and ecological responsibility."

The circular economy presents a major challenge for our customers, producers, and the entire chemical distribution sector. Yet it also brings significant opportunities for distributors who demonstrate the adaptability that characterizes our industry.

One example is the rise of innovative models like chemical leasing, where chemicals are essentially "borrowed" for the product lifecycle, with provisions for their return and recycling. This model, often referred to as product-as-a-service, aligns with circular economy principles. Additionally, the demand for recycled chemicals will continue to grow, providing distributors with opportunities to diversify and enter new markets.

The circular economy allows distributors to improve brand perception and assume social and ecological responsibility by adopting sustainable practices and promoting material reuse. This approach benefits distributors economically as they respond to a market increasingly focused on sustainability and strengthens their position relative to producers.

Closely related to the circular economy is the challenge of digitalization, especially in product data management. Upcoming standards like the European Data Act and the Digital Product Passport will reshape data transparency and traceability. When properly implemented, these standards can support sustainability and circular economy goals. Success in this area will depend on early vertical collaboration across the supply chain to ensure compliance and maximize digitalization's benefits.

These developments are also motivating suppliers to develop innovative products that support customer sustainability goals and open new markets. Regardless of shifting political directions in places like Brussels, Berlin, or Washington, D.C., these issues will nevertheless be of central importance for the chemical distribution sector in the coming years.

Empowering Innovation in Specialty Chemicals Distribution

Lars Schneider, EMEA CEO, Barentz

"Innovation is a significant growth driver in the specialty chemicals industry, and distributors are uniquely positioned to facilitate it."

The specialty ingredients and chemicals sector face a complex landscape. Geopolitical instability, rising regulatory demands, competition for skilled talent, and the increasing need for cybersecurity are key challenges impacting industries such as energy and automotive in EMEA. However, these pressures also create opportunities. Distributors, with a highly educated workforce, can offer specialized services and foster innovation to meet evolving customer needs. Addressing regulatory complexities and ensuring robust supply chains are just some of the ways distributors can deliver value. Additionally, rapid advances in sectors like electronics, automotive, pharma, and personal care drive demand for distributors' expertise in advanced, sustainable ingredients. Embracing digital tools further supports business transformation, enhancing efficiency and strengthening customer relationships.

Despite economic and geopolitical headwinds, investment remains essential in several areas. The development and engagement of personnel is paramount, especially as we strive to attract and retain skilled talent. Additionally, investment in ESG and DEI is critical to align with industry expectations and meet stakeholder demands. Technological upgrades—such as ERP systems, data analytics, and AI—are vital for process efficiencies, enhancing decision-making, and enabling a growing sophistication of our offering. Our laboratories and technical staff are our investment into in-house innovation capabilities, and they empower us to drive innovation directly, while a robust supply chain setup ensures we can meet customer demands reliably.

Innovation is a significant growth driver in the specialty chemicals industry, and distributors are uniquely positioned to facilitate it. As intermediaries, we connect suppliers and customers, gathering and sharing insights on market trends, requirements, and product performance. By leveraging our extensive data and knowledge, we help suppliers understand the evolving needs of diverse market segments. In-house labs enable us to develop proprietary solutions and promote new technologies, bridging the gap between production capabilities and customer expectations. This approach helps overcome structural challenges in the supply chain, fostering collaboration and ultimately driving industry innovation.

Chemical Sector Navigates Turbulent Waters

Thomas Dassler, CEO, Häffner

"We at Häffner Group … play a critical role in providing the downstream sector with essential raw materials that are becoming increasingly scarce in the region."

One of the most pressing challenges currently affecting both basic and specialty chemicals across all segments is the lack of demand. Prices remain low, adding to market pressures. In addition, increasing bureaucracy from regulators in Berlin and Brussels is putting further strain on the sector. High labor and energy costs, especially by international standards, also reduce the competitiveness of chemical producers. The ongoing economic weakness in Germany further exacerbates these challenges, limiting domestic growth potential and impacting the broader market dynamics. Geopolitical uncertainties, including global trade tensions and shifting alliances, add an additional layer of unpredictability to the market landscape, affecting supply chains and investment decisions. This environment is likely to lead to further closures of chemical production facilities and the relocation of operations abroad, posing risks to domestic supply chains.

However, at Häffner Group, we view these challenges as opportunities. The shift in production and supply dynamics underscores the growing need for agile distributors who can source and transport large volumes of materials from other markets into Europe. We at Häffner Group recognize the chance to bridge these supply gaps and play a critical role in providing the downstream sector with essential raw materials that are becoming increasingly scarce in the region. There is also an opportunity to invest in innovative, sustainable solutions, such as green chemistry, that can differentiate market players, meet evolving regulatory requirements, and attract environmentally conscious customers. By embracing these challenges, Häffner Group aims to strengthen its role as a reliable partner and leader in adapting to a changing industry landscape.

Driving Sustainability through Innovation Together

Rolf Kuropka, CEO, Krahn Chemie Group

"As a distributor, we can play a crucial role in driving sustainability: acting as a consultant for our typically smaller customers and inspiring our suppliers"

I believe that challenges and opportunities are two sides of the same coin. It is up to us to turn it to the favorable side. Good examples are the overwhelming European legislation, where we can act as a consultant and facilitator for our customers, and restrictions regarding the use of raw materials, where we could lead the way in finding sustainable alternatives.

I'm fully convinced that every investment which helps to make our planet a better place for future generations is worthwhile. As a distributor, we can play a crucial role in driving sustainability: acting as a consultant for our typically smaller customers, inspiring our suppliers, and serving as an "detective" discovering interesting new sources. Absolutely, through a perfect cooperative approach with our suppliers and customers: this can involve finding innovative raw material sources from our customers' waste streams, unleashing synergies from the combination of raw materials from our various suppliers in our application laboratories and developing unique testing procedures to support our suppliers and customers in their product development.

Investing in Innovation and Sustainability for Growth

Pia Berghaus, Vice President, Möller Chemie

"Investments in digital transformation, sustainability, and collaborative innovation are crucial for navigating uncertainties and unlocking growth potential."

There are several challenges, for example, the demand for sustainability. Customers increasingly prioritize eco-friendly and sustainable products, which requires distributors to adapt their portfolios. Here, we can act as a bridge between suppliers and customers to promote green products. Customers expect digital solutions for ordering, tracking, and communication, which pushes distributors to modernize rapidly. The digital transformation also requires investment in ERP systems and AI-driven inventory management.

For our customers and for ourselves it is important to offer value-added services. In this case, providing technical expertise, regulatory compliance support, and application development are key factors for having a long-term customer relationship. When we talk about technical expertise, we think of developing solutions with customers as it strengthens loyalty and differentiates the distributor.

If we look at the industry, we can clearly see that there is a consolidation trend. There are many mergers and acquisitions within Europe, which increase the competition for smaller players like us.

Then it is necessary to mention the supply chain disruptions. Global challenges, such as geopolitical tensions and raw material shortages can affect inventory and logistics, but also the willingness for further investments.

For all the challenges and opportunities, we need the right people. We need the right people to be successful in our transformation. This is why talent development is crucial.

All in all, we can say, that the chemical distribution industry stands at a crossroads of challenges and opportunities. Investments in digital transformation, sustainability, and collaborative innovation are crucial for navigating uncertainties and unlocking growth potential. By embracing the role of solution providers, distributors can support both suppliers and customers in shaping a resilient and innovative future.

Eco-Friendly Demand Drives Opportunity

Gerd Bergmann, Managing Director, Nordmann

"The demand for eco-friendly and sustainable products offers opportunities for visionary companies."

The chemical industry currently faces numerous, partly unprecedented challenges, including high energy and fluctuating raw material prices, regulatory burdens and geopolitical tensions. These factors impact customers in the manufacturing industry and thus also distributors, resulting in a weaker demand.

New technologies, which are rapidly evolving, offer many opportunities for increasing efficiency and developing products. Mastering (master) data and external market knowledge is a decisive factor for future success. We are heavily investing in the digitalization of processes to make faster, success-oriented, data-based decisions.

The demand for eco-friendly and sustainable products offers opportunities for visionary companies investing in green technologies, recycling processes and sustainable practices but is often still too price driven. Sustainability is crucial for environmental and climate protection. Nordmann has made it a central element of its strategy. In future years more products will be banned or replaced by sustainable ones. Looking just at scope 1 and scope 2 emission will no longer be enough, the CO2-equivalent will become important as a currency. Governments must reduce rampant bureaucracy and regulatory frenzy to avoid excessive burden on companies, as is currently the case, while continuing to protect the general public.

Additionally, our colleagues are essential for us. The growth of an individual will always be at the center of our undertaking, and we will continue to attract and develop the best talents from inside and outside the chemical industry. More than ever, distributors have the task of acting as a strong link between customers and suppliers, for example, to drive forward the above-mentioned development of innovative, sustainable products. Strategic partnerships with authorities can also be an advantage in this respect and investing in our own laboratories, as Nordmann steadily does, will support as well.

Seizing Growth through Digital Transformation

Dany Njeim, CEO, RN Chemicals

"Digital transformation presents significant prospects for the chemical distribution sector, enabling distributors to leverage technology for enhanced efficiency."

In the current landscape, distributors in the chemical sector face several significant challenges. Supply chain disruptions require them to adapt swiftly to unforeseen events and find effective ways to mitigate their impact. Additionally, the increasing regulatory complexity demands that distributors stay updated on evolving regulations to ensure compliance, thereby avoiding potential legal and financial penalties. They also grapple with sustainability and environmental concerns, needing to balance profitability with their responsibility towards the environment. Furthermore, cybersecurity threats pose a risk, necessitating investments in robust measures to protect sensitive data and prevent cyberattacks.

Despite these challenges, there are also notable opportunities for growth. Digital transformation presents significant prospects for the chemical distribution sector, enabling distributors to leverage technology for enhanced efficiency. By offering value-added services such as formulation development, technical support, and customized solutions, distributors can differentiate themselves in a competitive market. Embracing sustainability and the circular economy not only leads to cost savings but also improves brand reputation and fosters increased customer loyalty. Lastly, global expansion into new markets can open up fresh avenues for growth, allowing distributors to tap into emerging opportunities.

Even amidst economic and geopolitical challenges, certain areas of investment remain crucial for chemical distributors to ensure long-term sustainability and growth. Key focus areas include digital transformation, which encompasses supply chain optimization, data analytics, and customer relationship management (CRM). Embracing the sustainability and circular economy through eco-friendly products, sustainable packaging, and waste reduction and recycling is essential. Additionally, distributors should also prioritize value-added services like technical expertise and product development to enhance their offerings. Finally, investing in cybersecurity is critical to protect sensitive data and maintain trust in a rapidly evolving digital landscape.

Optimism and Growth Amid Economic Challenges

Arthur Jaunich, CEO, Stockmeier Chemicals

"At Stockmeier Chemicals we keep investing in our offering of value-added services to best support our customers in building their competitive edge."

The current European economic environment remains challenging, with structural issues—for example, high energy costs, excessive regulation, or scarcity of labor—limiting the competitiveness and growth prospects of many industrial producers. Also, chemical distribution, especially in basic chemicals, is impacted by slowing demand and price erosion. We expect market consolidation to further accelerate in the chemical distribution sector. Still, we at Stockmeier Chemicals, stay optimistic. As a chemical distributor, we support our customers with an efficient, reliable, and safe supply of a broad portfolio of chemicals. We help optimize product sourcing and logistics, provide support related to regulation and sustainability, and offer individual toll manufacturing solutions. At Stockmeier Chemicals we keep investing in our offering of value-added services to best support our customers in building their competitive edge. And we will continue to expand, also M&A driven, to provide both our customers as well as principals with even broader coverage.

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INNOVATION PITCH

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Risk Assessment
Critical Insights for Companies into Climate and Biodiversity Risks

Biomaterial Innovation
Microcrystalline Cellulose (MCC) with a Low Carbon Footprint

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Giving Environmental Data an Exact Price Tag for Businesses

Providing Critical Insights into Climate and Biodiversity Risks for Companies

Refinq, a Vienna, Austria-based start-up founded in 2023 by Franziska Walde, Lukas Fischer, and Markus Berger, aims to empower companies by providing critical insights into climate and biodiversity risks through advanced data analytics. Leveraging their backgrounds in ESG sectors, the co-founders have developed a platform that integrates geospatial data, climate scenarios, and machine learning to help businesses make informed decisions regarding their environmental impact and compliance with stringent EU regulations.

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Franziska Walde, Co-Founder, Refinq

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Lukas Fischer, Co-Founder, Refinq

CHEManager: What were the key drivers behind the creation of Refinq? How did the idea come about?

Lukas Fischer: The idea for Refinq emerged from our collective experiences in the ESG space. We recognized a significant gap in how businesses understand and manage climate and biodiversity risks. Personally, I have a background in law and regulatory affairs, and I saw firsthand how challenging it is for companies to navigate these complex issues. We wanted to create a solution that not only provides insights but also translates them into actionable financial terms.

> *"Our tool is specifically designed to address the environmental challenges faced by the chemical and pharmaceutical industry."*

Franziska Walde: For me, working in media sales within a green economy-focused capital market medium highlighted the growing need for businesses to proactively address environmental risks. The impact on economy is something we are all passionate about, and Refinq allows us to contribute meaningfully by empowering companies to become leaders in environmental stewardship.

What do you want to change with Refinq in the business world?

F. Walde: Our mission is to transform environmental data into actionable financial insights to protect and enhance business value. We envision a world where companies lead the fight against climate and nature risks by using foresight and innovation to not only protect but also enhance their value.

What central problem is Refinq addressing?

L. Fischer: Refinq addresses the critical need for businesses to understand their relationship with climate and biodiversity risks. We provide companies with essential insights into their future viability and enable them to proactively shape their transformation. This is crucial for staying resilient in the face of increasing environmental challenges.

What have been your biggest challenges so far?

F. Walde: Educating the market has been a significant challenge. Many companies are still not fully aware of the importance of integrating environmental risk assessments into their business strategies. We spend a lot of time helping our clients understand the long-term value of proactive environmental management.

What is the value proposition of Refinq for companies?

F. Walde: Refinq provides a competitive advantage by helping companies manage environmental risks proactively. We offer cost-effective risk mitigation, regulatory compliance support, and enhanced sustainability reporting. Our platform's predictive analytics and real-time data enable better decision-making and strategic planning, ultimately protecting and enhancing business value.

How does your tool help the chemical and pharmaceutical industry in particular?

L. Fischer: Our tool at Refinq is specifically designed to address the environmental challenges faced by the chemical and pharmaceutical industry, particularly its significant water usage. By analyzing and optimizing water consumption, Refinq helps companies reduce their environmental impact, improve resource efficiency, and comply with strict regulatory standards. Additionally, the tool assesses climate risks and biodiversity impacts, ensuring that operations are sustainable and resilient in the long term.

> *"Our mission is to transform environmental data into actionable financial insights to protect and enhance business value."*

Personal Profile

Franziska Walde, a seasoned media and sales professional with a profound dedication to the green economy, co-founded Refinq in 2023. Her extensive experience in media sales, coupled with a focus on capital markets and sustainability, drives her commitment to transforming environmental data into actionable business insights. As a passionate advocate for the impact economy, Franziska leads Refinq's mission to help companies proactively manage climate and biodiversity risks, ensuring their long-term resilience and regulatory compliance.

Lukas Fischer, co-founder of Refinq, is a legal expert with extensive experience in regulatory affairs and ESG compliance. His background in law and his passion for sustainability have fueled his drive to help businesses navigate the complexities of environmental risks. At Refinq, Lukas leverages his expertise to integrate advanced data analytics and machine learning into actionable insights, guiding companies towards sustainable and financially sound practices. His commitment to environmental stewardship is at the core of Refinq's innovative solutions.

Business Idea

Decoding Nature for Smarter Business Decisions

In a world where over half of global GDP is moderately or highly dependent on nature, businesses face a critical paradox. They rely on ecosystems and natural services for raw materials, supply chain stability, and long-term growth. Yet, economic activities are the primary driver of biodiversity loss, increasing systemic risks that are complex and challenging to quantify.

Refinq solves this challenge with an innovative platform that decodes nature- and climate-related risks, empowering companies to understand their dependencies and impacts on the natural world. By combining geospatial analysis, satellite imagery, climate models, and biodiversity metrics with cutting-edge AI, Refinq provides actionable insights that translate nature-based risks into clear financial implications.

At the core of Refinq's offering is the Digital Nature Twin. This pioneering tool creates digital replicas of company assets, providing location-specific, data-driven assessments. It helps businesses identify risks, quantify financial impacts, and prioritize initiatives that strengthen resilience while fostering a nature-positive transition.

Refinq's platform delivers:

- Systemic Risk Assessments: Pinpoint nature and climate risks across supply chains.
- Regulatory Support: Streamline compliance with frameworks like TNFD and CSRD.
- Scenario Planning: Simulate future conditions to drive data-informed decisions.

Built for scalability, Refinq operates on a subscription model tailored to the number of assets assessed. From small businesses to global enterprises, the platform provides customized solutions that integrate seamlessly into workflows. A user-friendly dashboard delivers real-time analytics, enabling businesses to anticipate risks, optimize sustainability strategies, and seize competitive advantages in a rapidly evolving regulatory landscape.

With Refinq, nature is no longer just a risk—it becomes an opportunity to unlock value and drive sustainable growth. Businesses gain the tools to transform how they approach environmental challenges, ensuring resilience, compliance, and leadership in the transition to a nature-positive economy.

- Refinq, Vienna, Austria
  www.refinq.com

Elevator Pitch

Transforming Nature Risks into Measurable Value

Refinq empowers companies to navigate the complexities of climate and biodiversity risks by transforming nature-related challenges into actionable business insights. Using advanced AI and geospatial analysis, Refinq processes diverse data sources—from satellite imagery to proprietary client data—to deliver unparalleled clarity on systemic risks and financial implications.

At the heart of our platform lies the Digital Nature Twin, a groundbreaking tool that creates digital replicas of corporate assets, providing location-specific assessments and scenario planning. This enables businesses to identify vulnerabilities, simulate future outcomes, and make data-driven decisions that align financial goals with nature-positive strategies.

Milestones:

2023-2024

Phase 1: Core Technology Development

- Launch 2023 in Vienna the Digital Nature Twin with foundational geospatial and biodiversity analysis capabilities.
- Develop AI-powered systemic risk assessment tools.
- Establish partnerships with early adopters across financial services, energy, and real estate.

2024-2025

Phase 2: Scaling Solutions

- Integrate advanced scenario modeling and compliance modules (TNFD, CSRD).
- Expand proprietary datasets through strategic collaborations with biodiversity and climate data providers.
- Launch additional service tiers tailored to mid-sized enterprises and multinational corporations.

Roadmap:

2025 – and beyond

Phase 3: Global Expansion

- Launch multilingual support and localized dashboards for international markets.
- Build an ecosystem of third-party integrations, enabling seamless use of refinq insights across client systems.
- Expand AI capabilities for automated decision support and benchmarking.
- Drive industry thought leadership by contributing to global nature-positive frameworks.

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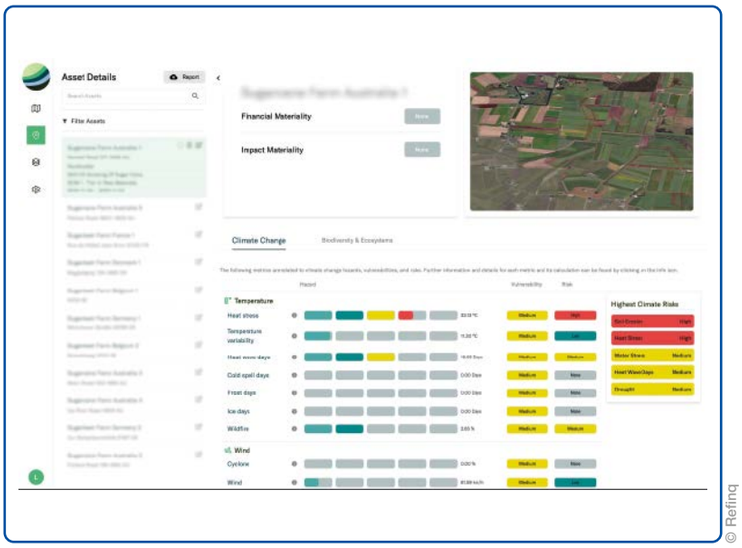
Refinq's platform decodes nature- and climate-related risks, empowering companies to understand their dependencies and impacts on the natural world.



© Refinq

One of Refinq's solutions can enable financial institutions to make informed investment decisions using hyper-granular biodiversity and climate data.

Pioneering Sustainability in Pharma Excipients

Harnessing the Power of Lignocellulose to Create Sustainable Solutions

As the pharmaceutical industry faces mounting pressure to reduce its environmental footprint, a Finnish company is setting a new standard in sustainable manufacturing. Nordic Bioproducts Group (NBG) has developed AaltoCell technology, a patented process for producing microcrystalline cellulose (MCC) with an impressively low carbon footprint. In this interview, NBG's CEO and co-founder Olli Kähkönen, discusses how the company's proprietary technology is reshaping the excipient landscape by delivering sustainable, safe, and innovative solutions rooted in Finnish expertise.

© Nordic Bioproducts Group

Olli Kähkönen, Co-Founder, Nordic Bioproducts Group

Personal Profile

Olli Kähkönen, co-founder & CEO of Nordic Bioproducts Group, has over 30 years of experience in marketing, international business, and product commercialization. In 2019, inspired by a passion for sustainability, he co-founded Nordic Bioproducts Group with Professor Olli Dahl. Holding Master's Degrees in Finance & Marketing, and Economics, Olli Kähkönen combines business expertise with a deep connection to nature. Born in Rauma, Finland, he finds inspiration in Finland's forests, balancing his professional mission with a love for family, music, and outdoor adventures.

CHEManager: What inspired the development of AaltoCell technology and the founding of Nordic Bioproducts Group?

Olli Kähkönen: The journey began at Aalto University's School of Chemical Engineering, where I had the privilege of collaborating with Professor Olli Dahl, a distinguished researcher in sustainable biomass refining. We were united by a shared commitment to addressing climate change, driven by the belief that innovative technologies could create meaningful impact.

Among Dahl's research projects, one breakthrough stood out: a novel method to transform cellulose-rich wood pulp into high-value materials like MCC. Remarkably, his innovation proved to be a sustainable solution related to chemical use, energy efficiency, and process performance. Inspired by its potential, a dedicated team was formed to further develop the innovation.

The result was AaltoCell—a patented technology that harnesses the power of cellulose for a wide range of applications, from pharmaceuticals to cosmetics and more. In 2019, we founded Nordic Bioproducts Group to bring this groundbreaking innovation to the market.

How does AaltoCell technology transform MCC production?

O. Kähkönen: AaltoCell is designed to revolutionize MCC production by dramatically reducing its environmental impact. Compared to conventional methods, it uses 95% less water, 69% fewer chemicals, 90% less energy, and reduces the global warming potential (GWP) of MCC production by 81%. The process also minimizes waste by capturing valuable by-products like sugars through a closed-loop system.

These benefits are confirmed by a third-party life cycle assessment (LCA) at our new commercial-scale production facility in Lappeenranta, Finland.

Can you tell us more about your new facility in Finland?

O. Kähkönen: Our facility in Lappeenranta addresses three critical needs of the pharmaceutical industry: demand for sustainable solutions; need for safe, pure ingredients; and importance of supply chain security.

Opened in April, it's the first commercial-scale plant to utilize our AaltoCell technology. It features the world's first continuous MCC production line with a capacity of up to 10,000 tons annually.

The LCA figures mentioned earlier come directly from this facility, showcasing how our technology can deliver significant environmental benefits at scale. Our achievement in Lappeenranta was underscored when we were recognized as a finalist in the sustainability category at this year's CPHI Milan Awards.

Let's talk about safety and purity, how does AaltoCell address these issues, especially the hot topic of nitrosamines?

O. Kähkönen: Nitrosamines have become a critical concern due to their potential presence in medicines and their classification as probable human carcinogens. This issue has drawn attention from regulators like the FDA, which recently issued guidance urging manufacturers to assess and mitigate these risks.

Our PURA Series MCC is designed to meet these requirements. By starting with pristine raw materials—softwood pulp from sustainably managed Finnish forests and water from Lake Saimaa, considered one of the purest in the world—we're able to achieve unmatched purity in our product. In fact, our PURA Series MCC maintains nitrite levels below detection—a significant factor in mitigating nitrosamine risks and meeting the highest regulatory and safety standards.

We're also proud that our production facility meets ISO 9001:2015 and Excipact certification standards, reinforcing our commitment to stringent quality management and manufacturing practices.

What is PURA Series, and how does it stand out in terms of performance?

O. Kähkönen: PURA Series MCC represents the full potential of AaltoCell technology, combining exceptional functional properties with environmental responsibility to meet the evolving needs of pharmaceutical manufacturers.

Performance-wise, it combines high bulk density with a unique spherical shape, ensuring ultimate flowability and high compressibility. It also improves disintegration, facilitating the efficient release of active ingredients for better efficacy.

Beyond its functional advantages, PURA Series provides supply chain resilience within Europe. By producing locally, we enable reliable sourcing and supply chain security—essential factors for manufacturers prioritizing both reliability and sustainability in their operations.

What's next for Nordic Bioproducts Group?

O. Kähkönen: The launch of PURA Series at CPHI Milan was just the beginning. We were excited to showcase our team's expertise and introduce our innovative MCC products to the pharmaceutical community.

Looking ahead, we're expanding the scope of AaltoCell to support other products, including nanocellulose crystals, and pursuing new applications for PURA Series.

Any final thoughts on the future of sustainable pharmaceuticals?

O. Kähkönen: Sustainability is no longer optional—it's an industry imperative. Our journey with AaltoCell is a testament to what can be achieved when we blend scientific rigor with environmental stewardship. We're excited to continue leading this charge and hope to see our efforts inspire others to innovate in the pursuit of a cleaner, more sustainable future for pharmaceuticals.

Business Idea

Cellulose Reborn

Nordic Bioproducts Group (NBG) is redefining what's possible with biomass, transforming nature's most abundant renewable resource into innovative solutions to address global sustainability challenges. Based in Finland, NBG is more than a biomaterials innovator—it's a strategic partner helping companies transition to renewable, circular solutions with measurable business impact.

NBG's expertise spans biomass chemistry, engineering, smart technology design, scalable manufacturing, and commercialization—creating a seamless pathway from lab to market. This holistic approach positions NBG as a key enabler of the green transition, helping industries reduce reliance on both fossil-based and virgin materials and adopt renewable solutions.

At the heart of NBG's innovations is its patented AaltoCell technology, a groundbreaking method for producing microcrystalline cellulose (MCC) and other biomass derivatives. These advanced materials empower industries to integrate high-performance bio-based solutions into their products while addressing global sustainability goals.

Complementing its technology, NBG's BioInnovation Garage (BIG) serves as a collaborative platform for R&D, feasibility testing, and scaling sustainable innovations. By bridging the gap from concept to commercialization, BIG empowers partners to turn visionary ideas into tangible results.

In 2024, NBG launched its first commercial-scale production facility for sustainable MCC. With an annual capacity of up to 10,000 tons, its facility in Lappeenranta, Finland ensures a reliable supply of high-quality materials to meet regulatory demands and customer expectations for greener products.

As a pioneering force, the company is dedicated to introducing breakthrough technologies and biomaterials that redefine the landscape of sustainable solutions and enable a more circular future.

■ Nordic Bioproducts Group, Espoo, Finland
https://nordicbioproducts.fi

NORDIC BIOPRODUCTS GROUP

Elevator Pitch

Biomaterial Innovation

Microcrystalline cellulose (MCC) and other cellulose derivatives are valuable ingredients utilized across diverse industries, enriching product properties and performance. Moreover, the use of cellulosic materials fosters environmental sustainability by replacing non-sustainable and potentially harmful substances in a range of applications.

As the purest and most versatile form of cellulose, MCC has been used in a range of industries for decades—from pharmaceuticals and food supplements to food ingredients, cosmetics, and skincare. The global demand for MCC is high, and the market is projected to grow exponentially by 2030.

Enter Nordic Bioproducts Group. The company's AaltoCell technology was developed to be the most sustainable and efficient technology to produce MCC in the world. It harnesses the power of cellulose to create high-value biomaterials for use across a wide range of industries —from pharmaceuticals, supplements, food, cosmetics, textiles, composites, packaging and beyond.

Milestones:

2019
- NBG founded by Olli Kähkönen and Olli Dahl

2020–2021
- AaltoCell IPR & patent portfolio transferred from Aalto University to NBG
- First commercial R&D projects
- Team of ten academics

2022
- CMPC collaboration & equity investment
- Business Finland funding for piloting plant
- Lappeenranta MCC pilot factory building starts
- Team of 15 academics

2023
- Taaleri equity investment
- Team of 25 academics

2024
- Marubeni and PTTMCC MOUs signed
- AaltoCell commercial-scale MCC production starts in Lappeenranta
- Excipact certification achieved
- 45 employees
- Marubeni 1st production trial a success
- Pharma concept approved at CPHI Milan 2024
- First distributor agreements signed
- CPHI 2024 Award finalist—Sustainabilty

The co-founders of Nordic Bioproducts Group: Olli Dahl and Olli Kähkönen.

NBG has developed AaltoCell, a patented process for producing microcrystalline cellulose (MCC), which achieves a significant 72% reduction in greenhouse gas emissions compared to traditional methods.

European Chemistry Partnering 2025

The 9th European Chemistry Partnering (ECP), a business speed dating event for the chemical and biotech industry, will be held in two parts: on February 12, 2025 as a live conference in Frankfurt/Main, Germany, and on February 25–26 as an online event. The focus is on tech scouting which helps to connect potential partners that support or share a common vision of a sustainable future. Corporates can find new technologies to solve the problems of today and tomorrow. Start-ups and SMEs can engage in dialog with venture capitalists and industry representatives.

■ https://ecp.european-chemistry-partnering.com/9th-ecp/

European Coatings Show 2025

The European Coatings Show (ECS) covers all aspects of the production of paints, coatings, sealants, construction chemicals and adhesives on March 25–27, 2025, in Nuremberg, Germany. The demands placed on paint and coatings are constantly growing. Therefore, the coatings industry faces great challenges. ECS gives attendees the opportunity to meet innovation leaders and discuss the latest developments in materials as well as technologies and equipment.

■ www.european-coatings-show.com

Interphex 2025

The International Pharmaceutical Expo (Interphex), dedicated to pharma and biotech innovation from development to marketing, is scheduled to take place on April 1–3, 2025, in New York, NY, USA. The annual trade show and technical conference brings over 10,000 global industry professionals and 625+ leading suppliers together. The event provides a combination of no cost technical conference, exhibits, demonstrations, and networking events.

■ www.interphex.com/

Chemspec Europe 2025

Chemspec Europe is to take place on June 4–5, 2025, in Cologne, Germany. The event is the key platform for manufacturers, suppliers and distributors of fine and specialty chemicals to showcase their products and services to a dedicated audience of professionals in the industry sector. The product portfolio of this event covers fine and specialty chemicals for various industries. Conferences presenting the latest results of ongoing R&D projects round off the show.

■ www.chemspeceurope.com

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Thanks to the use of renewable raw materials and energy sources, we are driving a future with more sustainable ingredients for detergents.

› **We are world leaders in the development of sustainable ingredients for detergents, with our NextLab range.**

This future has a future

Discover more at chemicals.moeveglobal.com

We produce raw materials for detergents with up to an 80% lower carbon footprint than fossil-based alternatives, according to a cradle-to-gate life cycle assessment.