SPECIAL REPORT ON MEXICO

A Global Business Reports publication presented with Chemical Week

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INTRODUCTION TO MEXICO

This report has been produced by Global Business Reports. Research conducted by Mariolga Guyon, Maeve Flaherty, Esteban Camarena, Carola Gómez and Natalia Preciado. For more information, please visit gbreports.com or contact info@gbreports.com. Cover photos courtesy of Grupo Petroquímico Beta, UPL, Polioles and Pochteca.

Despite a challenging macroeconomic landscape, in 2022 the Mexican chemical and petrochemical industries not only grew but positioned themselves to take advantage of a future defined by reshoring and nearshoring. Macroeconomic shocks including the Russia/Ukraine War, US-China political instability, and the combination of high inflation and dramatic interest rate rises compounded pre-existing logistics and supply chain challenges. For Mexican chemical and petrochemical companies, however, these challenges provided an opportunity to rethink how they do business. The visible trend among Mexican chemical and petrochemical companies in 2022 was an investment in operational efficiency and flexibility: diversifying supply chains, digitalizing processes, and prioritizing sustainability at all points along the value chain.

Behind this success is the strong position of the Mexican economy exiting the pandemic. At the end of 2022, the index of global real economic activity recorded a growth rate of 4.7%, and, according to the IMF's World Economic Output, Mexico's GDP grew 2.1% in real terms. Many companies experienced net gains throughout 2020 and 2021 due to the increase of demand in individual-use plastics and personal care products that have continued to benefit from protracted demand and post-pandemic shifts in consumption trends.

While this upward trend indicates relative progress and the overall resiliency of the Mexican economy, a closer analysis of the economic indicators contributing to the growth reveals a complex situation. Upsurges have varied across economic sectors. For instance, Mexico's agricultural sector and industrial activities, which account for a significant portion of the GDP, have both grown throughout 2022. In contrast, the services and construction sectors have yet to recover to pre-pandemic levels.

According to Miguel Benedetto, general director of the Chemical Association of Mexico (ANIQ), the chemical and petrochemical sector has seen a growth in revenues, but this is not reflected in the production output across the entire sector. While higher prices may translate to higher revenues, production costs, inflation and the threat of recession in 2023 have limited Mexico's chemical production capacity, which stood at 895,568 tons (t) in November of 2022, according to ANIQ. The challenges have impeded the industry from operating at its full potential. In October 2022, data from INEGI showed the annual inflation rate stood at 8.4%, while data from ANIQ indicated the price of crude, which nearly doubled between 2020 and 2021 according to primary benchmarks, is projected to remain high in 2023.

The insufficient supply of basic petrochemicals such as ethane, propylene and ethylene oxide from PEMEX, the country's main supplier of chemical raw materials, remains an issue. "The government has focused on the refining and production of petroleum at the expense of producing basic petrochemicals," explained Benedetto.

Mexico imported over 7 million t of petrochemicals in 2021, which still falls short of the national demand. According to Dr. Adrián Duhalt, research scholar at the Baker Institute on Global Energy Policy, to stimulate the growth of the chemical and petrochemical sector, PEMEX must invest in critical infrastructure, and private companies must be allowed to fully participate in the downstream sector of the economy.

While PEMEX has been slow to respond to market demands, it has participated in modernizing the industry through public-private partnerships. Braskem Idesa has invested US$400 million to build an ethane import terminal in Laguna de Pajaritos in Coatzacoalcos, Veracruz in partnership with PEMEX and other stakeholders. "This is an important development for the infrastructure needs of the petrochemical sector because it has the potential to provide ethanol to various industries down the supply chain and stimulate economic growth in the region," stated Duhalt.

Work on that terminal is continuing apace. As of February 2023, Stefan Lepecki, CEO of Braskem Idesa, stated: "30% of the EPC is completed. We have already purchased the required long-lead items and completed 80% of the engineering. Construction has started, currently focused on the foundations."

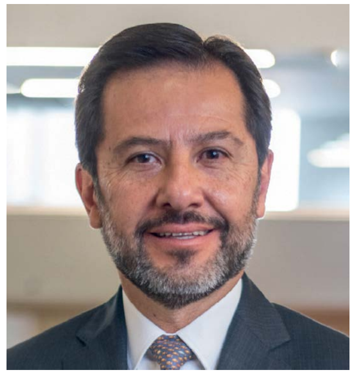
In June of 2022, Advario, a subsidiary of Oiltanking, purchased a 50% stake in the project, leading to the establishment of a joint- venture company to construct and operate the terminal called "Puerto Mexico Chemical Terminal" (TQPM).

Even once the terminal is operational, gaps will remain in the supply chain and many chemical and petrochemical companies will continue to face feedstock shortfalls. This is a missed opportunity for the country: Mexico's industrial sector depends on chemical imports at a much higher rate, 28% of the total demand, than comparative industrial economies, according to a report by McKinsey & Co.

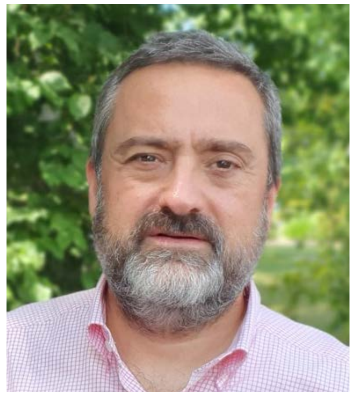
Despite these challenges, Mexico has tremendous potential given its geographical location, human capital, and market growth opportunities. The chemical industry has long been a vital player in the economic health of the country at large. In November of 2022, the industry employed 49,639 people, according to ANIQ, while in 2021, the industry contributed 2.2% to the total GDP of Mexico. The benefits the industry could potentially provide with sufficient investment are dramatic. McKinsey & Co. estimates that sustained investment in the chemical industry could add 4% growth to the country's GDP and double chemical production output by 2035.

Among the many steps required to facilitate this growth is a greater focus on innovation. In the past decade, Mexico has lagged behind other countries in chemicals patent applications. Compared to Brazil, for example, the country is far behind, submitting 15% of the number of patent submissions. However, Mexico has a talented, young, and well-educated workforce that is primed and ready to drive innovation and advance the field with the support of intentional investment.

This forward momentum is particularly visible in digitalization. Over 2022, many major Mexican companies across the value chain introduced new digital technologies including CRMs, sales platforms, digitalization of internal processes, and, particularly in the



Miguel Benedetto, General Director, Chemical Industry Association of Mexico (ANIQ)



Martín Toscano, President, Evonik Industries Mexico

agricultural sector, new technologies for data collection. The possibilities that artificial intelligence, cloud computing, and the digitalization of systems offer to the chemical industry are near limitless.

Digitalization will be vital for the industry to achieve its sustainability goals, explained Lepecki: "To counter climate change, digitalization and automation are essential for us. Carbon neutrality is our target, and we must use digital infrastructure to reduce our emissions."

Multiple companies we interviewed for this report announced STEM partnerships with local universities in 2022, demonstrating the role the chemical industry can play in facilitating and supporting the digital prowess of Mexico's population through educational collaboration. The opportunities for increased efficiencies provided by new technologies will contribute to continued growth within the industry and create technological spillover effect benefitting the entire Mexican economy.

NEARSHORING: A SHIFT FROM GLOBALIZATION TO REGIONALIZATION

In response to supply chain challenges and global inflation, the chemical industry has begun to pivot towards sourcing raw materials from regional partners, restructuring logistical strategies, and adopting new technologies to maximize efficiency and minimize operational costs. The regionalization of markets gained traction in 2020. Mexico is an increasingly attractive investment destination for companies seeking to regionalize, and has 13 Free Trade Agreements with 50 countries, such as the United States-Mexico-Canada Agreement (USMCA), which gives the country a competitive advantage as more than 80% of its exports are destined for the US market.

Martín Toscano, president of Evonik, emphasized the importance of seizing the possibilities provided by nearshoring: "Nearshoring is a significant opportunity for Mexico, but supply and regulatory issues must be addressed to take advantage of the possibility."

The impacts of the trend are already being seen. According to US census data, Mexico exported US$382 billion worth of products to the US in the first 10 months of 2022, which was a 20% increase over the same period in the previous year.

The industry is burdened by excessive regulation. Discussing product approvals, Jose Maria Bermudez, CEO of Viakem, explained: "One of our core challenges is legal certainty in our regulatory and environmental approaches. We need to understand the rules of the game to implement them, and those rules should be based on science and not ideology."

Excessive and constantly changing regulation is hostile to investment, impacting not just the chemical sector but upstream and downstream players, and particularly the energy sector. Discussing Mexico's renewable energy opportunities, Toscano said: "International and local investors need a legal framework to invest. The technology is available, and international and local players are ready to invest in these fields, but we still need a clear regulatory and political player."

Energy is an area where President Andrés Manuel López Obrador (AMLO) has encouraged particularly challenging regulations. His decision in 2021 to present a constitutional reform of the electricity sector, reversing the 2014 energy reform that allowed private investment, has the potential to be extremely burdensome to the chemical and petrochemical industry. The aim is to reinstall the government monopoly over the energy sector, which increases energy costs and reduces the sustainability of the sector.

CFE produces a limited amount of energy from renewables, particularly hydroelectric power, but it does not take advantage of Mexico's rich wind and solar resources. And, to maintain CFE and PEMEX's central position in energy production, the government has delayed approvals for wind and solar farms that are ready but need approvals to connect to the grid. With these changes, it will be nearly impossible for Mexico to reach its commitment to produce 35% of the country's electricity from renewable sources.

Government moves in the energy space have the potential to drastically impede the willingness of foreign companies to invest in the country. This is not just a domestic concern – the impact that the energy reforms will have on the private sector is angering regional partners. Canada and the US argue that these changes are in breach of the USMCA and have brought an action against Mexico; the legal challenge will probably be resolved this year and potentially lead to sanctions. For the country to truly take advantage of nearshoring, these regional partnerships are vital.

The logistics crisis has been a clear driver of nearshoring, as delays and skyrocketing prices made Mexico a far more attractive supplier than China. However, the price of shipping stabilized over the course of 2022, normalizing at the end of the year. In this context, there is concern that the rapid pivot towards Mexico may slow. However, continued geopolitical tension between the US and China, exemplified by the recent diplomatic spat over spy balloons, reduces that risk and increases the likelihood that trade barriers between the countries will persist and increase. To hold on to Mexico's advantage in a calmer logistical landscape, the state must make an active effort to attract investment.

The chemical industry has every reason to remain positive about the country's potential. At ANIQ's Annual Chemical Industry Forum in October 2022, nearshoring and the modernization of industry were the foremost topics. Benedetto highlighted the global realities that will benefit Mexico, stating: "The pandemic demonstrated that globalization is unsustainable for the continuity of the supply chain."

This is a moment of momentum for Mexico's chemical industry, with all the factors in place for transformative growth. "Nearshoring is an opportunity to reinforce the company's competitiveness and the competitiveness of Mexico's industrial sector," said Lepecki. "We have all the conditions in North America to continue developing nearshoring more competitively." ■

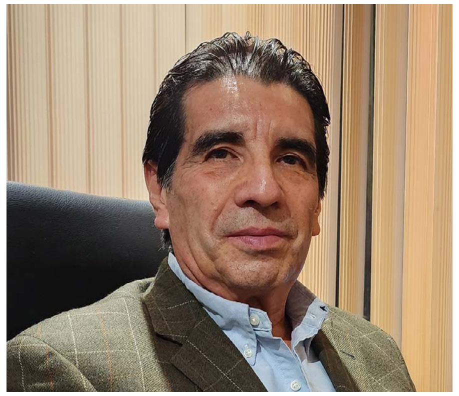
SUSTAINABILITY

Bio-based solutions and water resource management reshape Mexico's chemical Industry

Mexico has historically lagged behind other countries in its prioritization of sustainability, but that tendency is going through a rapid and broad shift. However, the new focus on sustainable and renewable practices is driven not by government investment. Instead, the private sector, including the chemical and petrochemical industry, is dragging Mexico into a more sustainable future.

According to the G20 Climate Risk Atlas, if Mexico follows a high-emission pathway, heatwaves could last 4,005% longer, leading to 34% longer agricultural droughts. In addition, extreme weather events and sea level rise will have society-wide destructive impacts, and Mexico could lose up to 1.97% of its GDP by 2050 for climate-related reasons.

Esteban Guáqueta, Latam Marketing Director for NALCO Water, Ecolab



Sergio Aburto, Latin America North Director, Acadian Plant Health

Shifting the mentality in Mexico is challenging in a difficult economic moment. Gregory Plak, CEO of Polaquimia, a specialty chemicals company that is at the forefront of using nanotechnology to create a more sustainable chemical industry, said: "It is challenging to shift consumer mentality towards more sustainable products, which can be up to three times more expensive, during unfavorable market conditions. The growing rate of inflation and the high cost of products is dissuading consumers from purchasing ecologically friendly products."

Many chemical and petrochemical companies are implementing internal and external strategies to reach Environmental, Social, and Governance (ESG) goals, not only to minimize environmental impacts and reduce operational costs, but also to bolster the company's competitive advantage in a global economy that continuously gravitates towards sustainable products and practices.

The challenge here is transitioning to sustainability and renewable energy without hampering economic growth, especially as the global economy is still recovering from the pandemic and supply chain issues. However, investment and innovation in new chemicals, particularly in water treatment that improves sustainability metrics at a lower cost, provide a reason for enthusiasm in Mexico.

ASSIGNING NUMERICAL VALUE TO WATER MANAGEMENT

The chemical industry uses water throughout the production process for heating and cooling, steam production, and other steps, however, the industry has not always prioritized sustainable resource usage. Esteban Guáqueta, marketing manager at Ecolab LATAM, explained: "Historically, the chemical industry has struggled to assign real value to water, and it is only when we set a numeral value to a resource that we begin to prioritize its management."

Setting a numerical value to water is a radical rethinking of resource management, but one that must be incorporated into the chemical industry at all points on the value chain if a tangible change is to occur.

Innovation that maximizes water usage is an essential component of changing long-held practices. Companies have invested significant resources to develop chemical products that maximize water use, especially for heavy industries. Ecolab, for example, aims to help its clients save over 300 billion gallons of water by 2030. Solenis, a specialty chemicals company, also focuses on developing products for water management. "In terms of sustainability, we aim to efficiently manage water resources using specialty chemicals, which has garnered the support of big companies," stated Ángel M. Pedraza, business director at Solenis México.

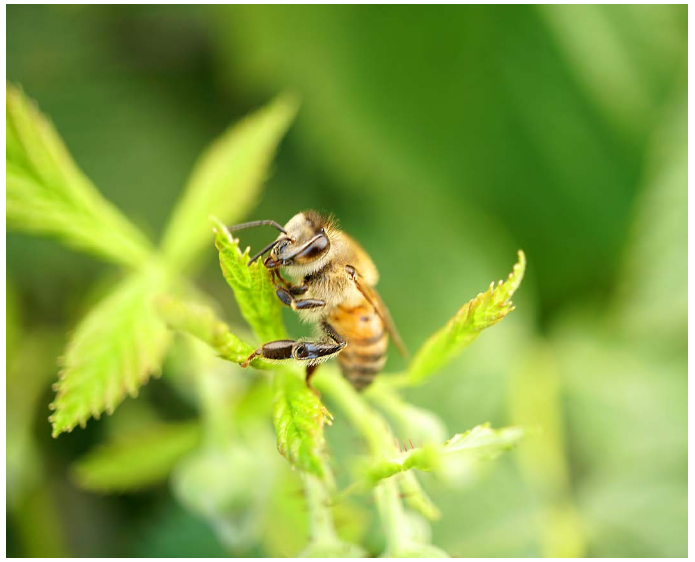


Image courtesy of Grupo Versa.

Effective water management ultimately requires specialty chemicals that can minimize the use of water as well as repurpose water for other applications. SNF Floerger is an industry leader in providing specialty chemicals for water management. Julio Rubio, general manager at SNF Floerger, said: "We have seen a growing demand for these products, especially as water scarcity and the need to repurpose water become more relevant."

AGRICULTURAL BIOLOGICALS TAKE OFF

The agrochemical segment, in particular, is an area where sustainable technology is at the forefront of innovation. In 2022, the global market for agricultural biologicals was valued at US$12.9 billion, and the industry is expected to grow at a CAGR of 13.7%, according to Markets and Markets. A combination of consumer demand for safer, certified foods and increasingly strict regulation and sustainable agricultural targets drives this desire for bio-based solutions.

In November 2022, an EU Commission law to simplify approval processes for biological crop protection products became effective, as part of the EU's Farm-to-Fork Strategy. To maintain its position as a major exporter, the Mexican agriculture sector must take advantage of the possibilities this can offer.

Mexico has two different markets with two different approaches to internal agrochemical regulation. Farmers producing high-value crops for export desire biological solutions, but those producing for internal consumption prefer cheaper chemical products. The Mexican government pays far less attention to regulating the internal market. Paulo Iria Antunes, COO of Asertglobal, a company that offers biological solutions for the agrochemical industry, explained: "It has resulted in two agricultural segments in Mexico: one that is regulated, and one that is not."

In Mexico, this opening to agricultural biologicals is driven less by a focus on sustainability within the country than by multinationals with global sustainability targets and by Mexican companies with export-driven priorities. For example, Asfertglobal expects the biofertilizer market to continue growing. Iria Antunes said: "The closeness of Mexico to the US is an opportunity, but there are strict regulations for exporting agriculture to the US."

The crop protection industry is meeting demand through investment in innovation. Acadian Plant Health produces plant stress reduction products based on a seaweed called Ascophyllum nodosum. However, this seaweed is limited in quantity by the specific regions in which it can be grown. Therefore, limiting harvesting to only what is replenishable puts pressure on supply. Sergio Aburto, director Latam North for Acadian Plant Health, said: "We are continually improving our technology and innovating to make more products utilizing the same Ascophillum."

Mexico has the potential to be at the forefront of agriculture innovation. "Our biosolutions are 100% developed by Mexican research, with 100% natural content," Roberto Escalante, general director of UPL, stated. "Last year, our focus on innovation and R&D motivated the construction of two new research centers in Mexico that create solutions for Mexico and worldwide. In addition, we plan to build a new plant for biosolutions, and we are expanding our other plants."

According to Aburto, Mexican farmers are still learning about the benefits of bio-based products. Speaking specifically of biostimulants, he explained: "There is a misconception that biostimulant products are extras rather than critical contributors to crop health."

This misconception is being combated not just by new offerings on the market, but by the investments of Mexican crop protection associations and companies involved in the segment to educate Mexican farmers on the benefits of sustainable farming. In 2023, the market for bio-based solutions in Mexico is poised to explode. ■

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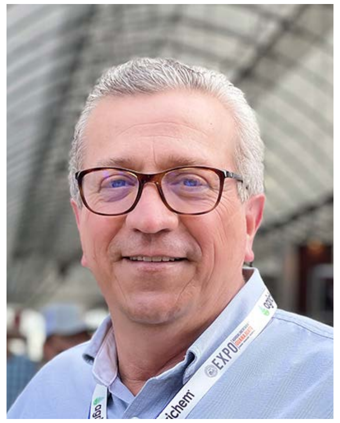
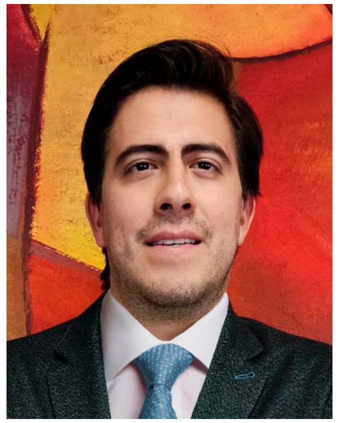
AGROCHEMICALS

New government regulation threatens Mexico's flourishing agrochemical industry


Luis González, President, UMFFAAC


Luis Miranda, General Director, Mezfer Crown

Mesoamericans in southern Mexico were the first to cultivate corn, tomatoes, avocados, cacao, and other foods now considered kitchen staples worldwide. Today, the agricultural sector in Mexico has evolved to become one of the most prominent globally as it continues to benefit from resource-rich land, ideal weather conditions, and relatively low production costs.

According to 2022 data from the US International Trade Administration (USITA), Mexico is the 11th largest agricultural producer in the world, exporting 70% of its produce to the US. Luis Eduardo González, president of the Mexican Union of Agrochemicals Manufacturers and Formulators (UMFFAAC), stated: "Mexico produces an important range of products given its vast tropical regions, and it is strategically located to meet global market demands."

Agricultural exports from Mexico to the US totaled US$39 billion in 2021. In the first quarter of 2022, the agricultural sector had already grown by 2.7%, and it is expected to continue growing throughout 2023. González highlights the role the crop protection industry plays in that success, stating: "In 2021, the crop protection industry had revenues of US$17 billion, with continuous growth in 2022."

INFLATION AND ILLEGAL FERTILIZERS: A PERNICIOUS CIRCLE

A significant challenge for the Mexican agricultural sector is record-high inflation, which was reported at 8.7% towards the end of 2022, and increased consumer prices. To tackle inflation, Mexico's President, Andrés Manuel López Obrador (AMLO), launched its Anti-Inflation and Deficit Plan (PACIC) in May 2022 to combat food prices and insulate the agricultural sector from inflation by suspending import tariffs on certain products. While industry leaders gave the plan mixed reviews, inflation rates have begun to decrease despite the ongoing macroeconomic issues in Europe and China. According to Carlos Jurado, Latin American North business director of FMC: "These issues have been exacerbated by the war in Ukraine, which directly affected the fertilizer market and thus increased the production costs of many crops."

The high cost of fertilizers and, consequently, higher production costs impact the entire agricultural sector, especially small-scale farmers. It has also contributed to the increased use of illegal pesticides. González of UMFFAAC referred to a report indicating that there is currently more than US$400 million worth of illegal pesticides in the market, which is a considerable risk for the industry. He said: "The issue continues to grow because of the government's inadequate monitoring and response."

Dr. César Parada, general director of Valent de México, said: "As an industry, we are lobbying the Senate of the Republic, seeking greater control over regulations to prevent contamination by illegal products. These products are primarily imported from China, and we are working with various players within the government sector, including the Secretariat of the Economy, who have control over imports."

Unfortunately, the illegal fertilizer market will continue to impact the crop protection industry throughout 2023.

UNEXPECTED GROWTH OPPORTUNITIES

For Mezfer Crown, the surge in the price of fertilizers presented an expansion opportunity. "The price of fertilizers increased significantly in 2022, which allowed us to significantly increase our rates by 30 to 35 percent," says Luis Enrique Miranda Arredondo, director general. Given the stength of the Mexican agrochemical industry and the country's competitive advantages, Mexico will continue being a leading agricultural producer worldwide.

Labor, in particular, is a major competitive advantage for the country. Rafael Iriarte, marketing manager Latam for Isk Biosciences explained: "One of the more attractive crops right now is the berries segment, and that's a high-value crop that is also very labor intensive. So having high-quality labor is very important to taking advantage of those sorts of opportunities."

The industry's focus on technical innovation and digitalization also bodes well for the future. "Digitalization improves the value of our production processes," says Nery Echeverria, head of sales Mexico at Bayer Crop Science. "We use drones and other forms of technology in the field to ensure that our data is precise and to improve our operations in areas such as water management."

Javier Valdés, CEO of Syngenta, is likewise proud of Syngenta's CropWise program. "The platform uses satellite imagery to provide information on the specific area of the crop with pest or disease problems, allowing technicians to focus solely on the affected area, saving time and resources."

"This industry is highly technologically advanced," affirmed Luis Osorio, executive director of the industry association Protection of Crops, Science, and Technology (PROCCyT). "When I speak of technology, I am not just referring to drones or tractors in the fields but to the technology and rigorous scientific process required to develop a single tomato that is more resistant to environmental stresses."

From the seed onward, improved digital processes will enable the industry to meet growing demand and sustainably increase yields.

THE GENERAL HEALTH LAW THREATENS MEXICO'S AGRICULTURAL SECTOR

The threat of new government regulations has been the dominant topic of conversation within the crop protection community throughout 2022. The proposed General Health Law, intended to eliminate highly hazardous pesticides (HHP), has the potential to dramatically reshape the agricultural sector and the economy as a whole in Mexico – for the worse. Fernando Vera, CEO of Grupo Versa, explained: "The law, as proposed, is too sudden and prohibits a significant number of the real solutions that farmers use to control pests in their fields. The most affected parties would be small growers who are the base of the agricultural sector in Mexico."

One need only look to Sri Lanka, a recent test case for sudden bans on agrochemicals, to see the potential for economic devastation. President Gotabaya Rajapaksa implemented an unexpected ban on chemical fertilizers in 2021. The extensive ramifications of the bill were felt nationwide in 2022, leading to widespread unrest. Sri Lanka experienced a reduction in rice yields to 2.92 million tons in 2021- 2022 from 2020-2021's 3.39 million; every crop that depends on pesticides has also been impacted, with production losses across the Sri Lankan agricultural sector. Rajith Keerthi Tennakoon, former governor of the important agricultural district Rajanganaya, commented on the law in The Guardian, stating: "We are a tropical country full of rice paddies and banana plantations, but because of this stupid fertilizer ban, now we don't even have enough food to feed ourselves."

The backlash was so intense that President Rajapaksa was forced to backtrack and repeal the law.

Under the proposed law, Mexico would see similarly dramatic production losses. Gad Ben Joseph, CEO of Koor Intercomercial, explained: "We are talking about a potential 50% drop in production from the same land."

Marco Salcedo, director of AMVAC, is one of many who identified ideological perspectives outweighing scientific approaches, saying: "There is significant pressure on the industry that is coming not from scientific research, but rather from beliefs and ideology."

This is not to say the Mexican government should not regulate the crop protection industry. However, regulation must be designed in a scientific and purposeful manner.

The increased ideological opposition to agrochemicals within the government has not just been felt in the threat of the General Health Law, but through the difficulty companies experience obtaining approvals for new products, which can take upwards of four to five years. Bernardo Gomez, director of CUPROSA, identified registering products as the most significant problem for the company in Mexico, stating: "Although it is not a new problem, the situation has worsened due to a general misunderstanding about agrochemicals."

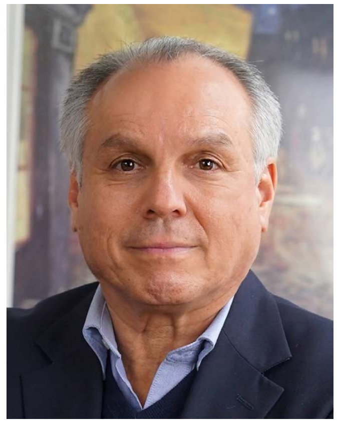
"Right now, it is easier to register a product in Europe because even if obtaining the registration is a complex and challenging process, the European administrations will follow their own rules. You might not like the response you get, but it will come," elaborated José Fueyo, director of operations of Sifatec. "In Mexico, on the other hand, the government pushes you off and gives you no information."

The inability to obtain approvals for new products only exacerbates the problem of the potential General Health Law. The agrochemical industry invests heavily in innovative technologies and new products that increase crop yields and improve effectiveness while simultaneously bettering sustainability outcomes. Still, companies struggle to bring these new products to market. Salcedo said: "Other countries do not place the same burden on their agricultural industries. How can you ban products and not approve anything new to replace them? It doesn't make sense."

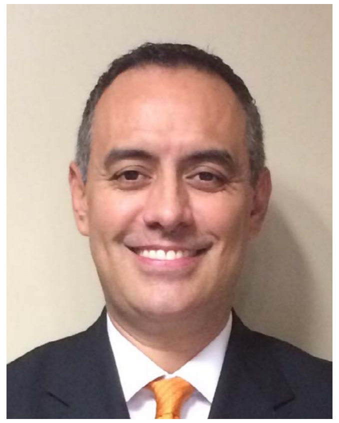
Among the industry leaders we interviewed, there was agreement that, although the law will dramatically impact the crop protection industry, the priority is the harm this new ban will do to the Mexican population. Daniel Travers, general manager of ANASAC International, said: "It is the farmer who is hurt the most, not the major multinational, and it is the customer who will suffer from high food prices due to insufficient crops."

UMFFAAC and PROCCyT are both dedicating significant energy to address the political situation. When asked about PROCCyT's priorities for 2023, Osorio stated: "Much of our agenda for this year focuses on the regulatory agenda. PROCCyT's priority for this year is advancing a scientific approach to regulation."

Again and again, in interviews with GBR, industry leaders encouraged regulation to reduce illegal fertilizer use, affirmed the need for rigorous testing to ensure that new products are safe, and highlighted efforts to improve sustainability outcomes. The agrochemical industry consistently strives to innovate. But, when it comes to feeding the world, Mexico's crop protection companies need the government to step out of the way and let them do their jobs. ■



Fernando Vera, CEO, Grupo Versa



César Parada, General Director, Valent

PETROCHEMICALS

Public-private partnerships forge a path towards improved raw materials access

Mexico's petrochemical sector is a vital link in the country's economic chain, with a wide number of petrochemical companies that benefit from Mexico's rich natural resources and a strong services sector. The growth of the sector is hampered, however, by an insufficient supply of raw materials and the government's short-sighted prioritization of fuel production over petrochemical feedstocks.

David Coindreau, general director of Polioles, divided the petrochemical industry's challenges into four parts: "Macroeconomic outlook uncertainty (including inflation); logistical bottlenecks; uncertain PEMEX investments in the petrochemical sector to recover basic petrochemical production; and the geopolitical outlook."

All four issues will continue to hamper the petrochemical industry in 2023, although positive trends in inflation reduction provide one bright spot.

Petrochemical products behave much like commodities, experiencing cycles of rising and falling demand, and periods of overcapacity. Stefan Lepecki, CEO of Braskem Idesa, stated: "Last year, we had a perfect storm in the global petrochemical industry. We had strong inflation, a near-recession, and issues in the Chinese and US economies. In the petrochemical business, we used to have overcapacity in production due to the new project and a considerable increase in energy prices due to the war in Europe. As a result, the petrochemical business faced a squeeze in the margins."

However, Lepecki added: "The growth of the petrochemical and polyethylene products has been positive compared to the general economic growth rates in Mexico and Brazil. Therefore, we expect this downcycle to be shorter than in previous years."

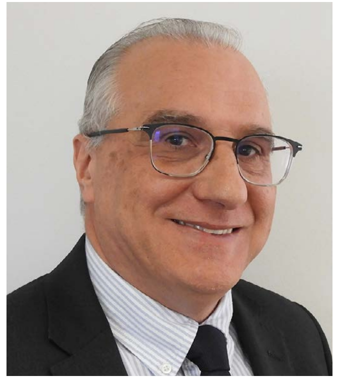
Discussing the industry's recent growth, Baltazar Manfro, CEO of Plastiglas, described an increase in sales which allowed for positive revenues overall, but explained: "Plastiglas still did not experience record profit due to high costs. It's not that the market is growing continuously, but that we are returning to a normal trajectory of the market, before the pandemic."

In 2021, the US International Trade Administration ranked Mexico the 12th major crude oil producer globally, 21st in crude oil reserves, 16th in refined capacity, and 5th in logistics infrastructure. Estimates for 2022 indicate a 0.05% growth in total local production, making it the fourth largest producer in the Americas after the US, Canada and Brazil. Mexico should, and in earlier years could, be more than able to supply the needs of its petrochemical industry. That petrochemical feedstocks remain lacking is a story of persistent government neglect of petrochemical infrastructure.

Government investment in PEMEX, although insufficient, has nonetheless led to the July, 2022 opening of the Dos Bocas refinery. AMLO, a fervent resource nationalist, opened the refinery with significant fanfare despite the refinery being far from completion. It is not expected to begin producing motor fuels until 2023. Experts believe it will not be operational at full capacity until approximately 2025, when Dos Bocas will be PEMEX's largest refinery with a processing capacity of up to 340,000 barrels per day.

However, there was little enthusiasm about the project among the industry leaders interviewed for this report. PEMEX is dedicating too significant a portion of its resources and attention to the project at the expense of modernizing and improving other areas. The refinery, though bolstering the nation's petroleum production, will not provide feedstocks for the petrochemical sector, and as such does not solve the larger feedstock shortages issue.

Stefan Lepecki, CEO, Braskem Idesa



Baltazar Manfro, CEO, Plastiglas

Mexico currently suffers from a deficit of many key feedstocks, including ethane, propylene, ethylene oxide, ammonia, and sulfur, among others, with production capacity for the industry at approximately 70% in 2022. Coindreau explained: "Ethane production has declined 55% over the last six years, placing continuing pressure on our industry and forcing us to outsource and focus investment elsewhere."

The insufficient and unreliable supply has led to a trade imbalance at Mexico's expense, with nearly US$30 billion in raw materials imported per year.

This will cause a long-term shift in the industry. Raúl Baz Harvill, CEO of Grupo Petroquímico Beta, stated: "In my opinion, the lack of ethylene oxide will lead to a consolidation of the industry. Access to raw materials, particularly ethylene oxide, is always a significant problem. Indeed, some companies are looking to shift their focus entirely."

Harvill explained that Grupo Petroquímico is looking for products that contain less or no ethylene oxide: "We are moving into that type of production because your supply is more secure, ensuring fewer ups and downs in production and headaches due to supply issues."

In addition to a lack of feedstock production, the government's paltry investment in petrochemicals has resulted in aging infrastructure and poor training. Accidents are a noticeable risk in Mexico, as demonstrated by a pipeline explosion on November 30, 2022, in Veracruz that injured 19 people and temporarily halted access to ethylene oxide.

PEMEX is currently experiencing a generational change that is transforming the company's capacity. The experienced employees who have the necessary expertise are retiring, and those who remain do not have the necessary experience and abilities to carry out the complicated operations.

There are some signs of progress. In October of 2022, PEMEX announced that it will increase gas production by up to 400 million cubic feet. This number, however, still falls short of Mexico's demand for 8 billion cubic feet per year. "We know that if producers had consistent access to raw materials, they would maximize production capacity," Benedetto stated. "Therefore, sourcing locally produced raw materials will galvanize the chemicals and petrochemicals industry in Mexico."

Braskem Idesa and Advario's joint-venture Puerto México Terminal will also relieve pressure on the industry, and is the result of some awareness on the side of the government of how important the petrochemical industry is. The agreement to build the ethane-import terminal, signed with PEMEX and the Mexican government in 2021, demonstrated some commitment. Lepecki said: "The government supported us by defining the best location, providing access to the right-of-ways that pass through land belonging to PEMEX, and facilitating permits."

With construction actively in progress, the terminal is expected to begin operations in 2024. Speaking of the petrochemical industry as a whole, Benedetto of ANIQ said: "We view this as a window of opportunity for real collaboration between the industry, consumers, and the government to rectify the production conditions."

MEXICO AT THE INTERSECTION OF CHEMICAL AND MECHANICAL RECYCLING

Moving towards a more sustainable petrochemical sector will not come cheap. Coindreau explained: "Sustainable products often have higher production costs, translating into higher consumer prices. As such, it is difficult to persuade end consumers to purchase these products, particularly during economic fluctuations."

However, Mexican companies in the petrochemical space are investing heavily in approaches to facilitate reuse and recycling. "Plastic has applications that are difficult to replace, and it is less expensive than other materials. Therefore, at Carvajel Empaques we have focused on the implementation of circular economy programs to close the loop of plastic packaging," explained Alexander Torres, sustainability manager for the Northern Region at Carvajal Empaques.

This reflects the increased demand for recycled products, both mechanical and chemical recycling, seen worldwide. The trend is only increasing. More than 80 multinationals across the CPG, packaging, and retail industries have committed to utilizing 15 to 50% recycled products in their packaging by 2025 (McKinsey). In the advanced recycling area, the plastics industry is looking at the possibility of year-over-year growth of up to 20% through 2030.

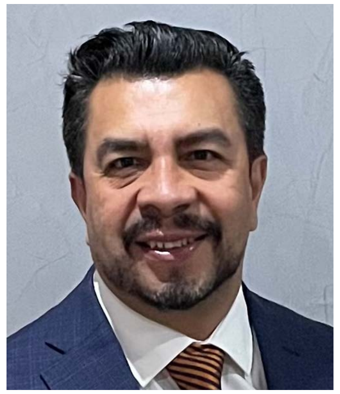
Recycling is a priority for companies operating in Mexico. "Sustainability and ESG are essential to Plastiglas, and we have always focused on the environment," Manfro said. "For more than 45 years, we have had a recycling program for acrylic sheets. Last year, we launched a product called EcoGreen, which is made of 100% recycled material."

Braskem Idesa is likewise involved in plastics recycling, partnering with the Mexican recycling company Alcamare to produce products based on recycled materials. "There is a multi-decade tradition here of working in PET recycling, which has included polyethylene in the past 10 years," said Lepecki.

After decades of investment, Mexico has an excellent PET recycling rate of 56% of all PET plastic consumed within Mexico, ranking just behind the European Union. Although various Mexican companies, particularly in the specialties space, are actively working on developing advanced recycling products, Mexico's particular strength remains mechanical recycling. Increased investment in chemical recycling products, in combination with the existing mechanical recycling expertise, will allow Mexico to be a world leader in the advancement towards a circular economy. ■

LUBRICANTS

Synthetics on the rise



José Luis Guzmán, CEO, Castrol

During the pandemic, there was a significant drop in passenger car sales, which had a negative impact on the lubricants industry. However, the winds have now shifted. Jose Guzman, CEO of Castrol, said: "In 2022, we experienced recovery in demand for our products in the passenger car sector after the pandemic, with a growth of 10% from 2021."

Castrol experienced particular growth in the motorcycle segment, with Guzman observing: "In recent months, the market share of our products for motorcycles has increased significantly. This market grew by 15% in 2021 and by about 35% in 2022."

The automotive industry, a central market for the lubricants sector, is poised for a strong 2023. Fuesto Cuevas, general director of the Mexican Association of the Automotive Industry (AMIA), expects the industry to experience a 6.6% rise in vehicle production in 2023, the second year of expansion after four years of reduced sales.

The lubricants industry was, like many segments of the chemical industry, impacted by raw material shortages in 2022. "Most of the lubricants and additives industry began the year with a shortage of raw materials. Raw material prices increased by about 30%, while usually, the increase per year is about 5%. It was an unprecedented situation," said Guzman.

Specific raw materials have experienced particularly extreme shortages. Héctor Sánchez Rivera, executive director of the lubricant distributor Polylubex, stated: "In the last two years, there have been severe shortages of raw materials in the urethane industry."

Innovation is crucial to meet continued demand, and advancements and investments in the synthetic lubricant space are a defining trend. The global synthetic lubricants market is expected to be valued at US$37.3 billion by 2023, and is an area of significant potential for the Mexican lubricants segment. Synthetic lubricants function better and provide their clients with better outcomes. However, these benefits come at a cost. Luis González, CEO of Lubline, explained: "In general, people continue to prefer natural and mineral oils rather than synthetic oils because they are cheaper. Still, we are working to convince our clients that synthetic oils last longer and protect better."

The tangible difference in outcomes between synthetic and natural lubricants is significant. Sánchez Rivera said: "Conventional lubricants need to be replaced after about 3,000 hours, while synthetic lubricants need to replaced after about 8,000 hours. A longer usage time improves productivity and reduces costs."

These technological benefits and the global push for more sustainable products have created an opening in the market. González concluded: "We anticipate that synthetic oils will grow exponentially over the next few years." ■

SPECIALTY CHEMICALS

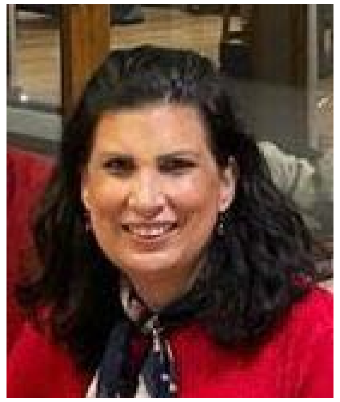
The industry pivot towards specialty chemicals gains momentum

The Mexican chemicals industry increased its participation in the specialties market despite ongoing feedstock challenges. The high-value, low-volume nature of specialty chemicals requires technical expertise that enables the highly developed Mexican chemical industry to shine. As of September 2022, the global market size for specialty chemicals was estimated at US$807 billion, and is expected to grow to US$1,151.32 billion by 2030, indicating that Mexico could benefit from the projected growth.

A common theme that has emerged from the industry leaders interviewed for this report is that a lack of domestically produced raw materials is the main challenge to developing the industry; however, many companies have adapted to market fluctuations and gained traction in the specialties space worldwide.

For instance, Lanxess has focused its strategy on developing high-quality products with high added value, margins, and consumer impact. "We have been able to diversify our portfolio and have expanded our presence in the global market," stated Miguel Ángel Rodríguez, general manager of Lanxess Mexico.

2022 was, indeed, a year of growth for many companies. Gabriel Londono, managing director of Omya, said: "We had a hard time supplying the market during the pandemic due to low production capacity. In 2022, however, the market started to grow again, and mass consumption increased. As some companies had insufficient inventory to meet the needs, they demanded more from us."

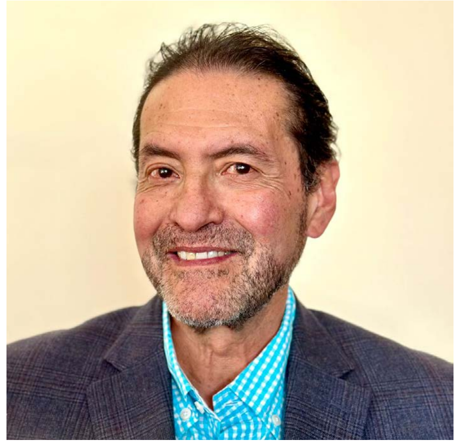


Maggie Gómez, General Director, Charlotte Chemical

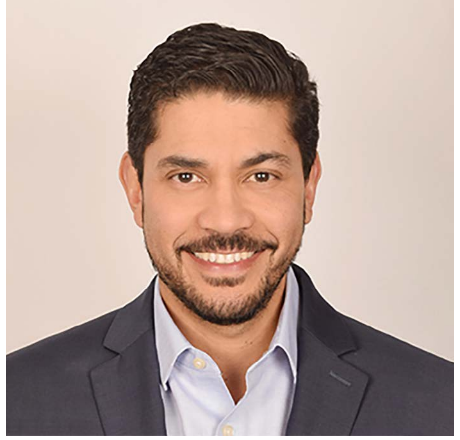
"Over the past two years, Mexico and Brazil, already our largest markets, saw the most significant growth," stated Eduardo Alvarez, Director of Sales for Imerys.

In Mexico, the predominant challenge to the growth of the chemical industry is the supply of basic raw materials such as ethane and natural gas. Eduardo Aguiñaga, general director of Viscofan, stated: "We have been particularly affected by shortages of polyamides and glycerins. To overcome these issues, we sought to negotiate with suppliers to double or triple our stock levels of these key raw materials."

Sekisui Specialty Chemicals adapted to this challenge by increasing its production capacity, expanding its storage capacity, and shifting its sourcing to more regional partners. "While logistical challenges have interrupted supply chains, we see a great opportunity for expansion in regional markets," stated Antonio Felix Fernández, commercial manager for Sekisui LATAM.



Antonio Felix, Commercial Manager Latam, Sekisui Specialty Chemicals



Rafael Méndez , Regional Director – Latam Northern Tier, Croda

Specialties companies have reacted to these challenges by diversifying and strengthening supply chains. Jorge David Saldaña, chief strategy officer of Wyn de México, identified supply chain disruptions as the most significant challenge, saying: "We learned the importance of creating alliances with logistical experts and building strategic partnerships with companies across the entire supply chain."

Nonetheless, specialty chemicals companies have not been as exposed to logistics challenges as other chemical industry segments. Maggie Gómez-Rábago, general director of Charlotte Chemical, said: "As a specialty chemicals company, we do not move huge volumes, so we are less exposed to logistics issues than other chemical players."

INNOVATIVE TECHNOLOGIES

New technologies are transforming the industry. Nanotechnology is one such bright spot. Proquipusa has integrated nanotechnology into its products to develop recycled resins. "Ultimately, integrating nanotechnology into chemical products allows higher efficiency in the material's performance, which contributes to the circular economy by repurposing chemicals and minimizing waste," stated Luis Espinoza Rueda, Proquipusa's general manager.

Indeed, nanotechnology is experiencing a noticeable boom. Gregory Polak, CEO of Polaquimia – Grupo Polak, said: "We are developing products that are biodegradable, in the sense that we are using nanotechnologies that contribute to the decomposition of products to their elemental compounds within nature, which can subsequently be used for other products."

These advancements in nanotechnology directly contribute to the push for a circular economy, and nanotechnology will continue to be an area of innovation in the industry in 2023 and beyond.

Nanotechnology is only one of the various sustainability pushes in the Mexican chemical space. "Sojitz and Braskem Idesa recently collaborated on a new project to bring BioMEG to the market. The project is part of our larger work towards 100% Biomass PET," said Taishiro Nohara, director of Sojitz Mexicana.

The investment in innovation is directed at a wide variety of new technologies as the industry pushes advancement across multiple frontiers. What unites these companies is a willingness to dedicate profits to the common pursuit of more sustainable chemicals. Alonzo Autrey, managing director health & nutrition (LATAM) of DVA stated: "Product development is a day-to-day focus of our R&D team. We are focused on innovative solutions for our key markets."

Innovation on all levels of the specialty chemicals industry is advancing. "Pochteca is transforming its digital ecosystem, optimizing current operations and innovating in the way we interact with our stakeholders. Artificial Intelligence, big data analytics, cloud based systems, and integrated software applications that retrieve information from the same data lakes in an efficient way are key in order to optimize end to end processes and improve decision making," stated Eugenio Manzano, executive director of Pochteca.

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NICHES MADE NEW: SMALL SEGMENTS WITH EXCELLENT GROWTH

Nearshoring will lift the entire Mexican industrial sector, but it will have a particular impact on niche segments of the chemical industry, providing unique opportunities for specialties producers to respond to demand in previously small markets. “We expect to see a greater focus on ‘nearshoring’, meaning producing close to the end markets or where primary materials are available. This will lead to industry growth in regions that are traditionally less popular,” explained Arturo Molina, managing director of Covestro Mexico.

A strength of the specialties space is producing lower volumes of products to serve specific niches. José Arturo Paulín, CEO of Dresen Química, explained one area of opportunity: “In the animal nutrition market, there is exciting and essential growth in the pet food industry due to the humanization of pets. As the culture has changed, the requirements for the quality of pet food have changed, making this a solid niche for us.”

This cultural shift demonstrates the importance of understanding end-user desires.

Rafael Mendez, managing director for LATAM Northern & Southern Tier of Croda, explained that personal care is Croda’s most significant business, and he expects to see continued growth in that area: “The global nearshoring trend is evident in the personal care space, with many companies entering the Mexico market as it is a crucial supplier.”

Some trends instigated by the pandemic are here to stay. Miguel Ruiseñor, general director of IMCD Mexico, observed: “Interestingly, consumers have become more aware of the importance of hygiene and the use of sanitizers, so the demand for these products has remained stable since 2020.”

The unexpected opportunities of the post-pandemic specialties landscape reflect Mexico’s comparative advantages. “The main advantages of Mexico are its strategic geographic location with access to two oceans and its proximity to the US, one of the largest markets in the world,” said Federico Soto, general director of Órgano Síntesis.

Despite the ongoing global challenges exacerbated by the pandemic and geopolitical conflicts, Mexico is well-positioned to capture market trends toward sustainable products and regionalization. However, to seize economic opportunities in the specialty chemicals space and jump on increased demand in previously small segments, Mexico must tackle its feedstock shortfalls by modernizing the nation’s infrastructure and strengthening regional partnerships.

FRAGRANCES AND FLAVORS

The fragrances and flavors industry is flourishing, benefiting from the constant and growing demand for food products and a continued consumer desire for cleaning and wellness products. Precedence Research forecasts the global industry to be worth US$44.18 billion by 2030. With its excellent talent base and access to materials, the Mexican industry is buoyed by this global trend.

Multinationals dominate this success. A few major players control the Mexican fragrances and flavors industry, and it can sometimes be difficult for local Mexican companies to compete. Francisco Palafox, director general of Frallier, explained: “Globalization is a challenge for smaller firms in Mexico because the largest manufacturers use the same two or three providers worldwide. It is almost impossible to gain business from these major global manufacturers, and these few major players control the market.”

However, the industry’s adaptability during the pandemic demonstrated its strength. Ana María Urrea, president of the National Association of Producers of Aromatic Products (ANFPA), explained: “We saw a slowdown in sales of the flavors used for gums and sweets. However, our products benefited from the home cooking trend. It was an interesting shift in consumer behavior, and we feel lucky as an industry to have found lots of opportunities in the chaos.”

Perfumes, too, had a market change, as people could no longer afford expensive imported perfumes and turned to providers with lower overheads. Jose Arias, CEO of AZ Fine Chemicals stated: “This provided an opportunity for the local industry, and in particular direct sales companies such as Avon and Mary Kay, to record high sales.”

All interviewees identified growing demand for natural products in the flavors and fragrances industry. “The consumer is continuously more conscious of their health and more attentive to the ingredients they are consuming,” Cristophe Enise Barroso, general director of Robertet de México, explained, continuing: “Government regulation of products is increasingly strict.”

The industry sources a vast amount of its raw materials directly from nature. As such, the industry stands out within the chemical segment for the intentionality it brings to sustainability. Urrea emphasized: “While we have lots of technologies that mimic nature, and we make the best use of technology, our biggest source of beautiful raw materials is nature. We have inherited the responsibility to be kind to our planet. ■

PAINTS AND COATINGS

The regionalization of supply chains facilitates an increased move into sustainable products

Flor de María González, General Director, ANAFAPYT

The paints and coatings industry overcame supply chain bottlenecks and a host of pandemic-related challenges by adapting to logistical issues and sourcing raw materials from alternative markets. Demand for paints and coatings remained relatively high throughout 2020 and 2021, benefiting from pandemic-related trends, including increased home and office renovation due to the move towards remote work and greater print production in the coatings segment.

The paints and coatings industry adapted to unstable market conditions by gravitating towards regionalization, strengthening its logistical capacity, and expanding its portfolio to include more sustainable products. Arias Zuñiga Lara, former president of the National Association of Manufacturers of Paints and Coatings (ANAFAPYT) during 2022, stated: “One of the most remarkable aspects of the industry is that, unlike most other industries, there have been no company closures, and ANAFAPYT has even increased its number of partners.”

Data from ANIQ on the paints and coatings sector indicates that, between 2020 and 2021, exports increased by 20%. The paints and coatings industry accounts for 7.2 % of the GDP of the chemicals sector, and it is expected to grow partly because of domestic automobile manufacturing. Zúñiga Lara said: “The market in Mexico is large, with a per capita consumption of 9.22 liters.” The sector contributes noticeably to the larger economy, with well over 200 companies employing more than 12,000 people.

Like other segments of the industry, supply chain issues and logistical challenges were some of the main inhibitors for growth in paints and coatings. Many companies responded by actively procuring raw materials from regional partners. Moises Silva Pérez, business manager of Pyosa, explained: “We have implemented a regional strategy to source as many materials as possible from regional clients.”

For Pyosa, the logistics challenges have been equally an opportunity. Silva Pérez said: “Our growth in sales was largely driven by shortfalls in the supply chain. For example, when there was a shortage of pigments, we were able to quickly supply that.”

The trend towards regionalizing markets has pushed companies to strengthen business ties with trade partners in North America and LATAM. The strategy has insulated the industry, to an extent, from high prices. Jorge David Saldaña, chief strategy officer at Wyn, said: “International trade with the US and LATAM has allowed us to continue growing and has stabilized prices here in Mexico.”

This regional approach to supply and trade must, however, come with support from the government. This is a strategy the industry is actively engaged in advocating for on a national level. Flor de María González Mariblanca, general director of ANAFAPYT, explained: “One of the main strategies discussed was the unbundling of trade relations through international agreements to reduce dependence on a small number of suppliers.”

MINIMIZING ENVIRONMENTAL IMPACTS WHILE MAXIMIZING EFFICIENCY

Given the fears of climate change and a new generation of consumers, an increasingly global demand for sustainable products has the potential to stimulate growth in the paints and chemicals industry, and many companies are heeding the call. “Traditionally, paints and coatings use a nitrocellulose base which is known to be a high VOC producer, but many paint companies are transitioning to water-based chemicals that are safer to use,” said Saldaña of Wyn.

It has been challenging in Mexico and Latin America to change consumers' habits toward purchasing. "In Mexico, the consumer has been slower than its counterparts in Europe and the United States to gravitate towards sustainability," said Silva Pérez.

Interadi, which has focused on developing more sustainable products, offers an emulsifier for solvent-based paints that reduces VOCs by allowing them to add up to 40% more water instead of solvents, has observed a lesser prioritization of low-VOC products. Héctor Jiménez Landa, general director of Interadi, said: "Since these molecules are more expensive, we have had problems selling them in some Latin American countries, because in these markets there are still many factories that want good, efficient, and cheap products, no matter how toxic they are."

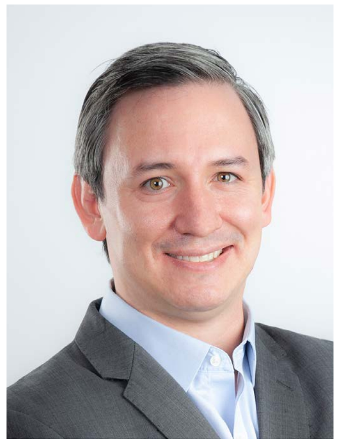
Additionally, many governments in Latin America have limited or no laws regarding VOC use, making these products readily available to consumers. However, the trend towards more environmentally friendly paints continues apace. Silva Perez stated: "In Mexico, the government is shifting towards regulating VOCs in consumer products, and we are prepared to meet these regulations."

The expectation of forthcoming regulation, paired with a market trend towards sustainability, is driving this shift even before the Mexican paints and coatings industry experiences strict regulation. Increased sustainability requires companies to rethink not just their products, but their operations. Many companies are also implementing sustainability within their production facilities to minimize environmental impacts and maximize efficiency. Reacciones Químicas has made sustainability and environmentally conscious practices a bedrock of their strategic planning. Pablo Cueva, strategic development director at Reacciones Químicas, said: "Nuevo León suffered from water scarcity in 2022, and that made water management a key topic in the company. Also, 90% of our electricity is derived from renewable energies, solar and wind."

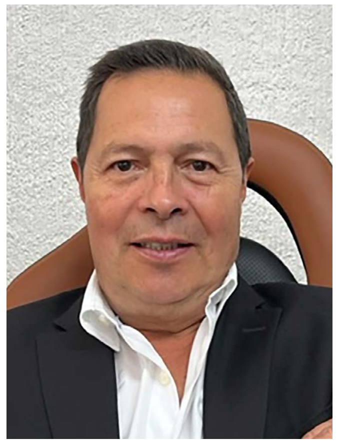
Demands for powder coatings are growing due to higher profit margins resulting from product effectiveness, sustainable qualities, low VOC emissions, and higher transfer efficiency than liquid coating technology. With an expected CAGR of 6.2% between 2021 and 2028, the market for powder coatings is expected to grow to US$18.95 billion by 2028, according to Fortune Business Insights.

Companies continue to invest in their production capacity and modernize their technological systems to minimize costs and environmental impact, reflecting their confidence in the Mexican market. For example, in August 2022, PPG announced that it would invest US$11 million to double the production capacity of its powder coatings plant in San Juan del Río, Mexico, which is expected to be completed by mid-2023. The Mexican paints and coatings industry is poised to benefit from global demand for sustainable products.

Demand will only increase as the consumer recognizes that sustainable products have utility beyond their environmental metrics. "Sustainable products have added value beyond their low environmental impacts, such as better color acceptance or less percentage of the product needed to achieve the same result," stated Francisco Rubio of Kemikals. "Even if the price of environmentally friendly products is higher than conventional products, the benefits exceed the costs when the products are evaluated comprehensively." ■



Pablo Cueva, Strategic Development Director, Reacciones Químicas



Héctor Jiménez Landa, CEO, Interadi

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DISTRIBUTION

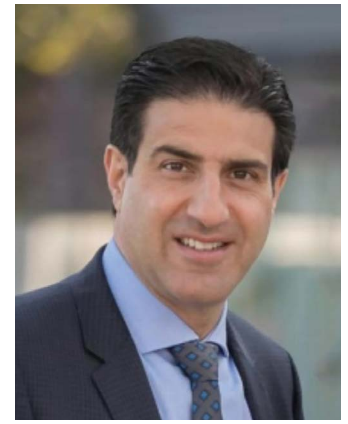
An industry in transition after a record year

Mexico's chemical distribution industry experienced an outstanding 2022, with skyrocketing raw materials prices providing distributors with excellent profits and sustained demand for products. Utilizing their sophisticated logistics, ample storage, and highly technical services, distribution companies flourished in a year that was challenging for the rest of the industry in various ways. The Mexican market is complex, and navigating the logistics and regulatory landscape is greatly facilitated by local partners with the relevant expertise. For major international companies, working closely with skilled distributors was the best way to increase profits in a difficult period.

This strong market demand for distribution services magnified Mexico's specific advantages in trade and location. Alfredo Isón, executive president of Química Delta, explained: "Given the high volatility of prices, it is more logical to source products from the US. Free trade agreements certainly help us bring in products with low import rates, so the USMCA gives us a huge logistical advantage."

Across the entire value chain, companies are gravitating towards strengthening trade with regional partners. Over the next several years, demand for chemical products in Mexico will provide continued opportunities in the country. "Mexico is a strategic provider to the US in every single industry that requires specialty solutions: food, pharma, paints and coatings, construction, etc. Mexico is also the country with the largest number of free trade agreements across the world," said Mauricio Cárdenas, country manager cluster Mexico at Caldic.

Mauricio Cárdenas, Country Manager Cluster Mexico, Caldic



Alfredo Ison, Executive President, Quimica Delta

Jen Riley-Brady, vice president international of M. Holland, identified specific areas of growing demand for the company, explaining: "Automotive and packaging are the areas that are evolving the quickest, much of it tied back to reshoring. We are seeing the growth in those verticals commensurate with the reshoring activities over the past few years."

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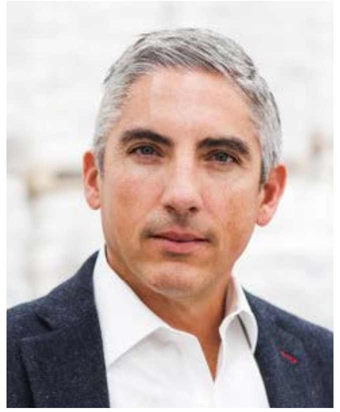


Francisco Rubio, President, Kemikals

Although the pandemic and supply shortages provided a boom for distributors, distributors still had to adapt their processes to ensure the ability to assist customers. Strengthening processes is only more critical as the high prices are beginning to slow. “Covid-19 harmed the supply chain, and, during the second half of the year, there was a drop in demand, so we had excess inventory,” said Francisco Rubio, CEO of Kemikals. “In December 2022, the prices were at their lowest point in some time,” explains Javier Gonzalez, director of Grupo Quimisor, continuing: “Prices are now improving because the producers are reducing their production and are operating at a lower capacity.”

For 2023, the challenges are expected to abate. Sergio Chiñas, general manager of First Quality Chemicals, stated: “The manufacturing companies have been able to catch up, and now previously scarce materials are available, and competition is returning to normal, pre-pandemic levels. There are still some cases of continuing scarcity, but overall, the market is normalizing.”

Javier Cortina, CEO of Possehl, described the impact this has on pricing: “Rates and prices have been coming down in some areas closer to what we saw three years ago. We believe there is a move

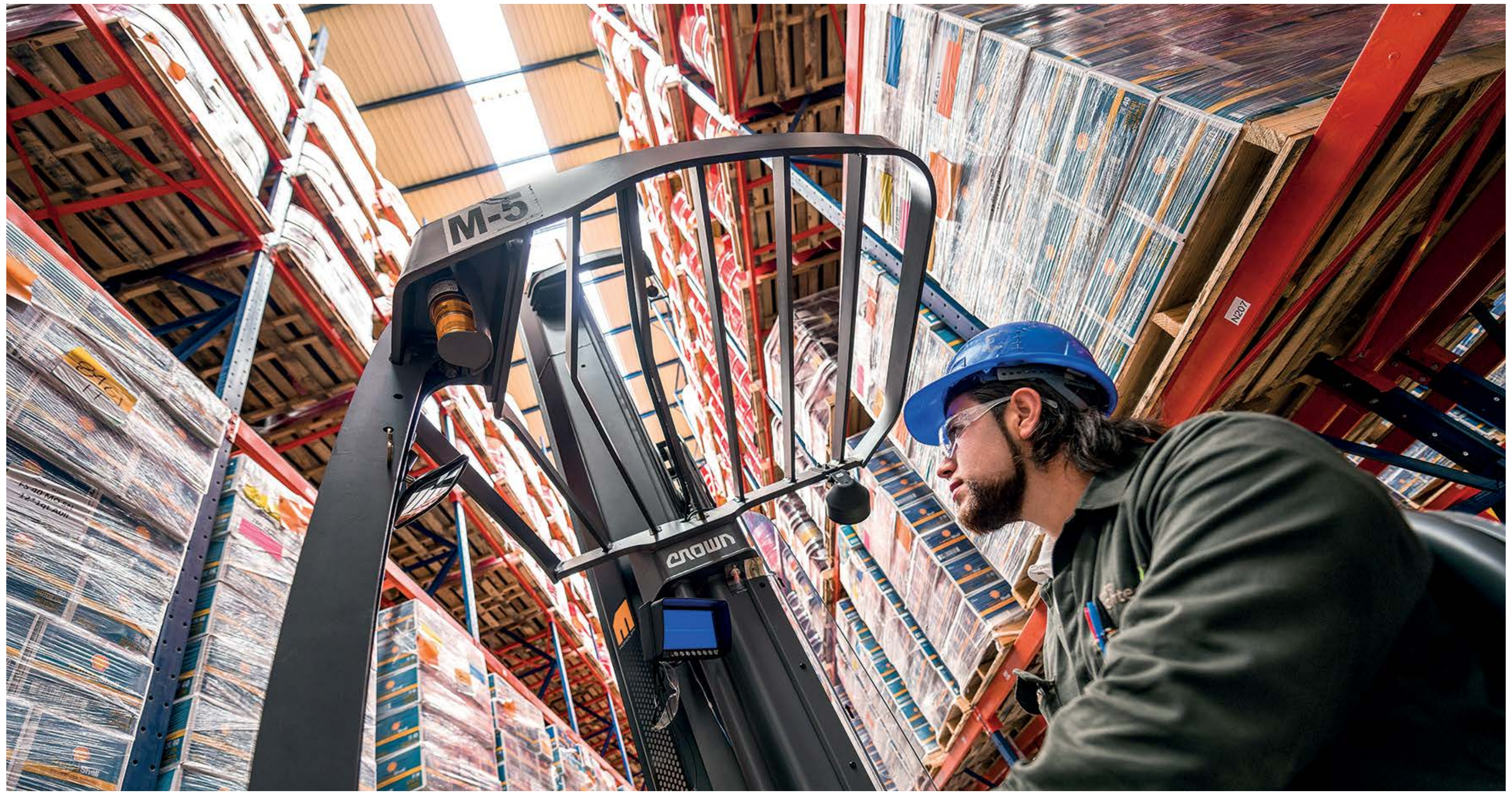


Image courtesy of Pochteca.

towards more stability in prices and rates, but the ability to plan is still a challenge.”

High prices and low supply benefit distributors, as companies turn to them to fulfill their supply needs. “The shortages allowed us to capture an excellent part of the market. Now, we are helping our clients develop and utilize new products utilizing our comprehensive and growing portfolio. It is better for us as a distribution company for the Mexican market to be experiencing shortages than not,” said Miguel Valdivia, general manager of Trade Chemicals & Products.

Consolidation remains a consistent theme in the industry. The distribution industry is made up of three bands: major companies with significant resources and large teams, mid-sized companies, and extremely small and specialized companies with as few as three employees. The industry is beginning to separate into two levels, big companies and very small companies, as consolidation continues. Larger companies primarily target mid-sized companies which already have significant assets and established organizational structures, as these are easier to incorporate, while extremely small companies require a significant degree of professionalization and capacity-building to fit into the established organizations of large companies.

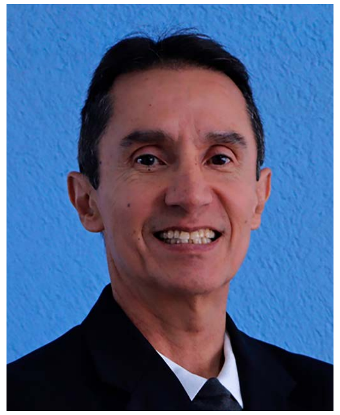
With the high profits of the distribution segment over the past year, distribution companies have significant reserves, providing them with the resources for significant purchases. Many of the companies interviewed expressed interest in growing through acquisitions. Cárdenas explained that both organic growth and growth via acquisitions are priorities for Caldic, saying: “Any M&A activity has to be strategic, meaning we need to find companies that complement our business. We are currently looking for opportunities in Mexico, and we expect 20% to 25% of our growth to come from acquisitions.”

THE CHEMICAL DISTRIBUTION INDUSTRY EXITS THE PANDEMIC WITH A NEW DIGITAL FOCUS

In addition to improving logistics by increasing storage capacity and expanding their product portfolios, many companies are also implementing advanced technological systems to oversee precise supply volumes, minimize waste, and reduce operational costs. “We are professionalizing our CRM systems to better serve our clients and improve the efficiency of our services,” said Isón.

Investment in improved CRMs enables significantly improves internal efficiency. Digitalizing internal processes utilizing tools such as advanced analytics and the cloud, and developing comprehensive digital customer interaction platforms allows distributors to serve their clients effectively and efficiently. The move towards e-commerce sites and digital platforms for customer interaction is visible in the Mexican chemical distribution industry. In June 2022, Nexeo Plastics launched its revamped MyNexeo customer site, which provides customers with access to more than 15,000 products. Arturo Hoyo, vice president line management North America at Nexeo Plastics elaborated: “We already had an online portal, but the portal was primarily for handling orders. We designed our new platform to be a tool like Amazon—the customers can not only place orders but also search and compare products, view monthly offerings and the latest promotions, and track their orders in real-time.”

Digitalization is central to the DNA of Kigo Chemical, which launched during the pandemic. “We were born during the pandemic, and we faced serious questions about how we could start in a business that is oriented around people without access to people,” Alejandro Iniestra, managing director, said. “We decided to see the pandemic as an opportunity and launched our ERP with Microsoft.”



Sergio Chiñas, General Manager, First Quality Chemicals

Eugenio Manzano, Executive Director, Pochteca

Technology and the digitalization of systems allow companies to maintain accurate supply and distribution data, improve customer interface, and minimize operational costs. The investment across the board in digital technologies and improved processes has enabled a successful year, explained Iniestra: “These past few years have been good for all the distributors I know.”

However, the market is shifting, and the landscape will be more challenging as raw material prices drop. In this context, investment in the technological side is only more critical. Iniestra continued: “The supply chain is improving, and there is more product in the market, so the main challenge is to keep growing while the prices of some raw materials fall.” ■

LOGISTICS

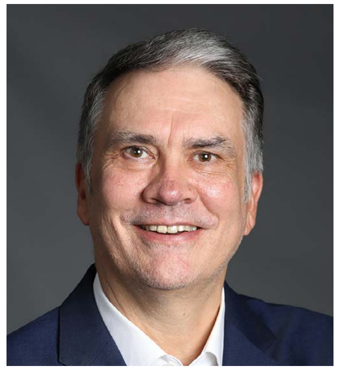
Overcoming crime and anti-government protests to build improved logistics infrastructure

Despite seeing significant growth and many opportunities due to the ongoing nearshoring trend, the Mexican logistics sector grappled with security challenges in 2022. According to ANIQ, in 2022 there were 2,854 incidences of road robberies in the chemical industry, of which 2,478 qualified as violent. Of those, 53% occurred in Mexico State.

The impact of violence on chemical industry logistics is not merely an issue of random or small scale criminals. The strength of cartels and organized narcotics crime is a direct threat to the industry. Jorge Pedroza, director general of ED Forwarding, explained: "There are certain towns where the rail passes or junctions are located where there is significant violence due to narcotics crime. There are substantial issues when the syndicates completely close down rail lines."

The danger that narcotics crime will continue to play in 2023 was thrown into sharp relief by the extensive violence following the arrest of drug lord Olividio Guzmán-Lopez, the son of Joaquín "El Chapo" Guzmán. The cartel's reaction included blocking roads, burning vehicles, and shooting at planes at the local airport, shutting down the movement of goods near Culiacán in Sinaloa.

Rail blockages and stoppages are not just the result of organized criminal activity. A common tactic of protesters is to shut down transit routes. "I argue that blocking rail tracks is a federal crime and should be prohibited," stated Humberto Siller, CEO of Logistica Integral. "We have asked the government to guarantee free transit, an established right in the Mexican constitution. Free movement is not just about the free movement of people, but also commerce."



Martin Sack, Regional Head – Americas, Leschaco

Santiago Carús, CEO, Euromex

The logistics sector supports the rights of the general populace to protest and free speech. However, the government must balance the right to protest with the right to free movement. At the moment, the government is far too deferential to protesters at the expense of the logistical needs of Mexican industry and the population at large.

INFRASTRUCTURE: THE PRIVATE SECTOR STEPS UP TO THE PLATE

The lack of government investment in Mexico's infrastructure leaves the country unprepared to meet future demand. Santiago Carús, CEO of Euromex Logistica, highlighted the Port of Manzanillo as insufficient. He said: "A serious issue for the industry is the capacity of the Port of Manzanillo. The quantity of cargo being handled significantly outstrips the capacity of the port."

Roads and rail, too, need to be improved to meet demand. "It is impossible to maintain commerce between the largest economy in the world and Mexico with only two-lane highways," said Siller.

The incapacity of the roadways to carry the necessary volume of vehicles not only leads to significant delays as goods are stuck in traffic, but also more accidents on the road. This was only exacerbated by a significant shortage of drivers on both sides of the border. Martin Sack, regional head Americas of Leschaco Group, stated: "In Mexico, the main concern was the shortage of trucks and truck drivers, a problem which will continue in 2023."

According to the International Road Transport Union, the shortage of drivers in Mexico grew by 175% in 2021, resulting in a shortage of 87,500 drivers, while Mexico's national chamber of trucking (Canacar) identified a shortage of 50,000 drivers.

Despite these limitations, 2022 offered noticeable opportunities to celebrate public investment in the logistics sector. In March of 2022, the Felipe Ángeles International Airport opened in Mexico City, relieving pressure on air infrastructure at the existing international airport. Additionally, the Tehuantepec Isthmus Interoceanic Corridor project, which will allow for the movement of 1.4 million containers annually at the narrowest point between the two oceans, is expected to begin operations in 2023.

Private investment, too, is an area of opportunity, and individual businesses have stepped up to fill the infrastructure gap. For example, in late October 2022, Kansas City Southern (KCS) broke ground on its new International Railroad Bridge, which will cross the Rio Grande from Nuevo Laredo, Tamaulipas, to Laredo, Texas. At the groundbreaking, KCS president and CEO Patrick J. Ottensmeyer stated: "The bridge will make this vital USMCA trade corridor safer, more fluid and secure, and relieve traffic congestion in Laredo and Nuevo Laredo."

Rodrigo Ordoñez, CEO of Mexico for Katoen Natie, highlighted investment in the logistics sector, stating: "Mexico is a significant market for Katoen Natie, and we invested US$41 million in the country. In the coming years, Katoen Natie is expanding our rail terminals."

FR Terminales, a company with over 20,000 meters of railway tracks, is also investing significantly in Mexico. Ramón Isla Gómez, general manager, said: "Currently, our most important expansion project is in the seaport terminal in Tuxpan, which will increase our storage capacity by 30%."

Demonstrating a similar commitment to the country, Leschaco Group is strengthening its presence in Mexico. "Over the next 4-5 years, we expect to open one additional warehouse per year in Mexico," stated Sack.

On the services side, they will open a regional control tower in the country in 2023, demonstrating the trend towards digitalization. Francisco Galvez, managing director of Leschaco Mexicana, said: "The control tower will offer our customers import and export order management, adding technology and visibility tools to a process that is currently largely carried out by people."

Bordering the US, with access to both the Pacific and the Atlantic, and easy access to Central and Latin America, Mexico is exceptionally well positioned to attract growth and investment. Alfredo Maldonado, director of sales of Bolloré Logistics México, praised the country's geographic position, which allows for just-in- time delivery, saying: "Many goods from China arrive only after major delays, which costs significant money, whereas in Mexico, goods can be transported to any city in the US within 24 hours."

"On an industry-wide level, we must continue expanding rail transit in logistics, as it enables us to reduce carbon emissions. Rail transport is a more environmentally friendly way of transporting products," said Alejandro Doria, President of Bulkmatic.

It is the industry's hard investment in infrastructure that stands out in 2023. A collaborative approach to private sector investment in the logistics industry demonstrates the sector's determination to take advantage of the bright future provided by regionalization. Siller explained: "At Logistica Integral, we are always focused on collaborating with our competitors. All the companies in the industry know each other very well, and we are all interested in achieving the same goals."

SERVICES

SUSTAINABILITY DRIVES A FOCUS ON GREEN ENERGY AND IMPROVED EFFICIENCY

As multinational corporations and the chemical sector at large have increased their demands for sustainability along the value chain, the services sector is seeing growth in processes that improve sustainability metrics. The prioritization of sustainability has included investment in the move towards a circular economy, a focus on improved efficiencies through digital solutions, and a continuing desire for affordable renewable energy.

Jose Maria Bermudez, CEO of Viakem, which provides custom and contract manufacturing solutions, sees growth in the agrochemical and performance chemicals sectors, where sustainability is increasingly a major priority. He stated: "A significant amount of our participation is in high-growth essential value chains."

Assisting the chemical industry to improve efficiency in processes is central to the support the services companies provide. As Astrid González, chemical industry manager of Endress+Hauser México, explained: "The question for the chemical and petrochemical industries is how to modernize and digitalize in transformative ways. In the past, there often wouldn't even be Wi-Fi in the industrial section of a plant."

Salvador Urbina, Vice president, Linde

Connecting the processes from beginning to end in a technologically advanced way enables growth for the industry. This shift, however, requires chemical companies to prioritize talent and recruitment, said José Ruiz, CEO of Alder Koten IMD: "In order for companies to be part of the Fourth Industrial Revolution (Industry 4.0), they need to attract skilled workers to help them manage modern operating systems."

THE SECOND LIFE OF PLANTS AND PROCESSES

An area of notable success in the services industry is Engineering, Procurement, and Construction (EPC) firms that operate primarily by reselling used processes, plants, and machinery. By selling high-quality used machinery and processes at a lower price, the industry enables mid and small-size Mexican companies to compete while still being an essential partner for more prominent players.

In many cases, Mexican companies prefer second-hand equipment they trust to newer equipment of potentially lower quality. "A factor in the industry's success is the quality of the used equipment build in the US and Germany," said Schlaefli. "Mexican companies would rather buy more expensive, second-hand equipment from the US and Germany than cheaper, new equipment from China."

Tony Loveman, director of business development Latin America for IPP, explained that reusing retired plants, processes, and equipment systems contributes to the circular economy. Loveman stated: "We take a piece of equipment or a plant from one manufacturer and offer it to another that can be repurposed or reused, so we are ultimately a recycler of the industry."

A GREEN HYDROGEN REVOLUTION LED BY THE PRIVATE SECTOR

The word on everybody's lips, it seems, is hydrogen. Although the gas provides only one part of the larger sustainable energy matrix required for Mexico to complete a green transition, it is the subject of conversation and notable investment from the private sector.

Salvador Urbina, vice president of Linde North Latam Energy & Engineering, explained: "The government has not emphasized green hydrogen, but the move towards clearer gases will continue to happen in Mexico because the private sector will focus on it regardless of government investment."

Dario Belmonte, director of Latam for Grupo Stin, foresees opportunity in the energy sector. "Energy is the area of most significant growth," he said. "With renewable and green energy entering the country, the energy sector provides a substantial area to expand."

Eckhard Hinrichsen, country manager of DNV Energy Systems Mexico, agreed, adding: "Mexico has some of the best wind and solar resources."

The proposed energy reform and regulatory concerns, however, has dampened enthusiasm from investors. Jorge Hinojosa, business development lead at Hinicio, a hydrogen consulting firm, explained: "Regulatory and permitting uncertainty is slowing down the willingness of companies to jump into the development of projects, particularly for transnational companies which can prioritize other geographies with more favorable conditions."

To facilitate this interest, a unified and clear regulatory approach is necessary. The industry is building a united approach to advocacy: the recently formed Mexican Association of Hydrogen hosted a well-attended conference in 2022. Florencia Vitelleschi, country manager of Topsoe and an attendee of the conference, explained: "To develop the market, on the one hand, we need legislation, and on the other, we need investment. The legislation will have to come first."

There is a visible move not just towards hydrogen but a further focus on more expensive low-carbon hydrogen and green hydrogen, which is entirely carbon neutral. Caio Zapata, CEO of Enestas, noted multiple shifts towards more sustainable energy in the Mexican energy sector: "When we founded the company, our goal was to improve the environmental impact of the industry in Mexico by substituting natural gas for diesel and propane, which produce more greenhouse gases. Now that we have the infrastructure, it is simple to substitute renewable gas for natural gas."

"Air Liquide Mexico is quite involved in this shift towards low carbon and green carbon," said Raphael de Montfort, director general of Air Liquide México. "Air Liquide Group plans to invest 8 billion euros in the low-carbon hydrogen supply chain by 2035, working upstream with electricity providers and downstream with our customers."

Taking advantage of this private investment will be a priority all along the value chain. José Jaime Constante, managing director of John Crane, stated: "Sustainability is a key element of the energy transition, and a key focus as our existing product range supports the actual as well as future industry requirements."

The industrial gases segment, in particular, is an area for which Mexico is well-positioned for growth as an exporter. "Mexico has an excellent position for exporting products to the Asia Pacific," Urbina explained. "Asia has access to plenty of carbon-based products, but insufficient green products and therefore requires significant imports."

The recent signings of the Bipartisan Infrastructure Law and the Inflation Reduction Act have significantly lowered the cost of hydrogen production in the US, making it more challenging for Mexican companies to compete. Jorge Hinojosa, business development lead at Hinicio, nonetheless sees room for positivity: "We expect that Mexico could benefit from these bills in some ways, such as technological spillover from the United States enabling Mexican companies to utilize cutting-edge hydrogen technology within a shorter timeframe. These incentives are already changing the game, but that does not necessarily mean there won't be opportunities in Mexico." ■