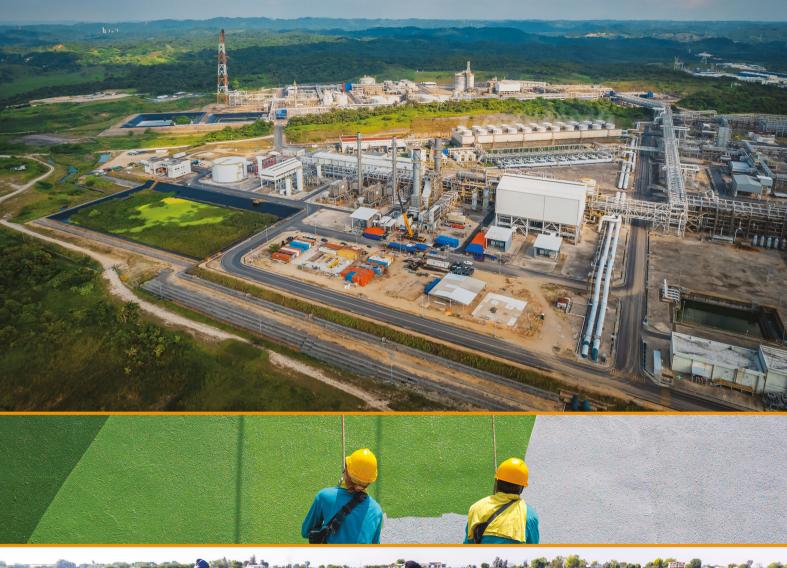
SPECIAL REPORT ON MEXICO

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Chemical Week

by S&P Global





Special Report on Mexico

This report has been produced by Global Business Reports, Research conducted by Mariolaa Guyon, Maeve Flaherty and Eneko Johnson. For more information, please visit abreports.com or contact info@abreports.com. Cover photos courtesy of Braskem Idesa, ANAFAPYT, Syngenta and Pochteca.

MEXICO COMPETES FOR FORFIGN CAPITAL

An election year provides opportunities

August 2023 was the first month in which Mexico was the main exporting commercial partner of the United States, representing a major victory over China for Mexico. Commerce between the US and Mexico is currently valued at US\$779 billion/y. Since 2018, nearshoring has been the word on everybody's lips, and as it continues to take off, it will carry the Mexican chemical industry with it.

According to World Bank data, the value of FDI investment in Mexico has not changed dramatically since 2018. However, in 2023 more of that FDI profit has been reinvested. Interestingly, the sources of the FDI are diversifying, demonstrating a recognition of Mexico's benefits at a global level. In 2018, almost 53% of FDI in

Mexico came from the United States, while in 2022, that percentage was only 43%, although the amount of investment in dollars remained similar.

Mexico is expected to attracted US\$40 billion in FDI in 2024. One factor is the comparatively low cost of labor. In 2023, the average US salary was US\$28/h, while Mexico's average salary was only US\$12/h. That status quo has, however, changed, On January 1, 2024, the national minimum wage was raised by 20% to US\$14.50. Miguel Valdivia, Commercial Director of Trade Chemicals, commented: "Political issues in Mexico have six-year time frames, and in the previous term, we were worried about gasoline and supplies, but in this six-year term, I think labor is the most relevant."

According to the Mexican Institute for Competitiveness (IMCO), out of 43 economies studied, Mexico is currently ranked at 37th in competitiveness. This is the lowest the country has ever been ranked, following a decline in results since 2018. Mexico ranked well for labor and employment, but low rankings in health, quality of education, and the state of law, among other factors, weakened the country's position.

Mexico compensates for these challenges with a favorable geographic and trade relation to the United States. The United States-Mexico-Canada Agreement (USMCA) is a driver of the Mexican economy. Despite the impending renogiation of the agreement in 2026, the trade relationship between the US and Mexico is secure, bolstered by logistics crises that have driven companies to secure their supply chains to the US by basing themselves in Mexico.

The US is not, however, the only core player when it comes to nearshoring. Leschaco, the global logistics provider, has observed an increase in the Asia-Mexico chemical trade. Francisco Gálvez, manag-

ing director of Leschaco, said, "Historically, northern Europe was the global hub of chemical production, but Asia is becoming the new core of this market, and companies from that region are establishing operations in Mexico."

For the chemical industry, which is extremely capital-intensive, the establishment of new operating units is difficult, with companies entrenched in other locations. The choice for a major chemical producer to enter Mexico can only be made with a long-term supply chain strategy in mind. Jose Luis Urrutia Segura, president of the industry association CANACINTRA, said, "One of the greatest challenges for the chemical industry in Mexico is how to insert itself into these positive nearshoring trends as a capital-intensive industry."



Esteban Guáqueta, LATAM marketing director for Nalco Water, an Ecolab subsidiary

Foreign investment is already transforming the country. Salvador Soria, president Mexico, Central America, and the Andean region at Arkema, said, "The nearshoring trend has opened doors for greater collaboration and synergy within regional markets, fostering quicker responses to market demands and reducing logistical complexities."

ENERGY IN THE EYE OF THE ELECTORATE

Globally and nationally, the coming years will be years of political change and electoral uncertainty, which will shape the economic situation and investment climate nationally and regionally. The United States,

for example, will have a pivotal presidential election in 2024 with ramifications for the Mexican economy. Esteban Guáqueta, LATAM marketing director for Nalco Water, an Ecolab subsidiary, noted, "Globally, approximately 50 countries will have elections. That will impact the industrial sector."

Mexico will be among them. Mexicans will head to the polls on the 2nd of June 2024 to elect a new President. The incumbent, President Andrés Manuel López Obrador (AMLO), is barred from a second six-vear term due to a one-term constitutional limit. The upcoming election has two frontrunners: the governing, left-wing party Morena's candidate, Claudia Sheinbaum, a former scientist and mayor of Mexico City widely touted as the current President's







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prodigy, and opposition candidate Xóchitl Gálvez, a self-made businesswoman and politician with indigenous roots who will represent the National Action Party (PAN). Polling data suggest that the Morena coalition will retain the presidency in 2024.

Since the nationalization of Mexico's energy sector in 1938 and the creation of the state-owned oil giant PEMEX, energy policy has been a political battleground. right and left. The Mexican state relies on PEMEX, championed by resource nationalist AMLO, to generate billions of dollars in revenue annually. However, a US\$100 billion debt pile and chronic underinvestment in PEMEX facilities, where refinery utilization rates have declined yearly, has left the chemical industry in a challenging position. Given the energy-intensive chemical industry's need for low energy prices and dependence on petrochemical feedstocks supplied by PEMEX, the industry's fortunes are tied to political developments in energy policy.

Structural inefficiencies in the energy market extend beyond PEMEX. The electricity market is dominated by the Federal Commission of Electricity (CFE), which generates most of the electricity for the country and



Miguel Valdivia, Commercial Director, Trade Chemicals

is reliant on natural gas imports from the US. This presents a "core challenge" to the industry's competitiveness according to Miguel Benedetto, managing director of ANIQ: "When looking at natural gas, we are competitive, with much the same price that Houston has, plus distribution costs. When looking at electricity, however, we have a huge differential. Electricity costs are between 25% to 30% higher compared to the Houston area."

These elections could define the chemical industry's future. Gálvez's energy policies



Miguel Benedetto, Managing Director, ANIQ

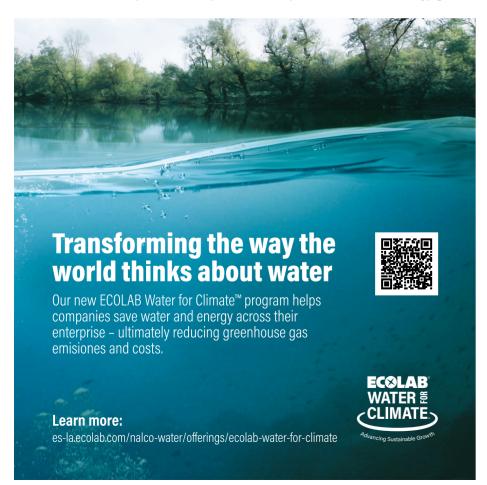
are reminiscent of the Nieto era: Reforming PEMEX, encouraging private energy sector investments, and promoting green energy investments in hydrogen and solar power capacity. She has proposed creating a new state energy company, Energías Mexicanas, which would focus its operations on renewable energies.

By contrast, Sheinbaum's statements suggest an approach similar to AMLO's, stressing energy sovereignty and the role of PEMEX. Both candidates have highlighted the importance of green energy and the transition towards renewable energy sources. However, the candidates differ in the methods. One favors private investment, while the other supports state intervention.

These elections will impact the future of renewable energy in Mexico. The country has incredible renewable energy resources, but the current government, to protect PE-MEX, has not provided support or approvals for a significant investment in renewable energy. Of the lack of renewable energy policy, Dieter Femfert, commercial director of Cryoinfra, said, "In the long-term, this will disadvantage us in front of other countries."

Hugo Villareal, VP of energy and engineering at Linde, described decarbonizing industrial processes as Mexico's most pressing political challenge. "The government has to promote this wind and solar power industry," he said, adding, "Regulators have to catch up."

Government investment in energy will be critical to making Mexico attractive for nearshoring. "Electricity prices are relatively high in Mexico compared to the US," said Patricio Gutiérrez, chairman of the board of Grupo Idesa. "If we cannot lower these energy costs and promote a renewable energy matrix, there is a risk that our industry will become uncompetitive and unable to meet the environmental demands of clients."



PETROCHEMICALS

A difficult year with stabilization in sight

2023 was an extremely challenging period for the petrochemical industry, with margins squeezed due to oversupply. "We have seen new capacity across the world, especially in the US and China, combined with less strong demand in strategic regions such as the US, Europe and Asia," said Braskem Idesa CEO Stefan Lepecki. "In this sense, the petrochemical business in general suffered significantly in 2023."

According to figures from the Chemical Industry Association of Mexico (ANIQ), production of petrochemicals in the country has plummeted from a 2018 volume of 8,068,099 t/y to 4,549,787 t/y in 2022. After years of underinvestment, PEMEX lacks the infrastructure to turn excess gas from oil wells into chemical feedstocks, making Mexico the 7th highest gas burner on the planet. Instead, the industry has turned to imports from the US, and pipeline imports have increased 400% since 2011, according to the US Energy Information Administration, driving costs higher and exposing Mexican chemical industry players to global price fluctuations.

Mexico is feedstock constrained, with a continuous insufficiency of raw materials production to meet the needs of the chemical industry. The core cause has been the precipitous drop in production by PEMEX. Aging infrastructure and lack of investment in the country's petrochemical complexes has been a scourge to industry development. Production only continues to drop. "PEMEX will stop production of ethylene oxide in December of 2023, and will overhaul the Morelos plant, which is the youngest of the plants," Raúl Baz Harvill, CEO of Grupo Petroquímico Beta stated.

AMLO's government has ignored the needs of the petrochemical industry, continuously underappreciating its role in Mexico's supply chain. Baz Harvill explained: "This government changed parties, and they decided to prioritize the refinery at Dos Bocas, reorienting all the resources around that project. The industry suffered tremendously as a result."

One alternative is to build stronger supply chains with the United States and Canada, the latter of which is in a constant state of ethane oversupply. From a regional supply viewpoint, the North American oil and gas outlook is positive, driven by rising basic hydrocarbons production in the US and Canada. David Coindreau, general director of Polioles, explained: "The boom in the US of natural gas and ethane production has led to the development of the segment of the Mexican industry dependent on imports."

This has wounded domestic production. "On the other hand, segments of the chemical industry in Mexico that depend on local production have been declining," stated Coindreau. "There has been significant growth in the distribution industry to compensate for the lack of supply."

The situation was not helped by the October 23, 2023, decision of the Mexican government to restrict the import of over 60 refined petrochemical and petroleum products. The decree had immediate effect, with the government blocking two railcars of aromatics (ARO 150) shipping from Houston on the 24th, according to S&P. The government stated that their intention was to reduce fuel theft and clamp down on the black market of stolen fuel. The move was seen by some as a potential gambit by PEMEX to monopolize petroleum and petrochemical imports.

The result was an abrupt halt to imports for impacted companies, throwing their supply chains in disarray. These companies spent the end of 2023 and beginning of 2024 scrambling to gather and translate thousands of pages of highly complex information to submit to the govern-



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ment in desperate pursuit of rapid import permit approvals. Waiting for those approvals left the affected companies at a complete stand-still in parts of their operations.

The October 2023 decision built upon a December 2022 regulation that focused on LDA permits at the port. Fuels at terminals at the port require volumetric controls, ensuring that every liter that enters is recorded by the authorities. The new regulation extended the need for volumetric controls to petrochemical products, requiring challenging to obtain permits. Alfredo Ison, president of distributor Química Delta, stated: "The benefit is that those of us who do receive the permits gain a greater market share. Nonetheless, the policy increases the complexity of importing petrochemicals."

There are, however, some important steps forward in supply access, primarily due to private investment. Braskem Idesa is in the process of constructing Terminal Química Puerto México, the company's future ethane import terminal, owned and operated in a joint-venture with Advario.

The terminal was 50% constructed as of January 2024. The company expects to begin operations in Q1 2025, drastically reshaping the country's petrochemical industry. The future of the terminal was secured in late 2023.



Lepecki explained, "In November 2023, we concluded our project financing, which was a success during a challenging moment for the industry. That financing was around US\$408 million, representing 70% of the total investment including CapEx interests and working capital."

The outlook for the petrochemical industry in 2024 is positive, if only slightly. There will be no new capacity coming online in 2024 or 2025 in the US, and less new capacity coming into operations in Asia than last year. The US and Asian economies both have some question

marks, but there are some signs of recovery. "I expect that we will continue in a downcycle, but with better margins and better prices than in 2023," said Lepecki. "The supply-demand dynamics will be more balanced globally, with a slow increase in price."

Patricio Gutiérrez, chairman of the board of Grupo Idesa, agreed that there are positive signals. Gutiérrez said: "I am cautiously optimistic for the Mexican economy and our industry. The global economy has been stabilizing and returning to a relative sense of normality despite ongoing crises because we are getting used and dealing with them."

AUTOMOTIVE GROWTH DRIVES LUBRICANT SALES

The lubricants segment is moving in lockstep with the larger automotive industry, which has recovered to pre-pandemic levels. On some levels, such as the number of trucks sold, the automotive industry is exceeding pre-pandemic levels.

According to INEGI data, in 2023 Mexican auto production increased by 14%, domestic auto sales by 24%, and exports by 15%. "The sector does not suffer from the supply issues with steel and semiconductors that were the case not too long ago, so supply chains are functioning, internal consumption is rising in Mexico, and exporting volumes go from strength to strength," Said José Luis Gúzman of Castrol.

In 2020, the automotive sector accounted for 62% of the Mexico's lubricant consumption, making the automotive industry a particularly crucial end market (Mordor Intelligence). José Guzmán, managing director of Castrol, explained: "The lubricants market will grow 3-5% in 2023, in line with the industry, and we think this will be the case for the next 10 years, after which the Mexican market will have been adapting to electric and hybrid models, and there will be changes to market growth."

CIRCULAR ECONOMY ON THE GLOBAL STAGE

In April 2024, UN member states will gather for the fourth round of treaty talks for a global treaty to end plastic pollution, which the member states have committed to signing by the end of 2024. The efforts are in response to worldwide calls for a legally binding treaty to strengthen regulations for eliminating plastic waste and pollution, driven by developing nations that are currently drowning in the waste of developed nations.



Eugenio Manzano, Executive Director, Pochteca

According to OECD data, only 9% of plastic gets recycled. With plastic production doubling between 2000 and 2019, the percentage of waste currently recycled is nowhere near enough to make a dent on the reality. The challenge will only increase; by 2060, plastic waste production is expected to triple, according to OECD data, of which 50% is destined for landfills.

Environmental activists have decried the role of oil-producing states and oil and gas and chemical industry lobbyists in holding up the negotiations. However, in Mexico, it is the private sector that is taking the lead in reducing plastic waste.

Pochteca, a Mexican raw materials distributor with operations across the country, is focusing efforts in this direction. Eugenio Manzano, Executive Director stated: "Given the heightened focus on environmental stewardship, we are intensifying efforts to promote environmental consciousness and actively engage in circular economy initiatives. We are committed to investing in both personnel and infrastructure to deliver environmentally sustainable solutions, including advanced waste management practices and the integration of eco-friendly and health-conscious products into our product portfolio."

With growing demands from the public to proactively address the issue of plastic waste. the petrochemicals industry is actively seeking new technologies and formulations to support plastics recycling and waste reduction. 2024 will be a pivotal year in shaping the future of global plastics production and driving the development of a more functional circular economy. "The main challenge for the plastics industry is to focus on sustainable solutions to increase recyclability," said Miguel Ramirez, general manager of Avient. "There is a historically negative public perception of our industry; now, we can turn it around."





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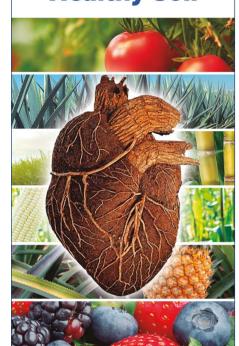
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AGROCHEMICALS

Crop protection sector battles with climate and regulations

Mexico's agricultural sector generates tens of billions of dollars in annual exports. Behind recent export growth has been Mexico's innovative crop protection industry. Strong demand for beverages such as tequila and mezcal, has given this industry an added boost. Luis Eduardo González, president of the Mexican Union of Agrochemicals Manufacturers and Formulators (UMFFAAC), stated: "There is still untapped potential. About 60% of our agriculture is small and subsistence farming, so there is much potential for this segment to be better trained and equipped, introduced to technological farming methods, and to diversify the crops in cultivation."

By some measures, the agricultural sector has performed strongly; per the Ministry for Agriculture and Rural Development (SAD-ER), the Mexican agricultural trade in the first nine months of 2023 was worth US\$72.4 billion, with a trade surplus of US\$6.09 billion.

Low demand and prices made 2023 a challenging year for agrochemicals. Companies focussed on managing inventories and cost structures. "There has been a correction within the agrochemical industry, especially in inventories in the major agricultural markets such as Brazil and the United States," said José María Bermudez, CEO of Viakem, a contract and development manufacturing company. "We observed a significant drop in demand, not due to any structural cause, but because of the ups and downs after the pandemic and the volatility created along the value chain."

Climate disasters and regulatory headwinds have stifled the industry's growth prospects. Regulation has been a central challenge.In our round of interviews, crop protection executives emphasized the burden imposed by excessive and illogical regulation. Dr. César Parada, Valent de México's general director, said: "For many crops, the decisions made by the Mexican government look more political than based on technology and science."

BIOLOGICAL PRODUCTS FOR A MORE SUSTAINABLE FOOD SYSTEM

Consumers are increasingly focused on the safety of the food they consume and the environmental impact of growing techniques, and the industry has been investing heavily in sustainable alternatives to traditional agrochemicals. Acadian Plant Health produces products from a seaweed called Ascophyllum nodosum, which is grown in the North Atlantic. The company, which recently launched a product called TOGGLE to enable grains, cereals and industrial crops to be more resilient against abiotic stress, supports its agricultural clients in increasing yields sustainably. Sergio Aburto, director Latin America North for the company, explained: "Our Canadian seaweed has a higher concentration of bioactive compounds, providing a high bio-stimulant technology that improves the crop's abiotic stress resistance."

There is immense potential for the biostimulants market in Mexico across several segments. Sugar cane prices are rising, so producers are more willing to invest on products that sustainably improve yields. Demand for agave, driven by tequila and mezcal, is also rising. Additionally, Mexico is strong in high-value crops such as berries and vegetables, and some specialty crops like walnuts, all of which have the money to invest in advanced biological technologies.

Delayed permitting approvals have been a challenge to navigate, and there is no positive end in sight. Companies wait years for product approvals, dramatically slowing the pace with which the industry can bring innovations to market. AMVAC, for example, has 14 registration applications waiting for a response, and another 15 for which COFEPRIS needs to review the information, some of which are as old as 2018. "We are trying to work with the authorities, developing products with greener technology, trying to comply with their demand to develop alternatives to agrochemicals," said Marco Salcedo, director of AMVAC. "If they want to have better, greener technology, they must speed up the process of registrations."

There is space for technological innovation in developing more sustainable crop protection products. FMC, for example, is in the process of bringing its new BioPhero pheromone technology to Mexico, currently working with the government to gain approvals. Carlos Jurado, Latin America North business director at FMC, stated: "BioPhero developed the technology to replace expensive synthetic pheromones using highly specialized pheromones in smaller volumes, which will significantly reduce operational costs for farmers."

The development of advanced, natural crop protection products will continue to be an industry priority. The trend towards sustainable and biological products is irreversible, driven by strict regulation and consumer demand. Luis Osorio, executive director of industry association PROCCyT, said: "This year's mission is vital: To support the development and investment in sustainable practices, new products and technologies, such as biotechnologies that support this transition."

CLIMATE RISKS: MEXICO CONFRONTS ONE OF THE DRIEST YEARS ON RECORD

If 2023 will be remembered for one thing by Mexico's farmers, it will be for the lack of rain. Rain shortfalls represent a growing threat to Mexico's agricultural industry. Javier Valdés, CEO of Syngenta, said: "2023 has been a very challenging year in Mexico in terms of rainfall, the driest year in the last thirty. Mexico has suffered from some extreme temperatures. The dams are at their lowest point in years, and we have had many crop losses."

According to data from Conagua, the Mexican National Association for Water, moderate

to extreme drought conditions increased by 8.45% in 2023, and in June 2023, rainfall levels were 61% lower than the 1991-2020 average for the same month. These climatic challenges have impacted Mexico's food production, dropping the country from 9th to 10th on the list of largest global food producers in 2023.

Mexico's agricultural sector consumes 75% of the country's water, according to Conagua, though there are competing demands for access to water as Mexico's population and economy grow. Booming cities in the north, such as Monterrey, exacerbate this problem. The lack of rainfall has been problematic and has social implications, setting the stage for competition over water between rural and urban areas. The dry season has impacted sales of certain agrochemical products in the country. According to Nery Echeverria, head of sales in Mexico at Bayer Crop Science: "We have had lower demand throughout the industry for weeds control products because this year has had less rain, and less rain means less weeds."

In addition to dry weather conditions, the sector confronted other climatic risks in 2023, including storms. In October 2023, Hurricane Otis devastated Guerrero state's coastline, causing catastrophic damage to the city of Acapulco and inundating crops across the region. Climate cycles are becoming less predictable, introducing new risks. Luis Osorio, executive director of the industry association Protection of Crops, Science, and Technology (PROCCyT), stated: "The global population is growing, yet agriculture faces multiple challenges: Climate change, natural disasters, and regulatory challenges."

The government has taken steps to mitigate the water stress caused by the lack of rainfall and intense competition for water, restricting water access to the industrial sector in affected regions such as Jalisco, Nuevo Leon, and Tamaulipas, among others. The government is also taking steps to incentivize changes in cultivated crops, encouraging the cultivation of crops such as rapeseed, which need far less irrigation than many of the fruits and vegetables commonly planted, while discouraging corn production.

DOUBLE JEOPARDY: REGULATORY CONSTRAINTS AND THE DUAL PERILS OF PROHIBITION AND APPROVAL TIMES

In addition to persistent climate challenges, the agrochemical sector continues to confront an uncertain and complicated regulatory framework. Mexico's agrochemical industry is highly regulated, and the scale and complexity of this regulatory challenge have only increased during AMLO's presidential term.

Agrochemical players face incoming legislation in 2024 that will outlaw glyphosate products. A common interpretation from industry heads is that the Mexican government's regulation of the agrochemical



Marco Salcedo, Director, AMVAC

industry is not scientific and does not comply with global standards. Regarding the glyphosate ban, Bayer Crop Science's Nery Echeverría said: "The European Union recently renewed its registration for another 10 years due to the hundreds of studies reinforcing that it is a safe product."

Marco Salcedo, director of AMVAC, reiterated the dual pressure that the government is putting on companies by outlawing glyphosates but not speedily approving alternative products: "The Mexican government is putting intense pressure on glyphosate and other products. At the same time, you do not get new approvals."

Regulatory obstacles are not new to the in-

dustry, and dealings with regulatory bodies such as COFEPRIS (Federal Commission for the Protection against Sanitary Risk) have been a persistent challenge for the industry. COFEPRIS has become increasingly hostile to the industry; rejections and delays are common. Fernando Vera, CEO of Grupo Versa, mentioned, "The phytosanitary industry is highly regulated, and our ability to obtain new registrations in a timely manner depends on COFEPRIS approvals."

COFEPRIS backlogs have left the sector's R&D departments in a state of limbo. According to Luis Osorio, executive director of PROC-CyT: "Due to the regulatory backlog of approval, innovation in Mexico has paused in the past five years. For example, the average approval time for new agrochemical products is 11 years from submittal, during which a new product will undergo over 120 analytical tests."



SPECIALTY CHEMICALS

Feedstock shortages drive new entrants into the market

Falling commodity prices have accelerated the trend of companies reorienting towards the specialty chemicals market. Companies are expanding their offerings of innovative, low volume products to meet demand in specific growing niches. The post-pandemic specialty chemicals industry is one marked by increasing regionalization of supply chains, innovation in processes, and a focus on trends specific to the Mexican market.

Some niches are doing better than others. During the pandemic, there was a major boom in demand for personal care products such as disinfectants, and that demand has continued even as Covid has become less of a concern. The habits inculcated by the pandemic in terms of both personal and industrial disinfection have continued. Federico Soto. general director of Organo Síntesis, said: "For those of us in the personal care market for disinfection and water treatment, the re-

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bound began in October 2023, so we expect that in 2024 we will see pre-pandemic levels

Proquipusa is another company in the personal care and disinfectants market, offering specialty products ranging from detergent products for the automotive industry to specialty creams for cosmetics. The company's new detergent for the automotive industry cleans and maintains metallic machinery parts with a new application that saves automakers three distinct cleaning phases. Luis Espinosa Rueda, general manager of Proquipusa, said, "We want to keep growing in some of the new markets we have identified as targets, such as detergents with nanotechnology properties."

The personal care sector is one in which Mexico is experiencing noticeable growth. According to Statista, the Mexican personal care market is expected to reach a market volume of US\$4.14 billion in 2024. This has led to tangible investment, with companies seeking to take advantage of Mexico's geographic position and large market. "Mexico as a country has a very matured and experienced manufacturing Industry and has the right competitive advantages to become the first supplier for various markets in the US, and we believe that the consumer and life sciences markets are some



Rafael Méndez, Vice President, Croda LATAM

of them," said Rafael Méndez, vice president

Although the market for specialty chemicals for personal care has grown rapidly during and after the pandemic, Mexico's perennial engine of growth, the automotive industry, remains a crucial segment for specialty chemicals producers. The automotive industry uses plastics, coatings, and a variety of other chemicals, but it also drives chemical demand through the income it provides to the country. Maggie Gómez-Rábago, CEO of Charlotte Chemical, said: "As the automotive industry grows, people have money to spend on goods and on building houses, further driving the demand for specialty chemicals."

Covestro, a German company that produces polyurethane and products for coatings and adhesives, offers products primarily used in the automotive industry. The company, which has two sites and a team of over 300 in Mexico, has experienced growth in the automotive area. To continue that growth, Covestro has prioritizes R&D in areas such as coatings. "For the automotive industry, lowering weight is essential because the weight of the car is a key factor in the car's energy consumption," stated Arturo Molina, managing director of Covestro. "In Covestro's coatings section, we offer products that require a thinner layer of paint but simultaneously reflect more energy and consumption."

Momentive, a silicone producer, is investing in its presence in the automotive industry. "One of Mexico's strongholds has always been the automotive industry," said Eduardo Cortes, CEO of Momentive. "It is one of our key segments, and we are envisioning ways to support the future with new electric and autonomous vehicles."

REGIONALIZATION OF SUPPLY CHAINS

With stricter demand from consumers for sustainable products, managing supply chains has become crucial. For consistent production and growth, the chemical industry must have a se-



Maggie Gómez-Rábago, CEO, Charlotte Chemical

cure domestic supply chain. For some companies, the most effective way to manage supply chains is to develop the raw materials themselves. Dresen Ouímica, a manufacturer of animal and human nutrition products, now produces its own raw materials for its natural antioxidants. For example, the company cultivates the rosemary for rosemary extracts. Jose Arturo Paulín, CEO of Dresen Química, said: "We have brought the whole supply chain in-house, which allows us to better monitor it and make sure that things are being done responsibly."

NOSTALGIA AND INDULGENCE: EMOTIONS DRIVE FLAVORS AND FRAGRANCES

Flavors and fragrances emotionally resonate with consumers, and are among the most personal of chemical products, with consumers coming into contact with the products in everything from shampoos to snacks. For Mexicans, a desire for comfort is driving sales. "A major trend, accelerated by the pandemic, has been demand from consumers in Mexico for products based on traditional Mexican food and drink culture," said Cecilia Paredes, country managing director for Bell Flavors & Fragrances. "People are embracing their heritage, and there is a strong demand for traditional flavors such as tamarind and hibiscus."

The demand for plant-based products is part of a global shift in consumer conscience, which has a dramatic impact on the industry. Cristophe Enice, managing director of Robertet, explained: "There is a global consumer trend towards healthier products, so our technologies and natural products are in high demand."

Robertet has seen success in its expanded flavor enhancers line, benefiting in part from government regulation driving healthier food. "Our sweetener enhancers, salt reduction and fat reduction technologies are doing very well," said Enice. "It has been three years since the Mexican government introduced a new labelling regime on products with salt, sugars, and fats, which has been a boon for the industry as producers look to reduce the levels of them in their products."

Both globally and domestically, fragrances and flavors regulation has become stricter. The International Fragrance Association, which regulates ingredients used in the industry, recently updated its code of practice. The changed regulations have increased the number of ingredients classified as allergenic from 26 to more than 86 ingredients.

COFEPRIS regulations on drug precursors have been challenging to manage. Industry players support the government's efforts to handle the issue and are working with the associations to develop more flexible arrangements regarding controls. "Most of the materials that we use to produce legitimate products are designated as precursor materials for the production of these illegal goods, which complicates and slows down their importation, warehousing, and approvals," explained José Arias of AZ Fine Chemicals, a supplier of raw materials to the flavors and fragrances industry. "This has been time-consuming and costly."

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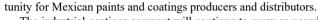
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PAINTS AND COATINGS

Nearshoring promotes demand for industrial coatings

As nearshoring drives growth in the Mexican industrial sector, paints and coatings will reap the benefits. According to Mordor Intelligence, the Mexican paints and coatings market was worth approximately US\$3,416.43 million as of 2023,growing to US\$4,315.79 by 2028. That growth will be driven in large part by demand from construction and automotive sectors. In a period marked by technological advancements, sustainability provides a bright point of oppor-



The industrial coatings segment will continue to grow as nearshoring develops Mexico's industrial sector and demand for industrial coatings rises. Innovative material coatings have consistently been in high demand, particularly antibacterial products and those that provide better corrosion and drag resistance. Industry experts spoke about recent trends, including demand for coatings utilizing nano particle technology and demand for coatings comprised of raw materials with biodegradable components.

Carboline is a distributor offering high-performance coatings for materials at risk from corrosion, fire, or chemicals, such as water treatment infrastructure, electrics, pipes. The company is particularly strong in the petrochemical and rail industries in Mexico.





Francisco Rubio, President, Kemikals

Mexico's considerable heavy industry sector is a critical market. Chemical and petrochemical plants require a variety of fire protection, water treatment, and corrosion resistance products. Ernesto Goepfert, Latam director at Carboline, said: "There has been strong growth in the OEM (original equipment manufacturing) area. Mexico hosts several global companies with needs that are difficult to meet, and global suppliers like Carboline are the companies able to meet those global organizations' standards."

Reacciones Quimicas, which offers synthetic resins for coatings and for structural industries, has also experienced this demand. The company's clients are under increasing regulatory and commercial pressure to offer sustainable products. "we have launched low-VOC

products to support environmental requirements," stated Pablo Cueva, director of strategic development at Reacciones Químicas.

Chemetall, a subsidiary of BASF, offers a variety of specialty chemicals including industrial coatings solutions, and is also working to offer more environmentally friendly products, offering a new coating technology, VIANT, which helps customers reduce their energy consumption and requires customers to apply only one product rather than three or four. Angel Sanchez, managing director of Chemetall, said: "Our primary focus is to develop products that reduce energy consumption in the automotive industry. In the long term, we will discontinue certain products from our portfolio and develop chrome-free products."

Francisco Rubio, president of the paints and coatings distributor Kemikals, said: "There is a strong tendency towards sustainable products that are environmentally friendly and healthy for end users and workers in the production line. This includes both finished products and the inputs used to produce final goods."

THE SUSTAINABILITY AGENDA DRIVES REGULATION

Regulation has a major impact on the paints and coatings segment. That regulation is not just at the Mexican, but also at the regional and global levels. Canada, California, and the European Union are leaders in terms of developing new and stricter regulation, with other US states falling behind these players.

The Biden administration has made PFAS regulation a priority, publishing an Annual Progress Report under the 2021 PFAS Strategic Roadmap. In October 2023, the EPA published a rule confirming reporting and recordkeeping requirements for PFAS. More regulation on PFAS, manufactured fluorinated chemicals found in many industrial coatings, will take effect during 2024 and will have a major effect on product offerings. The regulation of PFAS is a major topic of conversation within the industry. "We are looking for some solutions with polymer technologies that work at least similarly to PFAS; PFAS products are excellent in terms of performance, but have some serious limitations and regulations," said Saldaña of Wyn. "New regulations are pushing new ways of formulating coatings."

PFAS are not the only area with regulatory changes. At a domestic level, lead coatings regulations are concerning the industry. At the end of 2023, ANAFAPYT met with the Ministry of the Economy to ask that regulations for lead control be formally accredited. Flor de María Gonzalez, GM of ANAFAPYT, the industry association, stated: "We are engaged in addressing the permissible limit of lead, and we are preparing a proposal for a conformity assessment procedure to modify the standard with the objective of presenting this proposal to COFEPRIS."



Pablo Cueva, Director of Strategic Development, Reacciones Químicas

ANAFAPYT is celebrating its 80th anniversary as a reference in the industry and has a slate of activities planned for 2024. The association, in addition to offering networking and educational offerings, will continue to prioritize government communication. One such area where it continues to work is communicating with the government regarding the federal law for the control of essential chemical drug precursors, which was published on May 3, 2023.

The law places controls on a variety of inputs for the paints and coatings industry, increasing the regulatory burden on the sector. Gonzalez said: "We have participated in activities targeted at COFEPRIS and are focused on collaborating with the government to help them understand the issues."

Being responsive to changes in regulation allows paints and coatings companies to find success. As regulation changes, those companies that offer alternatives for controlled and banned products benefit. Kemikals, for example, has seen a jump in demand for specific products due to regulatory changes. Francisco Rubio, president of Kemikals, said: "There is currently a coalescent agent in our product portfolio that is being widely adopted in the Mexican market due to local regulatory changes; although it has been part of our portfolio for a while now, the conditions are right today."

Companies in the Mexican paints and coatings industry have a history of adaptability and agility. With nearshoring picking up steam, the sector will benefit from the growing industrial sector and greater demand for its products. Nearshoring will bring significant economic benefits for the sector, but also demand agility. "There will also be an increase in competition with all this incoming business, and local companies will benefit from being adaptable and responsive," said Rubio. "Preparation for this transformative period is essential."

DISTRIBUTION

The 'super peso' complicates margins

2023 was a year of contraction in the industry after several previous years in which distributors raked in profits due to supply bottlenecks and high prices. Due to oversupply, prices dropped in 2023, and distributors experienced significantly lower demand. Overstocking created a downward pressure on pricing. "There has been some erosion of margins across the industry," explained Sergio Chiñas, CEO of specialty chemicals distributor First Quality Chemicals, adding, "However, the reduction in demand is worldwide, not specific to Mexico, and I expect it to be temporary."

The situation caused by tighter margins was not helped by a challenging exchange rate, with an overpowered peso putting pressure on companies. Distribution companies often import materials in dollars but sell them in pesos. Miguel Ruiseñor, managing director for Mexico at global distributor IMCD, stated: "The exchange rate in Mexico has created a complicated situation. The 'Super Peso' has impacted the distribution industry as every day, we see the value of the dollar decreasing."

This was an issue for the populace as much as it was for the industry. Mexico receives US\$60 billion annually in remittances, largely from the US, so remittances are a crucial part of household spending. By July 2023, the peso had increased by 14% against the dollar, reducing the value of those dollars. "Unusual economic situations with remittances, high inflation, and the exchange rate all occurred in conjunction, generating uncertainty," said Adriana Ramírez, commercial director at Helm de México. "We were unsure month to month what would happen, if prices would rise or decrease."

Several factors have contributed to the super peso: First, the Mexican economy's exports rose by 17% in 2022, increasing the dollars entering the country; second, the autonomy of the Bank of Mexico has enabled it to take steps to preserve the peso's purchasing power regardless of political pressures; third, there has been an increasing difference across the border in terms of interest rates, with interest rates staying much higher in the US over 2023, incentivizing international investors to buy more profitable government bonds in Mexico; and fourth, nearshoring has driven FDI to Mexico, particularly in a landscape of greater risk appetite on the part of investors.



The fluctuations in the exchange rate were not uniformly bad news. Miguel Valdivia, CEO of Trade Chemicals, said: "We were able to resolve the debts we have in dollars at a lower exchange rate, and that allowed us to have greater competitiveness in price for imported products, providing a benefit to our client."

Low demand for chemical products, meanwhile, has been driven not just by slower demand in the US and globally, but also by Mexico-specific factors. In 2023, access to qualified labor was an issue for chemical companies, constraining their ability to keep plants running at full capacity. "Finding qualified workers to operate the plants has been challenging, and many of our clients can't operate two or three shifts a day because they simply do not have the people," said Arturo Hoyo Vargas, vice president product line management North America at Nexeo Plastics, adding, "This has contributed to low demand."

Indeed, there is a shortage of labor at all levels of the industry. A scarcity of truck drivers has been a challenge for distributors, and there is no end in sight. Truck drivers can do the same job for better pay in the United States, and the country continues to bleed drivers. Humberto Elizalde Mendoza, CEO of organic peroxide distributor ICS Group, said:



Alejandro Aguirre, General Manager, Vinmar Plastichem Mexico

"We have taken steps to mitigate this issue by investing in our human capital; due to the nature of their cargo, we offer our drivers specialty training and competitive salaries. Unlike Canada and the US, there is not an abundance of people in this country that are trained to handle such specialty products, so retaining staff is very important for us."

The challenges are myriad, but for distributors, a return to better days is expected. Pricing is expected to stabilize in 2024 after the extreme drop over 2023, providing opportunity for growth. Mayra d'Artigues, President



Humberto Elizalde Mendoza, CEO, ICS Group

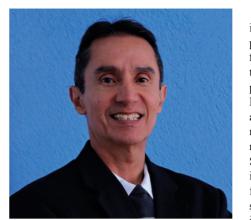
of Mexican distribution company Naseda, said: "2024 should be a more stable year for the industry, as inflation and costs have somewhat normalized, and consumer confidence is pretty strong due to factors such as salary increases."

Nearshoring is driving growth for the chemical industry, but it is not an unlimited positive. "While everybody mentions the upsides of nearshoring, there will also be an increase in competition as more foreign companies enter the market. Some companies are coming in from markets with high production but relatively low domestic consumption, driving them to seek markets like Mexico to dump their goods in," explained Luis Urquijo, sales director at Disan, a distributor of solutions for the home and personal goods, industrial goods, pharmaceuticals, and human nutrition sectors.

Alejandro Aguirre, General Manager of Vinmar Plastichem Mexico, a plastic resins distributor, elaborated on Mexico's strengths: "A comprehensive trade agreement like the USCMA is a great advantage for us. Our country stands to benefit as global supply chains become more regionalized to insulate them from exogenous shocks."

PEMEX UNDERPRODUCTION IS A CHALLENGE AND AN OPPORTUNITY

Lack of productivity at PEMEX has had a knock-on effect all the way to the distribution section. Miguel Ruiseñor, MD of IMCD, called for investment in improving efficiencies at the state-owned company, citing knock-on impacts of the companies' operational inefficiencies. Recently, the company has failed to pay suppliers on time. Ruiseñor said: "If they do not pay the companies serving them, those services cannot move, the distribution companies selling to these actors are also at a standstill."



Sergio Chiñas, CEO, First Quality Chemicals

With PEMEX underproducing, distributors play a crucial role in providing the industry with raw materials. To ensure this can continue at the pace and quantity necessary, the distribution sector must work with the government to ensure a more efficient customs and regulatory process. Access to materials is a political and economic issue for the entire industrial sector. Mendoza of ICS Group explained: "We have had issues with the flow of raw materials needed for the chemical industry; increasing demand in Asia and Europe has diverted some flows that traditionally came to Mexico and driven up costs. That is why we need to develop these capabilities locally."

Helm de México is a global distributor that specialized in moving large volumes, bringing raw materials into Mexico to supply the industrial sector. Adriana Ramírez, commercial director of Helm de México, said: "We are seeing some challenges in regulatory restrictions and tariffs, and the country must be focused on ensuring continued access to goods."

Nonetheless, with logistics smoother than in previous years and more supply available, petrochemical feedstocks will continue to flow into the country. There is more access to supply for products such as polyethylene, polypropylene and polystyrene. According to Ruben Ilitzky, CFO of Telch, supply availability should continue to improve, with good material availability if the US economy does not start growing significantly faster: "A new Shell facility in the Northeast and investments in capacity at existing plants will secure supply for the future, and demand is growing but at a stable pace. There are also plants in Asia offering material."

Although this glut in supply has depressed prices, not all the petrochemical sector has been such a challenge for distributors. Growth in the automotive sector over the course of 2023 is expected to continue in 2024, increasing demand for plastics, paints and coatings, lubricants, and other products. Alfredo Ison, president of Química Delta, stated: "Lubricants are growing at the same pace as the Mexican economy, which has been growing in recent years."

2023 was more challenging than the preceding boom year. Alejandro Iniestra, director of Kigo Chemical said "Attending the multifaceted challenges confronting the chemical industry requires a proactive approach, strategic planning, and collaboration across the industry," said Alejandro Iniestra, director of Kigo Chemical. "Chemical distribution companies should consider diversifying their supply chains, embracing sustainable practices, integrating digital technologies, and fostering a culture of innovation to efficiently navigate the growing landscape and preserve a competitive position in the market."

LOGISTICS

Mexico's infrastructure under nearshoring pressure

In an increasingly regionalized world, logistics players in Mexico seek to lift the North American region through increasing interconnectedness. Currently, communication routes between the United States and Mexico are inefficient in large part because Mexico has not modernized logistics paths from production centers to the main borders. To strengthen Mexico's attractiveness as a destination for nearshoring, domestic policy must support infrastructure development.

Logistics companies serving the chemical industry will play a crucial role in strengthening regional supply chains. Logistica Integral en Transportación, for example, participates in ALCAN, the association of logistics clusters and supply chains for North America, working with the body as it helps legislators understand the needs of the logistics sector. Humberto Siller, CEO of Logistica Integral en Transportación, stated: "The countries of North America have a common interest and must work together to develop the region to compete against others. To meet this goal, we must prioritize reducing inefficiencies in the supply chain between the US. Mexico, and Canada."

In a global landscape marked by constant logistics disruptions, this regional perspective is even more important. The latter half of 2023 has been a challenge due to disruptions at two major transit points: First, the Panama Canal has been impacted by low water levels, reduc-





ing the movement of ships across; second, the outbreak of war in the Middle East has reduced movement through the Suez Canal. Many shipping companies are now moving freight around the horn of Africa rather than risk routes nearing Yemen's coasts.

Some in Mexico see challenges with the Panama Canal as providing a major opportunity for Mexico to become a central logistics provider through the Interoceanic Corridor of the Isthmus of Tehuantepec, a rail corridor going from Salina Cruz to Coatzacoalcos. The recently inaugurated US\$2.8 billion project was developed with the intention to connect the two oceans by rail and serve as competition for the Panama Canal, with the project involving the expansion of the ports at each endpoint and investment in industrial parks and improved highways. In late December 2023, operations at the Interoceanic Railroad began, with President Andrés Manuel López Obrador inaugurating the line and then making the journey on the first train to Coatzacoalcos.

The Interoceanic Railroad is part of a larger investment in rail and will be connected with the new Maya Train, inaugurated in December 2023, running through five states and across the Yucatan peninsula. Many remain skeptical about these flagship infrastructure projects, arguing they are diverting valuable resources away from necessary investments.

Companies moving hazardous goods for the chemical industry must abide by strict dangerous goods guidelines set by the UN and, for air transport, aviation authorities including the IATA. Mexico's policies are aligned with global guidelines, and generally well-integrated with the global system. However, according to Jose Antonio Perea Perches, managing director of Global Gate Mexico, the lack of knowledge on the part of companies about global, regional, and domestic regulation has ramifications: "This means that a lot of goods are turned away at customs points for improper documentation or packaging."



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CHAOS AT THE PORTS

The port system is, by all accounts, a mess. There is insufficient staff across various ports, including a lack of customs agents. Ports are unable to handle container volumes, leading to delays.

According to industry players, the Contecon terminal at Port Manzanillo is having major problems due to lack of space and infrastructure despite the company's top-notch technology and container control. One logistics provider described a situation in which clients ask to move shipments with shipping lines that offer arrivals at other terminals. However, major shipping lines cannot guarantee where they will arrive, making it challenging to avoid Contecon. The source said, "Contecon is the biggest terminal, but it is having the most problems."

Demand for a smoother logistics process is driving investment in terminals across the country. FR Terminales, for example, is in the final stages of development of the Tuxpan terminal in Veracruz, with operations expected to start in December 2024. The details of the project are being finalized, and the company is working with the port administration to receive the necessary permits to begin operations. "The terminal is arriving at a very opportune time, with solid demand, and we have already had conversations with various clients," said Ramón Isla, CEO of FR Terminales. "The port of Tuxpan is the closest to the Valley of Mexico, and it is the beginning of the supply chain that starts in the center and reaches the United States."

A RAIL SYSTEM IN NEED OF INVESTMENT

The rail system, although crucial to the country's growth and a core piece of the national logistics matrix, is increasingly struggling with chaos at the borders. With two primary operators in the country, disruption to either from strikes, boycotts, accidents, or other problems has a



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knock-on effect on industry across the country. At the US border, the migrant crisis is a particular issue complicating the movement of goods and disrupting rail travel, as migrants move across the country on trains. "Unfortunately, there is no clear policy guideline on either side of the border," said Rodrigo Ordoñez, country manager for Mexico at Katoen Natie. "The consequences for rail transport have been grave, as trains cannot enter the United States due to the fear of migrants stowed onboard."

The impact of the migrant crisis at the US border on the rail system is complex. Union Pacific was impacted at the end of 2023, with the US customs authority temporarily shutting down the Eagle Pass and El Paso gateways to

reallocate human resources to process the influx of migrants. The issue was not the presence of migrants on the trains, but rather the sheer lack of customs officials to handle both the surge in migrants and normal cross-border trade and movement of people and goods. To allow for the smooth movement of trade, the United States must urgently increase their staffing levels.

Rail providers work closely with the US government to handle the issue. Union Pacific, which uses six existing rail gateways to cross the border and owns a 26% stake in Ferromex, has developed new systems to improve the efficiency of crossings, allowing crossings to move more quickly and arrival times to be more precisely anticipated. "At the Eagle Pass/Piedras Negras gateway, we have developed infrastructure alongside the Mexican and US authorities, such as the co-location center.







Francisco Gálvez, Managing Director, Leschaco

where customs officers from both sides will scan trains for irregularities simultaneously," said Beto Vargas, vice president Mexico at Union Pacific. "Before this, trains would have to be inspected and processed on both sides of the border."

A reliable rail system is crucial to supporting growth in Mexico. To grow rail infrastructure, however, the government must be actively involved. Trains that run in the US and Canada can easily operate in Mexico, but there are connectivity challenges, requiring the government to participate to connect more areas to rail tracks.

Isla of FR Terminales identified a bottleneck in infrastructure in the southeast, and said: "The most effective way to create more infrastructure will be through partnerships between the authorities and private initiatives."



Email: mherrera@logistica.mx