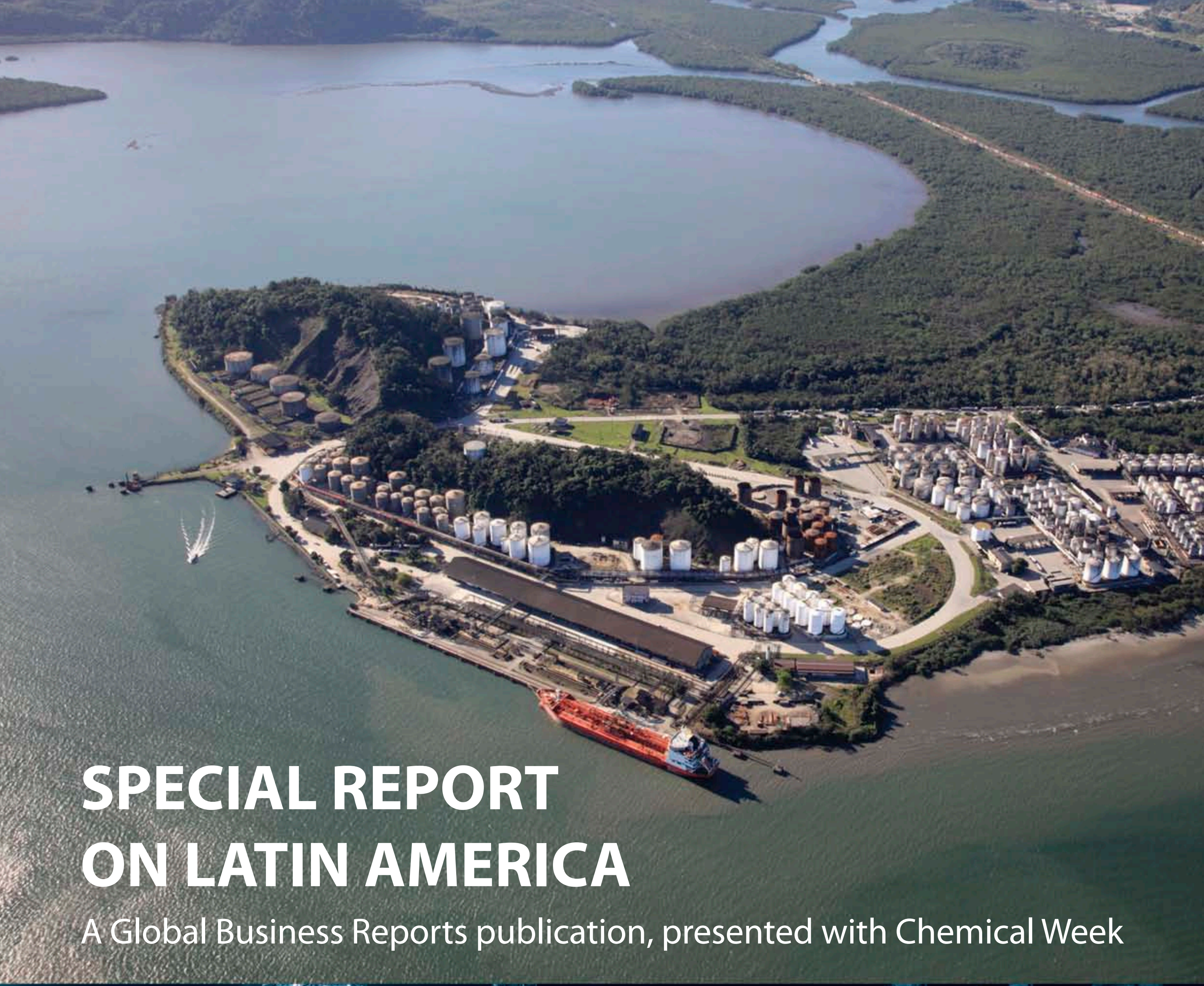
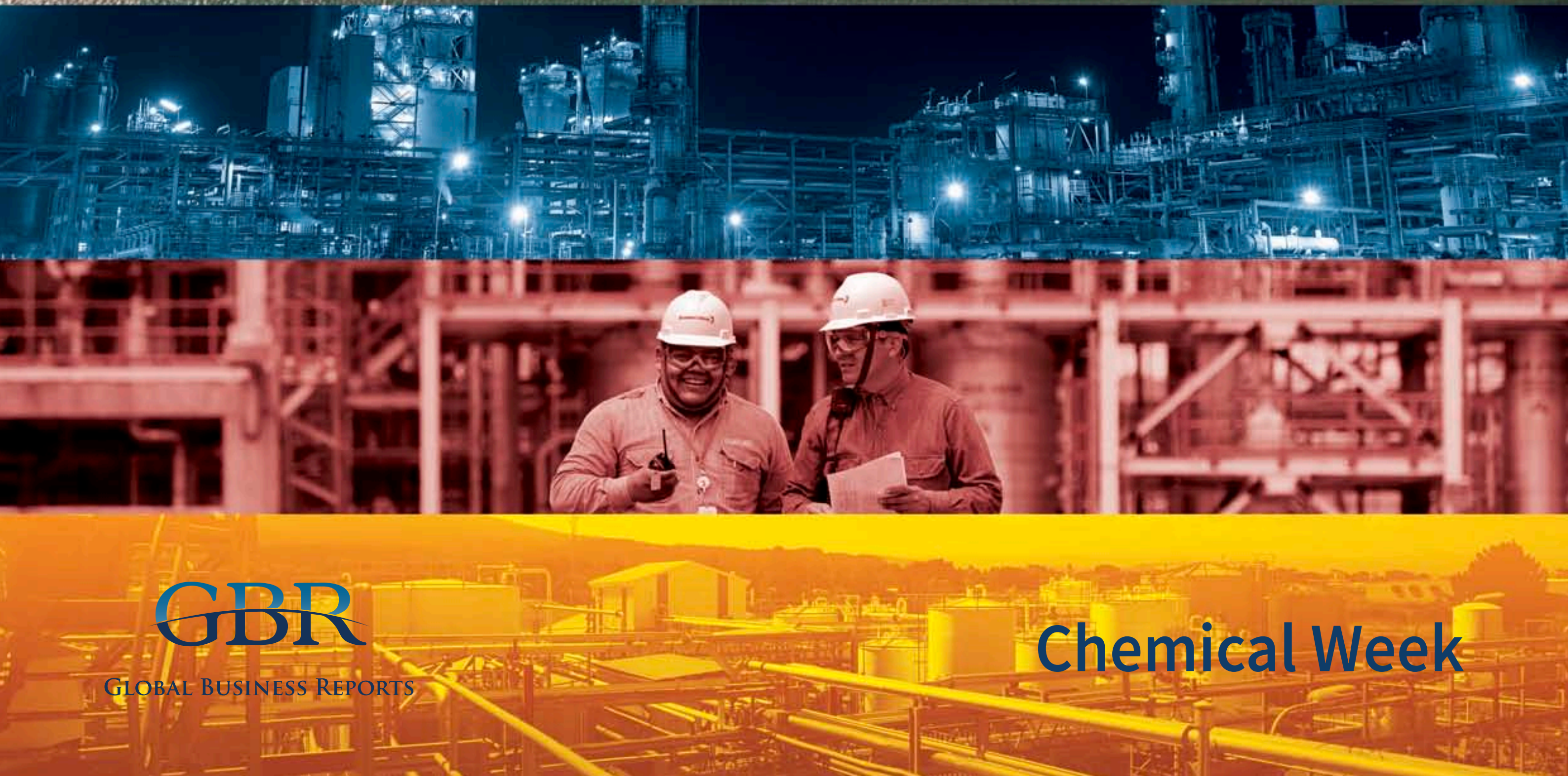


SPECIAL REPORT ON LATIN AMERICA

A Global Business Reports publication, presented with Chemical Week



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Latin America Overview: One Region, Many Countries

This research has been conducted by Alfonso Tejerina, Alice Pascoletti, Ben Cherrington and Paola Pérez from Global Business Reports. For more information, contact info@gbreports.com. Main cover photo courtesy of Porto de Santos, taken by Sergio Furtado. Other photos courtesy of Braskem, Braskem Idesa and Oxiquim .

INTRODUCTION

Each of Latin America's national markets presents its own particularities

It is often said that companies should 'think global and act local.' For large chemical producers and distributors involved in cross-border flows globally, this is particularly true. Strategies and policies that serve the purpose in one market cannot simply be replicated elsewhere, as trends in demand, regulatory frameworks and overall uncertainty over legal and business environments force companies to adapt.

In this dynamic context, Global Business Reports (GBR) presents its first report for IHS Chemical Week to cover the Latin American petrochemical and chemical industry as a whole region, rather than a country-specific report. As well as breaking down the factors impacting the region as a collective, the following pages will delve into the particular factors affecting five key Latin American countries – Argentina, Brazil, Chile, Colombia and Mexico. Industry growth through new projects, competitiveness and sustainability are the key themes discussed in the following pages, as a diverse region with abundant resources and a large consumer market looks to maximize its industrial potential.

OVERCOMING ECONOMIC UNCERTAINTY

Turbulent politics and changes of governments continue to be of concern to investors in Latin America, with high level corruption cases in Brazil, Argentina and Peru as well as the chaos of Venezuela reminding them of the perennial risks of doing business in the region.

Election years rarely see a boost to economic and industrial growth anywhere, and last year Latin America held presidential polls in its two largest economies, Brazil and Mexico. In Brazil, recent growth rates have not been enough to undo the damage of the recession, with just 1% GDP growth in 2017 and 1.4% in 2018 (figures by the International Monetary Fund and Brazil's Central Bank, respectively).

Meanwhile, in Mexico, López Obrador's landslide victory sparked fears that the new government could introduce bumps on the country's road to the energy reform initiated by the preceding Peña Nieto administration. Adding to the political uncertainty, Mexico had to deal with the renegotiation of the free trade agreement with the United States and Canada, which finally resulted in the new USMCA agreement.

A comparison between Mexico and Brazil makes for an interesting case study in market perception and expectation versus reality. Latin America's economic cornerstones sit at opposite ends of the region and are currently governed by divergent political ideologies. However, the initial reaction of the business world to each situation has been somewhat unfounded, as Munir Jalil, executive director of macro research for BTG Pactual, related: "In Mexico, we were expecting the worst of a supposedly populist political system materializing, which still has not, and growth is expected to be around 2%. On the other hand, we were very optimistic about the political situation in Brazil with a supposedly pro-business government, but expectations have been tampered since the new regime has taken over, and the country is also moving towards a more realistic expectation for growth."

Jalil went on to mention that the main challenge for the Bolsonaro administration will be to pass the pending pension reform, which is expected to be implemented in September 2019 but faces opposition from congress. Roberto Kirschner, South American director at Huntsman, echoed this sentiment: "Everything relies on the government success to overhaul the pension fund, which must be approved by congress. If the bill gets passed, I believe that Brazil will see a substantial amount of investment entering the country, and there will be a significant economic leap. If the plan is not approved, Brazil will likely continue to grow at a slow rate."

While Mexico's economy has recorded positive growth since 2010, expansion levels have plateaued and are expected to be in the 2% to 2.2% range in 2019. In comparison, the IMF expects the world's economy to expand by 3.5% in 2019, according to estimates released in January 2019. This is down from a previous IMF projection of 3.7% growth; the negative effects of the U.S.-China trade tariff war, among other factors, explained the revision.

Looking at Latin America as a whole, the overall feeling is that the region could actually perform better if governments were more willing to promote investment: "When you have a large consumer base of approximately 600 million people who are trying to improve their standard of living, you have the opportunity to create the products that they consume every day," related Mark Eramo, vice president for oil markets, midstream, downstream and chemicals at market intelligence firm IHS Markit. "The problem is that capacity in a significant amount of areas is not being added, and therefore the region is still a major net importer."

"From an energy and chemicals perspective, the best prospects are in Mexico, Brazil and Argentina. It will come down to government decisions to put policies in place that support or attract foreign investment, as well as stimulate in-country investment," he concluded.

GLOBAL DYNAMICS

By disrupting the previous trade scenario, the disputes over tariffs between the United States and China have also shaken the dynamics of global petrochemical product flows. Stefan Lepecki, CEO of Braskem Idesa, a large polyethylene producer based in Mexico, said that the United States is no longer a big exporter of polyethylene to China as used to be the case, and furthermore, the United States is bringing significant new capacity to the market: "All of this is creating new dynamics in trade flows, with an excess of polyethylene inventories here in the [Latin American] region, which is a challenge in the short term. Having said that, the long-term fundamentals are very positive, because global demand for plastics continues to be very strong," Lepecki said.

The shale revolution in North America and the ongoing wave of investments in new petrochemical capacity is poised to compete with any potential new capacity in Latin America in the upcoming years. While development of Brazil's pre-salt hydrocarbons and Argentina's Vaca Muerta already in motion, it will probably take a few years and a substantial increase in demand in the region to have new, sizeable greenfield projects of petrochemical plants in Latin America. "Latin America represents the shortest distance to market for North American exports," highlighted Eramo of IHS Markit. "Trade flows have been and will continue to be sound as there is ample product in the north and a need in the south. There are, however, pockets of production within Latin America that can compete within their domestic market."

The most recent flagship investment in the region was the US$5.2 billion plant by Braskem Idesa in Mexico. Inaugurated in 2016, the operation has been able to perform well despite the feedstock limitations in the country created by Pemex's output decline: "Before Braskem Idesa, 70% of the polyethylene consumed in Mexico was imported from the United States, and only 30% was produced locally. We managed to stabilize that by replacing some imports and also doing some exports," affirmed Lepecki of Braskem Idesa.


Mark Eramo, vice president for oil markets, midstream, downstream and chemicals at market intelligence firm IHS Markit.

On the chemicals side, BASF invested €500 million to build and inaugurate an acrylic acid complex in Brazil in 2015 – the only world-scale superabsorbent plant in South America, and the largest investment the Brazilian chemical industry has seen. "It is important for BASF to show that these types of investments can be profitable in South America, and once we have proven this, there will be room for more investment in the future," stated Manfredo Rubens, president of BASF South America.

While North America is undoubtedly a natural trading partner for Latin America, increased diversification of its export markets could hedge against future instability, a strategy that seems particularly prudent considering recent rhetoric from the Twitter-happy president of the United States directed at China, Mexico and Iran. Martín Redrado, founder and managing director of Fundación Capital, suggested that Latin America should make the effort to be more aggressive on developing bilateral or bi-regional credit agreements with countries outside of the region's traditional sphere of influence: "We should look beyond the traditional boundaries of exporting to traditional markets and look towards Asia, Eastern Europe and Africa. I believe that a more aggressive policy agenda will make Latin America more competitive."

A PUSH FOR NATIONAL CHAMPIONS?

The trend toward the electrification of transport and the gradual phasing out of internal combustion engines has far-reaching implications for many industries. In mining, this is pushing long-term demand for copper and other metals, for example. Throughout the hydrocarbons value chain, we could also see significant changes over the next couple of decades, especially in the downstream segment. Eramo of IHS Markit presented the following scenario: "There seems to be a consensus that the rate of demand growth of refined products, such as gasoline and diesel, will decline as we progress through the 2020s. By 2030, the incremental growth of refined product demand will begin to flatten out, and we will start seeing declines."

As a result of this, refiners may start to redeploy their assets to base chemicals, and that will affect the volumes that the refinery industry can bring to the market each year, explained Eramo. "In my opinion, crude oil to chemical integration is going to happen, but there are only a few large players globally that will be able to compete in this arena from a capital standpoint."

Those few large players are companies that can benefit from the synergies created by vertical integration and economies of scale. Federico Veller, executive manager for chemicals at Argentina's state-controlled YPF, the country's largest energy company, anticipated: "The petrochemicals industry is the sector that will drive hydrocarbons consumption over the next years. Large oil companies forecast flattened fuel demand, and this is why focus is increasingly placed on the petrochemicals business. Those companies that are vertically integrated, with feedstock production all the way to the downstream business, will be the most competitive ones," concluded Veller.

THE SUSTAINABILITY CHALLENGE

The industry needs to be proactive in its work with governments and the wider population.

In an era marked by rapid change and mass consumption, and with the world's population expected to rise from 7.6 billion people in 2017 to 9.8 billion by 2050, all industries must rethink their environmental and social impact and the sustainability of their operations. The planet has been sending signals for years, from global warming, to ocean contamination by plastics, to the predation of natural resources. In this context, how can organizations in the petrochemical and chemical industries promote sustainability across different areas through concrete actions and goals? A look at Brazilian giant Braskem's 2017 annual report sheds some light on how big industry actors are approaching the issue.

The company has defined three core priorities (climate change, water and plastic waste), and then further identifies 10 specific areas where they have set

Manfredo Rubens, president, BASF South America.

'macro-goals' to be met by 2020. These areas include safety, post-consumption (recycling), development of local communities, climate change objectives and use of renewable feedstock and renewable energy, among others. In nine of the 10 areas delineated, the rate of goal fulfillment was between 73% and 100% by 2017; yet, in post-consumption, only 1% of the 2020 objectives had been met by the end of 2017. This is indicative of the sheer scale of the recycling problem that the industry, together with the rest of its stakeholders, currently faces.

THE CIRCULAR ECONOMY GOAL

The rapid expansion of the plastics industry has caused far-reaching consequences, and there is no magic solution to tackle them. The world needs a multi-component strategy, including more stringent regulations, the development of the right infrastructure and handling processes for recycling, education at all levels of society and an innovation push by the industry.

Enrique Flaiban, general manager of Petrocuyo, an important petrochemical player in Argentina, emphasized that a solution cannot be reached without a joint effort: "We participate very actively in Ecoplas, an organization that provides information about the need for recycling. It is a great effort, because in Argentina there is not a strong recycling culture. We give support to some recycling cooperatives through the donation of defective product, but the legislation in Argentina does not help. In Buenos Aires, for instance, there is no separation of waste."

In Colombia, local association Acoplásticos is also involved in wide initiatives to promote a better recycling culture, including the Dale vida al plástico ("Give life to plastic") campaign. Daniel Mitchell, president of Acoplásticos, also commented on the responsibility of both industry and government: "From the design stage, the products need to be recyclable and environmentally sustainable. Then, the authorities need to do selective collection of waste, and informal recyclers need to be organized to improve their activity."

Brazilian chemical association Abiquim is also putting a lot of emphasis on education, working together with Plastivida, an institution that deals with the environmental and social aspects of plastics and implements education programs in schools. "Overall, we believe the most important issue to address in this subject is education. Well-educated people will not cause ocean pollution," said Fernando Figueiredo, CEO of Abiquim.

THE INNOVATION RESPONSE

Achieving a fully circular economy is indeed an enormous challenge. While banning some products like single-use plastics may have other undesired impacts, change is already happening, and all stakeholders need to see how they can adapt and contribute to it. In Mexico, by the end of 2018, there were already regulatory initiatives in 26 of the country's 32 states to ban the use of single-use plastic bags, straws and packaging.

Miguel Benedetto, general director of Mexican chemical association ANIQ, noted that in parallel to regulatory changes in the country, the resins industry recently made three firm commitments: "The first one is to meet the zero-pellet target across the entire value chain. The second is to assure that 100% of the industry's packaging is recycled or recyclable by 2030. Finally, by 2040 we will have to work with plastic converters and the retail industry to ensure that 100% of all packaging produced in Mexico is recycled or recyclable."

In this context, the largest players must be the agents of change when it comes to promoting recycling and preventing plastic waste from reaching the oceans. Jim Seward, vice-president of Technology, Sustainability, O&P and Joint Ventures at LyondellBasell, said: "The circular economy is particularly relevant for plastics as they are uniquely suited to recycling and have a very long lifespan. Our vision is that, after use, plastics should not become waste but should be viewed as a feedstock or raw material for other uses."

In this respect, companies are working on two main fronts: traditional mechanical recycling and the more complex process of chemical recycling. In the former, LyondellBasell has created a joint venture company in Europe called Quality Circular Polymers (QCP) in collaboration with waste management specialist SUEZ. Located in the Netherlands, QCP's facility has the capacity to convert consumer waste into 30,000 tonnes per year (mt/y) of polypropylene and high-density polyethylene.

Furthermore, in its work on the chemical recycling option, LyondellBasell has teamed up with Karlsruhe Institute of Technology (KIT) with the aim of developing a new catalyst and process technology to convert plastic waste into feedstock, which could then be reused in polymerization processes. Bob Patel, CEO of LyondellBasell, declared: "This is a bit more long term, but it could be a great solution for a more sustainable circular economy around plastics."

OTHER ASPECTS OF SUSTAINABILITY

Beyond plastic pollution, another key area that needs to be addressed in the context of sustainability is carbon emissions. The current international framework is provided by the Paris Agreement, ratified to date by 184 of the 197 parties to the United Nations Framework Convention on Climate Change (UNFCCC). The Agreement's objective is to keep the rise in global temperature in the 21st century below two degrees Celsius above pre-industrial levels. During COP24 in Poland in December 2018, the different parties finally approved a range of measures to make the Paris Agreement operational starting 2020.

In Latin America, the countries with the biggest emissions correspond to the largest economies: Brazil and Mexico represent around 2.5% and 1.7% of the world's total emissions, respectively. Indeed, this is one of the key issues that the Mexican chemical industry wants to address with the new López Obrador administration through a focus on the implementation of the carbon credit market in the country. Miguel Benedetto, director general of Mexico's National Association of the Chemical Industry (ANIQ), declared: "The federal government has committed to a 30% reduction in greenhouse gases by 2030 and a 50% reduction by 2050. In this respect, all industrial sectors will have to contribute significantly for Mexico to achieve these goals."

Marina Mattar, director of institutional relations and sustainability at the Brazilian Association of the Chemical Industry (Abiquim), assured that the chemical industry was the first industrial sector in the country to take a position on carbon pricing. A regulatory push will be key in this respect. The shipping industry, for instance, is ill prepared to deal with the IMO 2020 regulations that cap sulfur emissions, but the entry of this new standard into force will drive change. Meanwhile, the industry itself is also improving technologies in order to reduce impact.

Arturo Bettati, managing director of Latin America at Haldor Topsoe, a Danish-based leader in catalysis, gave more details: "The driver for cleaner fuels is not only the regulation to bring sulfur levels down. New truck engines that demand higher quality fuels are pushing the development as well."

As part of this trend, in Argentina YPF has a project for the production of clean fuels, and the company is working with Haldor Topsoe on the basic engineering for two ultra-low sulfur diesel plants at the Luján de Cuyo and La Plata refineries, while Reficar in Colombia is also installing two ultra-low sulfur diesel hydrotreaters with Haldor Topsoe catalysts. "Haldor Topsoe has developed new technologies for the ammonia, methanol and hydrogen production segments that are able to reduce CO2 emissions by about 14%, while also providing significant energy savings," Bettati affirmed. ■


YPF

LEADING ARGENTINA´S ENERGY
YESTERDAY, TODAY AND TOMORROW.

ARGENTINA

The general election looms after a period of severe volatility

An IMF bailout to the tune of US$56 billion, 25.7% inflation (CPI), unemployment rising to 9.1% and a currency devaluation that has seen the Argentine Peso fall from 20 to the dollar in April 2018 to 45 to the dollar in May 2019: for a country with significant resources, the question must be asked – how did we get here?

During the previous populist government, high levels of distortion in prices had become commonplace, according to Gonzalo Mórtola, controller at Puerto Buenos Aires. The country's biggest port is a public institution with over 100 years of history, as well as an example of how institutional corruption had eroded Argentina's competitiveness. "Fees were being charged that had never been charged in any other port of the world," said Mórtola, continuing, "For instance, there was a US$90 fee for the cleaning and sweeping of empty containers. There was also an insurance charge for all containers and merchandise, and without this insurance, the product could not leave or enter the port. The overall cost of fees was around US$360 per container."

In the years since, Puerto Buenos Aires has been able to reduce these costs by over US$300, illustrating the gravity of the situation the new government inherited.

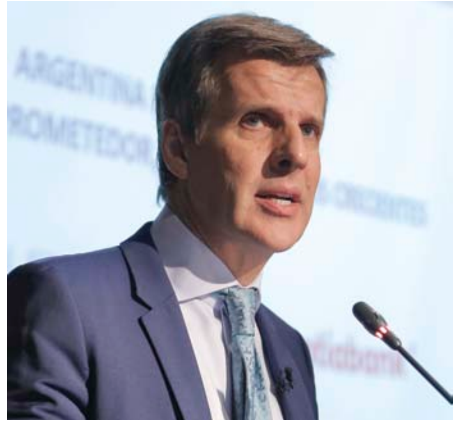
However, almost four years since the Macri administration gained power, the macro-economic picture in Argentina has remained depressed, an indication that anti-corruption measures and a more pro-business attitude alone have not been enough to breathe life into a struggling economy. "This government was overconfident with regard to the problems it had to surmount and the level of inconsistencies it was inheriting," stated Martin Redrado, director general of Fundación Capital and former president of Argentina's National Bank.

On July 22nd 2019, the candidates for Argentina's general election will be announced, and uncertainty still remains as to who will run, let alone who will win. So to what extent will the result of the presidential election impact Argentina's petrochemical and chemical industries? Fortunately, the outlook looks positive regardless of the result: "Whoever wins the presidential election later this year will benefit from the hard decisions the Macri administration has made, including important energy reforms to address the market distortions of prior policy decisions," said Derek Wong, economic officer at the U.S. Embassy in Argentina, emphasizing the commitment of the U.S. government to work in unison with whichever candidate the Argentine people elect.

Fundación Capital observed that the new regime will have to follow the path set out by the IMF for the foreseeable future, as the country does not have the cash to repay the debt in the short-term. The Buenos Aires-based firm, which analyzes trends and provides projections on the socio-economic and political environment and its impact on each business or sector of the economy, sees a very low probability of the country turning back to a populist government. Martin Redrado proposed that Argentina should be looked at from a sectorial perspective: "There are six sectors in Argentina that, no matter what political outcome there is in the elections, are still going to be winners. The petrochemical industry is one of these industries. The question is then how fast these sectors and the entire value added chain of these sectors will grow, but there is certainly a very positive outlook."

PRAGMATISM AND CREATIVITY PARAMOUNT FOR AN INDUSTRIAL SECTOR FACED WITH ADVERSITY

2018 could easily be described as a roller coaster for several of Argentina's industrial segments due to the devaluation of the peso and the back and forth over the fiscal regime on exports. Indeed, the local currency lost half of its value against the American dollar between April and September 2018. It was not a smooth process, but rather two strong devaluation 'earthquakes.' By the end of the year, the government had managed to tighten the leash on exchange rates, but data on industrial output revealed the effects of instability, with an accumulated 5% decrease year-on-year and a worrying 14.7% contraction in December 2018 alone.


Martín Redrado, founder and managing director, Fundación Capital.

"Unfortunately, in Argentina, you need to dedicate all your efforts to the day-to-day situation," lamented Enrique Flaiban, general manager of Petrocuyo, the polypropylene producer that resulted from the merger between Petroquímica Cuyo and Petroken. "Over the second half of 2018, volumes decreased by 30% virtually across the board. Financially speaking, you could lose all your previous work in one day, like when the U.S. dollar went down from 28 pesos to 42 pesos in a matter of hours. When you source your feedstock in dollars and all your billable is in pesos, the devaluation can cause a mess."

Petrocuyo's installed capacity is around 300,000 tonnes per year (mt/y) in two plants: Luján de Cuyo and Ensenada.

The Macri administration tried to open up Argentina's market to the world, and this meant the arrival of more imported product. Argentinian producers were forced to look for markets outside, in a move that a posteriori could be seen as a double-edge sword. "On one hand, this helped us during the devaluation, because 30% of our sales were in dollars," said Flaiban.

On the other, the government suddenly reinstated taxes on exports in what was described an "emergency measure" to tackle the country's deficit. Taxes on exports had already been applied, controversially, by the previous Kirchner administration, and many industries saw these as an obstacle that prevented new investment from entering the country.

Everything is transformed

We create our polypropylenes in a conscious way taking care of the environment, in order to generate new materials which will be recycled and reused later, transforming the waste into resources.

Petrocuyo

Rethinking the future

Flaiban explained some of the numbers Petrocuyo had to deal with, considering all these regulatory changes: "The government initially eliminated the refund for exports, which was equivalent to 4.5% of the FOB value. To compete internationally with companies like Braskem, Esenttia and the Arab and Korean players, the margins are really low, so this change by the government put our exports at risk. Moreover, after that, the government reestablished the export tax of three pesos per dollar exported, which had an impact of an additional 7%. Overall these two changes had a 12% impact on our exports. The government argues that this has been offset by the peso devaluation, but we buy our feedstock in dollars. Plus, energy costs and financing costs are much higher in Argentina than elsewhere in the region."

Flaiban of Petrocuyo gave more details about the polypropylene market: "Argentina does not have the scale yet to be very competitive compared to foreign players. Argentina's polypropylene market is 330,000 mt/y, while the United States is adding 3 million mt/y with their investments, Brazil has installed capacity of 1.8 million mt/y, Colombia has a capacity of 450,000 mt/y and Arab countries have enormous capacity as well – so, if these countries bring product to Argentina, they can cause great disruption." The irony, said Flaiban, is that Argentina's macroeconomic instability also acts as an entry barrier to these foreign players.

As global population increases, there is a need to extend the agricultural frontier. This results in the need for more fertilizers and, looking beyond nutrition, growing economies will require more chemical product in general. "The region has a deficit of 5 million mt/y of urea, with room for a 3-times world-scale multiplier," assured Federico Veller of YPF, which currently has an installed chemicals capacity of 2.2 million mt/y between its aromatics, fertilizers and methanol business units. "Meanwhile, in plastics, there is space for one world-scale ethane cracker and the associated polyethylene plants to cover the projected deficit in South America, mainly in Brazil. There is also space for a world-scale polypropylene plant, as our current surplus of propane can justify a new propylene plant to produce the associated polypropylene."

CHEMICAL DISTRIBUTION AND LOGISTICS

In the global chemical industry, the distribution sector represents approximately 20% of the value chain. In Argentina, on the other hand, this figure almost doubles. Adrián Gabriel Schwartz, president of Grupo Simpa, expanded on the reasons behind the sector's significance in Argentina: "Petrochemical producers are afraid of the financial risks in the country, hence distribution represents 38% of total sales."

Grupo Simpa is responsible for half of all petrochemical products sold in the distribution market in Argentina, selling polyethylene from Dow Chemical, polypropilene from PetroCuyo and polystyrene from Pampa Energía. While the company's market share has remained strong, Argentina's economic woes have affected turnover, reducing sales output from 17,000 mt/y to 12,000 mt/y. "The demand for all polymers fell because the crisis affects the whole industry, not just the raw material," Schwartz pointed out.

The crisis has been particularly hard on the small and medium-size distributors that lack the solvency and liquidity to face market volatility. For the major players, however, these circumstances offer opportunities for growth, as producers and clients alike depend on the flexibility and market knowledge of their distributors.

The global market leader in chemical distribution, Brenntag, has managed to grow significantly in the last two years in Argentina, taking advantage of its position to offer clients the products they need during times when other companies struggle to provide. "Despite the challenging circumstances, 2018 was a record year for Brenntag in Argentina in terms of profitability," revealed Guillermo Laborato, president of the company's Latin America South. "Political instability creates volatility in all market segments, but if you are as well prepared as Brenntag is, you will still be able to generate profits and growth," he added.

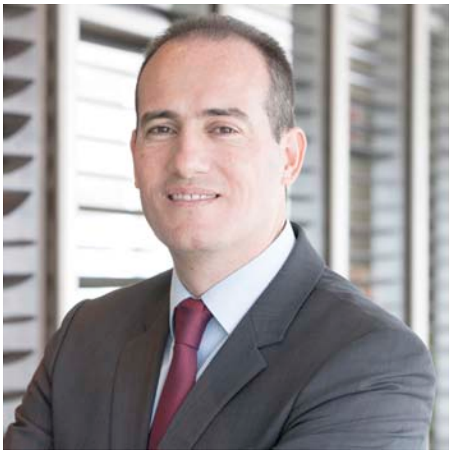
One of the major challenges for distributors and producers alike in Argentina, and indeed all of Latin America, is the logistics deficit facing the region. The Argentine Chamber of Logistics Operators (CEDOL) reported a 58% cost increase in the logistics sector in 2019, based on factors including rising petrol prices and tariffs. To help combat this challenge, Hernán Sanchez, commercial director of Celsur Logística (Celsur) and newly appointed president of CEDOL, called for a more collaborative approach between industry and government: "It is important for the organization to have an open channel of communication with the government and the trade unions to improve logistics. We have deficits in our methodology due to taxes, and we have to improve the tax situation."

Celsur provides 3PL (third-party logistics) services to companies such as Dow Chemical and YPF and is currently working on a new logistics model for the shale gas projects at Vaca Muerta, according to Sanchez. Acknowledging that Celsur's revenue in dollars has decreased due to currency devaluation, Sanchez noted that the company's market position has grown by approximately 10% in the previous two years. Underlining Celsur's commitment to its largest clients, he concluded: "Currently Celsur is focusing on the chemical industry and providing transport for solid products, and our investment in 2018 was dedicated to these services."

PETROCHEMICALS: THE VALUE-ADDED COMPONENT OF VACA MUERTA

Argentina is famous for its beef, with hordes of tourists flocking to experience the country's culinary delights. However, a different kind of dead cow currently has the mouths of both Argentine and international investors watering. With the notable exception of Venezuela, Argentina has been arguably the most turbulent of the Latin American countries in the last two years, yet can boast the region's most desirable resource – the vast unconventional shale reserves sitting in the Neuquén Basin.

Although development at Vaca Muerta is still in its infancy, with less than 4% of the resource having been developed to date, significant strides have already been made in its development, as illustrated by Federico Veller of YPF: "Back in 2012, YPF was the only player developing Vaca Muerta; today, after applying horizontal and multilateral technology, the scenario



Federico Veller, executive manager for chemicals, YPF.

has changed, efficiency has dramatically increased, and Vaca Muerta became a rich tapestry of different companies producing more than 70,000 barrels of oil per day and 50 millions of cubic meters of natural gas per day."

YPF is already seeing encouraging results from Vaca Muerta, and it expects non-conventional hydrocarbons production to represent 70% of its output by 2023, versus 30% in 2018.

YPF is the largest shareholder in Compañía Mega, the Argentinian producer of ethane, propane, butane and natural gasoline, born out of a US$720 investment between YPF with 38%, Petrobras with 34%, and Dow Argentina with 28%. Alejandro Fernández, general manager of Compañía Mega, commented that the company's expansion plan could result in its triplicating in size, but this vision depends on the development of Vaca Muerta. Fernández gave his views on the scale of the project: "Considering the size of the resource, Argentina is not in a position to be the only destination market for the products that come from Vaca Muerta," he said, continuing: "That is why we celebrate the initiatives and efforts that are being made to develop the infrastructure in the region that allows us to install Vaca Muerta as a reliable and competitive LNG supplier in a globalized natural gas market."

There is consensus that Argentina's shale potential at Vaca Muerta can mean transformational developments for the country. "Vaca Muerta can be a game changer, not just to meet the local market demand, but also to change trade flows internationally," said Sergio Marcondes, general manager of Braskem Argentina. In parallel to this, acknowledgment of the complexity and size of the task at hand is also widespread: "Having said that, this has to be treated as a long-term development. Large investments will be required for infrastructure such as new crackers," added Marcondes.

So what is a realistic timeline for Vaca Muerta to start producing significant feedstock for the petrochemical industry? The CIQyP is part of the discussion set up by the Argentine government for Vaca Muerta, and deliberates critical issues such as infrastructure, hydrocarbons demand, downstream problems and the supply of equipment. The biggest factor restricting fast development of Vaca Muerta, and a challenge for the Argentinian petrochemical industry, is the demand for gas. Argentina exports gas in the summer, but during the winter exports stop as all domestic production is consumed locally, and some energy has to be imported from Bolivia. "If we produce LNG in Argentina, this will enable the full development of Vaca Muerta by facilitating enough upstream activity to reach sufficient gas at competitive price. The reality is that we can achieve success in time, but this will take around five to six years," explained Jorge de Zavaleta.

The good news for Argentina is that Vaca Muerta contains gas that will last for over 100 years, and domestic production should see the cost of gas low enough to produce petrochemicals at an internationally competitive level. Jorge de Zavaleta touched on the role that foreign investment can play in the development of the unconventional resources, highlighting the upside of petrochemical production as a tremendous opportunity: "If you produce petrochemicals, with every US$1 per MMBTU (One Million British Thermal Units) of gas you can produce a plastic resin with a price of between US$4 and US$6 MMBTU, then if you transform that resin into a plastic piece, the value can increase from between US$10 to US$20. Our message is therefore that petrochemicals will be the value added component of Vaca Muerta." ■

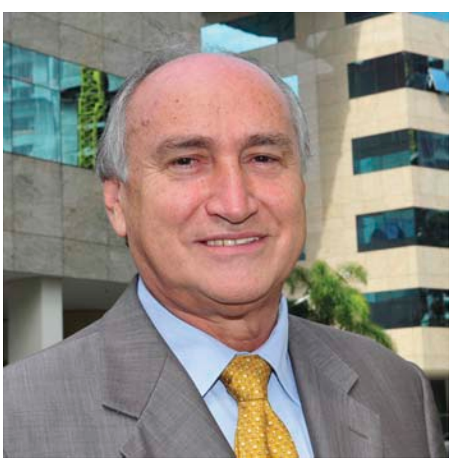
BRAZIL

Latin America's biggest market hopes pension reform will boost sluggish growth

If Argentina is a roller coaster, Brazil, the region's largest economy, is a heavy truck struggling to move up the hill at a decent pace. Two years of annual growth in the 1% range is certainly not enough to make up for two years of strong recession (-3.6% in 2015 and -3.5% in 2016, according to data from the IMF). Now, with uncertainty about the presidential election finally gone, the forecast for 2019 is 2.5% growth. This means the economy is gaining some traction, but at the same time, such a growth rate is still insufficient to improve Brazil's high debt-to-GDP ratio – at least if the country maintains its high levels of government spending.

In February 2019, controversial new president Jair Bolsonaro unveiled his proposal for pension reform, which is considered to be the critical element in a wider package of economic measures aimed at improving the state of Brazil's public finances. However, it remains to be seen if the president will obtain the backing of Congress, since its plan requires a majority of three fifths in the Chamber of Deputies, the lower house (which means at least 308 votes out of 513 deputies) and also three fifths in the Federal Senate.

Brazil's economic recession and issues related to local competitiveness have taken their toll on Brazil's local chemicals industry, which is today the eighth largest worldwide, as opposed to the sixth largest a few years ago. A 2019 report from Abiquim (the Brazilian Chemical Industry Association) stated the deficit in the trade balance of chemicals reached a record high of US$4.9 billion in the first months of 2019. "We have a lack of raw materials at an internationally competitive price," said Fernando Figueiredo, Abiquim's CEO, citing stringent labor and fiscal laws hampering competitiveness. "Nowadays 37% of the Brazilian market is being usurped by imported products," he continued.



Fernando Figueiredo, CEO, Abiquim.

Sales by the local chemical industry have gone down from US$150 billion in 2011 to less than US$120 billion in 2017, explained Marina Mattar, director of Institutional Relations and Sustainability at Abiquim: "The industry faces several issues, starting with the cost of energy and raw materials. In some regions, the cost of energy is three times the price you would pay in the United States."

"Additionally, logistics are difficult," Mattar continued. "If you are in the state of Sao Paulo, it is cheaper to bring chemicals from China than from Bahia. In Brazil, most transportation is done by road, which is very costly. Adding to all that, bureaucracy incurs significant cost for companies."

Figueiredo and Mattar both added that Brazil now offers great potential for the industry due to the oil and gas resources of the pre-salt fields, yet the ball is in the government's court: "We are trying to persuade the government to use this oil and gas for the industry, instead of adopting a model of exporting raw materials and importing finished products," Mattar concluded.

Paulo Guedes, Minister of Economic Affairs, is viewed as a sympathizer of the industry's concerns. Figueiredo said: "70% of the logistics proposals put forward from the Strategic Agenda of Logistics by Abiquim to the new government have been well-accepted."

The suggested proposals are from the A Different Future is Possible report put together between Abiquim and Deloitte, offering perspectives for the chemical industry that aim at removing the obstacles preventing investment and providing the sector with the conditions necessary to stimulate growth. The report details the current bottlenecks, such as lack of competitiveness, high cost of raw materials, electricity and logistics, as well as bureaucracy.

At the 21st annual APLA Logistics Meeting in São Paulo in March 2019, the Brazilian government laid out its strategy to create a more favorable climate for private investment and reduce logistics bottlenecks. Working in conjunction with BNDES, Brazil's national development bank, the government is drawing up a shortlist of projects to put forward as investment opportunities for collaboration with the private sector. "Rather than prioritizing one particular industry, the emphasis will be on a merit basis. Our current goal is to grow Brazil's annual GDP growth from 1.7% to 4% by 2022," revealed Diogo Mac Cord de Faria, National Secretary of Infrastructure Development for the Brazilian Ministry of the Economy.

Mark Eramo, vice-president at IHS Markit, agreed that it all comes down to the new Brazilian government to promote industrial development: "One would expect Brazil to leverage the price increase and continue to grow by attracting additional investments. Brazil is showing increased hydrocarbons production, and they already have the infrastructure in place with respect to refining and petrochemicals. The challenge is whether they can pick up where they left off before the recession and leverage their advantages to continue to grow and develop."

PETROCHEMICAL AND CHEMICAL PRODUCTION IN BRAZIL: DIVERSIFICATION TO MITIGATE RISK

On June 4th, LyondellBasell said it had ended talks with Odebrecht S.A. over the purchase of Braskem "after careful consideration". The proposed US$11 billion transaction had slowed due to complications surrounding a supply contract for naphtha with Petrobras and a delayed U.S. filing, according to Reuters, and the ending of negotiations will come as a blow to Odebrecht, as the construction conglom-

Edison Terra Filho, executive vice president, Braskem.

erate tries to restructure its debts after the infamous Car Wash scandal.

In the meantime, it is business as usual for Braskem, which has been working on enhancing its competitiveness and increasing its diversity in terms of feedstock and geography, according to Edison Terra Filho, the company's executive vice president. "Today, approximately 50% of the company's turnover comes from operations outside of Brazil. We are not reducing our footprint in Brazil, but rather diversifying and incrementing our activities in other regions," he said.

The main region responsible for company growth over the last few years has been North America, Terra Filho elaborated, noting the increase in capacity at Braskem's U.S. assets. "We have also started a greenfield project in Mexico, and we are in the process of building a new facility in Texas to increase production capabilities. Braskem's PP plant project in Houston is on schedule both for budget and for time. The expectation is to have the plant online within the first half of 2020."

One of the longest standing players in Brazil's chemical industry, Elekeiroz, has noticed market recovery since the low of 2016, which has coincided with the optimization of the performance of its Camaçari and oxo-gas plants, according to Marcos de Marchi, CEO. "Only in 2017, when the economic conjuncture had improved, were we able to take advantage of heavy disintegration and, as a result, Elekeiroz went back to its regular level of activity, attaining the international standards of competitiveness," he revealed.

When asked about the main obstacles facing the Brazilian chemical industry in 2019, de Marchi pointed to high gas and energy prices: "Fifteen years ago, gas used to be much cheaper than in the United States. Nowadays, it is three times more expensive," he remarked, continuing: "70% of the Brazilian energy is exclusively dependent on hydroelectric power, which theoretically should be one of the cheapest energy sources, but in Brazil that is not the case."

Despite the challenging macro-economic conditions in the region, a number of chemical producers in Brazil have managed to increase profits, such as global company Eastman. "From 2017 to 2018 the Latin American region for Eastman grew 14% in revenue within the global company," divulged Pedro Fortes, managing director of Eastman Brazil.

Fortes was keen to point out that sustainable growth for the industry as a whole is reliant upon a healthy economy, and that Brazil is still in the early stages of a recovery. He used the example of the group of young soccer players trapped in a cave in Thailand in 2018 to illustrate his perspective: one of the boys asked a rescue-diver who used to be a soccer coach, "Tell me what I need to do to be a better soccer player?" The diver responded, "Before we think about being a better soccer player, we need to leave the cave," providing an apt metaphor for Brazil's current situation. Fortes concluded: "In many ways I believe this sums up the situation in Brazil – we must create stability before we can take advantage of our enormous potential."

BRAZILIAN INNOVATIONS GIVE SUSTAINABILITY THE GREEN LIGHT

"In all markets, there are sustainability initiatives, and companies are looking for solutions that are more environmentally friendly where they can reduce the use of resources such as water and energy," said Oxiteno's João Parolin, who shares this perspective with many of his industry counterparts throughout the chemical value chain. Oxiteno's "Greenformance" concept was introduced to encourage the use of renewable raw materials, and the company now sources approximately 26% of its feedstock from renewable sources.

Another leader in specialty chemicals with an emphasis on promoting sustainability through innovation is Croda, originating in Yorkshire, United Kingdom, with its largest manufacturing site in Latin America and the company's Latin American headquarters located in Campinas, Brazil. 75% of the water Croda consumes at its Campinas plant is reused on the site, and Richard Pino, vice president of Croda do Brasil, highlighted an example of how innovation is the basis of the company's global strategy: "Croda invested in a site in the United States that is going to produce the first green EO (a bioethanol-based ethylene oxide) in the United States and will produce the largest range of 100% bio-based ECO surfactants in the world. This is a great benefit for our customers as they can move from petrochemical EO to green EO, which opens a huge market for them."

Green is also the operative color for Braskem, which has been expanding its "I'm green™" portfolio in line with a strategy to strengthen renewable chemicals, outlined Edison Terra Filho. Braskem is known for its green polyethylene, produced from sugarcane ethanol, and the world's first biopolymer to be produced on an industrial scale. "With the new bio-based EVA resin (ethylene vinyl acetate copolymer) product, Braskem is demonstrating its leadership in sustainable manufacturing," remarked Terra Filho.

Quimisa celebrates its 60th anniversary in 2019, and a focus on innovation and sustainability has been one of the pillars of its longevity, according to Rogério Wehmuth, owner & director of the family-owned company in its third generation. Wehmuth expanded on the importance of Quimisa's enzyme segment, which touches a variety of the industries the company operates in: "Enzymes are not only applicable in the life sciences industry, but also in textiles and water treatment solutions. By developing sustainable technologies using enzymes, we can reduce water consumption needs through the preservation of water. We can also apply our technologies to increase and maintain shelf life for products such as grains." ■

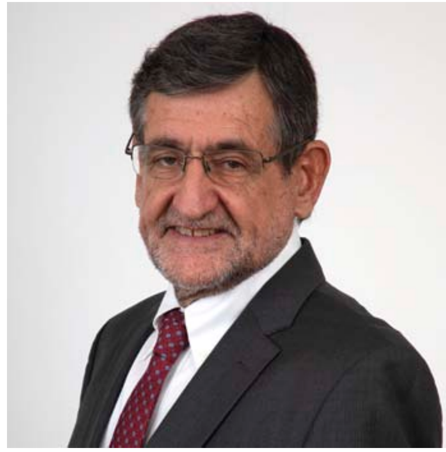
CHILE

The Andean country looks to strengthen trade ties with the Asia Pacific region

What Chile lacks in size in relation to its Latin American counterparts such as Brazil, Argentina and Mexico, it makes up for in stability, something the biggest Latin American markets have been sorely lacking in recent years. According to figures from the World Bank, Chile's economy rebounded from a sluggish performance in 2017 to grow at a rate of 4% in 2018, despite the trade feud between China and the United States negatively impacting the price of copper, the base metal that makes up around half of the country's exports.

Chile's stable economic and political context may be enviable to some of its neighbors; however, a relatively small population of just over 18 million and a geographical position that places the country far from a consistent supply of raw materials limits the potential of Chile's petrochemical and chemical industry, which represents approximately 2% of the country's GDP. ASIQUIM (la Asociación Gremial de Industriales Químicos de Chile), Chile's chemical industry association, is representative of approximately 90% of this figure, in terms of value of production coming from its 130 member companies.

Edmundo Puentes, ASIQUIM's president, observed that due to the size of the Chilean market and lack of local petrochemical feedstock, logistics to secure imported raw materials are key for the industry. From a geographical standpoint, Chile has the advantage of a long coast along the Pacific Ocean, providing excellent access for trade with the Asia Pacific region, which is currently the country's main export market. "Chile can offer the eastern countries of South America access to these markets through its ports, highways and railways," suggested Puentes, continuing: "In 2019, both the APEC meeting as well as the COP 25 will be hosted in Chile, which demonstrates the commitment of the political sector and the government to make the country a platform for trade in the Pacific region."


Edmundo Puentes, president, ASIQUIM.

Of all the countries in South America, Chile has perhaps the most open market, with a large network of trade agreements incentivizing exports to countries such as China, Chile's largest trading partner that received 27.5% of its exports in 2017. In January 2010, Chile became the 31st member of the OECD (Organization for Economic Co-operation and Development) and the first South American member at that time. For Julio Garcia, owner and general manager of ADIZOL, the Chilean distributor for global specialty chemicals company Lubrizol, "The open market in Chile has created a highly competitive environment." Explaining that Chilean companies often have to compete with cheap imports, Garcia underlined the importance of a quality service offering being the basis for thriving in such an environment: "Anyone can distribute a product, but having the requisite knowledge to provide a first-class service takes experience," he added.

For Juan Pablo Gazmuri, managing director & CEO of Panimex, the stability of the Chilean economy and its open nature brings opportunity. Panimex was founded in 1956, and today exports 90% of the production from its plasticizer plant and phthalic anhydride (PA) plants. Citing his company's close relationship with the Foreign Relations Ministry in the development of new free-trade agreements being signed, Gazmuri emphasized the need for cross-border collaboration to drive the innovation necessary to remain competitive: "We believe that it is impossible to fully innovate as a sole company, as we do not have all the solutions. Innovation should be driven by customers' needs, and the only way to be successful in innovation is finding the right partners."

The Chilean government is not the only stakeholder taking the initiative to strengthen the country's logistical infrastructure. In December 2018, Oxiquim, one of the major players in Chile's chemical industry, received approval for the concession of a new port in Quintero, near the city of Viña del Mar in the Valparaíso Province. Oxiquim's terminal in Quintero Bay is already the largest open terminal for chemicals in the country, and "the approval for the concession of a new port is both for the expansion of the existing services, as well as the construction of an additional port," said Edmundo Puentes, Oxiquim's general manager. "Oxiquim's plan is to build a new pier where we can load and unload liquids as well as bulk solids. I am convinced that Chile needs this new facility to handle the increasing demand as well as to offer more reliability in terms of port services," he added.

SOCIAL ACCEPTANCE KEY TO INDUSTRIAL DEVELOPMENT

Residents of Quintero, the small fishing community in central Chile, have not shown overwhelming support for some of the proposed infrastructural developments, with a number of environmental incidents in the region harming the relationship between locals and industry. In 2014, an accident involving the state oil company ENAP (Empresa Nacional del Petroleo) resulted in 30,000 liters of oil being spilt into the sea, and tension was compounded in October 2018 when more than 700 residents of Quintero and its neighboring town Puchuncavi were hospitalized by toxins due to high pollution levels.

Puentes acknowledged that social acceptance is the biggest issue facing all industries in Chile: "There has been an increase in regulations following public pressure that heavily influences authority decisions," he revealed, further suggesting that authorities should work together with the private sector to help improve the image of Chilean industry. "Authorities put the problem of dealing with communities in the hands of the companies instead of trying to manage these challenges themselves. In general, Chile is a business friendly country, but it is still going through the process of learning how to deal with all stakeholders in the best manner."

2019 marks the 25th anniversary of the Responsible Care program in Chile, and this has been of fundamental importance to the mission of ASIQUIM since its inauguration, according to Puentes, noting the association's target to have 100% of its members certified under the program by 2022.

The importance of implementing modern, responsible best practices was underlined by Claudio Gorichon, Reno S.A.'s general manager: "There is a chemical behind every product we consume daily, so, in effect, we as chemical distributors must be responsible and exude reliability," he stated.

Reno was founded in 1962 and today controls the importation, representation, commercialization and distribution of a variety of chemical products, with commercial offices and stock in Chile, Argentina and Peru. In 2018, Dow Chemical chose Reno as the best distributor of industrial solutions in Latin America's southern region, and Gorichon attributes this recognition to the company's focus on sustainable practices. He also suggested that the Chilean industry should improve old-fashioned methods: "Some small and medium enterprises working in the domestic market have lacked investment and neglected this responsibility." ■

COLOMBIA

A favorable macro-economic climate spurred on by a growing middle-class and regional diversification sees a country on the rise

In the eyes of the international community, Colombia was a country steeped in violence, embroiled in drug traffic and corruption that tarnished the image of a vibrant country abundant in natural resources and located at the gateway linking South and Central America. This stigma has become a thing of the past, as modern-day Colombia offers the security and economic and political stability for business to thrive. This context has captured the attention of companies throughout the chemical value chain in Latin America, such as Anastacio Overseas, the international trading arm of São Paulo-based Química Anastacio, which has experienced its sharpest growth in the region from its Colombian operations, according to CEO Jan Krueder.

Another chemical distributor to have experienced growth in Colombia is Rocsa S.A., which acquired Inproquim in 2017 with funding from private equity fund MAS Equity Partners, seeing the region as an area with high-potential. “In Colombia, if you check the top 10 distributors, there is one which is ahead – Brenntag, and then between the second and tenth, the numbers are similar, so there is opportunity for consolidation in the market,” observed Jaime Romero, Rocsa’s general manager.

There are a number of factors that point to the continuation of this upward trend, as outlined by Munir Jalil, executive director of macro research at investment bank BTG Pactual. Jalil pointed to a youthful age structure that still represents a population pyramid, and a GDP per capita (approximately US$6,000) far lower than other similarly developed countries in the region, with considerable room for growth. “Colombia receives the largest ratio of investment to GDP per-capita in the entire Latin American region, approximately 22%, and the biggest investors into Colombia are Colombians,” he explained, hinting that growth would be complemented by, rather than dependent upon, foreign investment.

Many countries in South America are dependent on production from their capital cities. Argentina, Chile and Peru all rely heavily on the contribution of Buenos Aires, Santiago and Lima, respectively, the lynchpins of their economies. Colombia, on the other hand, has a far more diverse spread of cities each with their own robust economic ecosystems, with Bogota generating only 25% of the country’s GDP, supported by industrial hubs in Medellin, Cartagena and Cali. “Colombia has only recorded two years of negative GDP growth over the past century, in 1937 and 1999, and the country has never entered recession,” observed Jalil, elaborating that his country’s geographical peculiarities (mountainous regions had previously limited infrastructure development between cities) have nurtured regional diversification. “This context allows for an insurance policy against negative GDP growth,” he concluded.

The potential for further growth was underlined by Daniel Mitchell, president of Acoplásticos: “Looking at local demand figures, we see great opportunity to grow: in Colombia, we consume 28 kg of plastics per person per year (versus 35 kg in Brazil, 43 kg in Mexico, 45 kg in Argentina, 50 kg in Chile and 150 kg in the United States).”

Acoplásticos was created in 1961, and represents the Colombian chemical and petrochemical activity in plastics, paints and inks, fibers and rubber, including virtually 100% of the petrochemical industry in Colombia. Describing how the association’s mission has evolved to mirror the needs of its industry, Mitchell noted that the 1990s were a time of negotiating free-trade agreements, 2002-2012 saw a drive to foster conditions that would make Colombia more competitive on an international level and in recent years, the focus has been on sustainability and innovation. This current focus is perhaps the clearest indication of Colombia’s development – without being bogged down by economic turmoil and political turbulence, countries can focus on implementing sustainable long-term visions, instead of short-term recovery measures.

Felipe Trujillo Lopez, manager of natural gas division, Ecopetrol.

PETROCHEMICAL AND CHEMICAL PRODUCTION IN COLOMBIA

Colombia has a number of key players in its petrochemical and chemical industry, counting on a mix of national, foreign, private and state companies for production that is mostly consumed domestically, but increasingly being exported to neighbouring countries with fewer resources.

The biggest company in Colombia is state-owned Ecopetrol, with a petrochemical division that represents 4% of its turnover, but if considered as an independent business would be the 15th largest company in the country. Ecopetrol’s petrochemical and industrial division achieved the biggest turnover in its history in 2018 – around US$570 million, according to Felipe Trujillo Lopez, manager of Ecopetrol’s natural gas division. “Ecopetrol is the most important industrial and petrochemical player in Colombia. In this category we can find BTX (benzene, toluene and xylene), aromatics, plastics (polythene and propylene) as feedstock,” he stated.

To build upon this success, Ecopetrol intends to increase its exports, according to Fernando Cubillos Guzmán, manager of petrochemical and industrial products. “The nearest markets, such as Ecuador, Peru, Chile and northern Brazil, are where our products are really competitive,” said Guzmán, who went on to describe Ecopetrol’s regionalization strategy to supply near geographies. Using Ecuador as an example, he elaborated: “They previously imported and stored benzene, toluene and

Juan Diego Mejia Mejia, president, Essentia (formerly Propilco).

xylene from Colombia, but then we suggested supplying to them as an extended geography, with a just-in-time system, no inventories, every day uploading trucks that go to Ecuador from Barrancabermeja. This way Ecuador saves huge capex costs. This same business model can also work with Peru, Argentina, Chile and the north of Brazil."

Essentia (formerly Propilco) is the largest petrochemical company in Colombia, covering 70% of the Colombian polypropylene market with a capacity of 480,000 tons per year (mt/y). The company is 100% owned by Grupo Empresarial Ecopetrol, which provides 30% of its feedstock. Esenttia also exports 60% of the country's polyethylene and polypropylene, but Juan Diego Mejia Mejia, president since 2016, believes the industry is being held back by a dependence on imported feedstock: "The lack of basic raw materials is a serious weakness for the Colombian petrochemical industry," he reflected.

Esenttia currently has an expansion project in its third phase, which will increase production by 70,000 mt/y in two years' time, but Mejia believes this growth has not reached its potential: "a substantial growth of our company will only be achieved once the issue of raw material availability is dealt with, and this is the case for many others."

From the side of the chemical industry, Juan David Urrego, director general of Andercol, also mentioned the scarcity of feedstock as a burden: "2018 was a challenging year in terms of the general market conditions in Colombia, the availability of raw materials and the competitive landscape."

However, Andercol's strategic decision to move its main facilities from Medellin to Cartagena to take advantage of export transportation should bear fruit for the chemical company in the Orbis Business Group, which currently exports 35% of its products: "We are definitely seeing an increase in our exports, especially with our facilities now being located in Cartagena. Our target is to supply 50% of our production to the Colombian market and 50% to our export markets," stated Urrego.

Andercol is a Colombian company with a decidedly international footprint; it is present in 28 countries throughout the Americas. However, foreign companies that decided to open bases in Colombia also contribute considerably to Colombia's petrochemical and chemical production, with Mexichem accounting for around 482,000 mt/y of PVC, and Americas Styrenics (AmSty) and the Ajover Group having a combined capacity of 110,000 mt/y in polystyrene.

AmSty's operates six polystyrene sites in in Americas, in addition to a world-scale styrene unit in Louisiana, producing around 1 million mt/y of product, 80,000 mt/y of which comes from the U.S. company's Colombian operation on two reaction trains. Tim Barnette, vice president – polystyrene at AmSty, commented that Latin American market demand for polystyrene has been steady over the last few years, despite economic conditions: "Nearly all thermoforming markets that rely on cost, speed, and energy efficiency are doing reasonably well now, despite the headwinds of sustainability concern and economic weakness."

Another foreign company to have entered the Colombian market more recently is StarChem, from Georgia in the United States, which opened in Medellin and started manufacturing raw materials for the chemical industry in 2015. The company has experienced exponential growth since, according to its business manager Giuliano Castellani: "We started in 2015 with US$200,000 in sales. In 2018 we closed with US$1.9 million in sales, and in 2019 we are projected to reach US$3 million."

VENEZUELAN IMMIGRATION: THE SHORT-TERM CHALLENGE OFFERING A BRIGHT OUTLOOK

"¡Esta barato, dame dos!" The famous phrase that marked an era of consumer growth and affluence in Venezuela that now seems like a distant memory. While the influx of Venezuelan migrants crossing the border may alarm some Colombians, those who know the region well will remember that Venezuela used to be the best market with the highest mark-up for selling produce in Latin America. In a very short time, Colombia's population has increased by 1.3 million, receiving by far the highest number of Venezuelan migrants fleeing an unprecedented economic crisis. This will come at a cost in the short term, but presents a positive medium to long-term outlook for Colombia, which will benefit from a young population creating a positive demographic dividend for longer.

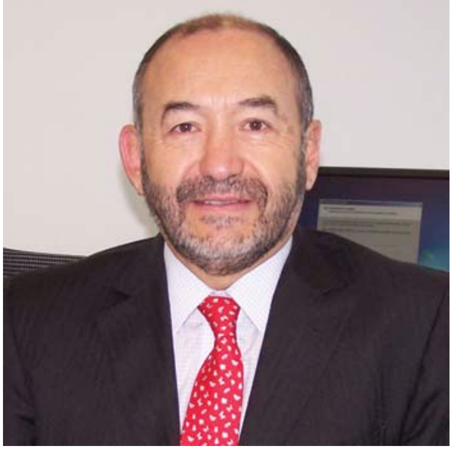
Ecopetrol is already reaping the benefits of this migration, according to Felipe Trujillo Lopez, who cited the phenomenon as one of the key factors behind the record 2018 profits for the company's petrochemical and industrial division: "The crisis in Venezuela has seen record levels of Venezuelan migrants (be that legal or illegal) enter Colombia, causing a 20% increase in the consumption of benzene, xylene, toluene and white spirit since September 2018."

Stemming in part from animosity between the current administration and Venezuelan president Maduro, Colombian president Ivan Duque has welcomed the migrants with open arms, referring to them as Colombia's "Venezuelan brothers." "The challenge is that we have to nationalize and formalize these migrant citizens as soon as possible for them to be an asset to the economy," explained Munir Jalil, concluding: "Fortunately, the government appears to be taking the relevant steps to speed-up this process."

As Venezuelan migrants looking for a better life enter the country at a rate of 4,000 people per day, this attitude of inclusion from the authorities is another promising factor contributing to the bright outlook for Colombia's economy. ■

MEXICO

The AMLO administration looks to strengthen Pemex amid tussles for feedstock



Jose Luis Uriegas, CEO, Grupo Idesa.

Stefan Lepecki, CEO, Braskem Idesa .

In Mexico, industry discussions were dominated last year by the long trade talks with their North American neighbors and speculation over what a potential López Obrador government may look like. Now, López Obrador ('AMLO') has been sworn in as the country's president and NAFTA has been updated under its new USMCA name. The clouds over global trade are not gone, however, even though the United States and China might finally come to an agreement to end their tariff dispute during 2019.

The deterioration of the performance of national oil company Pemex in recent years is not only creating woes for the owners of chemical capacity in the country; it is also being seen as a risk to Mexico's economy. In January 2019, rating agency Fitch downgraded Pemex's credit rating, creating concern among government officials. The national oil company currently holds US$106 billion in international debt – the highest of any state oil company in Latin America according to Reuters – and has to make US$27 billion in debt payments over the next three years. As a result of this downgrading, the Mexican administration announced it will inject US$3.9 billion into Pemex. "The Mexican government's focus must be to attract foreign direct investment to help develop the natural resources available in the country in support of energy and chemical development," affirmed Mark Eramo of IHS Markit. "With the current plans to reduce production and eliminate exports, the indications are that it is going to be difficult to attract that investment," he said.

Indeed, AMLO has recently stated that Pemex will not sign new joint ventures with private companies until existing projects yield oil production, raising doubts about future auctions and the overall progress of the energy reform. For Stefan Lepecki, CEO of Braskem Idesa, Mexico has the same geology as Texas, so the country has an opportunity to take oil and gas production back to higher levels. Yet, he said no one should expect the energy market to radically change overnight: "The energy reform is not a simple task; it takes time to transform the framework from a 70-year old monopoly to an open market. We are currently in that transition, where Pemex still is the main provider of feedstock for the petrochemical industry. Unfortunately, Pemex's lack of investment has made the reform more difficult."

Miguel Benedetto Alexanderson, General Director of the National Association of the Chemical Industry (ANIQ -Asociación Nacional de la Industria Química).

José Luis Uriegas, CEO of Grupo Idesa, joint venture partner of Braskem in the Etileno XXI plant in Coatzacoalcos, defended the need for both public and private participation to promote industrial development: "The López Obrador administration has announced that they are going to give strong resources to Pemex. Independently of the energy reform, which will take a few years, it is very important that Pemex receives strong support also on the petrochemical front."

Idesa is one of the companies participating in the opening of the upstream segment to private players through its stake in Tonalli Energía.

While the initiation of ethane imports by Pemex in 2018 was seen by many as a realization of the company's failure to maintain production levels, industry leaders saluted the move for the sake of maintaining a healthy value chain. Uriegas said: "It is good news that Pemex started importing ethane, because their installed capacity in Morelos and Cangrejera can be put to work with very competitive ethane from the United States. Setting up a bigger terminal to import ethane would be good news both for the private players and for Pemex."

Lepecki of Braskem Idesa, one of the companies that saw its output affected by the feedstock scarcity created by Pemex, highlighted that certain regions already have the infrastructure to import natural gas, and that this year an underground marine pipeline will reach the area in the southeast near Etileno XXI. "With that infrastructure in place, we can decide whether to buy natural gas from Pemex or to import from other players."

After ***three years*** of operations, we have contributed to the ***strong reduction of polyethylene imports*** in Mexico and to the ***improvement of the economy of our country***

However, for Miguel Benedetto Alexanderson, general director of the National Association of the Chemical Industry (ANIQ), the increasing import volumes of natural gas are holding the industry back: “The central issue impacting the competitiveness of the chemical industry is the lack of natural gas in the southeast of the country, which has generated a significant decrease in the production of the main gas derivatives such as ethane, propane and ammonia.”

MEXICO LEVERAGES ITS GLOBAL CONNECTIVITY

One of Mexico’s key advantages is its easy connection with the world markets. With dozens of free-trade agreements in place, Mexican companies have a variety of choices to pursue, both in terms of importing and exporting. The country has enhanced its visibility not just as a manufacturing center, but it has also emerged as a global hub for innovation in a diverse range of industries. “Mexico has 52 free trade agreements, which gives the country access to between 60% and 70% of global GDP,” highlighted Martín Toscano, managing director for Mexico at specialty chemicals company Evonik Industries.

Toscano was critical of the new USMCA treaty, which he said was “a lost opportunity to modernize the deal,” but he added that there continues to be a great flow of investment into Mexico nonetheless: “We have a unique advantage to continue attracting investment in many industries, not just automotive. We see enormous growth in the Querétaro aerospace hub, as well as great opportunity in the medical devices segment.”

Beyond this important niche of medical devices, where Evonik participates through its high performance polymers and healthcare business lines, Evonik benefits from Mexico’s diversified manufacturing base, which demands a whole range of products and from the expansion of middle classes in a country with a population of 124 million people. Toscano explained that this creates great opportunity in business areas such as household care and personal care.

Finally, Toscano described Mexico as a market where any innovative company should have a footprint: “Mexico is different to other emerging markets in that we are seeing multinational companies setting up R&D centers in the country, not just for the Mexican market, for also for exports. This is happening mainly in the automotive industry, but also in others. At Evonik we are already very strong in applied technology, with centers in Mexico dedicated to coatings and animal feed,” he concluded. ■

Martín Toscano, managing director for Mexico, Evonik Industries.

DISTRIBUTION, LOGISTICS & SERVICES

Consolidation and blurred lines

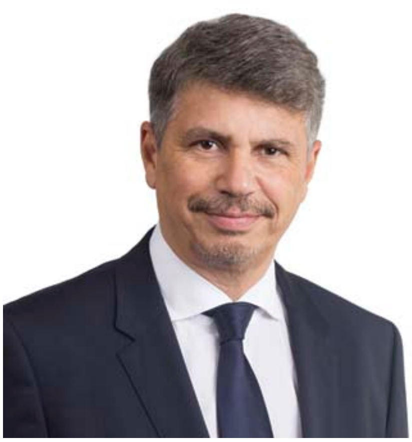
The chemical distribution sector in Latin America is undergoing a renaissance – or a reckoning – of sorts. The shift is observable through the reorganization of the market, as well as a trend towards adding more value for clients through an improved capacity to provide logistical support in a region where infrastructure challenges are often acute.

"Selling a product is part of what we do, but this is really a service for the producers to reach a market that they cannot serve and for the customers who would otherwise not have access to the producer," explained José M. Berges, CEO of GTM Holdings, the second largest Latin American distributor.

In 2012, the top 10 chemical distribution companies in Latin America had a market share of just 21%, according to The Boston Consulting Group, illustrating the severe fragmentation within the region's chemical market. However, a wave of M&A activity is helping to consolidate the industry, which in turn will help to introduce better practices and raise standards while streamlining the development of distribution channels.

Between September 2016 an April 2017, GTM tripled its size through three acquisitions: High Chem, quantiQ and Peruquímicos. The company will continue to seek new M&A opportunities, according to Berges, who elaborated on how the most recent acquisitions had improved GTM's capacity and expanded their offering: "Before acquiring High Chem, our position in specialties was very limited. We had a good position in industrial chemicals and in what we call customer solutions, which is basically to elaborate tailor-made blends and formulations for the clients," he said. "Through High Chem and then quantiQ, which had a very significant specialty chemicals operation as well, we became a full line supplier, with both industrials and specialties, and now we are transferring that knowledge from Mexico and Brazil to the other markets."


Jorge Buckup, president of Latin America division, Univar Solutions.


Guillermo Laborato, president of Latin America South Region division, Brenntag.

Univar Solutions began investments in Latin America only seven years ago when it entered Brazil, but has since made further acquisitions in Brazil, Mexico, Central America and the Andean region. Jorge Buckup, Univar Solutions' Latin America president, highlighted the theme that has become so apparent in the distribution space: "The trend is clearly one of consolidation and this is also where we see Univar Solutions playing a very important role. Our history in Latin America is recent, but the company has been growing significantly through acquisitions over these few years."

Buckup acknowledged that the distribution sector in Latin America is crowded, and volatility in the region's biggest markets favors a select few players with the means to offer safe and secure handling of materials, product availability, expertise, technical support and advanced digital solutions. "The landscape will not become easier for small and medium size distributors," he noted.

In this context, the distributors with the most extensive footprint, liquidity and resources have a distinct advantage. The biggest chemical distributor in Latin America, and indeed the world, is Brenntag, generating around US$15 billion in 2018 and employing over 1,600 staff in Brazil, Mexico, Colombia, Argentina, Chile, Peru, Bolivia, Ecuador, Central America and the Caribbean. Despite the economic headwinds in Brazil and Argentina, South America's two biggest consumer markets have remained the most profitable and fast growing in Brenntag's Latin America South region, according to president for this division, Guillermo Laborato. "For the biggest players in the market, which have the structure and liquidity to face market volatility, adverse conditions can create opportunity," he said, adding: "Brenntag is able to offer clients the products that they need during difficult times that other companies will struggle to provide. Diversity is also important – operating in different market segments gives Brenntag the ability to mitigate challenges caused by instability."

Another multinational player in the distribution and logistics space is BDP International, with a footprint of six offices and processing centers in Brazil, Argentina, Chile, Peru, Colombia and most recently, Uruguay. BDP's Montevideo office was opened in October 2018, in line with the company's global strategy to move further into and consolidate the company's position in Latin America. Hector Midolo, BDP International's managing director for Latin America, said: "We think of Uruguay as the Panama of the South. The country offers significant fiscal benefits and also has many free-trade zones of which global and regional companies are increasingly taking advantage."

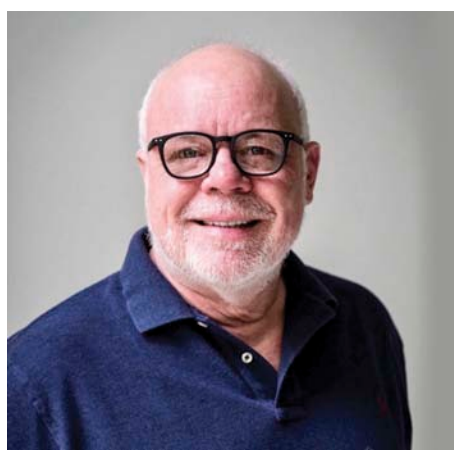
Multinational conglomerates such as Amazon and Alibaba have disrupted the traditional market further, leveraging their success in e-commerce to access small and medium sized clients. For distribution companies, this translates to a need to introduce practices that add value, and lessening the burden of logistics is a key area identified to create that value. "In countries like Brazil and Argentina, the logistics processes are usually complex, so the flexibility we are able to provide and having both domestic stocks and a flexible access to external sources are good add-ons," commented Matthias Vorbeck, general manager of Anastacio Overseas, the international arm of Brazil's Química Anastacio.

Learning to better utilize the tools afforded by digitalization is also key to embracing the transformation occurring in the distribution sector. "All going well, we will transition into becoming more of an information provider, where intelligent use of statistics and algorithms can have a very positive impact on monitoring inventories and prices," said Peter Staartjes, CEO of Andino Holdings, which offers distribution services through its Andikem arm.

Ultimately, Andino wishes to purse a business model that allows it to "serve the needs of chemical producers, and allow them to reach the final mid to small size customer directly without needing the assistance of a distributor," Staartjes elaborated.

Martin Sack, managing director of Leschaco Mexicana, a freight forwarding company focused predominantly on chemicals that also offers tank storage services, commented: "In Latin America, we are still a bit behind when it comes to technological development. I still believe that major organizations will procure their logistics services the traditional way, but definitely we are already preparing for future trends. As a company, we are investing heavily in new technologies, offering digital services for customers who require these."

The push towards digitalization will contribute to the increasingly blurry line



Peter Staartjes, CEO, Andino Holdings.

between distributors and logistics providers. "Even though there are good distributors in Latin America, the region needs more dedicated infrastructure," said Eugenio Manzano, executive director of Pochteca, a large Mexican player with a footprint in Central America and Brazil.

Taking advantage of its network of assets dedicated to chemical distribution, Pochteca began to offer broader services to suppliers and clients with specialized assets, including storage, blending, dilution, packaging, labeling, inventory management and product delivery.

According to Manzano, several industrial verticals are driving growth in the chemicals industry throughout the region, including water treatment, food, animal feed and agrochemicals. In Argentina in particular, the development of the massive Vaca Muerta shale formation promises to spark a revolution in the country – if numerous developmental bottlenecks can be overcome. Spanning 7.5 million acres across four provinces, the area is expected to help double Argentina's total oil and gas production to 1 million barrels per day (b/d) and 260 million cubic meters per day (cm/d), by 2030, according to official estimations. This presents an opportunity for the distribution of chemicals aimed at enhancing hydrocarbon production. Martín Cini, director of Petrolera Copsa, an Argentinean distributor, gave more details: "In terms of chemicals, Petrolera Copsa started as a distributor focused on the paints and adhesives business, but now we are dedicating a lot of effort to the oil and gas industry, which offers enormous potential. The oil and gas industry has seen significant growth in the Neuquén area, where Vaca Muerta still requires a lot of investment and infrastructure to reach the potential a formation like this should have."

Despite a tumultuous 2018, Argentina's economy, the second largest in South America and third largest in Latin America, offers enormous upside. If this trend continues, the chemicals industry, which already contributes around 12% of the nation's GDP, has great potential to grow further.

Nonetheless, from a geographic perspective, Brazil and Mexico remain core markets for distributors as the dominant economies in Latin America, while growth opportunities throughout the rest of Latin America are also promising with total regional economic growth expected to increase from 1.6% in 2018 to 2.1% in 2019. Countries such as Chile, Peru and Colombia do not offer the same scale for distributors as their larger peers, but boast attractive investment frameworks.

LOGISTICS: THE MISSING LINK

For Latin America to fully recognize the potential of its chemicals industry, achieving a competitive logistics sector will be critical. The region currently lacks comparative cost advantage; poor infrastructure continues to be a frustrating obstacle to efficient transportation, and the import-export dynamic across the region has created both challenges and opportunities. An example of this is the liquid storage business.

In this context, chemical distributors often need to invest in several facilities country-wide to make sure they have a strong network to efficiently serve clients. Martín Cini of Petrolera Copsa said: "Logistics in a country like Argentina are essential. If you do not understand logistics well, costs go up and make many businesses unviable."

Petrolera Copsa has three locations in Argentina: one in Neuquén run by a sister company dedicated to chemicals, petrochemicals and blending for the oil and gas industry; and two in the Buenos Aires province, one for chemicals and one for fuels and lubricants. "We are not only a chemicals distributor, but have our own formulating capacity and our own logistics capabilities, with different types of facilities and trucks. This gives us a competitive edge, because in Argentina there are chemical distributors on one side, or fuels distributors on the other, but not a distributor that operates in both areas," affirmed Gastón Cini, director of Petrolera Copsa.

In Brazil, which relies heavily on its trucking sector as the primary channel for transport due to a deficiency in rail and waterways, the export economy was expected to experience a boom that was not realized – largely as a consequence of chaotic conditions in the country's logistics sector. In the context of a slow recovery from the worst recession in its history and following a 10-day driver's strike in May 2018 that produced ongoing disquiet in the trucking sector, exporters have experienced difficulties securing trucks to deliver goods to port, according to a report by the Financial Times.

Consequently, a situation has arisen whereby exporters have been less able to take advantage of the depreciated Brazilian currency and the United States' pivot towards Latin America amid a trade war with China. The strike brought the country to a standstill and cost the chemicals industry alone an estimated 2.5 billion Brazilian real (R$), highlighting the continued impact of political dysfunction on the industry's ability to achieve progress. Another politically challenging issue in the logistics discussion is the lack of capital investments to support the construction of better infrastructure and, specifically, who should fund these projects. Talks of public-private partnerships to facilitate trade between countries have stagnated over perennial disagreements between states and the industry as to where to source the heavy capital requirements for such projects.

Despite challenges with infrastructure and disappointing performance on the exports side, imports continue to remain a strong business proposition throughout the region. Mexico and Brazil both fall among the top 10 importers of chemicals worldwide, with a combined value of US$81 billion, or almost 4% of total global value, according to the World Trade Statistical Review 2018.

In Mexico, energy reforms have allowed for the import of oil and gas, creating consternation as well as opportunity in the management of Mexico's refined fuel deficit for the logistics sector. "Unit trains with gasoline and diesel have become the norm and marine terminals on the east coast of Mexico, currently storing chemicals, are being constantly pressured by gasoline and diesel importers to assist in handling the discharge and much needed storage," said Peter Staartjes, CEO of Andino Holdings. "Our small marine liquid bulk chemical in Tuxpan has suddenly become an attractive option for chemical producers who are frustrated with bad, or sometimes non-existent, railcar service, or have been displaced by a terminal operator who would rather fill tanks with high volume and sometimes higher paying gasoline or diesel."

In this context, the tank leasing and liquid storage markets have an important role to play. However, taking advantage of the low price of oil in recent years, many companies have invested in liquid storage assets of their own, resulting in a surplus of capacity in the market. Ricardo Diogo, director of business development at Oiltanking, commented: "At Oiltanking we take a long-term view of the industry, so we manage to navigate the ups and downs, but we cannot ignore that there is some extra capacity in certain hubs and that an extra effort is needed to rent and fill up our tanks. Because of this, I expect to see some consolidation and optimization in the industry over the next five years."

Marcelo Scayola, manager for Latin American at Eurotainer, elaborated on the competition in this sector and his company's efforts to differentiate themselves: "There are several tank leasing companies in Latin America. We are the largest one, but the market is becoming more competitive, especially in Brazil," he said. "Through our partnership with Maersk, an advantage we offer is that we nationalize the tanks in each country where they are needed, so that there are no issues in terms of admission permits."

Latin America's competiveness as a chemicals hub will pivot on building capacity to facilitate the storage and, more broadly, the infrastructure to support the efficient movement of materials. There is ample reason to make these adjustments sooner rather than later as sustained economic growth and geopolitical shifts generate more interest in Latin America's rapidly developing markets. Martin Sack, managing director of Leschaco Mexicana, highlighted how freight forwarding companies like Leschaco view the changing relationship between Mexico and its powerful neighbor to the north as a positive signal: "We still see a huge opportunity to grow the business out of the United States, as the current U.S. government is pushing to increase manufacturing capacity. The already signed USCMA agreement shall stabilize and further strengthen the bilateral business between the United States and Mexico."

EMERGENCY SERVICES FOR A HAZARDOUS INDUSTRY

Logistical headaches can become costly for producers, distributors and customers alike. However, such costs pale in comparison with the potential damage caused by a chemical spill or explosive reaction. On January 18th 2019, a pipeline transporting gasoline exploded in the town of Tlahuelilpan, in the Mexican state of Hidalgo, killing 80 people. One of the emergency teams brought in to evaluate the scene was Ambipar Response, which is part of Brazilian capital business Grupo Ambipar and has a presence in 55 countries with multiple bases in Brazil, Chile, Argentina, Uruguay, Paraguay, Peru and Colombia. For Dennys Spencer, director of Ambipar Response, disasters of this nature should ideally be prevented by detecting the problem at an earlier stage: "We train industry employees to work with local communities to detect risks such as chemical spills. The earlier a risk is reported, the much greater chance of an effective response," he said.

Ambipar Response creates programs to manage the risk that revolve around chemical plants and designs action plans in case of an emergency. "This mobilization plan and training program is not only for the companies, our clients, but for all stakeholders in the vicinity of a chemical plant. Therefore, Ambipar Response works to assist the industry to work hand in hand with communities and local governments," explained Spencer. He provided the recent example of a chemical spill simulation conducted by Ambipar Response with Braskem in Osasko, Greater São Paulo, which involved 400 members of the local community. ■

Hazmat and Oil Spill Emergency Response Team

200,000
EMERGENCIES HANDLED

55
COUNTRIES SERVED

150,000
PEOPLE TRAINED

149
RESPONSE BASES

1,187
EMERGENCY TECHNICIANS