

MEXICO

MINING REVIEW

HIGHLIGHTS 2018



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MEXICO 2018

MINING REVIEW

If 2016 provided the fireworks of recovery for the mining sector, then 2017 has been something of a damp squib.

The sky is still lit up – the prices of metals including gold, silver and copper all rose during the first half of the year – but not as brightly as many hoped. Many mining companies are relieved simply to be making a profit again but this is thanks more to the cost-cutting that was implemented during the downturn than to the value of their wares. The road back to the sunny days of 2011, when gold was trading above US\$1,800/oz, seems like a long one. But the sector is well-placed for strong long-term performance. Silver production is falling while demand is underpinned by the solar energy industry, EVs and other electronic applications. Gold is still seen as an attractive safe haven from stock market volatility and base metals including copper, lithium and nickel are essential components in battery manufacturing. As a leading player in the global mining industry, this is good news for Mexico but the country faces challenges. After a 24-year absence, an Undersecretariat for Mining has finally been reestablished at the Ministry of Economy. The new department must drive further investment into the industry, propel the sector into the modern age by welcoming and encouraging new technology and act as a mediator in the squabbling over tax policy that is dominating public-private relations. With presidential elections looming in 2018, the new administration must also remember that mining companies – and investors – value regulatory clarity and consistency above all else.

Mexico Mining Review 2018 offers insight, opinion and analysis from the individuals and institutions shaping the mining industry in Mexico today. With over 200 interviews, technology and project spotlights, interactive maps and information-packed infographics, it provides a complete overview of the most powerful trends and pressing challenges facing the sector and connects the entire value chain – operator, investor, explorer and service provider – in one book.

THE YEAR IN REVIEW

For the mining industry, 2016 was a year of two halves. A recovery in metals prices motivated the industry to believe an upswing was finally on the way. But even with global geopolitics causing a strain, miners believe they have reason to celebrate

For the global mining industry, 2016 was a year of two halves. A recovery in metals prices motivated the industry to believe an upswing was finally on the way. But even with global geopolitical events causing a strain, many miners believe they have reason to celebrate

Metal prices recovered strongly during the first six months after a painful, four-year downturn. In June, gold rose to US\$1,361/oz, its highest price since 2013. But the latter part of the year was dominated by the political shockwaves of Brexit and the US presidential election result; gold fell by 15 percent and silver by 19 percent during 2H16 as investors sat back, scratched their heads, and wondered “What next?” But prices rebounded during the first half of 2017, a result of improved economic performance in China and a depreciation of the US dollar. The industry may have finally turned the corner.

In Mexico, the creation of the Undersecretariat of Mining at the Ministry of Economy was announced in December 2016 in what felt like a seminal moment for the industry. Despite its geological potential, total investment in the Mexican mining sector fell 20.9 percent in 2016. The challenge facing the new Undersecretary for Mining, Mario Alfonso Cantú, is to rejuvenate a traditional sector still struggling to fulfill its potential in the modern age.

“The Undersecretariat was created as an acknowledgement of the importance of mining as a strategic activity,” says Cantú. “It was a response to the industry’s expansion and the need for regulation, promotion and development.”

MINING IN MEXICO

In the context of Mexico’s sluggish growth in 2016 – an expansion of just 2.3 percent compared to the global average of 3.1 percent – there were encouraging signs of recovery for the local mining sector. After FDI crashed in 2015 to just US\$370 million – a byproduct of controversial fiscal reforms implemented the previous year – foreign investment bounced back in 2016 to US\$718 million, a jump of 94 percent. This is still some way off the US\$2.1 billion that foreign investors poured into the sector in 2014 but a positive sign of returning confidence nonetheless.

The green shoots of recovery were also present on the production side. Mexico’s total value of metal and mineral production in 2016 surged to a record high of MX\$234.3

billion, 9 percent more than the MX\$213.3 billion output the previous year. Once again, gold made the largest contribution to the total value with 37.4 percent, followed by copper (19 percent) and silver (18 percent).

According to IMSS, the sector generated 9,790 new jobs in 2016, more than twice the number of new jobs in 2015. The industry now employs over 354,000 people in Mexico.

GOLD – BOUNCING BACK

Like many commodities, gold suffered a volatile 2016 as unprecedented political shifts took their toll. After a strong start to the year, rising 25 percent to US\$1,361/oz by June 27, bullion prices began to fall off in July and continued to falter in the build up to, and aftermath of, the US presidential election that put Donald Trump in the White House. Between Oct. 24 and Dec. 25, the price of an ounce of gold fell 13 percent to US\$1,133/oz from US\$1,304/oz. The “Trump Bump” was more of a “Trump Slump” for precious metal investors. But the commodity rebounded in 1H17, rising steadily to reach a six-month high of US\$1,293/oz in July as uncertainty continued to roil international marketplaces.

Annual gold production for the year fell by 0.2 percent to 99.7 million ounces worldwide. For the second year running, Mexico placed eighth on the global list of gold output, second in Latin America behind Peru, with a total of 4.26 million ounces. On the corporate side, Fresnillo overtook Goldcorp as the country’s top gold producer after churning out over 935,000 ounces of bullion, a 22 percent YOY improvement. Goldcorp’s fall into second place was a result of its commitment to stripping its portfolio of noncore assets, a strategy that resulted in the sales of the Los Filos, Camino Rojo and San Nicolas projects during 1H17.

Fresnillo’s La Herradura asset was the most productive gold mine in the country, ahead of Goldcorp’s Peñasquito, with 520,400 ounces. Then, in 2017, Fresnillo outlined a new US\$110 million investment plan for La Herradura.

SILVER – MEXICO THE TOP DOG

After falling for five consecutive years from 2011, the silver price finally turned a corner in 2016 and continued the upward curve in 2017, never dropping below the US\$15/oz mark during the first half of the year. With strong demand from solar energy and electronics, the price was underpinned by falling supply. According to figures compiled by The Silver Institute, global mine production of silver fell by 0.6 percent to 885.8 million ounces in 2016, the first yearly drop since 2002, while scrap supply also fell for the fourth consecutive year.

Mexico comfortably retained its place at the top of the silver production tree, producing 173.9 million ounces and contributing 21 percent to global output, according to INEGI. Peru was second with 16.7 percent, followed by China (12.7 percent) and Chile (5.4 percent). Fresnillo was once again the top producer in Mexico (and the world), with 45.7 million ounces, followed by Goldcorp and Industrias Peñoles. With 21 million ounces of silver produced, Fresnillo's Saucito was the most productive silver mine in Mexico, followed by Peñasquito and the Fresnillo mine.

Fresnillo's strong performance continued into 2017, reporting 1H17 silver production of 28 million ounces, up 11.2 percent against 2H16. The company is aiming for 65 million oz/y silver output by 2018. With its entire producing portfolio in Mexico, the fundamentals for the national silver industry look strong.

COPPER - LONG-AWAITED GROWTH

After reaching a low of US\$4,310/t in January 2016, many believed the outlook was bleak for copper. But prices shot up in October and finished the year on the London Metals

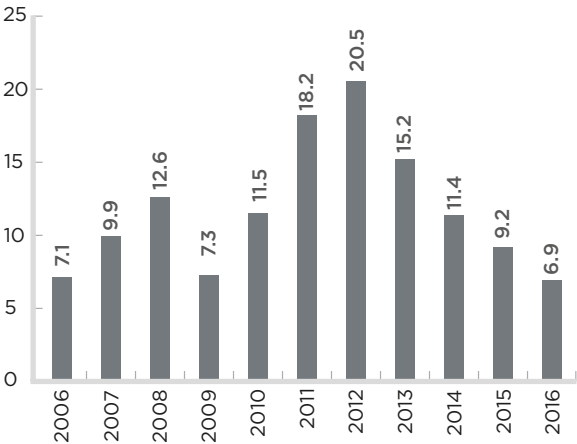
Exchange (LME) trading at US\$5,500/t. Then, thanks to a more solid forecast in Chinese economic growth and a possible scrap metal ban in the country, in July 2017 copper reached US\$6,292/t, its highest level in two years. According to Reuters, China accounts for 45 percent of global demand for the brown metal.

Mexico remained in 10th position on the list of global copper producers, contributing 766,000 tons - or 3.2 percent - to the total copper output, which amounted to 19.4 million tons. But this hides a spectacular YOY rise of 28.9 percent in national production by year-end 2016, buoyed mainly by the significant expansion at Grupo México's Buenavista del Cobre mine, which produced 316,000 tons.

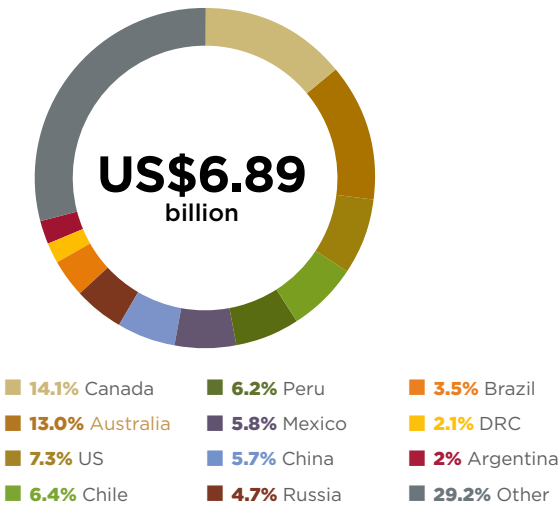
EXPLORATION COMES BACK TO LIFE

As the lifeblood of mining, spending on exploration is always an important indicator of the current state of the industry. According to S&P Global Market Intelligence, world investment in exploration fell YOY by 28 percent to US\$6.9 billion, the fourth consecutive yearly fall, suggesting that investors are yet to be entirely convinced of the longevity of the price recovery.

WORLD INVESTMENT IN EXPLORATION (US\$ Billion)



WORLD INVESTMENT IN EXPLORATION 2016



Source: CAMIMEX

The situation in Mexico is complex. Following the 2015 fiscal reforms, companies are no longer able to deduct exploration expenses after a project's first year; they now must wait 10 years to be reimbursed. The ruling provides a significant financial obstacle for cash-short junior exploration companies. But after falling to seventh place on the list of recipients for global exploration expenditures in 2015, Mexico climbed up one place to sixth in 2016 after attracting US\$400.9 million in total. Canada is still first on the list, ahead of Australia, the US, Chile and Peru.

The positive trend is also reflected in the number of new exploration projects in Mexico. In 2016, mining companies started work on a total of 55 new projects, with a total value of US\$130 million. This is compared to 44 projects with a total value of US\$103 million in 2015. Buoyed by the improved price environment, a number of exciting development projects, including Timmins Gold's Ana Paula, Fresnillo's Juanicipio, and Industrias Peñoles' Rey de Plata, have advanced well and should be coming online during 2018, underpinning Mexico's future production profile.

TAXING TIMES

Despite the signs pointing to a bright future, the mining sector in Mexico still faces several challenges. Most pressing is the ongoing standoff between the public and private sector on a number of tax-related issues. In early 2017, the Federal Chief of Governmental Audit released a report claiming that 59 mining companies had not met their financial obligations to the Mining Trust Fund -- allegations

TIMELINE 2016-2017	
March 2016	Torex Gold announces commercial production at the El Limón-Guajes mine in Guerrero
June 2016	Gold rises to US\$1,361/oz, its highest since 2013; silver rises to highest point since 2014
July 2016	Alamos Gold completes a US\$1.5 billion merger with Aurico Gold
July 2016	Japanese machinery giant Komatsu announces a US\$3.7 billion deal to buy Joy Global
August 2016	Fresnillo begins commercial production at its San Julian silver-gold mine following a US\$515 million investment
October 2016	Premier Gold completes the US\$122.5 million deal to buy Yamana Gold's Mercedes mine in Sonora
October 2016	Goldcorp's Peñasquito mine is forced into a temporary shutdown after a blockade by a trucking contractor
November 2016	Both gold and silver crash by 10 percent as the US presidential election result shocks the world
December 2016	The Zacatecas State Government announces controversial new Ecological Taxes. Mining companies including Fresnillo and Peñoles contest the legislation
December 2016	Gold is made available to the Islamic investor community following landmark deal between the World Gold Council and the Accounting and Auditing Organization for the Islamic Financial Institutions (AAO-IFI)
December 2016	Mario Alfonso Cantú is sworn in as Mexico's first Undersecretary for Mining in 23 years
January 2017	Goldcorp confirms deal to sell the Los Filos mine to Leagold in a deal worth US\$350 million
February 2017	Canada's Minister for Natural Resources and Undersecretary for Mining Mario Alfonso Cantú sign a Memorandum of Understanding (MoU) in Mexico City
March 2017	The Guerrero Mining Cluster and Sudbury mining technology cluster (SAMSSA) sign a historic MoU during the Mexico Mining Day at PDAC
March 2017	Sonora Governor Claudia Pavlovich announces a plan to contest the ruling on exploration expense deductibility in Congress
April 2017	Premier Gold's San Dimas mine reopens following eight-week stoppage of unionized employees
April 2017	President Enrique Peña Nieto opens Industrias Peñoles' 200MW wind farm in Coahuila
June 2017	Goldcorp continues asset divestiture with Camino Rojo and San Nicolas sales
June 2017	Reuters reports that Canadian mining companies working in Mexico are owed a total of US\$360 million in back taxes
June 2017	Gold finishes 1H17 up 7 percent; silver closes 2 percent up from the beginning of the year
July 2017	Copper rises to US\$6,400/t, a 2-year high, on stronger economic data from China

the companies deny. In June, Reuters reported that the federal tax agency SAT owes Canadian miners a total of US\$360 million in back taxes.

Then there are the infamous “Ecological Taxes” announced by the State Government of Zacatecas, a proposal that infuriated and alienated companies working in the region. The issue is being considered by the Supreme Court of the Nation (SCJN); if the tax is deemed constitutional and implemented, it would set a dangerous precedent for other states. Against this backdrop, the 8 percent tax slapped onto precious metal production in 2014 continues to rile operators. If the corporations and the government cannot resolve their differences, the sector is certainly in danger.

There are other issues. Mining companies regularly run into conflict with local communities and *ejidos* over land use. More could still be made of the opportunities afforded by the digital revolution. And the industry at large is still struggling to correct its image as a reckless exploiter of natural resources.

INDUSTRY OUTLOOK

The global mining sector is moving forward. Mining companies are not immune to the insecurity and inconsistency affecting global financial markets but metal prices nevertheless rose steadily during 2016 and 1H17. Considering the strong demand fundamentals provided by the blossoming electric car, solar energy and electronics industries, coupled with the ever-improving technology making mining operations more productive and cost-efficient, this trend can be expected to continue. With many of the world's largest mines running out of steam and resources, mining companies must now renew the industry's faith by investing more in exploration to prepare the global production pipeline for the demands of a digital, environmentally responsible world.

The priorities for Mexico are clear. The country has enormous mineral potential, a fact reflected in the increased exploration activity in 2016, but it is not the only country in Latin America to be blessed with abundant natural resources. To woo international investors, the government – and particularly the Undersecretariat of Mining – must provide the basic regulatory and financial framework to make the mining sector attractive. With presidential elections on the agenda in 2018, the incoming administration must also remember that miners appreciate operational stability and consistency above all else.

But co-operation is a two-way street; mining companies working in Mexico have to show willingness to work alongside the public sector and, if necessary, challenge new legislation according to legal protocol. If the entire mining community can use its respective strengths as a collective, the sector can expect to thrive.

UNDERSECRETARY SETTLES INTO NEW ROLE

MARIO ALFONSO CANTÚ

Undersecretary of Mining at the Ministry of Economy



Q: To what extent does the creation of the Undersecretariat of Mining reflect the growing importance of mining?

A: The Undersecretariat was created by the Ministry of Economy as an acknowledgment of the importance of mining as a strategic activity and a response to the industry's expansion and the need for regulation, promotion and development. Investment in Mexican mining was US\$19.8 billion in 2011 and 2012, and in the next four years, from 2013 to 2016, amid falling metal prices, it reached US\$19.9 billion. The mining industry's share of total GDP increased from 0.86 percent in the period between 2009 and 2012 to 0.96 percent in the 2013-2016 period. Employment in the mining-metallurgical sector as of December 2012 was 328,555 workers, while in December 2016 it registered a total of 354,702 workers. Finally, exports reached a similar level, with a US\$17.8 billion annual average in 2009-2012 and US\$16.4 billion in 2013-2016. This demonstrates that, despite falling metal prices from 2013 to 2016, investment levels, GDP and employment in the mining industry registered better performance than in previous years.

Q: How will the Undersecretariat operate differently from the General Coordination of Mining?

A: The growing investment in the mining sector is demanding that we increase our institutional capacity to provide better and easier ways for local and foreign investors in their projects. The Undersecretariat is carrying out five key priorities. Firstly, we are strengthening human resources to fulfill institutional functions and objectives. Secondly, we are modernizing our technological platform and digitalizing the concession process and cartography to accelerate the process for allocating a concession title. Thirdly, we have prioritized re-engagement of Mexican Geological Survey (SGM) resources in exploration activities to provide more projects with more information focused on rare earths and base industrial metals. Along the same vein, we are also promoting the generation of geological-mining, geochemical and geophysical mapping of the national territory on a scale of 1:50,000, prioritizing the areas of greatest interest and susceptibility to contain new potential mineral deposits. Finally, we are strengthening the Inter-Institutional Mining Group, made up of federal government agencies involved in regulating the sector.

Q: What is your opinion of the decision to implement the Ecological Taxes by the Zacatecas government?

A: The state of Zacatecas does not have jurisdiction to legislate on environmental taxes, as the General Constitution does not expressly establish it. E Both the federal and state governments have the power to design, develop and apply economic instruments that encourage the fulfilment of environmental policy objectives but this is limited to setting fiscal incentives and it cannot be used for tax purposes. On Feb. 14, 2017, the federal government therefore submitted, through its General Counsel, a constitutional conflict claim to the Supreme Court of Justice of the Nation (SCJN). The court will now determine the constitutionality of the actions of the state of Zacatecas.

Q: What does Mexico need to do to compete with other jurisdictions to attract more greenfield investment?

A: The public policy of the Mexican government regarding the mining sector is included in the Mining Development Program 2013-2018, which defines the objectives, strategies and lines of action to boost mining activity within a framework of sustainable development. One of the purposes of the Mining Development Program is to promote higher levels of investment and competitiveness in the mining sector. The Undersecretariat of Mining carries out investment promotion policies through participation in the main national and international mining events.

Another one of the policies implemented by the current federal administration is to increase the quality of information for mining projects, thereby developing detailed geology, geophysics and geochemistry activities plus direct exploration through diamond drilling. This provides the means to continue exploration, according to the results derived from mining operations.

The Undersecretariat of Mining was created as a specialized division of the federal Ministry of Economy in 2016 in response to the growing importance of the mining sector. Mario Alfonso Cantú was appointed to serve as Undersecretary

A VOLATILE BUT PROMISING YEAR

Metals prices are rising. Everyone in the industry is feeling bullish, especially in light of the geopolitical uncertainty of past months that traditionally has investors running to gold for safe haven. The future of the industry looks bright

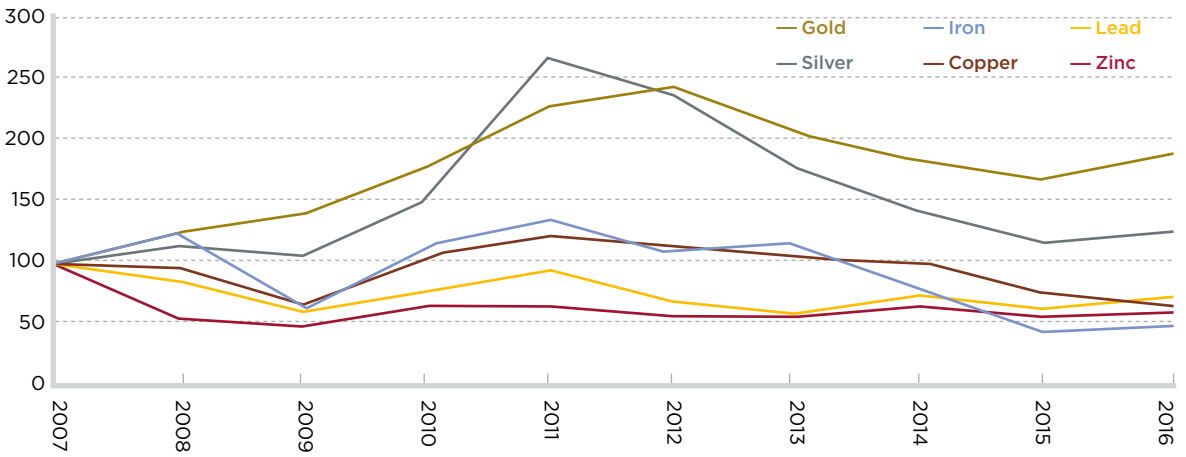
Volatility was the driver for the mining industry in 2016. A slower production due to a reduced appetite from China was only just compensated by price recovery in some metals and geopolitical uncertainty.

To counteract this lower demand, mining companies had to reduce debt and trim production. For the fourth

consecutive year, an investment drop prevailed worldwide. “Mexico has become one of the most expensive countries to invest in mining,” Daniel Chávez, President of the Mexican Mining Chamber (CAMIMEX) warns.

Despite the vast potential of the Mexican mining industry, new taxes, excessive increases in existing taxes and lack of legal certainty are dissuading investments. But this year, hope came in the form of the new Undersecretariat dedicated to mining, leaving many to speculate that the federal government is finally beginning to pay the sector the attention it deserves.

METALS PRICE INDEX

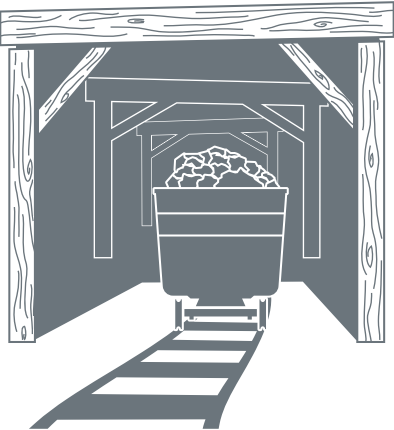


Metal	Var. % 2015-2016	Var. % 2011-2016
Gold	7.8	-20.3
Silver	9.2	-51.2
Lead	4.7	-22.1
Copper	-11.5	-35.5
Zinc	8.2	-4.7
Iron	4.4	-65.6

UNDERSECRETARIAT OF MINING

Twenty-three years since it closed, in December 2016 the Mining Undersecretariat was reopened. Mario Alfonso Cantú was appointed as Undersecretary, and his duties are:

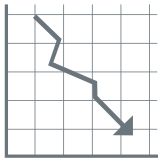
- To increase mining's presence nationally and internationally, at all government levels
- To enable the right implementation of public mining policies, and evaluate their results
- To adhere to the Article 27 of the Constitution (“all natural resources belong to the nation”)



MINING-METAL INDUSTRY 2016 FOR MEXICO:

GDP

9% Industrial GDP
2.9% National GDP
3.9% National GDP (including indirect mining activities)

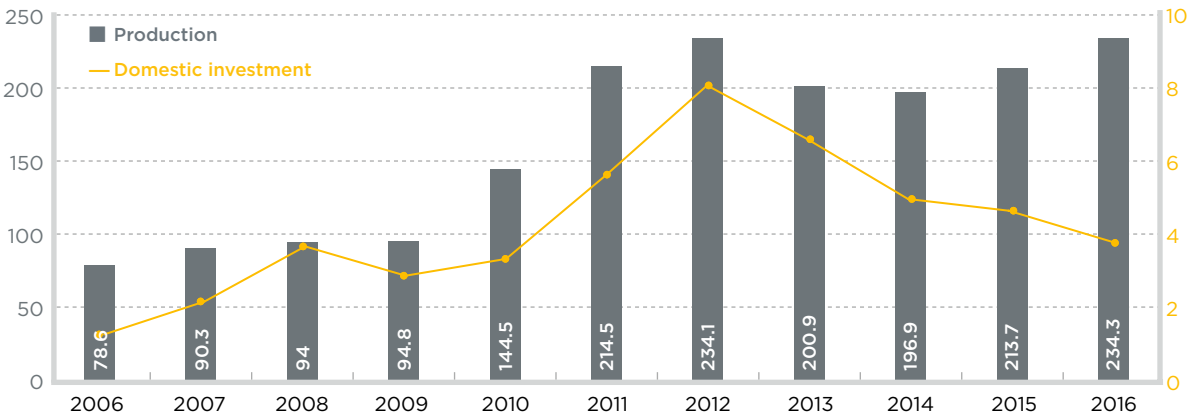


LESS EXPLORATION
Investments reduced to **US\$401 million**, **US\$90 million** less than 2015



TRADE BALANCE
US\$7.7 billion
1.7% growth from last year
19.6% more than 2015

MEXICAN MINING-METAL PRODUCTION (MX\$ billion) AND DOMESTIC INVESTMENT (US\$ billion)



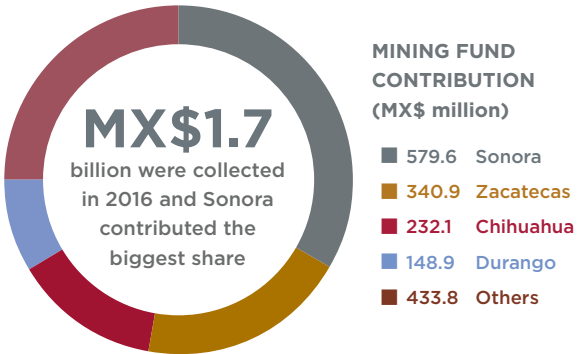
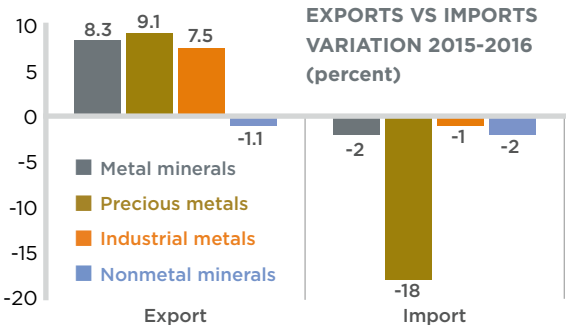
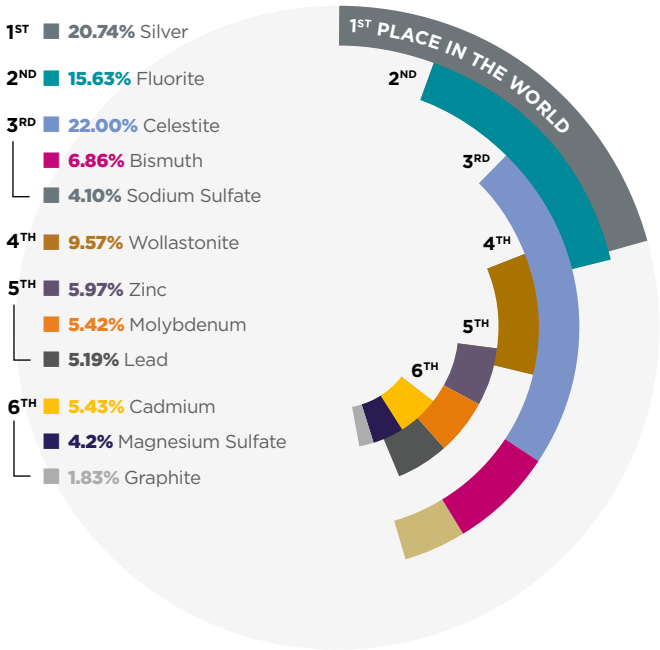
THE INVESTMENT AGENDA (US\$ million)

CAMIMEX Members	2016*	2017**
Exploration	367.3	516.0
Projects Expansion	558.0	953.9
New Projects	467.1	650.5
Training and Productivity	26.5	51.3
Equipment Acquisition	625.4	913.8
Environment	190.3	249.7
Health and Safety	70.1	102.8
Property Security	35.5	40.6
Community Development	17.2	18.2
Clean Energies	14.9	27.5
Community Support	15.7	21.4
Maintenance	376.4	431.6
Others	485.9	654.2
Subtotal	3,250.2	4,631.8
Non members		
Exploration	61.0	350.0
Assets	439.0	550.0
Subtotal	500.0	900.0
Mining Total	3,752.2	5,531.8

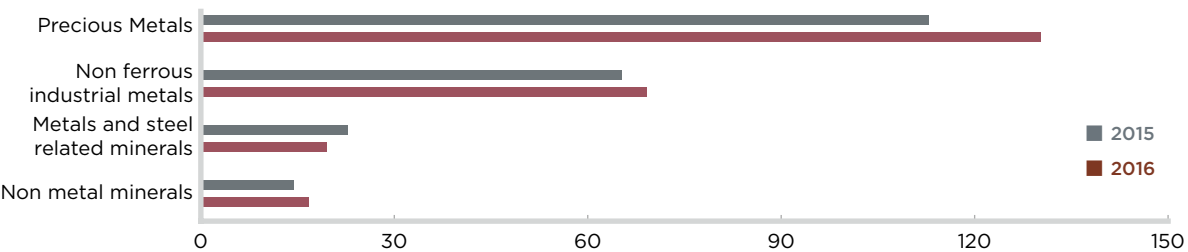
*Real figures **Projected figures

SILVER MARKET SHARE

Since 2010, Mexico has outperformed Peru as the main silver producer in the world. Among several mining products, Mexico is:



MINING-METAL PRODUCTION VALUE (MX\$ million)





BRINGING INDUSTRY, ACADEMIA AND GOVERNMENT CLOSER

JAIME LOMELÍN
President of CLUSMIN

Q: What are CLUSMIN's primary objectives?

A: The goal of the mining cluster is not to promote the sector - the government, the long history of mineral extraction in Mexico and the country's extensive resources act as a natural basis for investment promotion. We are aiming to support the economic development of Zacatecas state through the mining sector. We quickly realized that the main goal should be to play to our strengths and maximize the productivity of the industry in Zacatecas. To achieve this objective, the entire value chain that participates in mining activities in the state needs to take part in and support the cluster.

The cluster is split into four committees. The supplier committee, which is charged with attracting new businesses to Zacatecas; the human capital committee, which focuses on attracting and developing human capital; the science and technology committee that ensures the continued technological development of the industry; and finally, the well-being committee, which works to protect the environment and to improve worker safety and health.

Q: What role does the government play in the cluster?

A: Although the cluster operates entirely separately from the state government, the public sector has an extremely important role. Firstly, the government must facilitate the creation of new businesses, which includes reducing waiting times for permits and other qualifications. Secondly, it must create industrial parks, where businesses can work together and share knowledge and experience. Thirdly, it has a vital duty to attract new financial institutions to the state that can help SMEs access the capital required to grow and contribute to the local economy.

Q: What training does the cluster provide to the new generation of workers in the mining industry?

The Zacatecas Mining Cluster (CLUSMIN) is a nonprofit civil association formed by industry representatives and academia to strengthen the mining industry through the development of its human capital, as well as the attraction of suppliers to the state

A: We are acutely aware of the need to educate the next generation. To this end, the National Science and Technology Council (CONACYT) funded a study to determine the precise number of workers required to support the industrialization of the state until 2025. The study will be completed during 2H17 and will provide data on the number of metallurgists, geologists, maintenance engineers and technicians needed by the sector for the next 18 years. The state polytechnic university has recently created a course on metallurgical engineering. The course will focus initially on mathematical and scientific theory but second and third-year students will spend at least one week out of every four in the field, at a metallurgical processing plant.

The cluster is focused on the future. The state government has built a science and technology park, which is helping to finance new projects and innovative start-up companies. Minera Frisco set up the Laboratory for Mining Investigation, Development and Training in this park, with an investment of over MX\$50 million. The University of Arizona is also working on an international research center for compatible mining that will focus on sustainable tailings facilities, remediation, forestation and biodiversity.

Q: How does the cluster contribute to the creation of new jobs in Zacatecas?

A: The mining cluster began by creating a supplier committee, whose role is to attract new businesses to the state and create jobs for local workers. We are also working toward bridging the gap between the suppliers and the client, which can reduce costs, improve the level of service and therefore boost productivity.

We are under pressure from the trade unions to create more sources of employment because mining is becoming increasingly digital and mechanized. This is changing the nature of the mining job market, which now requires highly trained but fewer workers, and the industry as a whole has a responsibility to react and continue providing jobs. One of the cluster's main objectives is to attract new companies to Zacatecas that can train the large number of manual workers in the state to use modern industrial equipment.


MEXICO'S MINING CLUSTERS

Since the creation of Mexico's mining clusters, the states they belong to have experienced a greater level of communication with the government and academia, as well as a more streamlined supply chain

The Mexican industrial policy established within the Ministry of Economy's National Development Plan and the Mining Development Program 2013-2018 emphasizes the promotion of mining clusters as a key component. Their main objective is to coordinate an agenda among governmental agencies, companies and academia. By

gathering private companies, universities, associations, trade chambers and public institutions, the mining value chain can increase competitiveness and align itself more efficiently with environmental regulation.

Clusters have the added focus of promoting R&D, training and human resources development. Mexico currently has five mining clusters in Guerrero, Sonora, Chihuahua, Coahuila and Zacatecas. But with the mining industry present in 25 of Mexico's 32 states, there is a great deal of opportunity for the creation of further clusters.




Sonora

137
associates

18
mining units


- 106 service providers
- 5 labor associations
- 7 education institutions
- Main products: gold, silver, aluminum copper iron molybdenum and selenium

Founded in 2014



President:
Xavier Garcia de Quevedo

Source: www.clusterminerosonora.com.mx




Coahuila

78
associates

46
companies


- 11 education institutions
- 3 Research Centers
- 17 municipal authorities
- Coahuila state government
- Only one foreign company is associated with the cluster

Founded in 2014



President:
Rogelio Montemayor

Source: www.clustercoahuila.org.mx




Zacatecas

13
associates

14
mining units


- 7 mining groups
- 2 government bodies,
- 2 academic institutions
- 3 providing companies
- 63 companies (all based in Zacatecas)
- 35% of the state GDP comes from mining

Founded in 2012



President:
Jaime Lomelín

Source: www.clusmin.org




Chihuahua

130
associates

- Gathers Mexican, Canadian and US companies
- Incentivizes interaction between the providers of the region
- 96% of the state based companies are there

Founded in 2012



President:
Jesús González

Source: www.clumin.org




Guerrero

7
companies

MAIN PRODUCTS

Gold
Silver
Zinc
Cooper
Lead
Iron ore

Founded in 2016



President:
Alfredo Phillips

Source: [Guerrero Mining Cluster](#)

- Teloloapan, Arcelia, Cocula and Eduardo Neri are the main mining municipalities
- Potential investment of over US\$2 billion in the next six years
- Tecnopolo, in Iguala, will be the headquarters taking advantage of logistics in the region
- Guerrero's Gold Belt attracted Canadian firms
- An agreement was signed with Sudbury Area Mining Supply and Service Association: mining cluster from Canada considered the biggest in the world



UNDERSECRETARIAT THE FIRST STEP TO A LONG-TERM MINING POLICY

SERGIO ALMAZÁN

Director General of CAMIMEX

Q: How have global political events changed Mexico's mining industry outlook and what does the country need to do to weather further storms?

A: Conditions are changing in a significant way and without doubt, all sectors are facing a new context and new hurdles. Mining is no exception. In Mexico, we need to re-evaluate our mining policy. One of the main points CAMIMEX is fighting for is the implementation of a long-term state mining policy. This policy should be developed jointly with federal and municipal authorities and obviously with those that know the sector, such as operators, geologists and academics.

In our opinion, there is no stable mining policy. The last few administrations have only implemented mining programs that stipulate the plan that will be developed for that particular term. What we need is a policy that lays out the investment, the promotion and the objectives over the course of 10, 20 or 50 years. The mining industry is one that requires long periods for an investment to mature and pay off. In the best-case scenario, exploration takes around seven years, at which point construction begins and the mine can continue to produce. But in other cases, it can take 20 years just to explore the property. This is why a long-term mining vision is essential for the industry's survival.

Q: How has the government proven its commitment to the sector with the creation of the mining Undersecretariat?

A: Fortunately, this year the mining Undersecretary was appointed after 24 years without such a position. Without a doubt, this is good news for the sector. CAMIMEX believes that this will give a boost to the industry because there will be more weight behind the promotion and development of mining activities. The Undersecretary now holds the same level of power as his peers in other ministries. It is a very good indicator and may allow us to continue pushing for the long-term mining policy we want.

CAMIMEX is the Mexican Mining Chamber, the activities of which include research and promotion of mining activities as well as communicating with the industry and the government to attract investment and help shape government policies

Q: How will the 2018 presidential elections affect the continuity of mining policy?

A: This is exactly what worries us. It is important to have continuity. We will have to wait and see what the results will be but whatever the outcome, we are dedicated to working with the government for the promotion of the sector, regardless of ideologies. The most important task is being able to communicate the importance of mining for our country because many people do not recognize its value. Essentially, Mexico is a mining country, not because miners decided it should be that way but because of its rich mineralization and resources. In fact, Mexico is often ranked as one of the most promising mining countries in the world because of the reserves it holds. Often, when people think of mining, they imagine the mines of the past when rudimentary methods were employed. On the contrary, Mexico has a mature and modern industry that is socially and environmentally conscious.

Q: Given that the mining taxes have been in force now for three years, how do you evaluate the reaction of the industry?

A: Unfortunately, the taxes were conceived at a time when metals prices were at their peak, in 2011-2012. But when they were enforced in 2014, the prices had already been suffering for a few years and the new taxes jeopardized the industry's competitiveness. In 2011, Mexico placed 11th on a global level as an attractive investment destination on the Fraser Institute's survey but in 2016, Mexico was in 50th place. This shows us that something is definitely wrong. The situation illustrates that it is necessary to revise the country's fiscal framework in terms of mining, and this is what we are fighting for.

Our global position in exploration has also dropped. In 2011, Mexico was in fourth place and ranked higher than our closest competitors, Peru and Chile. Now we are in sixth place and those two countries have surpassed us. Another piece of evidence that demonstrates Mexico's declining attractiveness is that more than 169 projects have been deferred or suspended. These international studies show that the new taxes, the lack of juridical

certainty and the lack of security have become very dissuasive factors for investment in Mexico.

Q: How do you evaluate the Ecological Tax imposed by the Zacatecas state government and how will this situation unfold?

A: We reject these types of taxes for a variety of reasons but primarily because we feel they are unconstitutional. We understand that two *amparos* have been received on behalf of two companies and that they have a valid argument against the tax. But one only needs to look at the figures on how much competitiveness we have lost as a result of the federal taxes to realize that an additional state-level tax would be catastrophic.

Q: What is the likelihood the Sonora governor’s proposal to eliminate nondeductibility of exploration expenses will come to pass?

A: We are optimistic. Ultimately, we will be able to convince the government of the importance of the previous structure whereby pre-operative exploration expenses could be deducted in the same fiscal year they were made. We greatly welcome the support we are receiving from the governors of states like Sonora and Durango. Part of our mission is to approach various governors to explain the benefits of mining and what it means for the country and communities.

Q: How important is Mexico’s relationship with Canada and how can mining help to strengthen it?

A: Canadian companies, to a large extent, tend to be the ones that carry out most exploration activity in Mexico.

Canada has developed a great deal within the mining industry on a global scale, advancing technology, creating new financing options and prioritizing traditional ones. The TSX and the TSXV are useful tools to finance exploration activity in Mexico. In Mexico, Canadian companies have consistently demonstrated that they are demanding in terms of compliance with rules and regulations.

Q: What do you predict for the industry in terms of prices, taxes and exploration activities?

A: Judging by the current situation, I think mining companies will continue to be cautious. I do not foresee any issues with the companies that are already well-consolidated in the country but I think their focus will be on continuing to make their operations more efficient and increasing production. I think all companies will be cautious and will prefer to invest in existing projects rather than initiating greenfield activity. In terms of prices, production and exploration investment, I believe that in 2017 and 2018 we will continue to see similar behavior to that in 2016.

We are continuing to face challenges and we will continue to work toward exploration expenses being deductible in the same year they are made. It is also important to revise the current fiscal framework and schemes. For companies that already invest independently in the environment and social issues, it would be welcome if this were taken into account when calculating the taxes, which would allow us to return to our position as one of the world leaders in mining. We want the government to see mining as a strategic sector with a bright future.

STATES WITH THE LARGEST NUMBER OF MINING CONCESSIONS

State	2014		2015		2016	
	Concessions	Area (ha)	Concessions	Area (ha)	Concessions	Area (ha)
Baja California	606	1,650,326.16	610	1,484,650.51	622	1,500,757
Coahuila	1,930	2,847,323.02	1,964	1,705,327.42	1,977	1,676,456
Chihuahua	3,347	2,265,241.71	3,352	2,080,882.74	3,369	2,013,967
Durango	3,486	2,367,269.09	3,571	2,183,698.69	3,603	2,025,774
Guerrero	695	935,671.12	687	896,236.40	662	789,588
Guanajuato	632	326,905.76	637	327,156.13	630	307,891
Hidalgo	406	114,565.36	408	109,046.59	408	108,014
Jalisco	1,440	1,588,521.91	1,458	1,663,128.32	1,470	1,626,125
Michoacan	900	1,095,679.87	896	1,079,447.47	883	1,055,772
Nuevo Leon	491	503,747.98	527	373,306.16	557	378,233
Sinaloa	1,394	1,079,512.63	1,365	1,043,679.93	1,409	1,016,241
Sonora	4,408	4,432,576.20	4,421	4,153,065.89	4,454	3,990,494
San Luis Potosi	599	593,887.19	619	638,873.59	624	601,766
Zacatecas	2,287	1,910,603.48	2,317	1,773,975.56	2,311	1,685,729
Total	22,621	21,711,831.48	22,832	19,512,475.40	22,979	18,776,807
National Total	25,267	25,631,928.12	25,506	23,134,990.07	25,652	22,065,094

Source: CAMIMEX



LAW FIRM GUIDES MINERS THROUGH INVESTMENT LANDSCAPE

LAURA DÍAZ
Partner at DBR Abogados

Q: What is the status of DBR Abogados' challenge to the constitutionality of the mining tax?

A: The firm is only representing McEwen Mining in these matters. We attempted to file *amparos* for Aranzazú Holding and a Chinese company but were unsuccessful. The case is still under review with the Supreme Court of Justice of the Nation (SCJN) and we do not know for sure when this will be resolved. The petition was lodged in October 2015. When the law was introduced, we believe a technical mistake was made and we must wait to see if the SCJN agrees with us. This is a favorable situation because until we have the resolution of the *amparo*, the company is not obligated to pay the mining royalty, giving McEwen some room to breathe while developing its project. As far as I know, this is the only company in the mining industry that does not pay the mining tax. We are convinced that we will win this case. We are aware that other companies have filed *amparos* but we are not sure under which basis they are arguing the case. We hope to have a resolution as soon as possible because this would be positive for the entire industry.

Q: What other projects are you working on with mining companies?

A: We are working on the Ana Paula project with Timmins Gold that is being put into production, which is a huge challenge. Many factors must be considered, such as land rights and community relations, and several parties must be consulted, including SEMARNAT and CONAGUA. All the concessions must be in good standing and permits like that for explosives must be obtained. Helping clients take a project into production is how law firms really prove their expertise in mining.

Another challenge is when a project is sold to another company and another law firm is reviewing all the actions taken. This is a very good test of the caliber of any law

firm. Last year, we carried out a few interesting projects, including overseeing Timmins' sale of the Caballo Blanco concession to Candelaria Mining. We were also involved in the acquisition of Paramount Gold by Coeur Mining. Other tasks included project-financing assistance. A market with which we worked in Zacatecas and we believe will grow is lithium. I predict many companies related to lithium will be attracted to Mexico in the near future.

Q: How has the election of Donald Trump affected your clients and the work you do?

A: We have not seen any effect so far because although much of the investment in mining in Mexico comes from North America, the vast majority is Canadian. I do not predict any negative effects at all from the presidency because mining is a global industry and it does not depend on the US as much as other sectors like automotive. It is such a diversified global industry and this is positive in that no one player can really cause too much of an effect. I would even go so far as to say that Trump's presidency could create a positive effect due to the rate of the dollar against the peso. Because salaries and often operating costs of Mexican mines are in pesos, this offers dollar-denominated companies an added advantage financially.

Q: What is DBR doing to prepare itself for 2017 and what will be the biggest trends?

A: We expect more investment in Mexico in 2017 because metal prices are going up, which gives us more opportunities, especially in exploration. We are hoping the government will modify the rules slightly to attract more investment.

For the last few decades, the mining sector has been incorporated into the Ministry of Economy under the General Coordination of Mines, which attributes less importance to the sector. At the end of last year, mining was assigned its own Undersecretary under Mario Alfonso Cantú, emphasizing the increasing importance the federal government is ascribing the industry. This helped the government elevate mining in accordance with its contribution to the country's GDP.

Díaz, Bouchot and Raya (DBR) Abogados is a firm specialized in providing comprehensive solutions for its clients. DBR provides personalized legal services that adhere to the highest standards of ethics and responsibility

UNION WORKS WITH EMPLOYEES, EXECUTIVES TO BUILD TRUST, REACH GOALS

CARLOS PAVÓN

Secretary General of the National Miners Union (SNMM)



Q: What was the reasoning behind the creation of the National Miners Union (SNMM)?

A: We began operations in 2009 with the goal of creating a trustworthy, respected union for miners throughout Mexico. There were three main objectives, which remain the same today. First is security. As miners, we understand that security is not only the responsibility of the corporations but also of the union, the authorities and the workers themselves because they are the ones who know the conditions better than anyone. Second, we represent miners' rights and we work to ensure that we receive what we deserve. Finally, we want to ensure that the mining sector continues to create jobs for people throughout the country. Mexico needs as many sources of work as possible because the sad truth is that many people in this country simply do not have any opportunities to work. As a union, our goal is to preserve these sources of employment and create new ones.

Q: How does the union work alongside mining companies?

A: The relationship between the union and the mining companies is extremely close, and that is essential. We work not only with the workers, providing them support on a daily basis, but also with executives to bring about change in the long-term. The path to change is far more straightforward when there is a strong relationship between both parties and we recognize the need to be flexible during our discussions with a company's decision-makers. It is exceptionally rare for us to call a strike because we prefer to hold discussions and sign agreements. Nobody wins when a mine shuts down.

Q: How is the union working to improve mine safety?

A: We work primarily with the employees because we want them to know that they have the support of the union. The workers are the main point of contact we have with the mining companies. We provide training courses on the subject of security and we hold a conference every year where miners can get together to discuss issues and conditions in the workplace, both good and bad. We recognize the importance of worker safety and we believe that the workers themselves must take responsibility.

We are attempting to change the entire culture and mindset of the industry and as always there are some members of the community who are opposed to change and react badly to it. However, step by step we are getting the message across and that brings us great satisfaction. Technological advances are also helping on the safety front but we find that only the largest mining companies have the newest technologies. There are still many junior operators that use old and potentially faulty equipment and this is a big danger for workers. As a union, we enter the mines with which we work and check every vehicle that enters the site to be sure that the brakes are working correctly, the hydraulic system is up to standards, as well as other technical checks. Our primary objective is to have zero fatal accidents in mines and I am confident that we can reach this goal. I have seen a big improvement in the past six years, especially concerning the number of fatalities.

Q: What does SNMM think about salary levels for miners in Mexico and how important an issue is this for the union?

A: We still believe that wages for miners in Mexico are too low and we are working to improve them but there are certain things one must take into account. Firstly, wages do not include bonuses, which are a big part of the take-home pay for miners. The bonuses are dependent on productivity and production levels and can increase the daily wage for workers by up to 150 percent. Secondly, if metal prices are strong and the mine is profitable during the year, 10 percent of profit is shared among the workers as an extra bonus. During the boom years, around 2010-2011, the bonus that the workers received at the end of the year was far greater than their annual wages, so our fingers are crossed that the recovery of the metal prices will continue in 2017. Thirdly, Mexican miners benefit from the fact that the companies pay 100 percent of their social security. This is not the case in other mining countries around the world.

The National Union of Miners and Metallurgists (SNMM) is one of the only mining unions in Mexico that is not employer-led. It has 16 chapters representing miners and works with major operators to negotiate better working conditions in mines

MEXICO'S GOLD PRODUCTION: RISING TO DEMAND

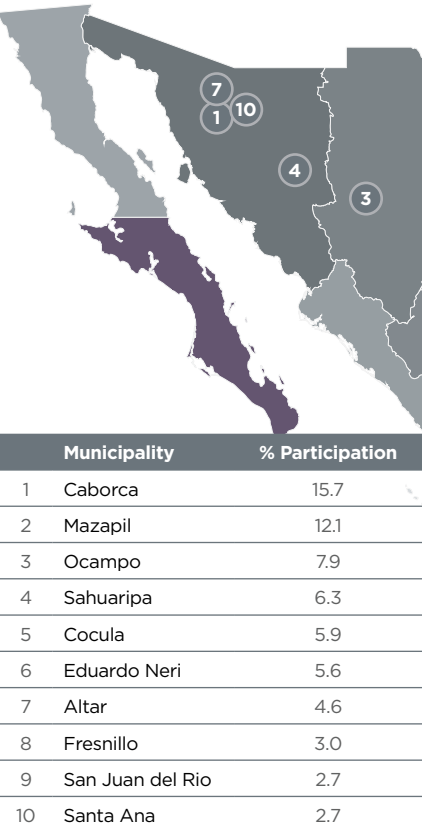
As a vital component in modern medicine, engineering and electronics, the world's long-standing fixation with gold shows no sign of abating. Gold miners in Mexico are quickly responding

Gold has always played a special role in modern civilization. Ancient cultures used it to decorate temples and tombs, and as financial systems evolved, it became a medium of exchange and the basis for the modern concept of money. Today, despite the rise of digital banking, it remains an essential reserve asset for central banks around the world. According to the London Bullion Association, around 7,500 tons are

currently held by the Bank of England in vaults underneath the City of London. It is also a central component in modern technology, including cell phones, memory chips and television screens.

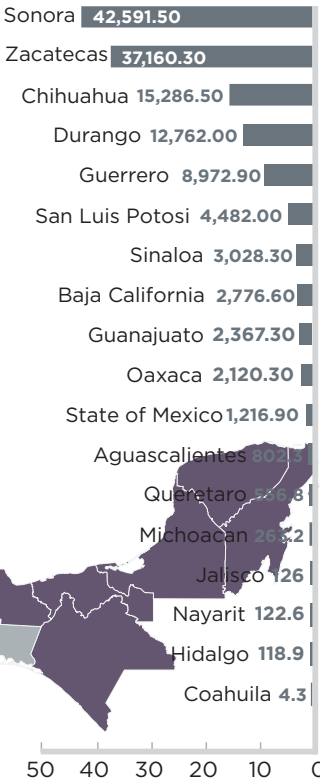
Mexico's annual gold output has risen by over 650 percent, enough to see the country rise to eighth place on the list of global gold producers. Although annual production dipped by 1.7 percent in 2016 to 4.26 million tons, a number of projects -- particularly in Guerrero and Sonora -- should help that figure rise over the coming years. The infographic below explains where Mexico's gold comes from and shows the leading role the country plays in the global gold market.

MAIN GOLD PRODUCERS BY MUNICIPALITY 2015



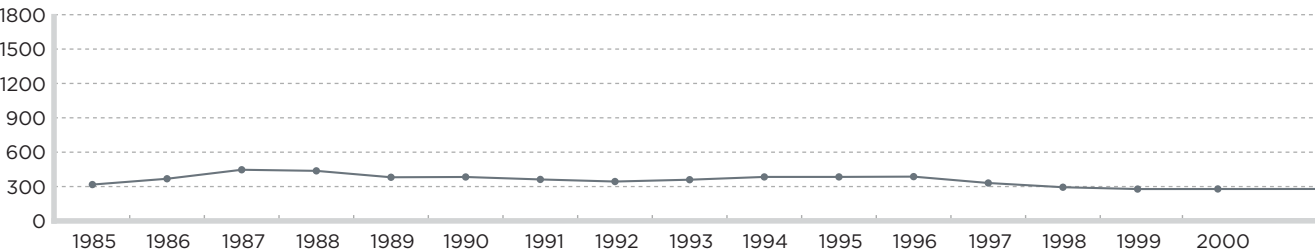
Source: CAMIMEX

GOLD PRODUCTION PER STATE
JAN-DEC 2015
(Thousands of kilos)



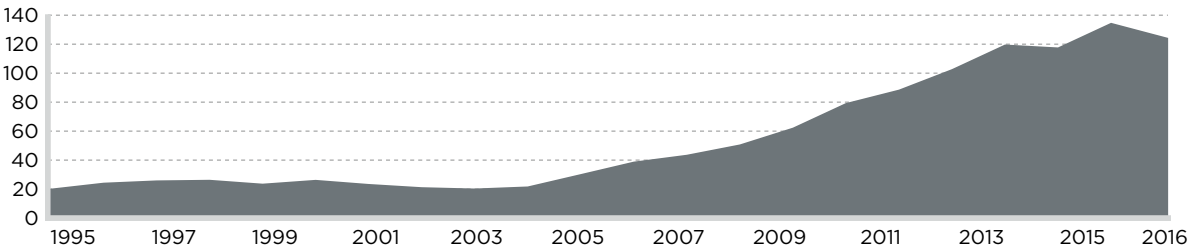
Source: INEGI

GOLD PRICES 1985-2015 (US\$/oz)



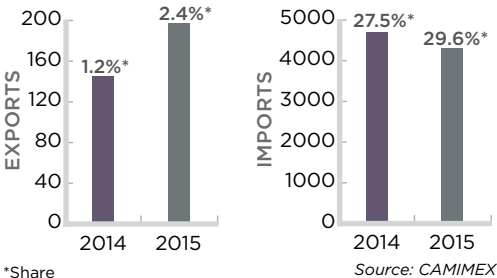
Source: DGPM with information from Metals Week

MEXICO PRODUCTION VOLUME (Thousands of tons)



Source: CAMIMEX

GOLD ACCORDING TO THE 2015 US\$ VALUE



*Share

Source: CAMIMEX



INVESTMENT

Annual volume of gold bought by investors increased by at least 235% over the last three decades.



CENTRAL BANKS

Central Banks sold 7,853 tonnes of gold between 1987 and 2009; between 2010 and 2016 they bought 3,297 tonnes.

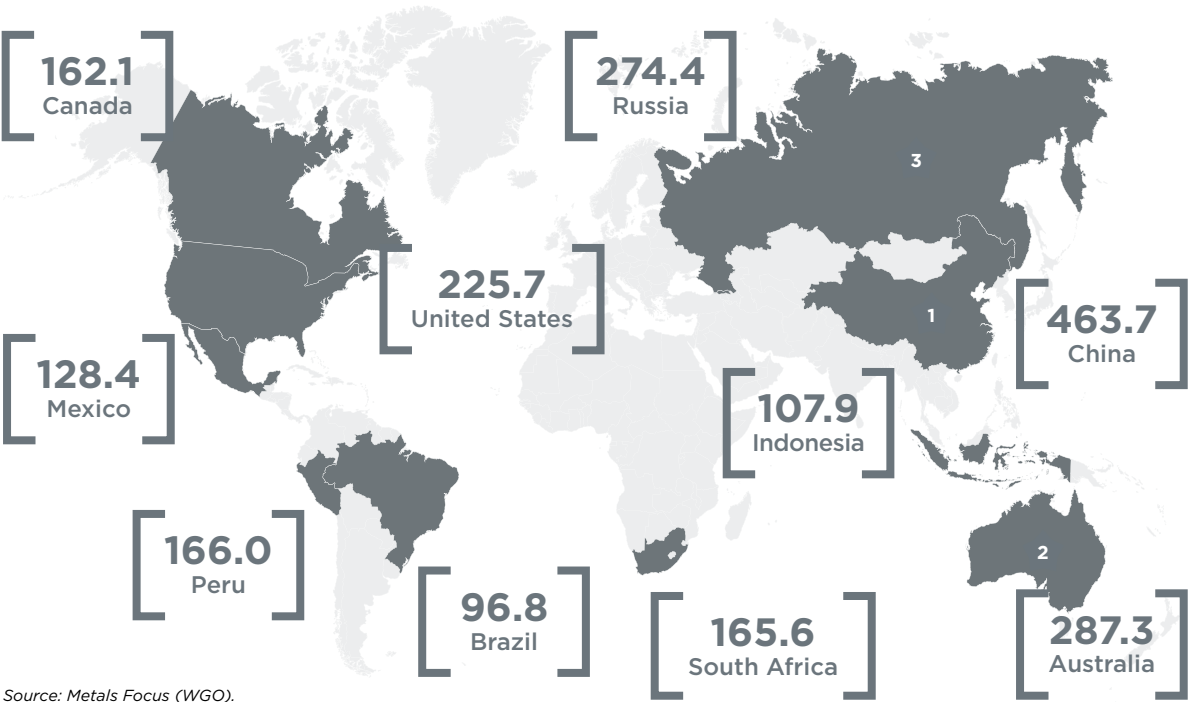


TECHNOLOGY

Gold has long been central to innovations in electronics. Today its unique properties and the advent of 'nanotechnology' are driving new uses in medicine, engineering and environmental management.

AMONG NATIONS (Tons)

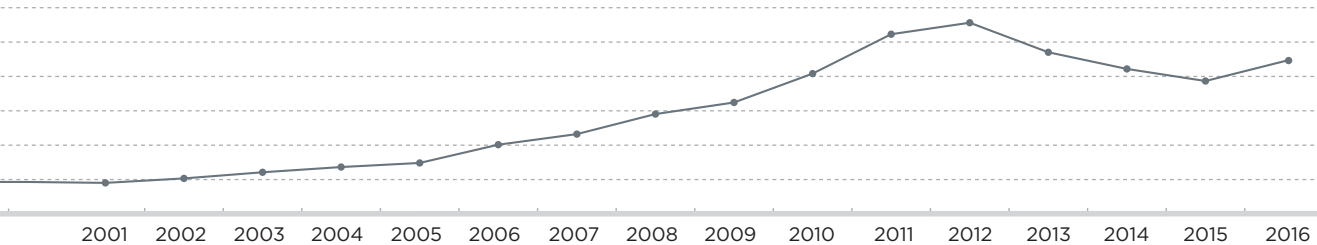
In 2016, China was the top world producer, but America is the driver with 5 countries among the top 10 producers.



Source: Metals Focus (WGO).



In June 2002, gold was trading at US\$312/oz. Fifteen years later in June 2017, the price has risen to US\$1,254/oz, an increase of over 300 percent





SAN JULIAN, JUANICIPIO BOOST PRODUCTION PIPELINE

OCTAVIO ALVÍDREZ

CEO of Fresnillo

Q: World silver production fell by 0.6 percent to 885.6 million ounces in 2016, the first drop since 2002. What was Fresnillo's reaction?

A: From 2011 until 2016, metal prices dropped on a yearly basis and the global mining industry was faced with real challenges. During this extended downturn, many mining companies were cutting exploration budgets and pausing ongoing projects. This trend impacted global output and caused it to fall for the first time in 15 years in 2016. In many ways, Fresnillo bucked the trend. While many mining companies were focusing on strengthening their balance sheet and cutting debt, we have always targeted a positive net cash flow. Adhering to a long-term strategy, during the slow years we continued with our balanced approach to growth based on investment in exploration and project development, and that helped us to continue growing and to increase our output to a record 50.3 million ounces of silver in 2016. In the past nine years, we have doubled our silver resources to 2 billion ounces and more than tripled our gold resources from 9 million ounces to over 34 million ounces. This is now reaping rewards because the silver price turned a corner in 2016 and has continued on the same trajectory in 2017. Every year, we reinvest approximately 50 percent of our net profit into the company and its projects. The remaining 50 percent is paid out in dividends to our shareholders. This is a strategy that has brought success over the years and we will not be diverging from this approach.

Fresnillo is on track to produce 65 million oz/y silver and 1 million oz/y gold by 2018

Q: How pleased has the company been with initial operations at San Julian and what impact will Phase 2 have on the project?

A: San Julian has been a challenging project from the outset. It is the largest investment in the group, with US\$515 million, and it is located in an extremely isolated area. We initiated Phase 1 during 2016 and Phase 2 during 2H17. Combined, the two phases will add 10 million oz/y of silver

to our production level for the next few years but we will also be heavily exploring the district because we estimate that only 30 percent of the area has been explored. There is a lot of potential to increase resources and we feel that this project will become one of our flagship assets in the coming years.

Q: How is the Juanicipio JV with MAG Silver progressing and what role does it have in Fresnillo's long-term growth pipeline?

A: Juanicipio is a very exciting project, with a resource base of approximately 240 million ounces of silver. Although it is smaller than some of the other assets in our portfolio, it is in a terrific silver district with an exceptionally high-grade ore body. We are applying for the final permits and will soon be submitting our plans to the board for approval, with construction set to begin during 4Q17. If all goes to plan, operations will begin during 1H19.

This is one of our key assets in our project pipeline but we are planning to develop a number of early stage projects in the coming years. Historically, roughly 90-95 percent of our growth has been organic and we continue to invest in exploration. In 2017, we will invest US\$160 million on exploration. These resources will be split evenly between our current operations, our development-phase projects and on greenfield exploration. Around 5-7 percent of this figure is invested in Peru, where we have been exploring for the past eight years and have a project with 50 million ounces of silver. We are also considering some activity in Chile and Argentina but the vast majority of the funds will be invested in Mexico.

Q: How is the turnaround at the Fresnillo mine progressing and what long-term aspirations does the company have for this historic asset?

A: The Fresnillo district has been mined continuously since the 1500s and it remains an outstanding ore deposit and mine. We have identified close to 800 million ounces of silver in resources at the deposit, which equates to a mine life of at least 25 years. In the past couple of years, we had some issues at the mine, falling short of our development targets. We have



Fresnillo Mine, Zacatecas

now increased our development rate to regain operational flexibility and last year we were able stabilize production. Our aim is to increase silver output by 7-10 percent in 2017. It is now a very efficient and productive operation and given that there is still strong exploration potential in the area, we believe that the Fresnillo mine will continue to provide the base for growth for several decades to come. It has always been a flagship project and this will not change.

Q: Mexico's silver production fell 3 percent in 2016 but it still holds the top spot globally. What must Mexico do to ensure its place as a leading silver producer?

A: In terms of geological potential, Mexico is in an extremely privileged position, and in most of the country there are also strong links to water, energy and other vital resources for mining operations. The country needs to combine this strong infrastructure and geology with policies that encourage mining and mining investment. Unfortunately, during the past few years a number of new taxes have been introduced that have taken away the competitive advantage that Mexico enjoys over other countries. We need to see policies that promote and encourage exploration, which are in place in other jurisdictions. If this happens, Mexico will start to meet its mining potential and we will see the industry playing a more significant role in national economic development. I am confident that the public sector will provide the necessary regulatory support.

Q: Fresnillo is one of Mexico's leading gold producers, with the company's production rising 22 percent to 935,500 ounces in 2016. What role does gold play in the company's overall growth plan?

A: Fresnillo was the largest gold producer in Mexico in 2016 and gold has always held an important position in our portfolio. When we listed on the London Stock Exchange in 2008, our growth plan was to double silver production to 65 million ounces and double gold production to 250,000

ounces of gold by 2018. We are now aiming to produce 1 million ounces of gold in 2018 – 300 percent more than we had initially targeted – so that reflects the vital role that this commodity has to play for the company. We expect our silver production to grow at a much greater speed than gold but we are certainly bullish on this commodity. This confidence is driven by a number of factors, including the announcement in 2016 to make gold available as an investment to the Islamic investor community for the first time. Every time we see a new investment tool, such as the Exchange Traded Funds (ETFs) a few years ago, we expect to see a pickup in investment demand. We view this issue as a positive development and we believe the demand for gold as an investment will grow as this new market begins to make its presence felt. In a world in which there is more and more uncertainty, precious metals play the role of safe haven and this helps to support prices.

Q: What are the primary long-term objectives that will drive the company's strategy going forward?

A: We are on track to achieve our goal of reaching annual production of 65 million ounces silver and 1 million ounces of gold by 2018. We are now in the process of defining what comes beyond 2018. Given our rate of growth over the past 10 years, it will certainly be a challenge to maintain the same level of expansion but I am confident that Fresnillo will continue to grow efficiently and productively by adding exceptional projects to the portfolio. One of the key objectives is to avoid diluting the quality of our asset base, so we will only bring online projects that will drive long-term growth.

Fresnillo is the world's leading silver producer and Mexico's largest gold producer. It is a subsidiary of Grupo BAL and operator Industrias Peñoles. The company is listed on the London Stock Exchange's FTSE 100

| MEXICO'S MAIN SILVER MINES







Bradford Cooke
CEO of Endeavour Silver



Godfrey Walton
President and COO of
Endeavour Silver

ENDEAVOUR EYES 50 PERCENT PRODUCTION BOOST

Q: What have been the main highlights and challenges of Endeavour Silver's three operating mines in Mexico?

BC: Our only disappointment last year was the Guanaceví mine, which fell behind its planned production. It encountered some operating issues underground, including breaking into an area of hot water and we did not have sufficient pumping, ventilation and electrical capacity to cope. We started a recovery plan last year to expand those capacities and the work should be completed in 2017 so that the mine will be back on track by year-end. We remain confident in the long-term potential at Guanaceví.

Our second mine, Bolañitos, was last year and has for many years been our most profitable mine. The gold we produce at Bolañitos typically exceeds the total cost to run the mine so the production of silver is effectively free. We are concerned about its short mine life and we are working on exploration and land acquisitions to identify further reserves and resources.

El Cubo, our third operating mine, was originally bought at the top of the metals market in 2012 as an operational turnaround candidate and a synergistic fit with Bolañitos. It was a high-cost mine that was unwanted by its previous owner. We invested a substantial amount of capital to discover new orebodies, expand the reserves and resources, redevelop the property and rebuild the plant and surface infrastructure. After being forced to accept some operating losses during the turnaround phase, El Cubo broke through last year and generated healthy positive cash flow.

Q: What strategy does the company follow when selecting new areas for acquisition and development?

GW: We look for brownfield opportunities where we can make a difference. Our geological expertise helps

us to decide where to go and what needs to be done to discover new orebodies. Investing in drill holes to test virgin targets is a must. One example of success is Guanaceví. It was producing 100t/d of old tailings when we bought the mine and now it is producing up to 1,200t/d of high-grade ores. Bolañitos is another example; it was producing 50t/d of old Spanish mine fill when we bought it and now it is producing up to 1,600t/d of high-grade ores.

BC: We have several exciting development projects in our portfolio. El Compas is a small but high-grade mine that should be in production by the end of 2017. We bought El Compas because even though the resources are small, the exploration and production potential are much larger, the mine is mostly permitted and the plant was already built and available on a 10-year lease.

Endeavour has several prospective properties in our exploration portfolio, including the large Guadalupe y Calvo district in Chihuahua. The district was famous many years ago for its high-grade ores and is located only 25km from Fresnillo's newest large silver-gold mine at San Julian. We are testing new targets at Guadalupe y Calvo to augment the historic high-grade resources and we believe the opportunities here are promising, especially given the area's historic potential.

Terronera in Jalisco was acquired because it is an entire district of silver-gold veins that had never been properly explored in modern times. It has the potential to be the biggest and second-most profitable of our mines by the end of 2018. Our first discovery is shallower, thicker and richer than the orebodies at our operating mines, so it has a high probability of having better economics. It will initially produce at 1,000t/d, then expand to 2,000t/d in year two, to eventually produce over 5 million ounces of silver equivalent. Finally, our Parral project was acquired because it has a 32-million-ounce historic resource and there are multiple untested exploration targets to expand the resources. Parral is a possible production startup by the end of 2019.

Endeavour Silver is a midtier silver mining company focused on the growth of its silver production, reserves and resources in Mexico. Since start-up in 2004, it has grown silver equivalent ounce production to 9.7 million ounces in 2016

MEXICAN INSTITUTION SETS SIGHTS ON ZINC

OSCAR GONZÁLEZ

Executive President of Americas Mining Corporation



Q: How do you assess the impact of regulatory reforms for the mining industry in Mexico and what changes have ensued?

A: We have been paying a significant amount of tax since the mining royalties were introduced in Mexico in 2014, including MX\$1.8 billion toward miners' rights. From our experience, the local governments in Cananea and Nacozari – the municipalities where our Buenavista del Cobre and La Caridad mines are located respectively – are investing the resources generated from the Mining Trust Fund into projects that will have a lasting beneficial impact on local populations. We are fully supportive of the fund and we plan to continue allocating more resources for many years to come.

An important part of our investment strategy is to spend US\$25 million on exploration, so we were delighted to see Sonora's governor recommend to Congress a reduction in exploration costs in the state. This would be a positive development that would boost the mining sector not only in Sonora but throughout the country.

We are also optimistic about the long-term effect that the Energy Reform will have on Mexico's mining sector. We are already using our gas and wind-based energy generators to cover our in-house needs, as well as making a profit on the surplus. This is a strategy that is bringing great rewards for the company and we are committed to continuing our work in the local energy sector.

Q: How is your investment strategy evolving in light of volatile international commodity markets?

A: Copper remains the most important commodity in our portfolio, representing 80 percent of sales in 2016. Naturally, the fall in price of the brown metal has had a damaging effect on the business. This effect has been mitigated to an extent by our investment plan, which is designed to raise overall production levels across our assets. For example, in 4Q16, copper production rose by 16 percent compared with the same period in 2015, helped by a rise of 57 percent in production at Buenavista del Cobre.

We have also begun to focus more on the base-metal sphere, particularly zinc. We acquired and reopened the Aznalcollar zinc mine in southern Spain in 2015, and we have great hopes for this project because we are confident that zinc is heading for a sustained period of strong price performance. Zinc production rose by 20 percent in 4Q16, while we also reduced AISC across the board. Despite the lower price environment for copper, our high production levels and low costs enabled the company to perform very well in 2016.

Q: Considering your extensive list of projects in the development and exploration phase across Latin America, where will you be focusing your efforts in 2018?

A: We are planning to move forward with a number of projects in the next few years, and Mexico is a priority for our investment plan, holding a vital place in our portfolio. In 2016, a total of 65 percent of metal and mineral production came from Mexico.

The primary focus is the San Martin deposit in Zacatecas, which has enormous potential but has been in limbo for the past 10 years due to a senseless strike that has been detrimental to workers, the state and the company alike. We are also preparing to move forward with the El Pilar, Pilares and Buenavista Zinc projects in Sonora, before turning our focus onto the Angangueo and El Arco assets.

On the financial side, we are waiting for the macroeconomic climate to improve in order to proceed with our plans to apply for an IPO for Americas Mining Corporation. Southern Copper has a dual-listing in Lima, Peru and New York, while Grupo México is listed on the BMV in Mexico City. We are convinced that an IPO will have a positive effect on the Americas Mining Corporation investment profile, although we are still evaluating where would be the best location for the company.

Americas Mining Corporation is Grupo México's mining subsidiary, overseeing Mexican operations, as well as those belonging to ASARCO and Southern Copper in the US, Peru and Chile



MINING CAN FOLLOW AUTOMOTIVE EXAMPLE

FERNANDO ALANÍS
Director General of Industrias Peñoles

Q: What must Mexico do to become a more attractive jurisdiction to the global investment community?

A: Mexico has enormous potential. It is estimated that at least 70 percent of the territory has not yet been explored. States including Guerrero and Oaxaca have strong geology but very little mining activity because there is no efficient policy in place to promote and support the sector. A few years ago the country had a dream of becoming a global automotive hub. The administration worked toward that goal and now Mexico is the seventh most prolific car manufacturer in the world. We have to acknowledge the geological potential, the skilled workforce, the access to industry-leading technologies present in the country to create the framework to capitalize on this opportunity.

Q: Peñoles recently announced an investment plan of US\$1.1 billion for the coming years. How will these funds be allocated?

A: The Rey de Plata polymetallic mine in Guerrero is currently under construction and should achieve commercial production by the end of 2018. The investment will total US\$387 million and it should be a very profitable asset that produces gold, silver, zinc, lead and copper.

We will also be investing a total of US\$330 million to expand the capacity of our zinc refinery in Torreon by 50 percent to 360,000t/y from 240,000t/y. When completed, this will make Peñoles the sixth-largest zinc producer in the world. Zinc is tremendously important for steel and therefore the construction and automotive sectors but global inventories are going down both in terms of concentrate and finished products. Unlike precious metals, the zinc price is essentially determined by fundamental economics so given the strong demand and supply shortage, I am very bullish on this commodity's performance in the next few years. Once Rey de Plata is operational, we will have a surplus of zinc concentrate

and we will then become one of the few companies in the world to own both a zinc mine and a zinc refinery. Coupled with the fact that we are next to the US, which is a huge market with a substantial zinc deficit, this will be an important asset for the company's portfolio going forward.

Q: How much of a boost was the Energy Reform for Peñoles and how are you taking advantage of this opportunity?

A: In 1999, we became concerned about the availability and cost of energy in Mexico and given that energy represented around 40 percent of our expenses, we started to look for ways to lower costs. Industrias Peñoles made a strategic decision to integrate our energy supply and start generating our own electricity. In 2016, a total of 81 percent of the energy we consumed was generated in-house. Most of this comes from the petcoke thermal plant in San Luis Potosi, which generates 230MW, and the two wind plants in Oaxaca that generate over 40MW. We also have natural gas turbines in Laguna del Rey, Coahuila and a steam generator in Torreon.

In April 2017, we will also be initiating a new wind project with the Portuguese energy company, Energias de Portugal Renovables, in Coahuila. The facility has an install capacity of 200MW, which will cover our energy needs for the zinc refinery expansion in Torreon. There is a new energy law in Mexico that will require companies to procure at least 30 percent of their energy from sustainable sources by 2025. Peñoles has already reached that landmark because we are convinced of the need for sustainable development.

Q: What strategies does Peñoles have in place to cement its leadership role within the Mexican mining sector?

A: The future of our company is based on three key strategic areas. The first is sustainable development, which incorporates the economic, social and environmental spheres. The second is human capital; we will continue to invest substantially to recruit, develop and retain the most talented people in Mexico. The third is technology. We have an internal R&D group made up of 35 full-time researchers working at a specialized center in Torreon, and we are always looking for innovative methods that can improve our practices.

Industrias Peñoles is a 100 percent owned subsidiary of Grupo BAL. The group is the largest gold and lead producer in Latin America and through its subsidiary Fresnillo, the largest silver producer in the world

OPERATOR GAINS CONFIDENCE OF EQUITY MARKETS

BEN PULLINGER

VP Geology at Excellon Resources



Q: How would you assess the prospects for the global mining industry and where does Mexico fit into that?

A: If we look at the production profile of a lot of companies over the next few years, especially given the fact a lot of companies over-leveraged themselves in the past decade, there is a real deficit in terms of production from 2019 and beyond. That is most pronounced in the gold industry. When looking at countries like Mexico that have had recent successes in exploration and in terms of projects that have been discovered from greenfields and brought through to production, it is clear there is a lot of mining entrepreneurship. The country is becoming an interesting place in which to operate and this period marks a turning point in Mexican exploration because it is becoming more innovative and advanced.

Q: What strategies helped to drive the share price up by more than 500 percent in 1H16?

A: Firstly, the company has been evolving constantly since 2012 and before that there was a lot of turnover in management, making it tough for the company to stay well-funded. A new CEO, Brendan Cahill, took over in 2012. Since then, the company has developed a strategy to significantly turn around operations that would see a doubling of production and more than halving of costs in 2H17. We were able to take advantage of improved equity markets and raise US\$25 million in a nine-month period, which attracted our largest holder, Eric Sprott, who now owns 19 percent of the company.

More importantly, this capital allowed us to recommence exploration for near-term mineable resources and to follow up on previous discoveries of skarn mineralization on the project. We have already had early success in the program. We are probably about 6,000m through that program and in 4Q16 we announced results in which we intersected significant mineralization. One of those was an underground hole in which we intersected 13m of 1,800g/t silver equivalent. This also brought forward production and gave us an extra 25m of mineralization. The mineralization that we are exploiting on the permit to date is indicative of a larger system that we will continue to explore.

Q: What strategies does Excellon use to raise funds?

A: We see a live interest in the retail silver market and some US ETFs. The silver space is quite small but quite well-monitored and, in terms of being able to raise that capital, we go to investors with detailed plans that show what we can do with the funds. We are at the point where we have raised more capital to see us through the slump. In the context of the Platosa ore body, every 10x10m block of mineralization contains approximately US\$1 million worth of metal due to the density and the grade. Therefore, for every drill hole on the project that defines additional mineralization, the return on exploration investment is significant.

Q: How are you planning to double production and halve costs this year?

A: This philosophy is actually quite simple. The biggest constraint on our production historically has been that there is a lot of water in the mine. This does not impede mining but we use a lot more grouting and the process is a lot more manual and time consuming. In 2015, we developed a simple engineering solution to more efficiently dewater the mine and we are in the final stages of implementing this optimization plan. With us being able to more effectively manage this water, we can develop five times faster, we can cut our maintenance costs and become a lot more efficient in terms of electricity use.

We are mining around 150t/d and we think that doubling this to 300t/d is just the first milestone. We think in 2018 there will be more room for optimizing that and at that point the only bottleneck would be our mill, which we can upgrade to a capacity of 500t/d. All the numbers and figures we have used are on the conservative end of the scale. So we believe that a goal of 300t/d is very achievable.

Excellon Resources is a precious metals producer based in Toronto. Its 100 percent-owned Platosa mine in Durango has been Mexico's highest-grade silver mine since production commenced in 2005





NAICA

Just 100km south of Mexico's iconic Parral mining district in Chihuahua lies the world-class Naica mine. The project, also known as Maple, operated for 64 years. It was first acquired by Fresnillo in 1951 and in 1964 changed hands to become an official part of sister company Industrias Peñoles' portfolio. With its own concentration plant, the mine was the country's second-largest lead mine. In its final year of production – 2014 – its output equated to 21kg of gold, 57,585kg of silver, 19,694 tons of lead and 15,399 tons of zinc. In 2015, with declining production and a drop in base-metal demand, Industrias Peñoles decided to suspend operations at the Naica mine indefinitely.

But beyond the precious metals and base minerals held within Naica, there are less typical reserves. In the year 2000, the Cueva de los Cristales, or Cave of Crystals was discovered by two Peñoles miners 290m below surface level, within the mine's limestone host rock. The cave is home to selenite crystals that are five times larger than any ever discovered, measuring up to 13m and weighing more than 55 tons. Discovered more recently and closer to the surface, at a depth of approximately 120m is the Cueva de las Espadas, or Cave of Swords. The crystals held within this chamber are much smaller, at around 1m long due to the fact that they are much younger than those contained in the Cave of Swords.

The recorded temperature in the Cave of Crystals is 45°C, with humidity levels of 80 percent, which makes it impossible to breathe and increases the risk of losing consciousness in less than 10 minutes. Researchers must wear oxygenated suits in order to be able to withstand 30 minutes of continued investigation. In fact, the cave is closed to the public for this reason. According to National Geographic, "the crystals are searing hot to touch; razor sharp but also soft like human fingernails."

The crystals require two conditions to grow: water immersion and heat in excess of 48°C, so scientists believe that conditions underwater must have been stable for hundreds of thousands of years. With the cessation of mining activities within the mountain, the water would be returned to the cave to once again stimulate growth. In March 2017, NASA scientists discovered microbes that had been dormant in the mine for between 10,000-50,000 years, which they believe demonstrates the ability of lifeforms to adapt to more hostile environments. This, they say, is a step forward in humans finding another habitable home within the solar system.



RICH GEOLOGICAL HISTORY CREATES BRIGHT MINING FUTURE

RAÚL CRUZ

Director General of the Mexican Geological Survey (SGM)

Mexico is located in the central-northern part of the American continent, a block that evolved 250 million years ago, detached from the super continent called Pangea.

The geological history of this emerging part of the planet has been changing, although always following a line of evolution that gave rise to multiple landscapes and geo-forms. The associated resources are derived from the earliest phases of continental drift. Most of these resources are related to magmatic processes - that is, those produced by the interaction between the oceanic and continental tectonic plates.

From the Mexican Republic to Patagonia at the southmost point of the continent, along the west coast of South America, over the last 180 million years, the phenomenon called subduction prevails. The oceanic tectonic plates of the Pacific collide and slide below those of North America, Central America and South America, which gives the region surprising but dangerous mobility, characterized by seismic zones, which is why millions of people living on the coastline and within the continent are permanently at risk.

The settlement and historical evolution gave Mexico and the countries of Central America and South America - especially Ecuador, Colombia, Peru, Bolivia, Chile, Brazil and Argentina, to mention only a few - a privileged position in terms of precious, basic and non-metallic mineral deposits. Comparatively, Mexico, Peru and Chile compete amicably for the sustainable production of raw minerals, which is essential for supporting the industry. The three countries have an important historical, economic and social component associated with mining activities, even predating the sixteenth century Spanish invasion.

As a result, each country is responsible for promoting mining activities. Mexico covers almost 2 million km²; Peru 1.2 billion km² and Chile 756,000km². Among the three countries, 41.2 percent of the world's silver, 43.6 percent of copper and 9 percent of gold is produced, so it can be said that mining is one of the main catalysts for the country's economic development. The activity is carried out with care for the environment, and respect for the preservation and

restoration of nature in those communities and regions in which mineral deposits are explored and exploited.

The history of mining in Mexico and Latin America has been more legendary than lucrative, at least in the early epoch, up until industrial modernization and the evolution of technology, which occurred well into the twentieth century. From Atacama and the Tarapaca and Antofagasta mountain ranges, passing through Cusco-Tarija and arriving at Taxco-Pachuca-Zacatecas, the Spanish colonizers found that the natives knew how to work gold, silver and copper, which encouraged them to continue with colonization.

Chile, Mexico, and Peru suffered more pain than glory throughout their mining histories, providing cheap labor to develop the industry, with almost zero social benefits throughout the time the colony prevailed. The evolution through the nineteenth century was equally slow, but the sector grew and expanded from the twentieth century onward, with communities demanding yields, and governments encourage producers to seek a tangible socio-economic benefit.

Consequently, in real terms, it is important to promote the relationship between countries that share not only a thousand-year tradition, but a geological evolution that left behind a legacy of resources that are and will continue to be useful for the survival of humanity.

Minerals do not exist as a by-product. There is always a reason, a process or a circumstance that allows us to associate them with a geological event. Geological sciences have developed since the sixteenth century - when the *De Re Metallica* treatise was written by the German Georgius Agricola. This was drafted in such a way that not only allows us to know more about the structure of the thin solid crust upon which mankind lives but also about non-renewable resources such as minerals, petroleum, uranium, coal and geothermal deposits.

The knowledge of geological evolution is exciting and important because within this environment it is possible

to coexist and marvel at the perfection of nature which, through an almost miraculous balance, has provided all the raw materials that the human race has used since it appeared on the face of the earth.

The concept of exploration has also appeared since time immemorial, and of course the practice has been perfected over time. All countries, governments and societies are concerned with continuing to provide the materials required to maintain the standard of living of today's society. None of the habits or activities of man and woman would be possible if not for raw materials to build the everyday tools of modernity. There is high demand, and that is why it is essential to continue supplying those materials.

The different countries of the world are aware of the responsibility of responding to internal and external demand, and have taken advantage of globalization by fostering business opportunities for themselves and for foreign actors. Each offers, first and foremost, a variety of geological contexts conducive to rich mineral deposits, as well as expectations for the location of more minerals that will be discovered thanks to the application of increasingly sophisticated exploration techniques.

The Mexican Geological Survey (SGM) is the institution that has committed to disseminate and propagate the geological knowledge of Mexico to encourage investment and contribute to the development of the nation. SGM is responsible for generating geological maps throughout the territory, surveyed to a scale of 1:250,000 and 1:50,000, the latter with sufficient detail to visualize zones and mineralized areas. SGM supplements this data with information on the major and local structures that control mineralization, as well as on stratigraphy, with

the support of satellite images that have a surprisingly powerful resolution.

As if this were not enough, to maintain our hard-fought position as the guiding institution in world-renowned geosciences, SGM adds regional aerial geophysics maps that cover 100 percent of the country, including into international waters. It also offers high-resolution geophysical techniques combined with radiometric information on uranium, thorium and potassium channels, as well as aerial electromagnetic time-domain (TEM) methodology, useful for detecting underground sulphide concentrations to determine the geo-hydrological potential of basins in arid and semi-arid zones.

To round off the country's intrinsic geological appeal, SGM operates two research centers in which mineral contents are characterized and assayed, and metallurgical tests are run to support mineral exploration and benefit decision making. Our technology is capable of identifying 38 elements in active stream sediment samples that are collected during geological surveys, and later are mapped in geochemical maps. This constitute an additional tool that helps the integral exploration of a region or of a district.

Mexico's landscape is varied, resulting from the geological evolution that gave rise to the formation of extensive mountain ranges of volcanic or sedimentary origin, desert and semi-desert plains, mountain ranges with active volcanoes, rock complexes and reliefs in the south and calcareous platforms in the southeast of the country. The Gulf of Mexico's coastal zones are wide, and their Pacific counterparts relatively narrow, which can be seen in the case of the Sierra Madre Occidental, the province of the world's largest gold and silver epithermal deposits.

SGM offers a wide diversity of exploration services and advisory for the world's mining companies. It welcomes interested parties to visit its offices, which are distributed across the country, or consult its website, where its pioneering GeoInfoMex platform can be found.

This platform provides a wealth of geographical data for Mexico, divided into various categories such as mineral deposits, geochemistry, geology and natural protected areas. GeoInfoMex allows users to access extensive geoscientific information about Mexico's terrain and make fast decisions, saving both time and money, and contributing to the efficiency and promotion of mining activity.

The platform contains more than 80 layers of information, generated by more than seven decades of mining exploration in Mexico, as well as information derived from inter-institutional agreements. This pioneering platform is the first of its type to map Mexico's mining concessions and offer the public reliable, up-to-date and quality information on a massive scale. The data can be sorted by category, identifying world-class deposits and important mining districts. This platform facilitates planning for the mining industry, allowing an agile interpretation of the information, presenting information in a comprehensive way and contributing to the most informed decision-making process.

SGM
PROVIDES
GEOLOGICAL
MAPPING
WITH
GEOINFOMEX



UNDERGROUND MINING: KEEP IT SIMPLE

GREGORIO CASTRUITA
General Manager of Resemin Mexico

Q: How is Resemin working to incorporate new technologies into its portfolio?

A: Unlike many mining equipment manufacturers, we are not focused on designing automated solutions. It is not that we do not believe in the benefits of automated or robotic machinery – the mining industry owes a lot to this type of innovation – but this misses the primary function of our machines, which is to ensure long-term reliability. In an underground mine, machinery is subjected to extreme conditions including temperature, dust, water and harmful gas leaks, and the more electronic networks are in use the higher the chance of a short circuit or failure. We focus on designing relatively simple but highly-productive machinery that has a minimal chance of costing the user through downtime. This policy toward technology has been popular and successful in Mexico.

Q: To what extent has the rise in metal prices had a beneficial impact on Resemin's business?

A: During 1H17, we sold a total of 20 machines to various clients, including four new customers, so we have been delighted to see the recovery of the sector and the impact it has had on our business. Word of mouth is still an important method of communication in Mexico so the fact that we are attracting new clients is an encouraging sign because it suggests the technology is selling itself through the quality of its performance. In 2016, we launched the Muki FF and Muki LHP products that are designed to work in narrow veins, which has performed very well and has helped attract new business. Two of the new clients are contractors working with Fresnillo. This is a significant development for the company because Fresnillo is the biggest primary silver producer in the world, and we are delighted to have our machines operating in their mines.

Q: What needs to be done to bring down the number of worker fatalities in Mexico's underground mines?

Resemin designs and manufactures bolters, jumbos, tunnel scalers and other underground drilling equipment. Headquartered in Peru, the company's Mexico base is in Zacatecas

A: The policies that have been implemented by both foreign and national companies in Mexico show that the industry is moving in the right direction. It took many years of hard work but we have finally reached a situation in Mexico where, for the majority of enterprises, worker safety is just as important as productivity and ore extraction levels. It is a priority for everyone and it is imperative that this continues to be the case.

Q: What new products is the company releasing in 2017?

A: We have released two products to complement the launch of the Mini Jumbo in 2017. The first was the Suri Scissor Lift, a heavy-duty utility vehicle with various functions including tube and ventilator fitting and fortification works. The most recent is the Scalemin scaling rig, a hydraulic diesel tunnel scaler used to mechanically remove rocks following a controlled explosion. Previously, this dangerous work was carried out manually but we now offer a mechanical solution. This is different to automation as no electronics are involved; we prefer the term mechanization.

Before the end of 2018, we will also begin manufacturing scoop tramps for the first time. We have always been focused on drilling equipment but our clients have made it clear to us that there is a need for underground loaders. This is the next important project for Resemin and our first scoop tramps should be available during 2018. This will enable us to provide equipment for the entire life span of the mine, from bore-hole drilling to material movement.

Q: How satisfied has the company been since its formal entry into Mexico four years ago?

A: We are pleased but we recognize that there is still work to be done. The market in Mexico is large and there are significant areas to cover but we know that patience and a long-term vision is crucial in mining. We are confident that we will continue to attract new clients in Mexico. The company aims to be working with all the major mining companies in the country on their largest underground projects. Our goal is to ensure that Resemin becomes known around the world for the quality of its personnel.

SODIUM CYANIDE EXPERT BUILDING MEXICO BUSINESS

LUIS REBOLLAR

Global Business and Strategy Director of Chemical Solutions
Business of The Chemours Company



Q: What was the strategic thinking behind the branding change to mining solutions?

A: The mining solutions division has become a strategic business unit for The Chemours Company and as such we wanted to expand its scope. We went from being a leading sodium cyanide producer to an industry leader with a broader scope to serve the variety of needs in the mining industry. One of our core values is to be a customer-oriented company. We will always ensure we are the safest and most reliable supplier of sodium cyanide but we will also aim to find new solutions for some of the most relevant environmental and safety challenges mining companies face. We focus on distributing sodium cyanide in the safest and most reliable way but we want to add more value for our customers.

Q: What role does Mexico play within your global portfolio?

A: We have more than 90 years' experience doing business in Mexico. The country is important to us and critical to our growth and long-term success. When it comes to mining solutions, we have been selling sodium cyanide in Mexico for more than 30 years and we are the market leaders in the country. Given the strength of this market, we are in the process of building a new plant in Mexico to meet the growing demand, requiring an investment of around US\$150 million. Currently we import everything from our plant in Memphis, Tennessee, so the new Mexican facility will help us improve our customer service in Mexico and in the Latin American region. We are confident the Mexican mining market will continue to grow in the next few years.

The sodium cyanide market in Latin America is unique because demand is higher than the installed capacity so many companies are importing the chemical from Asia. We want to distinguish ourselves by operating and manufacturing locally.

Q: How do you help your clients reduce their environmental footprint and reduce the risks associated with sodium cyanide handling?

A: Our planned sodium cyanide operation in Mexico will generate a lot of energy-related value, mostly in the form of steam. The new plant in Mexico will use the steam and

convert it into green energy that could then be distributed to surrounding communities.

Safety is a big issue for sodium cyanide users. We ensure that all our employees and clients are well-trained in how to handle the solution in a safe and responsible manner to reduce the risk of accidents. As the manufacturer, we feel that it is our responsibility to take the lead and contribute to developing safer and more robust standards for transporting and delivering our products to customers. We carry out regular mine audits, which involve sending our staff to the site and monitoring how the delivery trucks are being received, unloaded, cleaned and returned.

The new plant in Mexico will require an investment of US\$150 million

Q: How will new trends such as biomining affect the company's business going forward?

A: If a new method of extracting gold without sodium cyanide were to become technically and economically viable, this would of course have an adverse effect on our business as it is today. We have invested substantial time and resources internally to try and find an alternative to current practices and technology, and mining companies have been making similar efforts as well. So far, all efforts have been unsuccessful simply because sodium cyanide is a unique product and I do not anticipate a drastic change in the short term. Several new companies and young engineers are testing innovative methods and we support those efforts entirely and join them when possible. The reality, though, is that new technologies in this industry take a long time to develop. It will be a long-term project, with a lot of trial and error.

The Chemours Company has over 200 years' experience providing titanium technologies, fluoro products and chemical solutions. It is the world's largest producer of solid sodium cyanide (NaCN)



STRUCTURAL REFORMS NEEDED TO ATTRACT INVESTMENT

JEAN-DOMINIQUE IERACI

Deputy Head of Mission and Minister-Counsellor (Trade)
at the Canadian Embassy in Mexico City

Q: What kind of benefits does Mexico offer diplomats?

A: Despite its geographic proximity, Mexico does not feature in the minds of Canadian people enough; sadly, it is known either for its beaches or for its issues with crime. The relationship between the two countries is very rich but it has not reached anywhere near its full potential. As a diplomat and trade commissioner, it is important to realize that there is both a strong existing base of clientele and room for improvement. In Mexico, there are challenges but I believe that they can be overcome, so for me Mexico ticked all the boxes on the professional side.

Q: What would the potential renegotiation of NAFTA mean for the relationship between Canada and Mexico?

A: The “America First” policy adopted by US President Donald Trump has certainly helped bring Canada and Mexico closer together and has created an appetite for both countries to investigate further opportunities for cooperation. The relationship is by no means reliant on NAFTA but all the discussion and fear generated by the US rhetoric has exposed a certain weakness in the Canada-Mexico relationship. For example, in the early 1990s influential CEOs from both countries used to meet twice a year to discuss business opportunities and how to improve the bilateral relationship. This forum no longer exists and the Mexican community in Canada is much less visible than those of other Latin American countries like Chile. With the new presidential administration in the US, we are seeing more Mexican students coming to Canada to study and, with the lifting of the visa requirement, more tourists are arriving. It is vital that this trend continues because it is crucial to foster these interpersonal relationships.

Moreover, with the exception of Grupo Bimbo’s acquisition of Canada Bread in 2014 and a few other smaller deals, Mexican companies are not invested in Canada. The

business-to-business relationship is heavily dependent on Canadian investments in Mexico. This is something that we are trying to fix because the opportunities are there for Mexican companies.

Q: Roughly 65 percent of foreign investment in Mexico’s mining sector is headquartered in Canada. What role does this industry have to play in bilateral trade between the two countries?

A: There are two recent initiatives that demonstrate the importance the extractive sector plays in the relationship. Firstly, a Mining Work Group has been created within the Canada-Mexico Partnership (CMP), which is designed to improve communication and knowledge sharing within the mining communities of the two countries. Secondly, Canada’s Minister for Natural Resources James Carr signed an MoU with Mexico’s Economy Minister Ildefonso Guajardo during his visit to Mexico City in February 2017. While both are in the early stage, these initiatives are designed to give more structure to the role mining can play in strengthening the bilateral relationship. Once all the statistics and data have been agreed from both sides, I expect a series of seminars to begin, designed to discuss important issues such as environmental mitigation measures and relations with indigenous communities. From the Canadian government’s perspective, we want to support Canadian industry and ensure that we can disseminate our experience of mining in Mexico.

Mexico is not the only country in Latin America with an abundance of natural resources but the jurisdiction has traditionally had a strong operational framework that has attracted Canadians over the years. This has eroded in the past few years, to the extent that many of the Canadian companies operating in Mexico today would not have made the same decision had they known how the sector would develop.

Q: How can the embassy contribute to increasing Canadian investment in the Mexican mining sector?

A: There is a structural issue that needs to be dealt with. We spend a large portion of our time and efforts on helping

The Trade Commissioner’s mandate is to promote Canada’s trade and economic interests in Mexico, supporting the efforts of Canadian companies that have selected Mexico as a target market for their products, services or technologies

Canadian companies deal with security issues, which unfortunately have been on the rise in recent months, but also a considerable number of our clients are owed back-payments in VAT. We estimate that Canadian companies throughout the industries are owed close to US\$300 million in VAT back taxes. These are long-term outstanding claims that affect both cash flow and share prices. Since Canada represents 65 percent of foreign investment in the Mexican mining industry, we would like to see the Mexican government really tackle this issue because it is hurting the entire country.

Mexico needs to embrace the fact that it is a mining country. In other jurisdictions like Chile and Canada, the governments will defend the mining industry when there is an issue but this is not the case in Mexico. We think the public sector can do a lot more to protect and promote the industry, and to recognize the contribution it makes to the national economy. We are happy to help in this process because the reputation of a Canadian mine in Mexico has an impact on the image of Canada. The creation of the position of Undersecretary of Mining within the Ministry of Economy was a good start but we would like to see a more centralized management of the sector in Mexico City because companies cannot afford to lose time running between different ministries and agencies at the local, state and federal levels. We were also encouraged to see the federal government step in to deal with the Zacatecas Ecological Tax, which could have had a disastrous effect on mining in that region and we want to see further developments of that ilk.

Security is another concern. When there is an illegal blockade, we expect the government to step in and lift it but this does not always happen in Mexico. We need the government to protect our investments from criminal forces. We know that it is a challenging situation but we do not get the sense that the Mexican federal government does all it needs to do to enforce the law on a local level.

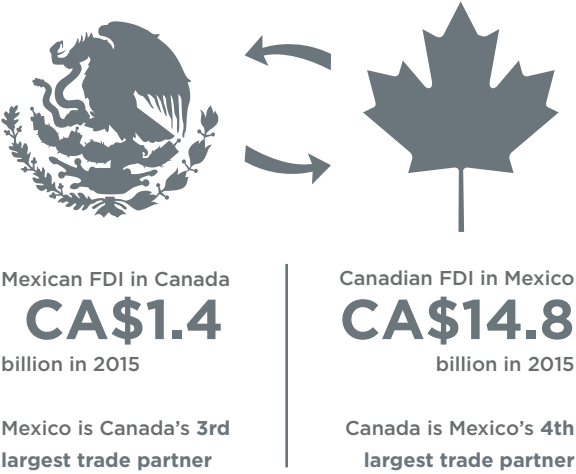
Q: What are the embassy’s main objectives with respect to trade in Mexico?

A: The issue of NAFTA looms large on my desk. NAFTA has been tremendously beneficial for all three countries and now is the time to modernize the treaty and improve it. Although the officials that negotiated the original treaty in the 1990s did an exceptional job, the world has moved on since then and new technologies such as e-commerce could and should play a more influential role in NAFTA going forward. We want to see greater protection for our investments, with more clarity and stability in the region in general.

We also want to see more Mexican investment in Canada because we feel that many Mexican CEOs do not fully

appreciate the opportunities for their businesses in Canada. Given the resources in Canada, there is no reason why Mexican miners should not be looking north of the border for investment opportunities, which could come either in the form of mergers and acquisitions or less formal strategic ventures.

The majority of the money in the mining sector raised from capital markets comes from the Toronto Stock Exchange and if the large Mexican miners have ambitions to become serious players on a global scale, they need to tap into the mining infrastructure in Toronto in one way or another. There is also scope for investment in the auto parts manufacturing sector, and many more. We see Mexico as the window for further cooperation with Latin America, and regional trade initiatives like the Pacific Alliance and the Trans-Pacific Partnership could provide the framework for us to achieve this.



Since **1993**, trade between Mexico and Canada has increased sevenfold, from **US\$2 billion** to **US\$20 billion** in 2016



Source: Canadian Department of Natural Resources, EDC

THE MINING TRUST FUND: A LONG ROAD TO CHANGE

Three years ago, the creation of the Mining Trust Fund sent shockwaves throughout the industry. The majority of mining companies are still to be convinced of its merits but its supporters believe a long-term perspective is needed

a specially created committee, composed of a mix of public, private and social sector representatives, to allocate the funds to specific projects.

In 2014, the newly elected center-right Institutional Revolutionary Party (PRI) government implemented sweeping reforms in a bid to raise taxes and boost public finances. Among the changes was a 7.5 percent royalty on metal and mineral production, plus an added 0.5 percent duty on gold, silver and platinum extraction. The Mining Trust Fund was set up to make use of the added cash inflow, with a specific goal to fund social infrastructure projects in mining regions.

Mexico’s metal producers felt persecuted. Already creaking under the pressure of plummeting commodity prices, the new taxes cut profit margins further and pushed many operators to the breaking point. Three years on, the Mining Trust Fund continues to divide opinion. Detractors argue the tax is unconstitutional and that a large chunk of the proceeds are lost in the public-sector ether. But some corners of the community believe that in the long-term, the ground-breaking program has the potential to bring real change to isolated communities with precious few sources of income.

The Mining Trust Fund has no precedent in Mexico. Under the guidance of the Ministry of Agrarian, Territorial and Urban Development (SEDATU), it is designed to finance social projects in targeted regions where mineral extraction is present. Municipalities and states receive a portion of the resources, depending on their respective contribution to Mexico’s mineral output. It is then up to

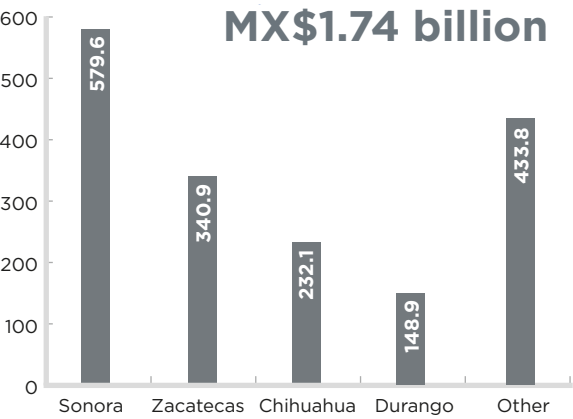
“Each committee is made up of five members and chaired by a SEDATU representative,” says Ricardo Lopez, Director General of the Mining Trust Fund at SEDATU. “Mining is a finite industry, so our job is to ensure that communities do not become dependent on support from the extraction activities going on around them.”

A total of MX\$1.74 billion (US\$98 million) was collected and redistributed in 2016. By February 2017, 812 projects had been started, of which more than 250 were completed. As the country’s most productive mining state, Sonora receives the highest proportion of the funds – over MX\$579 million in 2016 - followed by Zacatecas, Chihuahua and Durango.

Local municipal governments are in charge of distributing 50 percent of the funds, with the state and federal government presiding over 30 percent and 20 percent, respectively. The added income can make a dramatic impact to public-sector spending power on a local level, especially in municipalities with large metal outputs.

“The creation of the Mining Trust Fund opens a space for a fair distribution of capital among the communities that surround mineral extraction sites,” says Jorge Vidal, Minister of Economy for Sonora. “Without the fund, municipalities like Cananea would only have a budget of MX\$8 million per year but now they will have an extra MX\$122 million annually.”

MONEY COLLECTED BY THE MINING FUND
BY STATE 2016



Source: CAMIMEX

CORPORATE RESISTANCE

Mining companies have been open about their opposition to the reform, with many pointing to the questionable timing of the changes. In October 2014, the gold price stood at US\$1,143/oz, 50 percent lower than the same point two years previously. Arturo Bonillas, President and Director of Timmins Gold, says the government could have waited for the wounds to heal before striking another blow. “The tax was imposed at the worst possible time,” he says.

Although prices have subsequently recovered, the doubters remain. Many organizations have been operating mines for several decades and during this time have built up a strong, mutually beneficial relationship with the

local community. They feel the changes threaten this relationship and place responsibility on public authorities lacking in local knowledge.

“I have always stood against the reforms and continue to do so,” says Robert Eadie, President and CEO of Starcore International, which has been operating the San Martin mine in Durango since 2008. “We feared the government would not do an efficient job in distributing the resources collected into the Mining Trust Fund and this is exactly what has happened.”

For the mining companies, the results of the program have been slow and underwhelming. They are happy to support economic development in local communities through their own corporate programs, and feel that the Mining Trust Fund creates an unnecessary middleman between themselves and the people. Eadie claims the reform is “unconstitutional” and that it has not changed the way his company interacts with the community. “We do not wait around for the government to show up,” he says.

GOVERNMENT RESPONSE

Those at the Mining Trust Fund understand the concerns. Lopez acknowledges that the fund should do nothing to negate the “well-established” relationship between company and community, but stresses that the fund finances projects that fall outside of the private sphere.

“Our job is to make sure that the funds received from the new taxes are reinvested into infrastructure projects,” he says. “Mining companies are not responsible for improving public services.”

During the first two years, the focus was on small-scale infrastructure works on a local level. The majority were road maintenance, paving and construction projects in extremely remote areas of the country. A local road repair project may not have the dramatic effect of a suspension bridge or new hospital, says Lopez, but the real weight is often greater.

“Rather than speaking about specific projects, I prefer to focus on the overall social impact of our work,” he says. “For isolated communities, an improvement to the local road network significantly boosts quality of life.”

LONG-TERM BENEFITS

Given the fact that the Mining Trust Fund is an entirely untested public initiative, it should come as no surprise that the cracks are still being ironed out. According to Lopez, in the next two years the focus will switch to funding regional, rather than local, development that impacts larger and more urbanized communities. This

could produce the kind of results the companies are waiting for. While Lopez admits that his team is still trying to find the “most effective” way of investing the funds, he insists that this will process will not be rushed to appease the doubters.

“Many companies expect to see change happen overnight but that cannot be the case,” he says. “It would be easy to hand out the money to districts without taking care to ensure that local authorities are using it correctly but we believe that the quality of the construction outweighs the importance of speed.”

For Mexico’s miners, the recovery in metal prices during 2016 and the first part of 2017 eased the pressure applied by the added taxes and the focus switched away from complaint to strategy for increasing production. Nevertheless, it is clear that the issue is still a touchy subject for companies with years of experience in Mexico. Regardless of how well the sector is performing, they want to see results sooner rather than later.

“I support the royalty taxes and I do not doubt the good intention,” says Bonillas, before adding, “as long as the funds go back into the communities.”

DISTRIBUTION OF THE MINING FUND BY STATE AND MUNICIPALITY IN 2016 (MX\$)			
State	Municipal Allocation	State Allocation	Total
Sonora	440,707,743.13	264,424,645.88	705,132,389.01
Zacatecas	302,832,566.05	181,699,539.63	484,532,105.68
Chihuahua	142,080,772.14	85,248,463.28	227,329,235.42
Durango	111,385,579.59	66,831,347.75	178,216,927.34
Coahuila	82,136,539.95	49,281,923.97	131,418,463.91
San Luis Potosi	48,910,911.28	29,346,546.77	78,257,458.05
Oaxaca	30,764,545.45	18,458,727.27	49,223,272.72
Guerrero	28,880,298.28	17,328,178.97	46,208,477.25
Baja California Sur	24,761,902.38	14,857,141.43	39,619,043.81
Sinaloa	23,625,866.34	14,175,519.80	37,801,386.14
Michoacan	20,060,235.24	12,036,141.14	32,096,376.38
State of Mexico	19,335,500.15	11,601,300.09	30,936,800.25
Colima	16,957,778.88	10,174,667.33	27,132,446.20
Guanajuato	15,158,283.60	9,094,970.16	24,253,253.76
Baja California	12,081,188.18	7,248,712.91	19,329,901.09
Jalisco	11,524,804.45	6,914,882.67	18,439,687.12
Aguascalientes	11,306,975.78	6,784,185.47	18,091,161.25
Hidalgo	11,296,766.07	6,778,059.64	18,074,825.72
Queretaro	7,255,167.11	4,353,100.27	11,608,267.38
Veracruz	3,848,307.18	2,308,984.31	6,157,291.49
Nuevo Leon	2,913,710.68	1,748,226.41	4,661,937.08
Nayarit	670,662.90	402,397.74	1,073,060.64
Puebla	593,998.60	356,399.16	950,397.76

Source: CAMIMEX

MEXICO²⁰¹⁹

MINING REVIEW

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10 ANIVERSARIO

Fresnillo p.l.c. diez años en crecimiento sustentable

Fresnillo p.l.c. celebra una década de crecimiento disciplinado y de una estrecha colaboración con las comunidades en las que tiene presencia, reconoce que son ellas las que contribuyen a que su operación sea sostenible.

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Crece de la mano de sus colaboradores


Tiene la firme convicción de que su personal es la base del éxito de Fresnillo p.l.c. por ello, fortalece su desarrollo, talento y compromiso a través de constantes capacitaciones. Su compromiso es continuar siendo un Excelente Lugar para Trabajar.

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CEO of Mexico

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