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Mining in Peru

The llama that lays the golden egg.

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Peru: an Overview

A formative moment for the new Incan empire

A formative moment for the new Incan empire. Photo courtesy of Laconia Resources.

Unbeknownst to passing tourists and Peruvian citizens alike, in the heart of the City of the Kings, historical Lima, sits the largest collection of minerals in Latin America. Established in 2008 by industry magnate Guido del Castillo in memory of his deceased son, Museo Andrés del Castillo is a testament to the importance of the Peruvian mining industry as an agent of development as well as the geological riches of the country. Like the United States of America's National Gallery, which was famously given to the U.S. Government by Andrew Mellon, Museo Andrés del Castillo stands as a symbol for the unparalleled ability of private enterprise to create.

Peru was recently ranked by Bloomberg Markets Magazine as the fourth most attractive emerging economy for investment, behind only China, South Korea and Thailand. The Peruvian economy has doubled in size since 2002. Mining has been the largest driver of this growth, accounting for 24.45% of total foreign investment in 2011, and over 50% of total trading volume on the Bolsa de Valores de Lima (BVL), Lima's Stock Exchange. An estimated $53 billion is expected to flow into the country over the course of the next decade for mining projects alone, with $19.5 billion of these investments to be realized in 2013 and 2014. Investments in the sector are speculated to rise by 16% this year alone.

Peru's attraction lies in its mineral wealth. Miguel Cardozo, president and CEO of Alturas Minerals, a junior company said: "Peru's mineral wealth extends beyond copper and gold, two staples of many mining jurisdictions globally: as a country, we are also rich in silver, zinc, lead, and molybdenum."

According to the U.S. Geological Survey, in 2012 Peru was the world's third largest producer of copper, silver, zinc and tin, in addition to the fourth largest producer of molybdenum, the fifth largest producer of lead, and the sixth largest producer of gold. Beyond this, Peru is also known for phosphates, tungsten and, increasingly, iron and uranium.

Peru saw its production of copper, zinc, silver, and lead grow in 2012. Copper production rose to nearly 1.3 million metric tons (mt) for the year, a 5.1% uptick from 2011. Zinc production reached 1.28 million mt a 2% rise. Silver production grew by 1.8% to 112 million oz. Lead grew to 249,000 mt, up 8%. The only major Peruvian commodities that saw their production decrease in 2012 were gold and tin.

Production activity in Peru follows a longstanding historical trend of international involvement. Regions of Peru have been known to be mineral-rich since pre-Incan times: the Moche and the Chavín civilizations possessed strong traditions of jewelry. In 17th century, under Spanish rule, Peru became one of the world's largest silver producers. In the past century, the wealth of many prominent American and European families, like that of William Randolph Hearst, was built on the country's resources. Though the industry underwent nationalization that stifled it until the 1990s, today Peru offers itself as an alluring investment destination for many multinational companies.

Few mining industries globally, in fact, can boast of the diversity in business that Peru offers. While North American investment, Canadian in particular, has been the source of capital for much of the industry, in recent years Peru has seen its investors broaden. Chief among those in Peru's new wave of investors has been Brazil, which expects to invest a total of $17.5 billion by 2020. Already Peru has strong Brazilian participation in the form of Vale's phosphate venture, Bayóvar, and steel-giant Gerdau through its Peruvian subsidiary SiderPeru. Peru's allure for Brazilian companies is its location: taking a stake in Peru means access to the Pacific, and through it, growth markets. To further capitalize off of this, Gerdau announced this past September that it will raise the production capacity of its domestic facilities fourfold through a $253 million investment.

Australia has also built a strong bridge to Peru – players like Ausenco and WorleyParsons have taken on an instructive role in Peru's development as a mining jurisdiction. Paul Murphy, senior Geotechnical engineer of Mining Plus, an Australian consultancy that recently setup shop in Peru, explained: "There are many shared issues between Australia and Peru. In Australia we have learnt that there can be mutually beneficial solutions to issues such as water rights and community relations. This entails changing mentalities. Mining companies can better utilize technology and apply well thought out planning so they do not infringe, but actually improve, community's access to essential resources and services."

Peru has also seen rising levels of Chinese participation. Jorge Barreda, managing partner of SinoLatin Capital, a Latin American-focused investment advisory that will soon raise money for its first Peru-focused fund, explained that China's dearth of mineral resources and its need to continue its industrialization process have fueled its interest in the country: "Britain had colonies to supply its demand for natural resources; the United States possesses a wealth of natural resources; China has neither... There is a strong interest on the part of Chinese investors to invest overseas. Much of China's wealth is invested in U.S. treasury bonds and now, many investors would like to protect themselves against the dollar. This has underscored investments in natural resources."

It is the country's lack of resource nationalism that has attracted such wide diversity of investment. Operating in Peru does not entail the same threat of nationalization of other Andean countries, like Bolivia or Ecuador. Peru's international credit ratings reflect this: in 2012, Moody's upgraded Peru, citing the country's "reduced susceptibility to political event risk" as chief among its reasons. For five years already Peru has been deemed investment grade. Those that have placed there money in the country have been handsomely rewarded. Peru boasted one of the best country-focused exchange traded funds last year, outperforming many commodity specific funds, like those focused on gold and copper, which had been a staple for investors in the industry.

The Risk of Political Indecision

The largest challenge that industry participants face is found on a social and political level. The Peruvian political attitude towards mining has shifted. Since his election in 2011, President Ollanta Humala has attempted to balance the interests of local political groups with those of businesses involved in resource extraction and, in the process, has made the country a less favorable destination for international investment capital in mining.

Humala's election resulted in a restructuring of political institutions as well as a rise in the importance of the local community in mine development. Under Humala, a Ministry of Development and Social Inclusion was established for the purpose of strengthening the nation's weak social development programs. A program was also initiated that would require the support of certain disenfranchised groups in future project developments. This initiative has since come to be known as *consulta previa*. Drill permitting was also devolved to regional governments.

The most direct consequence of this has been that delays in permitting, and thus project development, have become endemic to Peru. Harold Waller, president of Energold Peru, a Canadian drilling contractor, explained: "Companies now require almost three months for a permit to drill 20 holes, and the better part of a year for an unlimited number of platforms."

On a broader level, a second, more difficult-to-measure manifestation of this political struggle can be seen in the way in which economic policy has come to address those operating within the resource sector. Under Humala, the mining industry has been met with a heavier tax burden. Following Humala's election, the structure of the country's tax system, and, in particular, the structure of tax on the mining industry, has changed. In accordance with the constitution of Peru, the country's natural resources are legally deemed to be the property of the nation. Tax is exacted in three forms: corporate income tax, royalties, and concession rights. While previously mining companies had paid royalties of 1% to 3% depending upon the mineral focus of their business, businesses now pay royalties on a sliding-scale, ranging between 1% to 12% of operating profits, in addition to a windfall profit tax that is levied at a rate of between 2% and 8.4% of net profits during mining booms.

The most immediate implication of changes to the nation's tax code has been capital-outflow. In particular, alterations to capital gains tax have lessened Peru's attractiveness as a regional investment destination. Peru has a capital gains tax of 6.25% at a minimum, which extends to 30% for all profits made by foreigners. Meanwhile, Colombia and Chile offer tax exemptions that have led to greater liquidity and the promotion of retail trading. The current structure has proved problematic in the development of a regionally integrated stock exchange, the MILA, as a lack of harmonized transnational regulatory policies has erected several barriers to direct participation and generated investor confusion. This could bar the exchange from reaching the two- to three-fold increase in the country's $25 million trading volume that Francis Stenning, the CEO of the Lima Stock Exchange (the Bolsa de Valores de Lima, or BVL), targets. To solve this, a committee has been formed to address Peru's capital gains structure with the hope of passing a new form of the law through Congress by July.

Yet even in cases where the interests of local communities and mining companies are in agreement, political sentiment towards mining has been indecisive. No case better illustrates this than that of Bear Creek.

Bear Creek, a Peru-focused Canadian mining company, has seen the fate of its

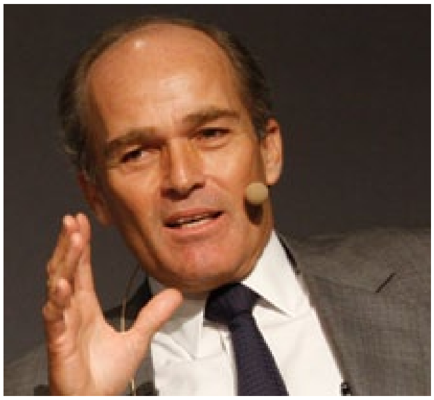
Santa Ana project fall subject to political uncertainty as a result of the activities of groups outside of the purview of its project. Located near Lake Titicaca and 50 km from the border with Bolivia, Santa Ana was perceived by communities in Puno, the region's capital, as having an impact on local water supply. Santa Ana is located in an entirely separate water-drainage basin from that of the communities of Puno; it is also a zero-discharge heap leach project. Understanding this, those communities that would be most directly impacted by the project, the communities of Santa Ana, had explicitly expressed their support for the project, explained Andrew Swarthout, CEO of Bear Creek. However, a series of protests by other communities within the region – communities, in fact, isolated from the project – resulted in the government overturning a Supreme Decree that it had initially issued in 2007 in support of the project (at the time, the Peruvian government had deemed Santa Ana a matter of national interest).

This cost Bear Creek 70% of its initial $800 million market capitalization. Andrew Swarthout said: "The market overreacted to the incident."

Today, the company continues operations in the country through its Corani project, a proposed silver mine, and continues to work with the Peruvian government to resolve the issues surrounding Santa Ana. While the company expects progression with Santa Ana, inarguably, the political treatment of the property has cost Bear Creek millions of dollars in lost capital and years of time that could have been spent developing the mine.

Changes in the political attitude towards the mining industry are symptomatic of a larger issue that the Peruvian government currently faces: balancing the country's economic development with the well being of interest groups. Although this has resulted in the forestallment of projects like Santa Ana and an attendant change in the way in which the sovereign risks of Peruvian mining are perceived internationally, the government nevertheless understands the importance of mining as an agent of economic development and will exercise restraint in constraining the industry further.

Roque Benavides, chairman and CEO of Buenaventura, the country's largest precious metals player, explained that the actions of the government will be checked by two factors: "One is the free-trade agreements, with their chapters in investment that have to be respected; the other is the investment-grade rating, which no president of Peru would like to lose."



Roque Benavides, chairman and CEO, Buenaventura.

This could mean a readjustment of certain policies that have interfered with industry development.

Yet even if the government retains its position towards the mining industry, Peru is not unique in its troubles – only in the way in which they have manifested themselves. Jorge Ganoza, president & CEO of Fortuna Silver provides a regional perspective: "Some people say Peru is risky, but all jurisdictions have challenges: for instance, in Chile you have energy and water constraints. Certainly in Peru dealing with the local authorities is challenging, but there is no easy jurisdiction anywhere. The reassuring thing in Peru is that the government has recognized mining as a key sector and will continue supporting it."

On what timeline this will occur, however, remains to be seen.

Familiarizing oneself upon entering the country with the appropriate regulatory agencies and their required processes is paramount to establishing oneself efficiently domestically. Humberto Salini, general manager of ASE, a leading archeological consultancy, said: "Upon entry into Peru, there are three areas that businesses must familiarize themselves with: the tax environment; the environmental requirements of their projects, and the archeological heritage of their prospective site. By understanding each of these areas, a business will minimize the difficulties it will face later on once their project has entered into development."

ASE's success as a business has been built on this. Part of a larger group that collectively also provides environmental impact assessment and consulting services, ASE currently advises over 20 mining businesses domestically and has worked on several of the country's largest infrastructure development projects, like the construction of the country's international highway system.

The protection of water and agricultural resources by mining operations is one of the key issues raised by local communities. Photo courtesy of Río Blanco.

Leo Tolstoy famously quipped that "happy families are all alike; every unhappy family is unhappy in its own way." The same could be said of the Peruvian mining industry. Successful industry participants have followed an almost formulaic approach to project management from the beginning of exploration through mine development by balancing the demands of external stakeholders, as onerous as they might be, with those of internal constituents. Every forestalled mining project has seen its problems develop uniquely.

To date, an estimated $7.5 billion in mining investments spread across 135 projects has been delayed as a result of the government's changing treatment of the mining industry. Of these delays, several projects like Minas Conga, Tía María, and Río Blanco, now hang in seemingly permanent regulatory limbo as their respective fates are decided. Minas Conga is a huge copper-gold project by Newmont Mining, the world's second largest gold producer, and Buenaventura; construction of the mine would cost $4.8 billion. The project has now been delayed for over a year. Río Blanco, in Chinese hands, is an investment valued at $1.44 billion while Tía María of Southern Copper is an investment estimated at $934 million.

There have been significant costs from the litigation associated with these delays. Zheng Li, CEO of Rio Blanco Copper, said: "Río Blanco has been mired in issues of community relations. In legal fees alone this matter has cost Río Blanco an average of approximately $190,000 USD per annum: last year we spent $200,000. Next year we expect to spend less: $100,000."

A project acquired by Zijin Mining Group of China in 2007, the current shareholders of Río Blanco entered into the property understanding the implications of the site's community-related issues. The size of the project's resource body made the decision justifiable. Zheng Li continued: "Río Blanco is a project of world-class potential, and certainly one of the last great resource bodies known in Peru. A copper molybdenum porphyry with a resource estimated at 1.2 billion mt of copper. When Rio Blanco enters into production we estimate that the mine will see throughput of 70,000 mt per day, or 25 million mt/y."

Rio Blanco has an expected mine life of 20 years. The firm plans to enter into production in 2020.

Yet even beyond mining, community relations now play a large role in project selection and development, even for industries outside of mining. Alexandre Jean Keisser, CEO of Enersur, one of Peru's largest power suppliers and a subsidiary of GDF Suez, furthers, that in the case of the domestic power industry, "problems arise from the speed of permitting and irrational local politics which make it much more difficult to construct projects than it used to be. Enersur has encountered certain issues, but our activities have generally remained stable. We run many community programs, but we have also decided to avoid certain areas altogether."

Alexandre Jean Keisser, CEO, Enersur.

While all rooted in the political atmosphere surrounding projects, community-related project delays are connected by four central themes and have been shaped by the interactions of three agencies: the state, the enterprise, and the community.

First, the way in which funds are tilled from mining projects and distributed among communities has been a point of contention. Private corporations have come to view regional governments as ineffective in the development of local infrastructure projects. Large-scale regional infrastructure projects have been slow to materialize, and when they have, their benefits have been unevenly split in favor of the development of resource-rich areas. Consequently, local

Andrew J. B. Carter, president and CEO, Tinka Resources.

communities in less resource rich areas have come to expect local mining companies to play a disproportionally great role in project development. Yet for mining companies, this is an impossible task.

Jorge Ganoza, president & CEO of Fortuna Silver, said: "Mining has a big impact in terms of the taxes collected by the government, but it is not a large employer if compared to other industries. Peru is a young country that is still in the process of formalization. One of the big problems we have is that many people in the Andes are completely out of the system and do not benefit from Peru's formal economic growth. You find many places where people still die of a bad cold. As mining companies we can contribute but the problem is so big, so historic and so deeply rooted that we cannot replace the State."

Andrew J.B. Carter, president and CEO of Tinka Resources, who are looking to develop a high grade bulk tonnage silver deposit at their Colquipucro property, said: "The larger problem that the Peruvian market faces is the financial burden that is placed on the mining community, in particular juniors who are not cash-rich, to pursue development initiatives that would otherwise be handled by the government. Many mining companies must assume the responsibilities associated with areas such as road creation and social improvement. While economically possible for larger companies, many junior exploration companies lack the resources required to take on this role."

Second, resource competition has resulted in project delays: one manifestation of this has been in water rights, while a second has been in informal mining. The former is exemplified in the delays surrounding Newmont and Buenaventura's Minas Conga, while the latter is illustrated by the clash in March between informal, or 'wildcat' miners, and Consorcio Minero Horizonte, the country's fifth largest gold producer, which led to the death of two.

Third, perceptions of the environmental impact of mining have shaped interactions between mining companies and local communities. Three factors have played into the way the environmental impact of Peruvian mining is perceived: the historical legacy of mine sites which were mismanaged in the past; misperceptions transferred to the formal industry by artisanal and illegal mining; and the introduction of environmental NGOs critical of the mining industry.

Tía María is a strong example of how the history of a site influences business' interactions with local communities. Alberto Butrón, director of Arequipa's regional department of energy and mines, said "In 1958, when Southern Copper started operations, environmental regulations and law were not in place; tailings were disposed of irresponsibly, polluting rivers and beaches. The historical legacy of the project as well as the subsequent failings of South-

Mining operations offer significant employment opportunities in their areas of influence. Photo courtesy of Buenaventura.

ern Copper to effectively engage the local community has caused Southern Copper to be perceived by some Peruvians as vain and untrustworthy."

At the time of Southern Copper's original involvement with the site, the company was in different hands. In 2005, the group became a subsidiary of Grupo México, but the legacy has proven difficult to shake.

Informal mining has also played a strong role in influencing local perceptions of the environmental impact of Peruvian mining. José de los Heros, CEO of Consorcio Minero Horizonte which operates in the gold-rich Pataz region explained: "Illegal mining is like the Wild West at its worst, with no rule of law and an appalling environmental impact; it influences unsophisticated public opinion, which does not distinguish between informal and formal mining, the former of which contributes heavily to the country's drug trade as well as damages the environment."

As Peru has become increasingly well known for the perceived environmental impact of its mining industry, non-governmental organizations have infiltrated local communities, exacerbating relations between companies and the communities which surround them.

These dynamics have shaped the regulatory framework of the Peruvian mining industry on a procedural level. While the political atmosphere that has accompanied these delays may change as a greater level of international pressure is put on the Peruvian Government – oil companies have recently declared force majeure to some avail at negotiations– changes to legislation may make delays in permitting more permanent.

Prior consultation, or consulta previa, a law that seeks to enfranchise marginalized groups of indigenous people, would, in its proposed form, allow for local communities to veto projects that are not deemed in compliance with the desires of local communities. An extension of the state movement to devolve the regulation of mining projects, prior consultation has already forestalled development on several of the industry's projects even though the law has yet to be implemented, as companies wait to see if the new rules will apply to them.

First Quantum Minerals, who entered the Peruvian market in 2010 through its acquisition of Antares Minerals, has seen the development of its Haquira project, a copper prospect, forestalled in anticipation of the passage of prior consultation. A lack of clarity surrounding the regulatory framework of consulta previa rooted in the Ministry of Energy and Mines and the Ministry of Culture's inability to come to a consensus as to whom the law might apply, has left First Quantum, in addition to several other mines seeking to enter development, unable to discern if their projects will be subject to the new legislation.

Primary school built by Minera Antares at the Haquira project in the Choccoyo Community. Photo courtesy of First Quantum Minerals.


Juan Díaz-Carreras, manager of commercial operations at MWH Peru.

Jorge Benavides Kolind-Hansen, manager of legal and governmental relations for First Quantum, said: "In June, Supreme Decree 020-2012 was passed. Additional authorization is now required to begin any activity, either exploration or extraction, for mining purposes. This process has yet to be fully implemented. The Ministry of Culture, one of the bodies governing the law's implementation, has yet to define what they consider to be indigenous communities. It is unclear on what timeline this will be resolved."

Aside from prior consultation, the creation of SENACE (Sistema Nacional de Certificación Ambiental para las Inversiones Sostenibles), the new regulatory body to govern many environmental services in Peru, has already delayed projects in anticipation of its introduction. Mike Parker, general manager of First Quantum, said: "SENACE may change the terms of reference for the EIA."

For First Quantum, who expects to begin construction on its Haquira copper prospect in 2016, this changed the development strategy. Mike Parker continued: "To preempt any additional delays, we have worked to make our EIA as adaptable as possible, rather than halting our project in anticipation of SENACE as many other companies have done."

The most immediate consequence of these social conflicts and their attendant reforms to public policy has been that money is being pulled out of the country. Peru's Sociedad Nacional de Minería, Petróleo y Energía (SNMPE) reported last September that as a result of anti-mining protests, a 33% drop in mining investments in 2013 is expected.

A second implication of these social conflicts has, however, been positive. Certain key issues within the mining industry, such as the environmental footprint of mining projects, have become more important and, as a result, mines that enter into development are giving more weight to the impact that their

Wilder Ruiz Conejo, chairman of JRC Ingeniería y Construcción.

project might have on external stakeholders, including local communities.

Juan Díaz-Carreras, manager of commercial operations at MWH Peru, a global leader in wet infrastructure and water engineering that handles environmental impact assessments and the design of tailings and waste-rock facilities, said: “We are beginning to see more companies move towards taking decisions in favor of more expensive but socially necessary solutions. It is harder for some people than others to accept the changes in the world – there are people who have been in the mining industry for a very long time and do not see why they cannot keep doing things the way they always have. Our job is to help them take a more holistic approach and recognize that certain decisions that initially seem to add to their expense for a project perhaps will not, and might actually be the reason the project has been able to go ahead.”

Hydrogeology and water treatment, two key areas of business for the firm, have been at the forefront of the debate on the impact of mining on local communities. In this debate, Chinalco’s Toromocho project rose to fame for electing to install a desalinization facility that would pump water over 100 km from the sea for use in its plant: a decision which many would deem uneconomic, but proved effective in preempting community backlash as a result of using scarce local water resources. For their service offerings, MWH Peru has experienced strong growth in recent years. In 2013 gross revenue for the firm stood at $54 million, a 20% uptick from the previous year, which was, in itself, a 20% growth from 2010. MWH’s clients include some of the industry’s largest players, like Freeport-McMoRan’s Cerro Verde, Xstrata’s Las Bambas, and Gold Fields.

Trust-building is now vital to the successful execution of projects in Peru. Juan Manuel Guillén Benavides, president of the Regional Government of Arequipa, the province in Peru that has boasted the highest 10-year growth rate, said: “Peru is a mining country and Arequipa is, if anything, a mining region, however, resentment and distrust have developed on the part of local communities to foreign investment.”

In resource exploration, companies have attempted to correct this by working directly with local communities. This approach has proven integral for Southern Legacy Minerals, a resource exploration company that inherited a slew of problems on Antikori, its principal concession, both a result of the project’s location in Cajamarca and its past owners. Fernando Pickmann, CEO of Southern Legacy and a partner at Gallo Barrios Pickmann Abogados, a mining-focused law firm said: “The communities neighboring Antikori had been demanding solutions to a number of local problems that the previous owners of the site had not addressed. In approaching our activities in the site, to remedy this, we went beyond simply asking permission to explore. We looked to directly tie the community’s development into the project site.”

One solution to this has been found: the enfranchisement of local communities in the development process. Within this, the localization of services, where possible, has proven effective in abating conflict with local communities. Wilder Ruiz Conejo, chairman of JRC Ingeniería y Construcción, a leading domestic contractor, said: “The mining industry has changed in recent years, as a result of both fluctuating metal prices and the increased importance of social and environmental concerns. With these changes we have seen an increased willingness on the part of mining companies to consider the often-strong offerings of local service providers. This has boded well for JRC. As a company we are fully capable of providing as comprehensive of a service offering as any international provider and offer the added advantage of being a local player.”

Involving local communities in environmental monitoring programs is commonplace is Peru. Photo courtesy of AQM Copper.

Production & Development

The View in 2013

Peruvian gold production decreased in 2012, but output increased in copper, silver, lead and zinc. Photo: Lagunas Norte operation, courtesy of Barrick.

Since 2011, the form of Peruvian mining has evolved. Projects have shifted in accordance with ore grades, political forces and market demand. For some players in the domestic mining industry, this has meant switching focus: certain commodities are no longer economically viable. For others, specifically explorers of minerals not typically associated with the Peruvian mining industry, their newly discovered resource bodies will likely become part of Peru's growth story.

Across the Peruvian mining industry, mines are facing increasing pressure on their cost structure. Gary Poole, president of Latin America for RungePincockMinarco (RPM Global), said: "Social issues are taken much more seriously than they used to be: an attendant increase in the level of requisite engineering detail has led to a dramatic rise in capital costs. Mines are located in more remote and difficult areas, characterized by complex mineral deposits and difficult infrastructure. In Peru, energy costs are currently half of what they are in Chile, but how long can this be maintained? Will companies receive easements to allow for power to be delivered to the site? Employees of large mining companies have also lost their jobs because of the level of overrun in capital project costs. The average capex overrun for large engineering projects in the industry over the last 30 years was 23%, but in recent years it has been closer to 50%."

Looking to optimize short-term returns, majors have invested in maximizing the value of what resources they already have in production. Emilio Zuñiga, vice-chairman of Latin Pacific Capital, a Peruvian investment bank focused on integrating Latin American energy investment, notes that: "The lead-time to get a project into production has expanded to double what it was 10 years ago. Even if the commodity price drops, and demand slows down, supply is very inelastic, because it takes 10 years to successfully get a project into production. Companies understand that the key to surviving the down cycle is to have very efficient operations, with low costs."

The most direct consequence is that a number of companies have enacted expansions, rather than pursuing new projects.

Gold

While Peru continues to sit comfortably as the world's sixth largest producer and Latin America's number one, the negative trend that afflicts the country's output since it reached a peak in 2007 (6.7 million oz) continues. Production in 2012 was 5.18 million oz, or 3% down year-on-year.

Yanacocha, the country's largest mine jointly-owned by Newmont (51.35%, operator) and Buenaventura (43.65%), closed the year with positive results as output was up from 2011's 1.29 million oz to 1.34 million oz. However, that cannot hide the downward trend of the last few years (this operation yielded 3.3 million oz in 2005).

2012 also saw the big setback of the suspension by the Peruvian government of the Minas Conga project, a $4.8 billion investment that would have added an average of 350,000 oz/y gold and 54,000 mt/y of copper over 19 years. Today, Conga continues to sit on the back burner. While the national government has claimed support for the project, this support has yet to manifest, leaving many to have serious doubts that the project will ever go ahead, even if the operator builds reservoirs to appease concerns about local water resources among the communities. Meanwhile, Gregorio Santos, the regional president of the Cajamarca region and one of the main anti-Conga leaders, is preparing his campaign for the 2016 presidential election.

Roque Benavides, chairman and CEO of Buenaventura, said: "If Conga does not go ahead, production in Yanacocha will continue to go down. The life of the mine will depend on a number of factors, such as how aggressive we are in exploring the oxides, and also going underground where there is a lot of potential and grades are higher".

Newmont, operator of the mine, is said to be less comfortable with underground mining however.

Buenaventura is the country's main gold producer, adding 446,000 oz/y from its other operations to its share of Yanacocha's 587,000 oz/y last year. Estimates for 2013 place its gold production below the 1 million oz/y mark due to a significant decrease from Yanacocha, even if the operations it manages will perform better. In the last three years, Buenaventura has added three new gold mines to its portfolio: La Zanja (53.76%-owned), Tantahuatay (40.04%) and Breapampa (100%).

The other main producers in Peru are, on the international front: Barrick (754,000 oz in 2012 from its Lagunas Norte operation at $318 per oz, plus 110,000 oz/y from Pierina), Rio Alto Mining (201,000 oz/y from La Arena) and Gold Fields (177,000 oz/y from Cerro Corona). National groups include the three mines owned by Guido del Castillo (for a total 330,000 oz/y), Consorcio Minero Horizonte (184,000 oz/y), Retamas (175,000 oz/y), Comarsa (160,000 oz/y) and Compañía Minera Poderosa (127,000 oz/y).

Alex Black, president & CEO of Rio Alto.

Rio Alto Mining is the latest success-case in the junior gold spectrum. Listed in 2009 in both Toronto and Lima, the company has joined the ranks of Peru's main gold producers virtually overnight, and completed a $30 million expansion in late 2012 to 36,000 mt per day of processing capacity. Alex Black, president & CEO of Rio Alto, said that the company has reached the level where it can move to the next stage at La Arena: "Our gold oxide production will probably remain at about 200,000 oz/y. Adjacent to the oxide, we have a sulphide deposit of copper and gold. This mine should start production by 2016. For phase II we intend to be fully funded through cashflow. As we have developed phase I, we will start small, and our targeted initial Capex will be between $200 and $300 million. Putting together all these components, I can easily foresee La Arena producing for the next 20 years or more."

In Cajamarca, Gold Fields continues production at its Cerro Corona gold-copper operation, where gold equivalent production fell 11% last year to 342,000 oz/y, and is expected to decrease again this year to 270-280,000 oz/y gold equivalent (Au eq.) Cash costs are significantly increasing, from $437/oz in 2011 to $600/oz this year, but the company assures the fundamentals of the operation remain strong, with 18 years of minelife remaining and the possibility to fully complete the 5-year payback on capex this year.

The South African company's other main asset, the Chucapaca project, (jointly-owned with Buenaventura) has been downgraded to an exploration/scoping stage, after the final feasibility study last year provided unfavorable economics.

Consorcio Minero Horizonte, a private Peruvian company with a long history producing gold in La Libertad, is trying to increase efficiency in an area that has terrible infrastructure, even though it is a historic gold district. The Parcoy underground mine, with average grade of 12 g/mt, is operating at full capacity and is now fully mechanized. José de los Heros, CEO of CMH, said the company is evaluating a four-year expansion program to go beyond 900 meters depth.

The Pataz batholith in La Libertad is the area where the gold used as ransom to release Inca emperor Atahualpa from the Spanish is said to have come from. The area hosts the operations of Aurífera Santa Rosa (Comarsa), a company owned by the Sánchez-Paredes family, and Compañía Minera Poderosa, a firm founded by Jesús Arias Dávila, the late patriarch of a long-running mining family, currently listed on the Lima Stock Exchange.

Poderosa, whose chairman Eva Arias currently presides the SNMPE, the association grouping Peru's mining players, increased output from 115,000 oz/y in 2011 to 127,000 last year, with ore coming from several underground mining units of its own as well as from formalized artisanal miners. The company aims to expand production, mainly through the Suyabamba project, which should produce 60,000 oz gold annually in 3-4 years time, provided that the environmental impact assessment and the community agreements are in place, according to Marcelo Santillana, Poderosa's general manager.

Other potential projects in the 84,000 hectares that Poderosa controls in the Pataz batholith include Montañitas and Misquichilca. The company is also working on a $100 million hydroelectric project, in order to support the energy needs of future mining operations.

Minera IRL, a gold producer since 2008 at the Corihuarmi mine (27,000 oz in 2012), is preparing to become a mid-tier producer with the development of Ollachea, its flagship project. The company is also developing a mine in Argentina called Don Nicolás. While Corihuarmi is expected to shut down in 2015, Don Nicolás (expected to start production in 2014) and Ollachea (2015) will become the backbone of the company in the medium term.

The feasibility study at Ollachea, located in the Puno area, contemplates production of 113,000 oz gold annually at full capacity during an initial 9-year minelife. Uniquely, the company has granted the local communities a 5% stake in the project, and has signed a 30-year agreement for project development. Courtney Chamberlain, chairman and CEO, Minera IRL, said: "I have been involved in many projects throughout my career and nothing goes the way you expected; but for Ollachea we have pretty much stuck to our schedule."

Chamberlain underlined the importance of having cashflow from Corihuarmi to develop new projects at times of tight financing conditions.

Silver

While Peru's growth prospects in gold do not seem very positive, in silver the picture is quite different, even if the country lost the world's top ranking to Mexico in 2010 and now ranks third after China according to USGS estimates. Last year production increased slightly to reach short of 112 million oz/y countrywide, and is expected to take an upward trend for the next three to four years.

As elsewhere, a big chunk of silver production came from non-primary silver operations. Indeed, the country's largest silver player with 22 million oz/y in 2012 is Volcan, a company typically portrayed as a base metals player. Antamina, one of the world's largest zinc and copper mines, also has sizeable silver production, reaching 13.3 million oz/y in 2012. As Peru embarks on the development of more large copper deposits, the production of silver as a by-product should increase significantly. Some copper projects with silver content include Xstrata's Antapaccay and Las Bambas (the former is already in production); Chinalco's Toromocho; and Hudbay Minerals' Constancia.

With regard to Volcan, also one of the leading zinc producers worldwide, the company announced its aim is to expand silver production to 30 million oz/y by 2014, upon the completion of three investment projects: the expansion of the Chungar unit to 5,200 mt/d, a new oxides plant in Cerro de Pasco, and the start-up of the Alpamarga-Río Pallanga unit.

Meanwhile Buenaventura closed last year with silver production of 18.3 million oz/y (+13%) and is expecting to reach 19 million oz/y this year. The increase comes mainly from the recent startup of Mallay, which yields nearly 1 million oz/y.

Together with Mexico and Argentina, Peru is an obvious destination for primary silver companies. Producers active in Peru include Hochschild Mining, Pan American Silver and, on a smaller scale, Fortuna Silver.

Hochschild produced 13.4 million ounces of silver last year (10.4 million attributable) from its Arcata, Pallancata and Moris mines, the latter of which is in closure mode. Moving forwards, the company is developing new assets in the country, namely Inmaculada (which is 40%-owned by partners International Minerals), Crespo and, at a less advanced stage, Azuca. Ignacio Bustamante, CEO of Hochschild, gave details about the former: "Inmaculada has

Steve Busby, COO, Pan American Silver.

potential to become Hochschild's most important mine. Before starting the operation, it already has 150 million oz of silver. To put things in perspective, when Pallancata, our main operation, entered production, it had 50 million oz. Inmaculada is truly a mining district."

The process plant at Inmaculada's $370 million project will have a capacity of 3,500 mt per day to become Hochschild's largest.

Like Buenaventura, Hochschild has also made a big bet on exploration with $95 million spent company-wide last year. "Many investors are used to a minelife of 20-25 years in big open-pit deposits, and perhaps do not understand underground mining very well. As an example, Arcata has been in operation for 50 years, always with three years of remaining reserves," said Bustamante.

As a result of exploration expenditures, Hochschild's average mine life has increased to 10 years. In 2012 the company even took the innovative approach of trying to increase the grade rather than the volume of the reserves, which translated into a 30% increase in grade in the Peruvian operations.

"The effort in exploration responds to a triple need: first, to generate confidence in the marketplace. Second, to improve planning with the acquired knowledge of the deposits. Third, having a longer mine life, it is easier to attract and retain talent," Bustamante concluded.

The other main player in the primary silver spectrum in Peru is Vancouver-based Pan American Silver, which produced a company record of 25.1 million oz globally in 2012, out of which over 5 million oz came from Peru. The latter figure includes output from its two main units in the country, Huarón and Morococha, as well as 300,000 oz from Quiruvilca, which the company divested in June 2012. "The sale of Quiruvilca was a bittersweet milestone. It was a very substantial part of our business since the early days of the company. We found out that the silver deposit had largely been mined out; there was still base metal content and a fair amount of copper potential, but the asset no longer fit the portfolio of a primary silver producer like us," said Steve Busby, COO, Pan American Silver.

Jorge Ugarte, general manager of Pan American Silver in Peru, stressed the importance of quality. "Production levels must increase, but we need to maintain quality. That is achieved through exploration and efficiency. In one of our mines we are going back to having 95% of own workers, when before 50% of the workforce consisted of contractors. This allows us to have better control over the operation and over safety."

Regarding safety, Busby provided more details about Pan American's operations in Peru: "These are narrow-veined deep underground mines, and are highly labor intensive. We have been bringing in safer mining practices with modern-day ground-support systems and we increasingly use more mechanized mining, with scoops, loaders and drills. We have had tremendous success over the last two years in improving the safety of our mines in Peru. More recently, in 2011, we launched a DNV program to train and develop our front-line supervisors,

which has resulted in tremendous improvements in our safety practices."

Other players in the silver spectrum include Fortuna Silver, which produces 2.1 million oz/y from its Caylloma mine on top of significant lead and zinc. Looking at project development, notable projects include Silver Standard, with its San Luis project, and Bear Creek Mining with Corani.

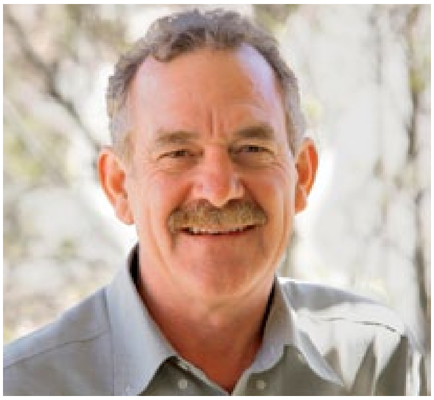
John Smith, CEO of Silver Standard, a company with silver production in Argentina, gave more details about San Luis, a project where the land agreements with the communities are proving lengthy to obtain: "The San Luis project is very good from a geological point of view: it is an epithermal system with lots of veins. San Luis consists of the Ayelén vein, which outcrops at surface. It is a very rich project, with grades at 25 g/mt of gold and 590 g/mt of silver. The plant will process about 400 mt per day for 3.5 years. It is not a large project in itself, at $100 million to build, but it is of great value for us; it is more about what it unlocks in the area," he said.

Copper

Peru's copper production grew from 1.24 million mt/y in 2011 to 1.30 millon mt/y in 2012, or at a rate of 5.12% year-on-year. Growth is speculated to intensify over the course of the next three years, as the industry hopes to counteract declining metal prices by increasing production by 75% to 2.15 million mt/y by 2015. This would fortify the country's position as one of the leading producers of the ore – Peru contains an estimated 12% of the world's copper reserves – yet still leave Peru's production far behind global leader and neighbor, Chile, which, at present, produces 5.24 million mt/y of the red ore annually.

Copper production in Peru continues to be dominated by multinational firms who have the requisite capital to stomach the multi-billion dollar investment required to bring a copper mine into production. These investments, while unlikely to lead Peru to topple Chile as the world's largest producer of copper, will significantly expand Peru's output, leading the country to perhaps distance itself from other nations, like the US, China and Australia, which in recent years have occupied the positions of the world's third, fourth, and fifth largest producers of copper.

Among Peru's largest operations, Antamina, the world's eighth largest copper mine, maintained its title of the nation's largest copper-producing mine. Production at the mine rose from 347,000 mt/y in 2011 to 463,000 mt/y in 2012, after realizing in-



Bruce Clements, president of Sociedad Minera Cerro Verde (SMCV).

creased production capacity as a result of the finalization of its mine expansion. In 2008, the company unveiled a 77% increase in its mineral reserves.

This was followed by a $1.29 billion investment in increasing the ore-processing index of the mine by 38%, or from 94,000 to 130,000 mt of ore per day. This was completed in the first quarter of 2012. The mine expects to continue to produce more than 450,000 mt/y of copper in 2013. Antamina sits on a polymetalic ore body, containing copper, zinc, molybdenum, silver, and lead. Following the expansion, the expected life of the mine was extended from 2023 to 2029. Antamina is joint venture between BHP Billiton (33.75%), Xstrata (33.75%), Teck (22.5%), and Mitsubishi Corp. (10%).

Freeport-McMoRan has also embarked on an expansion of its Cerro Verde mine that looks to significantly boost production capacity. Currently the country's second largest copper-producing mine, Cerro Verde produced 279,000 mt/y in 2012, split between the mine's concentrator and electrowinning leaching facilities. The new, $4.4 billion expansion is estimated to take annual production up to over 450,000 mt/y, making Cerro Verde one of the world's largest concentrating complexes.

The decision to expand was rooted in the economics behind operating a larger scale mine. Bruce Clements, president of Sociedad Minera Cerro Verde (SMCV), explained: "The crushed leach and run-of-mine ore reserves will soon be depleted, but the mill ore reserves amount to 3,992 million mt. At the 120,000 mt/day concentrator production capacity, the current mill ore reserves would support a mine life of approximately 90 years. Cerro Verde also has an additional 595 million mt of mineralized material that could be brought into production should market conditions warrant. The large size of this deposit will support a significantly higher production rate that results in improved economics. The expected mine life with the existing reserves is more than 30 years with the expanded production rate, which can be extended with the possible identification of additional reserves."

Southern Peru Copper also remains a strong player within the country's copper space. Between its five mine sites currently in production—Cuajone, Toquepala, Simarrona, Totoral, and Cocotea—Southern Copper produced 311,000 mt/y in 2012, the bulk of this coming from Cuajone. Should Tía María, the company's forestalled copper project in the south of Peru, enter into development, this number would likely rise by 120,000 mt/y. In addition to Southern Copper's mining facilities, the company also controls the Ilo Smelter, Peru's only copper smelter. Last year Ilo processed 204,000 mt of copper ore.

Collectively, Antamina, Cerro Verde, and Southern Copper made up over 85% of Peru's copper production in 2012: a number reflecting an exceptionally consolidated year. This was in part influenced by resource depletion on historic mine sites, like Xstrata's Tintaya. From 2011 to 2012, production at Tintaya fell by 48%. Be this

Ball mill located in the Cerro Verde concentrator plant. Photo courtesy of Cerro Verde.

as it may, a multitude of projects entering into the development pipeline are posed to change the face of the industry. Xstrata is chief among those companies that will play a more important role. The company has two large projects that will contribute to this: Antappacay, which is expected to boost total production by 143,000 mt/y, and Las Bambas, which is estimated to produce 315,000 mt/y. While Xstrata will retain Antappacay following its merger with Glencore, Las Bambas' fate is uncertain. As a caveat for the approval of the $64 billion merger by China's regulatory commission, Las Bambas will have to be sold prior to the completion of the deal.

Chinalco also ranks among these companies with Toromocho, a project many view as an example of the future of Peruvian mining. Developed by the Aluminum Corporation of China (Chinalco), Toromocho is pegged to be the fifth largest investment in copper that has been made to date in Peru, following behind Newmont's Minas Conga (gold-copper), a $4.8 billion investment; Xstrata's Las Bambas, a $4.2 billion investment; Anglo American's Quellaveco, a $3 billion investment; and China Minmetals' Galeno, a $2.5 billion investment. While large, what makes Toromocho an exceptional project is not the size of the investment or its projected production – at 210,000 mt/y, it is far smaller than the 400,000 mt/y Xstrata expects Las Bambas to produce in its first years of operation – but rather the way in which development has been approached. At a time when community relations have been the bane of many larger projects like Minas Conga, Chinalco has executed the most massive relocation initiative in the history of Peruvian mining and done so in spite of a mixed perception of Chinese businesses existing within the Peruvian market. Chinalco is currently finalizing the relocation of 5,000 people from Morococha, a town near the planned mine pit, to a new town which the company has created to house all relocated residents.

First Quantum Minerals is also poised to change the industry's prospects. A property with an ore body estimated at 5 million mt of contained copper, Haquira looks to begin construction on the site in 2016. The firm's acquisition of Inmet, a Canadian-based zinc and copper producer with several exploration prospects in Peru, could mean even broader exposure to Peruvian copper. The key driver of the acquisition was Inmet's possession of Cobre Panama, a copper project located in Panama that is speculated to be one of the largest copper deposits in Latin America.

Christopher Herald, CEO, Solitario Exploration.

Previously absent from the market, Rio Tinto will also be strongly positioned within Peruvian copper should their La Granja project enter into development. A 3.6 to 3.7 billion mt low-grade copper (0.51%) ore body, La Granja was acquired by Rio Tinto in 2006. The firm believes La Granja to have enormous potential. Ian Woods, general manager of Rio Tinto's Peruvian operations, said: "We believe La Granja to be the largest undeveloped copper resource in Latin America, with the potential to sustain a very large mine development in the future: up to 500,000 mt/y of copper for anywhere between 30 and 50 years."

Julcani, Buenaventura's first mine, in operation since 1953. Photo courtesy of Buenaventura.

Hochschild is the country's largest primary silver producer. Photo shows Pallancata camp, courtesy of Hochschild.

Currently engaged in pre-feasibility studies for the mine, the firm has taken a slower approach to development, citing the importance of balancing social concerns with those of the business. Ian Woods continued: "Rio Tinto's strategy is to conduct a phased development of the mine, beginning as a moderate-sized mine and developing sustainably after that. Such a strategy will allow us to manage our entry into Peru and also receive community acceptance. Our target is to enter into production by the end of 2017."

Peru's potential as a global copper producer – as strong as its current position might be – is still largely latent. Of the 2.7 billion mt/y that some expect will be added to the industry by 2021, Hudbay's Constancia will be among the first to enter into production. Constancia, with approved environmental- and social-impact assessments and an indicated resource body of 3.7 million mt of measured and indicated copper reserves, has now entered into development and is expected to contribute an estimated 100,000 mt to Peru's production.

Zinc and Lead: Higher-Density Production

Peruvian production of zinc and lead grew in 2012. According to the U.S. Geological Survey, Peru is now the third largest producer of zinc globally, while it is the fifth for lead. Zinc production rose by 2%, from 1.25 million mt/y in 2011 to 1.28 million mt/y in 2012. Lead production grew by 8% from 2011 until 2012, increasing from 230,000 mt/y in 2011 to 249,000 mt/y in 2012.

In zinc, the productivity of the industry's two largest mines was offset by declines on the part of other producers. In 2012, Antamina remained the single largest domestic producer of the mineral: a title unchanged from the previous year. In addition to its accolades in copper, Antamina is also the world's third largest producer of zinc. A polymetallic resource, which produces copper, zinc, molybdenum, silver and lead, produced 269,989 mt of zinc in 2012, only slightly less than the 270,457 mt it produced in 2011. Minera Milpo, a subsidiary of Brazilian Votorantim Metais, saw production rise by 15% between 2011 and 2012 to 186,000 mt/y. Minera Volcan, a domestic company and one the industry's leading producers of silver, zinc, and lead, produced 157,605 mt/y in 2012, 5% less than in previous years. Glencore's Minera Quenuales, however, experienced a decline of 23% between 2011 and 2012. Production at the mine fell to 112,000 mt/y from 146,000 mt/y.

Aside from mines in production, Votorantim's other assets in the country make it one of the industry's strongest players. The firm has large-scale operations in Peru through its Cajamarquilla zinc refinery, among the world's largest of its kind, and through the partnerships that it has developed domestically, such as with Solitario Explorations. In conjunction with Votorantim, Solitario Exploration has the Bongara zinc project: "One of the largest undeveloped zinc projects in the world," said CEO, Christopher Herald.

Production of zinc, which has a broad array of uses ranging from galvanization to the creation of alloys, brass, and bronze, has been underscored by poor macroeconomic conditions over the course of the past five years. Prices for the commodity reached a low in 2009 of less than \$0.50/lb, a fall from the \$2/lb highs seen in 2005, and a level which the commodity has yet to return to but also has yet to fully recover from.

This has not discouraged some from expanding production. Zinc is a volume game and operates on thin margins; greater production volumes have allowed businesses to maintain profitability. Isabel Arias, vice-president of SIMSA, a family-run mining business that first entered into zinc production 44 years ago through its Mina San Vicente, explained: "After production reached an all time low in 2011, volumes rose in 2012 to 62,000 mt/y; they are projected to rise again in 2013, to 77,000 mt/y."

This was made possible by a loan of $20 million to the company by Korea Zinc Co. and Trafigura Beheer BV, which the company received in March of 2012.

The more immediate effect that zinc pricing has had on the industry is found in resource exploration. One company to exit the zinc market has been Vena Resources, a polymetalic resource exploration company currently working to build up the resource of Esquilache, a polymetalic resource with strong silver potential. Prior to focusing on Esquilache, Vena had been largely focused on the exploration of uranium, in which the company still owns assets, and zinc, through an additional property, Azulcocha. A global downturn in the pricing of both elements spurred the company to consolidate its development. Juan Vegarra, chairman & CEO of Vena Resources, said: "While we anticipated a downturn in the global uranium market following Fukushima in Japan, we expected a zinc price that would make one of our projects, Azulcocha, economically viable. Unfortunately due to the global economic downturn this did not happen, so to avoid going further into debt on the Azulcocha project, we made the painful decision to sell Azulcocha so we could refocus the company on other projects, like Esquilache."

Uranium remains a commodity still on the fringe of Peruvian resource explorers' activities. Among them, Macusani Yellowcake has the largest domestic claim, estimated at over 4 million mt indiciated and nearly 8 million mt inferred uranium resource.

For zinc, Trevali Mining Corp., a zinc-focused base metals development business, sees hope in the prospects that the coming years might bring. Paul Keller, COO of Trevali, said: "While zinc fluctuated in value in recent years, we believe that the forthcoming shrinkage in supply caused by several of the industry's largest mines coming offline will out-value a drop in demand. We could see prices rise to more than $1/lb." Trevali Resources is on the verge of entering production with the rehabilitation of the historic Santander mine, which has zinc, lead and silver mineralization and looks to be commissioned in the second quarter of 2013.

Comparatively, lead pricing has shown stability over the course of the past two years. While this has not necessarily transferred into exploration activity – lead, commonly found in association with zinc, silver, or copper deposits, remains the unexpected, but not unwanted child of mining activity – the macroeconomic climate surrounding its production has not collapsed like that of other metals, leading it to, in fact, be a stronger relative contributor to profitability than in previous years. Over the course of the past year, lead prices have hovered at around $1/lb: over double its five-year low of $0.40/lb.

This has boded well for the profitability of Volcan, the leading miner of lead, which, although observing a decline in production in seven of its 10 lead-producing mines, managed to increase production by 13%, from a collective 29,000 mt/y to 32,600 mt/y.

Production gains on the part of the remainder of the industry's 10 largest producers – all small- to medium-sized companies with annual production values of over 10,000 mt – offset the almost unanimous declines in production experienced by the rest of the industry's participants. Ignoring the windfall generated by the stability of lead prices, many of the industry's smallest producers exited production in 2012.

Resource Exploration

Not for the Developmentally Challenged.

Drilling at Ayawilca. Photo courtesy of Tinka Resources.

In spite of the current state of global financial markets and local attitudes towards resource exploration, activities did not slow in 2012. Globally, the spending on resource exploration continued to grow in 2012, topping $20 billion for nonferrous metals.

Latin America remained the single most popular destination for resource exploration, with Peru taking an estimated 5% of the aggregate global budget for nonferrous resource exploration, according to SNL Metals Economics Group.This was spread across the activities of majors, mid-tier and junior companies. In 2012, the Peruvian government granted 582 companies 4,668 mining concessions. Among those present on the list of recipients were BHP Billiton, which received 144 licenses, and Barrick, which received 84.

Peru's attraction is that the economic fundamentals of resource exploration are strong. This is, in part, attributable to the country's geology. Marc Blais, COO of Sunset Cove Mining, a silver-focused resource exploration company explained: "In Peru many structures are outcroppings, allowing exploration to advance quickly and cheaply."

This aids companies in property selection. Less time can be spent on properties that do not show potential. Peruvian juniors are further aided by the pricing dynamics of the local market; exploration costs in Peru are not as front-loaded as in many other global markets. Peru has among the least expensive drilling rates globally – although this has come at a cost to both the segment and its consumers. José Antonio Fernández, CEO of Coretech, a diamond drill contractor supplier, said: "Drilling rates have, if anything, decreased since 1994. Drilling companies here pay very low salaries because local mining companies are happy to employ cheap mechanics to do the work. Consequently, the best talent in the industry has been exported to countries like Canada and Suriname where pay is higher. These small groups do not have the same standards of other drilling contractors operating in Peru: they do not take a long-term view on the market, they do not pay due attention to safety."

A result of this, later-stage studies tend to be the most capital-intensive part of the development process.

A healthy level of diversity exists in the activities of Peruvian resource explorers. While gold and traditional Peruvian base metals like copper remained the single-largest attractor of exploration funding, commodities less commonly associated with the domestic market, like iron, has also allured prospectors.

Gold

The success of several industry participants in establishing highly profitable gold mines in a relatively short period of time has drawn resource explorers in droves. Rio Alto is the most obvious example of a company whose success has defined the way in which Peruvian gold prospectors view the prospects of the domestic market as a result of the success of both its local fundraising and the ease it experienced in entering into production.

Among those seeking to emulate Rio Alto's success is Darwin Resources. Suriloma, the company's flagship property, falls within

The junior segment of the BVL already counts 19 exploration companies. Photo courtesy of BVL.

the same geographical area as Rio Alto's La Arena. Currently conducting drilling on Suriloma, the company believes its prospect to be mineralized similarly to La Arena as well. Graham Carman, CEO of Darwin Resources, explained: "We view the project at this early stage to have potential for a simple oxide gold operation. This straightforwardness is part of its appeal."

Darwin hopes to come up with an initial resource estimate by the end of the year, following which it will make a production decision.

At a time when financing has become so onerous, partnerships have been the lifeblood of many juniors. For Lupaka Gold, this has made all the difference. Following a listing, Lupaka Gold reached a turning point in mid-2012 when it had to consider a second round of financing after spending the bulk of its money on the acquisition and exploration of its principal property, Crucero, a gold mine with an estimated resource body of 1,800,000 oz. Eric Edwards, CEO of Lupaka Gold, said: "We were faced with a couple of options: we needed to raise funds, or we needed to find a strategic acquisition that made sense."

In fall 2012, Lupaka Gold completed an acquisition of Andean American, a company listed on the BVL, citing the company's cash, Peru-based gold assets, and large retail shareholder base as key reasons for the merger.

While at present a multitude of gold-focused resource exploration companies exist within the domestic market, those that are able to differentiate themselves show the strongest prospects in reaching development. The tale of Dynacor is didactic.

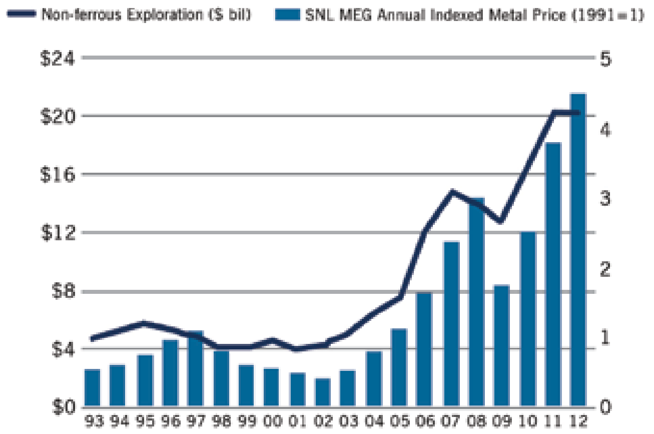
A resource exploration company, Dynacor initially entered into the market through its gold and silver ore processing facilities. With the strong presence of informal mining domestically, Peru was a natural fit for a model wherein a company like Dynacor would process the ore provided by small-scale or artisanal miners, trade it on the open market, and then use the capital to fund exploration. Dynacor established itself in 1996. In tandem with increases in gold price, Dynacor has expanded production capacity in recent years. To be completed by the end of 2013, the firm is in the process of expanding the capacity of its mill to 450 mt/day. The proceeds from this mill will be used to finance exploration on the firm's Tumipampa property, a site with a high-grade gold bearing surface vein structure with ore grades averaging between 5 g/mt to 7 g/mt. Listed on the TSX, Dynacor has used this model to finance itself with minimal dilution.

Copper

Although financial markets have shifted significantly over the course of the past several years, the economic potential of certain projects – and markets – has not. Copper-gold porphyries remain quite literally the gold standard of the industry and Peru remains one of the best locations in which to find one.

Among those that have sought out the elusive copper-gold porphyry and returned successfully is Rokmaster Resources. A company with two projects globally, the other in Canada, Rokmaster Resources entered Peru through its acquisition of AM Gold's Pinaya in 2012. Pinaya, a project with 2.1 million oz of Au eq. and a deposit value split nearly evenly between gold and copper, is situated within Andahuaylas-Yauri porphyry copper-gold belt, a region well-known for its mineral wealth. The project's neighbors include Xstrata's Tintaya mine, as well as

Estimated global non-ferrous exploration budget totals



Source: SNL Metals Economics Group

five other copper projects currently in development. While in the process of applying for drilling permits that will allow the company to explore on 18 platforms, Rokmaster hopes to soon begin a second drilling campaign that would target 10,000 meters on the site, allowing the company to better understand the resource.

Companies in the copper space of the domestic market have found their confidence in their prospects reaffirmed by the success of past resource exploration companies, like Hudbay's acquisition of Constancia. For the success of Constancia, former president and COO of Norsemont, Bob Baxter has returned to Peru as CEO of another resource exploration company, Indico Resources: a copper-focused venture with two projects in Peru, Ocaña and Maria Reyna. On Ocaña, the company has two targets: "A supergene copper project and an underlying, very large, copper-gold-molybdenum sulphide deposit," said Baxter. Progress on the site in 2012 has been substantial and looks to continue in 2013.

Announced in October of this year, the company's Maria Reyna project also shows strong potential. Baxter continued: "Maria Reyna is a property in excess of 3,000 hectares, located 100 km south of Cusco and 8 km to the north of Hudbay's Constancia Cu-Mo-Ag project. Maria Reyna holds strong potential in that it has potentially large deposits of copper and molybdenum. The concessions at Maria Reyna are mineral-rich, and we believe there are two large alteration systems that could produce copper and gold."

Other juniors currently focused on the copper segment of the market are AQM Copper and Alturas Minerals. AQM Copper is working at the Zafranal project in a 50-50 joint venture with Teck. The company released a PEA late last year that contemplated an economic pit to exploit 425.3 million mt containing 3.5 billion pounds of copper and 977,000 ounces of gold, for a minelife of 15 years at a processing rate of 80,000 mt/d. However AQM Copper's CEO Bruce Turner declared that the company is already working on a revision of this PEA in order to lower the concentrator throughput to 40,000 mt/d, due to the difficulties of the sector to finance projects with large initial capital expenditures.

At a much earlier stage, Alturas Minerals, led by president & CEO Miguel Cardozo, is advancing its Chapi Chapi property in the Apurimac belt. With a system of 4.5 by 2.5 km containing copper and gold mineralizations, the company hopes to proceed with a drilling campaign of 10,000 meters that should define the inferred resources of the site, and potentially extend the project towards the northern part of the property.

Silver

Following in Peru's strong tradition of silver production, resource exploration for the metal has continued in 2012. Tinka Resources has been at the forefront of this with Colquipucro, a historic mining site with activity dating back to the Spanish colonial era, located in Cerro de Pasco. Previously mined by Buenaventura, Tinka acquired the property in 2005, since then the firm has executed several drilling campaigns to expand the size of the site's resource. Their findings as to the structure of the site's mineralization have been unique. Andrew J.B. Carter, president and CEO of Tinka Resources said: "We discovered that between the high grade veins of silver on the site lay a large bulk tonnage silver deposit hosted by sandstone. Colquipucro (Zone 1) is believed to be the first of its kind in Peru."

This is coupled with the resource's strong metallurgy. Initial leaching on the site has revealed a recovery rate of 97%.

Colquipucro is only one of two principal sites on which Tinka Resources is exploring. Ayawilca, also located in Cerro de Pasco – and, in fact, less than 1.5 km from Colquipucro – was the focus of near-surface silver exploration in 2011. In its latest drilling campaign and upon testing the site's anomalies' at greater depth, Tinka discovered rich sulphide mineralization that bore large quantities of zinc over a strike length of 0.6 km.

A second silver project that has received much attention on the part of investors is Bear Creek's Corani. Forced to refocus following the loss of their right to operate on Santa Ana, Bear Creek put its efforts behind Corani, a project that now represents 80% of the company's asset value. Currently pending an environmental impact assessment that many expect will be approved by Q4 2013, should Corani enter into production in 2015 as the company expects, Bear Creek believes that the project will produce 13.5 million oz/y of silver. Although the mine is estimated to require $650 million to bring to development, production itself is likely to be highly profitable. Corani is a polymetallic resource, containing an estimated 1.85 billion mt of lead and zinc aside from its silver resource. Andrew Swarthout, CEO of Bear Creek explained the implications of this: "By virtue of the lead and zinc credits, the cash costs for these first five years are less than $0.50/oz of silver on a by-product basis. This means we would end up with a capital payback of less than three years as a result of very strong financial performance in the first years."

Corani's lead and zinc may also provide a path to development. Swarthout continued: "Corani will produce 50,000-70,000 mt/y of lead and zinc concentrate beginning in 2015, when the world supply of both concentrates is going to be constrained. We have seen significant interest in off-take agreements for lead and zinc, in particular from Asia and Europe, and we think that more than 40% of necessary capital can be addressed using off-take agreements. We can probably keep the equity down to between 30% and 40% on this project, and we think our share price will certainly reflect the de-risking of the project."

Iron Ore

Activity in iron ore has been on the rise. Although Peru is not completely unknown for iron ore production – Shougang Hierro, a private Chinese company long notorious for mismanagement runs the sole iron ore mine in Peru – several factors are making Peru an increasingly viable destination for iron ore.

Updated resource estimates are proving that Peru has large-scale endowments of iron ore. Cuervo Resources, a resource exploration company focused on identifying the country's iron ore belt, announced in a recent press release that the magnetite mineralization potential for their principal concession has increased to 2.4 billion mt. A deposit of this size would debase what have been the traditional arguments against iron ore production in Peru: the logistical cost of project development and the geographical location of deposits in the Andes: the development of a pipeline becomes feasible.

In addition to the size of deposits, Peruvian iron ore is high-grade. While Cuervo Resources' resource offers a magnetite skarn deposit, ranging from 40% to 45%, Strike Resources, a company with neighboring projects and a vested interest in Cuervo Resources, offers a magnetite iron ore deposit with a resource grade of 57%, one of the highest values globally.

The metallurgy of Strike Resources' Apurimac Ferrum project would facilitate bringing the resource into production. William Johnson, managing director of Strike Resources, said: "The mineral itself is soft and pliable, making it easier to grind. This translates to a potentially lower cost structure."

Strike has already moved towards assessing the economic feasibility of development on Apurimac. Johnson continued: "Our prefeasibility results have identified a need for us to expand the resource up to 500 million mt, at which point it will be sufficient to support a move towards a 20 million mt/y operation."

This may mean that we will soon see production of iron ore in the country evolve beyond that of Shougang Hierro.

Junior Development

A movement towards alternate development strategies has also taken place. Indico's Bob Baxter explained: "More and more juniors have taken an interest in becoming involved in production, or, at a minimum, maintained a passive interest in their projects through to production."

André Gauthier, president and director of Lara Exploration, a prospect generator, explained: "As a result of resource constraints, we will increasingly see projects managed by two or three partners with different levels of interest, as is already common in the oil industry."


David Cass, president of Focus Ventures.

In times where financing is difficult to procure, as during low points of financial cycles, an increase in partnerships as well as mergers and acquisitions is also commonplace worldwide. Peru has been no exception and, by and large, partnerships in Peru have been initiated by the industry's largest players. Hudbay Minerals, a company valued at $1.4 billion (May figures), is a shareholder of Panoro Resources, a copper-focused company who has significantly expanded resources at its Cotabambas project last year. Zincore Metals, a company with advanced zinc assets in Peru, has seen First Quantum Minerals enter as a strategic investor with a 23.7% shareholding position. Additionally, First Quantum is funding exploration at Zincore's Dolores copper project through a separate agreement.

Immediately this preference for production-oriented juniors has been reflected in the success of companies with late-stage operations, such as Focus Ventures, that have used their involvement with more advanced projects as a way of re-capitalizing themselves. Founded in 2008, Focus Ventures has drilled on four projects within Peru since its establishment, focusing its activity on historic mining sites. By using data previously collected on these sites and supplementing it with information gathered during drilling activities, Focus Ventures has been able to sell two of its projects: its Minas Chanca silver property, which Buenaventura acquired for $4 million, in addition to another property which it sold to Fresnillo, a major Mexican silver producer. This proved fundamental in continuing activities within the country. David Cass, president of Focus Ventures, said: "Selling these properties allowed us to finance with minimal dilution to shareholders and focus on our key properties in Peru and Mexico." Domestically, the company is now focused on drilling activities for its Aurora property, a large copper molybdenum porphyry.

Local Finance: A Flight to Greener Pastures

Beyond traditional partnerships and farm-ins, however, Peru-focused juniors have found a solid alternative for financing in the Lima Stock Exchange (BVL) which, in the last few years, has breathed new life into many of the industry's cash strapped juniors. Already 19 juniors have listed domestically. This movement to localize has been matched by the exchange's increasing sophistication, a trend that will offer strong benefits to both the local mining industry as well as the economy as a whole. Two major initiatives are currently in place to strengthen the exchange as a source of funding.

First, Lima is currently in the process of widening its regional investment base through the creation of the Integrated Latin American Market (MILA). Established in 2011, the MILA looks to consolidate trading on the Peruvian, Colombian and Chilean exchanges. Francis Stenning, CEO of the BVL said: "Since its establishment, the MILA expanded the base of investors from which the exchange can draw. This will only increase, should Mexico become incorporated as part of the MILA: the direction in which the most recent discussions between the two exchanges seem to be headed."

Second, and part of a larger move to increase the cost competitiveness of the exchange, the BVL is now in the process of establishing arbitrage agreements with the TSX, making it straightforward and relatively inexpensive to initiate a Peruvian dual-listing from the Canadian exchange. Moving forward, the BVL is looking into similar agreements with the AIM and the ASX, although the latter presents greater difficulties in the form of arbitrage complications wrought by enormous time differences.

These moves could make listing on the exchange a substitute for raising capital elsewhere – or at least in Toronto. Part of the current problem for mining juniors' lies in the overregulation of the Toronto exchange. Administrative costs have skyrocketed; this has translated into smaller IPOs. Alberto Arispe, CEO of Kallpa Securities, a Peruvian brokerage who sponsored most of the Juniors listed on the BVL, said: "Listing in Peru is cheap, costing between $50,000 to $60,000 and fast, whereas listing in Toronto can take 3 to 4 months and is substantially more expensive."

Ian Stuart, managing director of Laconia Resources, an Australian junior with a gold and silver project in Peru that has expressed interest in listing domestically, said: "Beyond any capital that we can raise within the domestic market and the stability of that investment, we believe that there is inherent value in listing on the BVL as proof of commitment to a jurisdiction. Our long-term interests in Peru extend beyond Rasuhuilca [Laconia's Peruvian prospect and company flagship] and listing in Lima is one way of illustrating this."


Ian Stuart, managing director of Laconia Resources.

Although global market conditions and the political environment of Peru remain the largest explanations for this, two factors, both related to the nascence of Latin American finance, have also played a role in the success of those listed in Peru. The risk management capabilities have been weakened by the paucity of financial tools available to locally listed companies. No futures market exists in Peru. Businesses must protect themselves against exchange rate fluctuations from abroad. These factors contribute heavily into the decision of local companies to have a dual listing abroad, as several of Peru's largest domestic majors, such as Buenaventura and Hochschild, have already done.

A second factor contributing to the way that the market has received these assets is found in the assets themselves. The success of Rio Alto's listing on the domestic market affirmed that local financing was feasible and that investing in junior mining could generate wealth. In particular, it reaffirmed the quality of Peruvian brokerages. Yet many contend that these brokerages lack sophistication and that this has resulted in the listing of sub-standard assets. Luis Zapata, partner and head of capital markets at Seminario, Peru's oldest independent brokerage notes that, by North American standards, "the sort of research that one's sees within the domestic market is not in-depth; it is more a marketing ploy."

Some brokerage houses have ruled out listings from juniors completely, citing risk aversion of their parent-entities, who are often conservative national banks.

While the advent of the MILA and its continued expansion may expand the investor base of the local exchange, several obstacles have hindered the effectiveness of the bourse. The current structure of the MILA does not allow for direct trading, for example. Differences in capital gains tax between Chile, Colombia, and Peru also deter participation. At least for now, this will prohibit the exchange from becoming a substitute for the TSX-v, or even a rival to Brazil's BOVESPA.

Return of the Conquistador

Engineering, Construction & Equipment

CAE Terra simulators are designed to improve the operators' performance in both open pit and underground mining. Photo courtesy of CAE Mining.

While the activities of mine-development focused businesses in Peru are unlikely to cease, and are certainly not without lucrative (long-term) prospects, like mining booms and busts of the pasts, a juxtaposition can be drawn between the prospects of the industry's producers and the industry's suppliers. It has been the metaphorical pick and shovel businesses of the industry – those whose businesses run off of the hope of geological promise rather than the political or economic feasibility of a project – that have seen the biggest growth. This can be observed across three support segments to the Peruvian mining industry: engineering, construction, and equipment supply.

A Pick Rush and a Labor Shortage: a Case for Consolidation

In a historical irony, the relatively strong and stable growth of the Peruvian economy has returned colonizer to colony in search of business growth. Responding to economic contraction, more European – and in particular Spanish – businesses have staked out a place in the domestic market, looking to capitalize off the potential offered by the Peruvian market.

Luis Padilla del Águila, commercial director for Ulma Peru, a Spanish firm focused on civil engineering, construction, and the supply of scaffolding, said: "It is the diversity of Peru's ore bodies, its polymetalic potential, that has given strength to the country's mining industry. Few countries exist with such potential and it has been this that has led to the presence of such a great number of companies focused on mine production."

Ulma, a company that has been present in the global market for over 50 years, established itself in Peru in 2001. Its Peruvian division has now become its fourth largest subsidiary globally, and the largest market in terms of contribution to revenue from its framework and scaffolding business.

It has been more than Peru's mining industry that has driven these firms to the local market. Increases in domestic levels of wealth, in part spurred by the contributions of the mining industry to the local economy, have set off growth in a number of secondary industries, like real estate and consumer products. It was this, in conjunction with the projected growth of the country's mining industry that attracted Poch, a Chilean engineering consultancy, to Peru.

Established in Chile in 1989, Poch entered into the Peruvian market in 2008: "A move that was a logical extension of the firm's regional growth strategy," said Nils Martin, general manager of Poch Peru. "We perceived a strong latent need within the domestic market for our services. Large gaps in the service offerings of local engineering consultancies existed, especially in the food and beverage, hospital infrastructure, and real estate industries. Poch has sought to fill these gaps, in addition to serving the mining industry."

One of these gaps that Poch has attempted to fill within the mining industry is found in the growing demand for environmental services triggered by the politicization of the footprint of mining

Engineering and construction firms fight for Peru's juicy contracts. Photo courtesy of Stiglich.

projects. In offering its environmental consulting services to the domestic market, the firm has found its Chilean heritage to be a key advantage. Martin said: "Today in Peru, many consultants have developed, or are in the process of developing, an environmental line to their service offerings. We, however, have been able to leverage our long history of working with similarly structured contracts in Chile as a competency in executing projects."

The Peruvian market is filled with firms that, like Poch, have either entered the market recently or are redoubling their efforts to fortify the position of their local office. Following an eight-year long partnership with the strong man of the local construction industry, Graña y Montero, STRACON, an international contractor with a long history of experience in bulk earthwork services, merged with Graña y Montero in 2011 to form STRACON GyM. Established for the purpose of consolidating the two businesses' joint-venture projects and operations, STRACON GyM has observed strong growth within the domestic market as a result of integrating their operations. From 2011 through 2012, the company's revenue grew by 35%. In 2013, the company anticipates 40% growth.

Such an influx of new players has not occurred without consequence, and many projects have become fragmented. Carlos Alarco, general manager of BISA, a leading domestic EPCM and a subsidiary of Buenaventura, explained: "Many clients now atomize their projects; few companies are awarded multiple parts of the same contract."

Typically quality will drive decision making for early project development with cost acting as the primary variable in service selection later on. Pierre Montauban, general manager of Amec Perú, said: "Companies realize that the most technically challenging and important decisions take place in the early stages of project development. Many businesses now look at international firms for early-stage studies but will consider local firms for detailed engineering and construction."

This change has squeezed some market participants thin: the highest value contracts are awarded in later-stage studies. This, however, may change as companies become sensitized to the impact that disjointed project management can have on project development. Already several businesses have observed a movement on the part of their clients towards a more harmonized approach.

Victor Anyosa, president and CEO of EPCM Experts, established four years ago due to the perceived dearth of companies within the domestic market that could handle large-scale project management, said: “In the past, clients expected a feasibility study with ±30% percent accuracy, but now they want closer to 15% accuracy. They want to invest in more accurate and less risky feasibility studies.”

This has influenced the way in which services are rendered. Anyosa continued: “It means the design and conceptualization process must have stricter parameters. Companies have to go into greater detail with what they want in order to get the results they want.”

In this, EPCM Experts has found a niche. “Our detailed studies give clients the predictable results they want and need. Sometimes companies switch to a cheaper company once completing their feasibility studies, but our clients see the value of sticking with a quality company like ours throughout the entire process. For this reason EPCM Experts expects to be one of the first EPCM operating within the domestic market to manage a contract in entirety. Until now, businesses have contracted EPCM’s on a piece-mail basis.”

Others are focused on making the cost of project management more predictable so as to staunch client outflow. For STRACON GyM, this has meant deploying a profit- and loss-sharing model in the development of contracts – to a strong return. Steve Dixon, director of STRACON GyM elaborates on the benefits of such a strategic relationship: “In the worst-case scenario, we are at least guaranteed to recover the costs that we incurred for the project, whereas on a traditional contract, we could end up in a far worse situation if things do not proceed as planned. Conversely, if projects are more successful than originally planned, we share in the reward.”

The firm currently has such a relationship established with Hudbay Perú for the provision of services to their Constancia projects as well as Rio Alto, and hopes to use such a model in at least half of their future contracts.

For others this has meant altering the way in which companies interacts with their clients. Ausenco, a global leader in EPCM services, has physically integrated some of its own employees into the businesses of their clients so as to better advise their clients how to approach project areas in which they might lack extensive services. Jorge González-Rodiles, general manager of process infrastructure at Ausenco said: “One of the main points where a project can become derailed is when a business attempts to grow in an area in which it lacks familiarity. This is especially common among small- to medium-sized companies, who, having grown quickly, are beginning to extend their service offerings into areas that they have not historically had any experience in. Our project management services were an answer to this, leveraging our competencies in a wide-variety of project types.”

Businesses currently also face pressure on their cost structure driven by other variables, chief among them, the domestic market’s shortage of skilled labor. This is, in part, attributable to political crises of the past and terrorism. Hernando Graña, president of Graña y Montero (GyM), said: “The problem is that Peru lost almost an entire generation of engineers 20 years ago, when there was little work available, and now the market is full of young and inexperienced people.”

Mauricio Molina, CEO of SSK, a subsidiary of Chilean Sigdo Koppers and strong player within the region’s construction industry explains the implications of this: “It is not clear whether the industry now has enough resources, particularly in labor, to meet large-scale project requirements. It will become more difficult for both the client and contractors to remain competitive.”

This has already been observed in the movement of Peruvian projects away from Peru. Alberto Coya, operations manager of minerals and metals at Ausenco, said: "One of the largest challenges that Ausenco has faced in building our local process plant EPCM capability is the dearth of experienced project EPCM talent that exists within the domestic market. Consequently, the majority of the major EPCM projects completed in Peru, especially engineering and procurement components, have been handled from outside of Peru. Torromocho is one example of this along with Antapaccay, Antamina and Las Bambas."

Chinalco is rumored to have moved the design of its facilities for Toromocho to the United States. Barrick is alleged to have shifted its operational center to Santiago.

Rather than handling the development of these projects outside of Peru in perhaps better-staffed offices, several industry participants have responded to the industry's labor shortage by investing in developing talent domestically.

Private education has emerged as a key theme in the retention and development of talent. Hochschild Mining, a Peruvian mining company, has created a private university for purposes of better training their employees. For SSK, this has entailed the establishment of a corporate university, where their workers will receive training at facilities of Universidad Peruana de Ciencias Aplicadas (UPC). Upon completion of their courses, SSK's workers will receive degrees.

This is part of a broader move on the part of the company to bring the standards of local workers up to those which the company is used to working with in Chile. To this end the company will also soon launch a worker training and certification program that will seek to create a standard of quality among workers for certain skills. Three Centers of Excellence will also be commissioned in 2013 that will seek to build the technical capabilities of the company's workers. A Welding Center of Excellence, an Instrumentation Center of Excellence, and a Rigging Center of Excellence are all to be launched as part of this program.

These initiatives play to SSK's long-term development strategy. Molina explained: "Our 5-year goal is to become recognized not only as the premier electromechanical company within the industry, but also as the preferred company of employees."

EPCM's already challenged to retain talent will see their workforce become more costly and their turnover more difficult to suppress, should Peru's foreign influx continue. Already, several businesses have realized the strength of an acquisition in responding to this. Ausenco expanded into the domestic market through three acquisitions in one day. More recently, SRK Consulting, one of the world's largest diversified resource consultancies, reentered the Peruvian market through its acquisition of SVS Ingenieros. Until 2002, SRK had operations within the domestic market. These were closed following a slowdown within the local mining industry.

The merger of SRK Consulting and SVS Ingenieros is a strong fit for the domestic market in that it provides an answer to the region's resourcing problem in two ways. First, a greater level of employee involvement within the business will staunch talent outflow as employees, under the new structure of the firm, will share in the profits of the organizations. In accordance with its global shareholder structure, SRK has stipulated that as part of the merger, SVS Ingenieros' two principal owners, Carlos Soldi and Antonio Samaniego, are required to sell their shares to employees of the local office.

Second, as a global organization, SVS Ingenieros will have access to a wider pool of talent, allowing for the firm to expand its service offerings. Carlos Soldi, general manager of SVS Ingenieros, said: "There are a number of professional service lines that SVS has never been able to offer in Peru, such as due diligence and hydrogeology. Although there is a demand for these services, we have never had the technical capability or the resources to offer them. SRK's participation in our company will allow for us to draw upon the company's global resources so that we might offer these services domestically. As our resources are internationalized, we will see our practice domestically draw upon the talent that SRK has cultivated in its global offices. Through this our service line will be expanded to include resource calculations and certification, due diligence, geotechnical services, mine planning, and process design."

Worley Parsons recently acquired TWP, a South African based company with a large operational presence in Peru that will benefit Worley Parsons through its strong set of underground services. This follows a historical trend for the firm. Claude D'Cruz, senior vice president of minerals, metals & chemicals for the Americas, said: "Our company had previously made several acquisitions in this region, in recognition of the fact that to operate in Latin America one really needs to be Latin American."

Beyond aiding in the way that a business is perceived locally, an acquisition of a local player will help international businesses overcome the technical challenges of the domestic market, of which there are many. Hernando Graña explained: "It is rare to find a country with such varied climates and altitudes. Working at 4,800m in remote areas, as our employees do, is very tough."

Ausenco's Alberto Coya continued: "On a technical level this affects the way in which equipment is sized: de-rating is of high importance in these environments. The larger effect that altitude has on mining is found in productivity. One's performance is not the same at 4,000 meters. Working hours have to be adjusted to effectively manage fatigue. More rigorous medical checks are a requisite prior to ascending to altitude. One must give more thought as to how fatigue is managed. This requires an additional level of protocol and management. From a design perspective, these projects at altitude are often associated with climatic conditions such as snow and wind which need to be considered in the design and execution strategy for the construction but also for the ongoing operation of the project."

The industry needs to invest in training to cultivate the necessary workforce to support its growth. Photo: Yanacocha, courtesy of SSK

Gareth Sheppard, managing director of Master Drilling Perú.

The geography means that foreign companies looking to enter Peru must adapt the services they offer elsewhere. "The ore bodies present in South Africa are totally different to the ones common in Peru", explained Gareth Sheppard, managing director of Master Drilling, a South African drilling contractor and raise boring specialist who entered the Peruvian market in 1998.

Master Drilling is looking to leverage South Africa's expertise in underground mining in Peru, whose ore bodies have traditionally favored open pit operations. "In Peru, one normally has outcrops; a ramp system can easily be used for underground mines. As deposits become deeper, shafts become a more logical choice for mining logistics," Sheppard explained.

Equipping the Domestic Market for Growth

Those businesses operating in equipment rental, sales, and contracting have similarly seen strong demand, and, as a result of it, observed competition intensify. Principals, once dependent on local distributors, are now eyeing a move into the domestic market directly, given its potential and their already well-developed brand image. New equipment suppliers, both from the West and East, have entered as well, challenging longtime market champion Ferreyros, distributor of Caterpillar.

One such company that has entered into the market to the chagrin of many of the industry's longtime competitors is Gildemeister, who has built a small South American empire with expected annual turnover of $2 billion in 2013. Entering Peru originally as a car business in 2003, Gildemeister now operates in several markets, including high-end equipment distribution. To better serve this segment of the domestic market, and specifically the mining industry, the group setup a subsidiary, Rentalmeister, with the premise of the company's establishment being to import and rent leading Asian brands. In this, one key company that Gildemeister and Rentalmeister have come to serve domestically is Sany, a Chinese manufacturer which, since its establishment, has risen to the rank of the world's sixth largest distributor of heavy equipment.

Underscoring the success of Sany globally has been a change in the way in which customers perceive Chinese products. Benjamin Gao, general manager of Sany's Peruvian operations said: "Our products have been optimized for the purpose of providing the highest level of value-added to our customers, and because of this, our products have become accepted by both domestic and overseas markets for what they are: globally, leading products." This, however, Gao acknowledges, has not been an easy process.

In part because of its focus on emerging brands like Sany, Gildemeister projects strong growth within the domestic market. "Our three-year objective in our target markets is to achieve at least 10% of market share, and in five years increase that to 15% to 20%, turning over $100 million in volume," explains Nigel Sergent, manager of Gildemeister's mining equipment division.

SKC Rental, a division of Sigdo Koppers Chile – which also owns SSK - came to Peru to serve the mining industry, which

Rodrigo Barrientos, general manager, SKC Rental in Peru.

now constitutes 60% of its business domestically, in addition to the country's booming construction and energy sectors. SKC Rental focuses on the rental of heavy equipment. Their value proposition has found strong resonance with some of the industry's largest players; Las Bambas, Toromocho, and Antamina are all among the clients whose patronage has led the company to triple in size in the past three years.

These companies have been aided by ease of accessing capital within the domestic market. Mauricio Robalino, general manager of La Llave, a distributor of industrial products used in the mining industry, said: "The amount of financing options that exist today in Peru are awesome; almost all projects can now be undertaken."

Yet Peru lacks maturity if compared with others markets – operating domestically entails a greater level of risk, even by regional standards. Rodrigo Barrientos, general manager of SKC Rental in Peru, said: "The largest difference between the Chilean and Peruvian equipment market is found in the concentration of the industry. In Peru, where there are a limited number of large-scale projects; there are a smaller number of players within the industry. In Chile, this is not the case: there is a greater level of diversification. This limits risk."

This is also observed in the government's treatment of key industry issues, like safety. For New Concept Mining, a South African supplier of products focused on improving the safety of underground mining, Peru stands out for its lack of regulatory support. The company's products were so well-received within the domestic market that a key gold mine in the country's decision to stop supplying their products resulted in a series of worker-led riots.

Juan Quiroga, general manager of New Concept Mining's Peruvian operations, said: "In South Africa, the safety legislation significantly supports the expansion of our business, but unfortunately this is not yet the case in Peru."

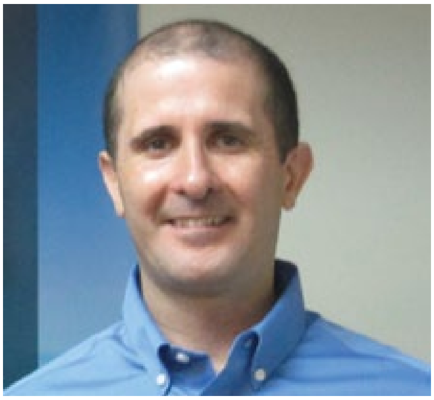
Among other products, New Concept Mining is producing wire mesh for underground mining. Quiroga explains they have their own designs, "but for the Peruvian market it will be difficult to bring the mesh from South Africa due to transport costs. In the near future we will be looking at establishing a roofbolt and mesh plant in Peru."

Beyond Equipment

Safety regulations also have a direct impact on the adoption of software solutions. Damian McKay, president of CAE Mining, an Australian firm that acquired Datamine in 2010 and is currently expanding its mining division, said: "What the mining industry does not have, in Peru or elsewhere, is a governmental top-down legislation that makes certain standards mandatory; for instance, a minimum of 100 hours of simulator training for a truck driver."

CAE Mining offers software, simulation and training solutions through leveraging the group's expertise in aviation. The company is investing heavily into integrating its modular solutions under one system, called Summit. The benefit of these technologies is found in terms of savings and enhanced safety: "Our solutions in training and simu-

Damian McKay, president of CAE Mining.



Andrea Magro, business manager for South America for GroundProbe.

lators prevent the malfunction of equipment and trucks that can cost up to $7 million. Safety costs are also an issue we are helping to solve, since we are preventing worker injuries that translate into additional expenses for companies."

McKay assured companies are starting to realize the importance of incorporating new technologies, going against the commonly held perception that miners are reluctant to try new things: "Two or three years ago, the decisions on whether or not to adopt our solutions were left to specific engineers or geologists whereas nowadays we are witnessing more corporate, strategic decisions being made by companies as whole."

Andrea Magro, business manager for South America for GroundProbe, a developer of safety equipment that supplies geotechnical monitoring solutions and radar used in the prevention of accidents for open-pit mines, explains that the perception of safety as a priority in the domestic mining industry is limited. "Today only large companies in Peru have shown an interest in newer safety-enhancing products. Often users tell us they requested our products but their management failed to recognize their value as risk management tools and their positive impact on production rates."

Regionally headquartered in Chile, GroundProbe saw the market for its services expand within the Chilean market following the implementation of laws requiring that all Chilean miners commit to safety by implementing the use of the most sophisticated mine-safety technology available, such as the system GroundProbe provides. Magro speculates that Peru will go down a similar path, yet it will come at a cost: "Peru will adopt similar regulations at some point: unfortunately, it often takes a serious incident like the one in Chile in order for safety to be prioritized by the domestic market."

Perhaps as a result of the industry's underdeveloped regulatory structure, in particular with regard to safety standards, the appeal of the Peruvian equipment market has even attracted a number of informal businesses. A market for knock-off (or pirated) machine parts has proliferated domestically. Jay Salby, director of ICC, a distributor of machine parts for leading global businesses like Berco and a company that has operated within Peru for close to 17 years, explains that, while sales of these products have been mainly driven by "small contractors with just a few pieces


Luis Felipe Elias, managing director of SGS Peru.

of equipment, looking for a price, there are risks that come attached with purchasing these products, like in safety. No strict system of regulation exists to prevent the spread of inferior products."

This has held true across the board; purchasing decisions are often driven by cost, not quality – especially for smaller mines. Greg Rasmussen, process manager of Xstrata Technology, the technology arm of Xstrata Mining, explained: "It is a price-sensitive market, with smaller companies more focused on capital than operating or maintenance costs."

However, and perhaps ironically, this market for knock-off products coexists with a strong testing segment. SGS has been among a multitude of international players, like ASL and Intertek, to setup shop within the domestic market as a result of Peru's appeal. Entering into Peru in 1986, SGS has seen its business expand rapidly over the course of the past 10 years. Mining has been the leading industry contributing to this growth. The firm has grown its service line within the domestic market through mining by focusing on four areas of business. Geochemical analysis, a service required by resource exploration, leads the company's growth. Other services include outsourcing, which involves replicating the procedures and internal standards of SGS's testing services in the office of clients; metallurgy, the company's most recent introduction to its service line; and services related to trading, which involves the testing and certification of concentrates."

In continuing to grow the business, Luis Felipe Elias, managing director of SGS Peru, projects that the company may employ several strategies to expand its presence: "We will be in the market for making acquisitions. Expect to see SGS Peru broaden its service offerings as well."

While the ability of growth markets to fuel an influx in international business is not a new development, the entrance of these companies into the market has not gone unchallenged: a divergence from the historical characterization of Peru as a market lacking value-added services. In certain segments, domestic businesses are, in fact, the dominant player.

There is perhaps no better example of this than Exsa, one of the country's leading solutions providers in explosives. Founded in 1954, Exsa has staked out a claim to the regional market. Headquartered in Peru, the company has operations in Brazil, Panama, Colombia, Chile and Ecuador. In Brazil, this entailed the acquisition of Britanite, the country's largest manufacturer of explosives. Domestically, this has meant investing heavily in improving manufacturing processes and developing a stable supply of ammonium nitrate, a key commodity in explosives production and one of which there is currently a global shortage.

Gustavo Gómez, commercial manager of Exsa, sees the entrance of new competition into the industry as part of an industry maturation process from which Peru will ultimately benefit: "Increased levels of competition offer strong benefits to both businesses operating within the industry and the consumer. Competition makes a business question and rethink the way in which it operates: how it can better serve its clients."

For the company, this has involved establishing a blasting technology center, which offers the staff of their clients the opportunity to learn how to better use explosives. By opening a dialogue in such a way, Exsa has been able to expand the perceived utility of their products, better communicate techniques for the safe use of explosives, and deepen customer loyalty: all of which have been particularly important given advances in technologies that might seek to act as a substitute to explosives and the heavily regulated nature of the domestic market.

The domestic market for testing services is also led by a Peruvian business, Laboratorio Plenge. Established in 1954, Laboratorio Plenge was originally created to provide metallurgical and assaying services to the domestic market. Today the company's services line has expanded so as to also include hydrometallurgical testing, high-pressure oxidization testing, and comminution testing.

Considered by many to be the market leader for testing services within Peru, Laboratorio Plenge has leveraged the success of its business model in country to expand into other territories. Currently the


Gustavo Plenge, general manager of Laboratorio Plenge.

firm operates in Colombia, Mexico, Ecuador, Chile, Argentina, the United States, and Brazil.

This expansion has been underscored by the firm's ability to generate technological competencies, the development of which has been driven by the firm's outward looking nature. Gustavo Plenge, general manager of Laboratorio Plenge, said: "Our business benefits strongly from our strong ties with large organizations that operate technology. We are exposed to these companies' technology in our work, which in turn allows for us to adjust our business model. We also actively seek out new information related to technological advances through international publications and mining congresses."

Though few and far between these global-Peruvian leaders might be, owing to the technical challenges associated with the domestic mining industry such as the country's geology, its altitude and the seismically active nature, businesses that have been able to create state of the art products in the domestic market have found their products well-prepared to handle the challenges of operating nearly anywhere else.

One way in which businesses have structured themselves so as to capitalize off of this characteristic is by acting as a contractor domestically first, and then incorporating the feedback gathered from the local market into product design. Ingetrol, a contractor and manufacturer of portable drill rigs, has found that by pairing contracting with manufacturing the company has been able to generate synergies in several forms.

Luis Silva, president of Ingetrol, said: "Offering contracting services in conjunction with our manufacturing business has been a strong fit. In fact, we believe it has improved the quality of our services. This is for two reasons. First, by operating


Marc Blattner, general manager of Tumi Raise Boring.

both in manufacturing and in contracting we are able to quickly gather feedback on our products. This fuels innovation. We are able to test our products at will with new clients: as a contractor, we assume the cost and risk of introducing a new service. Second, we have found that contracting generates sales, in addition to helping spread our brand name."

For this, of the three countries in which the company has an operational presence – Chile, Mexico, and Peru – Peru acts as the company's chief product testing market.

The benefits of having an operational presence in Peru, however, extend beyond the technical caliber of products designed around the domestic market. Luis Silva continued: "Peruvians now prefer local brands. They buy local products and try to support the local industry. They have a sense of pride in their hearts as a result of being able to support local businesses. In Chile, people still prefer to import from large manufacturers, but that has to change if Chile enters into the next stage of industrialization."

Be this as it may and in spite of frequent cries that Peru must move beyond its near exclusive focus on extractive services, the number of manufacturing businesses operating in the domestic market remains small. This has been for weak political support.

This is seen through the case of Tumi Raise Boring. Tumi Raise Boring is a leading raise-boring contractor in the domestic market. Headquartered in Lima, the company incorporates feedback gathered on their products from the local market to create a state of the art design. Their products are then manufactured domestically and sold either directly or through distributors throughout the global market.

Marc Blattner, general manager of Tumi Raise Boring, explains that: "We want to be known as a complete Raise Bore solution. Between our business and that of our parent company, our service offerings include services related to drill pipes, cutters, and machine operation. Our integrated offerings are a key point of difference between Tumi Raise Boring and that of our competitors: we are the only company capable of providing all of these services."

Be this as it may, Tumi Raise Boring has received weak support domestically. Blattner continues: "Peru is a young market for the production of equipment. We are what some would call pioneers in production in Peru for any type of equipment. In an attempt to gain more political support, we have actively petitioned local officials for providing additional incentives for manufacturers. Some officials have been responsive, but the Ministry of Mines and Energy (Minem) has been slower to push for greater regulatory support." Few incentives for businesses to establish a more permanent and autonomous presence within Peru exist, and while this does not mean that the country's growth is likely to stall, there are costs to remaining undiversified.

The benefits attached to a bustling economy and rapid increases in income – construction booms, infrastructure development, and a strong consumer products market – offer the greatest opportunities to producers. Peru risks forgoing many of these opportunities.

Though damning, the choice of governmental officials to not extend incentives to those establishing a value-added presence within the country is one that will benefit those that have entered Peru in search of rebuilding their global business. Nationalism, of which there is no shortage locally, cannot play into consumer discretion if there is no local provider to favor. This will make for a warm reception for the Spanish, among other foreigners, upon return to their former colony.

Conclusion

Empire (Re)building: Stacking the Deck.

Peru's resources have trapped the government into thinking that stable economic growth can be built out of a house of cards. Neither a manufacturing jurisdiction nor one that offers a strong domestic service sector, should the base of this house give way, the country's mining industry and the prosperity which the country has built on its back, could collapse. To remedy this, Peru must now look internally so as to assess how the success of certain regions in using foreign investment as a development tool can be emulated. Peru must fortify its base.

Although few regulatory bodies have proactively addressed the structural issues of the Peruvian economy, those that have act as excellent examples to both the national and other regional governments. The Regional Government of Arequipa is one of these few examples. Regional President Dr. Guillen explained: "The Government of Arequipa is heavily focused on strengthening the region's ties to investments in energy, education, health, in addition to improving the investment climate for mining activities through taking an active role in conflict resolution. Underscoring this decision was an understanding of the importance of these sectors in regional development. Strong primary industries build strong secondary, and tertiary industries: it is a virtuous cycle, and one that offers unparalleled opportunities both in regional competitiveness and also in the talent of our residents." To aid such investments, the Regional Government of Arequipa has hired famed academician and management consultant Michael Porter to act as an advisor.

While many have perceived problems of community-relations to be a fatal blow to the industry, production in Peru will continue, as will the growth of the country's support sector. Few countries exist that comparatively have their decks as stacked as that of Peru. Peru is politically open and has the resources required to build empires. In fact, they already have.

Even if the pace of growth of the mining industry lessens, it will likely only be temporary: a hiccup in the development of what has and will continue to be one of the world's leading mining jurisdictions, and one that will be corrected upon the government reaching a greater realization. Llamas cannot lay golden eggs. They are mammals.

The Peruvian government has never invested in the internal capabilities required to bring the country to developed nation status without the mining industry acting as the premier agent of economic development. The country's development story is not a monologue. Clarification of the regulatory framework surrounding the industry is imminent. The Peruvian government knows better than to bite the hand that has fed its industrial growth, and for this, we will see a healthier mining industry emerge from the crisis of confidence and politics in which the Peruvian mining industry is currently embroiled.