Despite weakening markets in the course of 2014 the European mining and minerals industry continues to follow its path to modernisation and expansion. Increased support from both governments across Europe and the European institutions in various forms have helped companies to continue to strive for growth and help Europe’s become less dependent on imports. The Raw Materials Initiative and the European Partnership on Raw Materials provide a stimulus for a whole series of projects that will make geological data as well as other mineral market relevant data more available to investors. The industry is looking forward to a whole host of calls under Horizon 2020 with emphasis on mined products along the supply chain and their applications.

Equally 2015 will see a range of meetings in the various Member States that will address raw materials and industrial policy issues. The new Commission is expected to provide additional fresh impetus for the European economy that will include our industry as an integral part.

We are looking forward to a promising 2015!

Corina Hebestreit
Director of Euromines
The Minerals4EU Project

The first pan-European network on raw materials management

Industry, governments and society want commodities at lower prices; environmentalists want a greener industry; investors want less risk - extracting metal and minerals has never been more challenging. Finding new deposits often involves exploration in remote regions; getting the licences can involve navigating through bureaucracy and corruption, and raising the investment for the project is often near-impossible. The mining industry knows that if it had more, and better, data it could reduce risk, make smarter decisions and get to production faster. But getting good data is not easy. Even if you know where to find it, the data will probably be in a different format for each country, often out-of-date and usually non-digital and so difficult to use.

For many people, Europe is no longer seen as a region for mining as they rush to explore in Africa, Latin America, Asia or even under the seabed. Whilst the attractiveness of Europe for mining is challenged, and what there is is partly heavily regulated, it is not the case that Europe is without mineral resources. The problem is that finding out about them might involve searching for data in any one of the 28 or so national geological surveys, all of which have their own ways of working, dissemination, data formats and language. As in any region, the lack of easily available, reliable geo-data is a disincentive to develop a mining project.

The Minerals4EU project is designed to bring Europe's minerals related geodata into one, virtual, place through a web portal so that users can more easily get the information they need, directly onto their computer, and free-of-charge. The Minerals4EU project is designed to meet the recommendations of the EU’s Raw Materials Initiative and will develop an EU Mineral intelligence network structure delivering a web portal, a European Minerals Yearbook and a Foresight Study. It will provide data, information and knowledge on mineral resources around Europe linking to the European Innovation Partnership on Raw Materials, seen by the EU Competitiveness Council as key for the successful implementation of major EU2020 policies.
The first pan-European network on raw materials management

The project will first establish the EU minerals intelligence network structure, comprising European minerals data providers and stakeholders, and then transform this into a sustainable operational service. Minerals4EU will therefore contribute to and support decision making on the policy and adaptation strategies of the Commission, as well as supporting the security of EU resource and raw materials supply, by developing a network structure with mineral information data and products. The European Minerals Yearbook will combine ten years of production and trade statistics for primary minerals with new datasets for exploration, resources, reserves of primary minerals and available statistics for waste flows from which secondary minerals-based raw materials can be obtained. Minerals4EU is built around an INSPIRE compatible infrastructure that enables EU geological surveys and other partners to share mineral information and knowledge, and stakeholders to find, view and acquire reasonably standardized and harmonised georesource and related data. It will integrate the best available mining expertise and information based on the knowledge base of member geological surveys and other relevant stakeholders, in support of public policy-making, industry, society, communication and education purposes at European and international levels.

A matter of great concern both to the mining industry and to the European Commission is the long term sustainability of the system. Too many EC supported projects have produced good results but have disappeared once the project funding ended. The Minerals4EU project is, however, tasked with designing its own long term sustainability.

Will it help Europe’s mining industry? It will certainly make it easier to find best-available data, but that does not mean that they will be exactly what the mining industry is looking for in the sense that the geological reports might be old, or the maps at too small a scale to be useful. Public geological data will continue to be a national responsibility of the countries, and some of them do it better than others. But by having easier access to information, the industry will not face such disadvantages that the governmental licensing authorities have greater knowledge; the early stage risks can be reduced and hence the finance providers should be more willing to support an investment case backed up by real data.

From the project web site at www.minerals4eu.eu details will be shown on how to access the data. A preliminary release, open for public use, is expected to go live in January 2015. The project team is receptive to all ideas and suggestions.

Juha Kaija
Project Manager
GTK

Nikolaos Arvanitidis
Scientific Coordinator
EGS-MREG & SGU

From the project web site at www.minerals4eu.eu details will be shown on how to access the data. A preliminary release, open for public use, is expected to go live in January 2015. The project team is receptive to all ideas and suggestions.
Building Opportunity: Growing Gold Mining in Greece

The European Union is one of the world’s largest consumers of minerals and metals. Despite owning a sizable chunk of the world’s natural resources, nearly 60% of the bulk metals used in the EU are currently imported. In terms of gold, the EU accounted for only 1.2% of the world’s gold production in 2012. Canadian miner, Eldorado Gold, is working to grow this percentage.

A Greek Mining Renaissance

Eldorado is at the forefront of building a leading gold mining jurisdiction in northern Greece. The Skouries and Olympias assets Eldorado is developing are estimated to produce a combined 310,000 ounces of gold per year and would help make Greece the largest gold producer in the EU. “We see huge potential to build long-term opportunities,” says Eduardo Moura, Eldorado’s Vice President and General Manager of Greece. “We are creating jobs, improving local infrastructure, paying taxes and generating export revenues.”

Eldorado’s Greek assets lie in the Western Tethyan Belt, a prospective belt of rocks in Eastern Europe often described as “overlooked”, “under-explored” and “highly prospective”. Together, the Skouries and Olympias deposits hold a reserve base of 8 million ounces of gold.

Committed to Mining Done Right

Greece has a rich history of mining but has not yet benefited from modern gold extraction. Pioneering modern mining techniques in a largely service-oriented economy is not without its challenges. “Changing hearts and minds takes time, patience and a lot of dialogue. All eyes are on us to demonstrate that mining can be done responsibly, with utmost care for the safety and security of our people, our neighbours and the environment” says Paul Wright, Chief Executive Officer of Eldorado Gold. “It takes years to build a mine but it takes decades to build a company with integrity”.

Eldorado’s Chief Operating Officer, Paul Skayman echoes this sentiment. “It is so important for us to get these projects done right or we won’t be working in Greece, or anywhere else for that matter, for long”. This commitment to excellence in terms of employing industry best-practices, strictly adhering to safety and environmental regulations and maintaining systems to identify, manage, audit and remedy potential impacts from project inception to closure is Eldorado’s approach globally.
Olympias and Skouries: Unique Developments

At Olympias and Skouries, significant resources have gone into designing the projects to reduce surface impacts as much as possible. Olympias, a pre-existing underground mine that produced silver, lead, zinc and gold, is being developed in three phases. The first phase is a rehabilitation project where Eldorado is cleaning up previously-mined tailings from an area equivalent to 35 football pitches. When complete at the end of 2015, Eldorado will replant the area with native vegetation grown at the Olympias nursery, one of the largest in northern Greece.

The second phase will include reactivation of the mine at an initial run rate of up to 650,000 tonnes of ore per year. Projected to begin in 2016, ore will be processed through the existing, refurbished mill using a flotation process to produce three concentrates: lead-silver, zinc and gold-bearing phylite-arsenopyrite.

The third stage, from 2020, will see the development of a new plant facility located in the adjacent Stratoni valley, where Eldorado currently operates a silver-lead-zinc mine. Eldorado is also developing an 8 km tunnel to connect the new plant location via the underground mine. With 1.6 km already complete, the tunnel will eliminate hauling traffic on local roads. Additionally, all of the current surface infrastructure at the Olympias mine site will be removed, including the dismantling of the current processing plant. The Olympias valley will be fully reclaimed and restored to its original, vegetative state.

Approximately 10 km from Olympias, the Skouries project has also been designed to minimise surface impacts. To occupy the least possible surface area, a combination of open pit and underground mining methods were chosen. Tailings will be re-used as paste backfill in the underground and material from the open pit will be used to construct dam walls. Rehabilitation will parallel mining activities so when areas are no longer needed for mining use they will be returned to a natural state. “Skouries is a very unique project in that there are no waste areas” says Skayman. “We’ve put an immense amount of effort into building an operation that’s as low impact as possible”.

When in full production, Eldorado estimates its Greek operations will create approximately 5,000 direct and indirect jobs, over €750 million in direct taxes and contribute more than €500-700 million per year (depending on metal prices) in export revenues.

Louise Burgess
Communications Manager
Eldorado Gold Corporation

Eldorado’s Assets in the Halkidiki Region of Greece:
LKAB develops Europe’s biggest iron ore project

LKAB (www.lkab.com) can look back on more than 120 years of successful, sustainable mining striving to be in harmony with the environment and society in the Arctic region. LKAB presently produces around 90% of the iron ore mined in EU and specialises in high-grade iron ore pellets for steel producers. LKAB commands a market position as the world’s third-largest and Europe’s largest manufacturer of iron ore pellets.

In the early 2000s LKAB’s Board of Directors adopted a decision in principle to realize LKAB’s targets and strategies for increasing the delivery capacity from 25 million tons of iron ore to 37 million tonnes. The growth programme LKAB 37 comprises the three new open-pit mines Gruvberget, Mertainen and Leveäniemi in the Svappavaara field, south of Kiruna and as well expansion of railroad and port capacity. The growth strategy is based on the ambition to keep pace with the growth of the company’s customers and to strengthen LKAB’s competitiveness.

The market

During full year 2014 global crude steel production is expected to grow by 4.2 percent to a total of 1,675 million tonnes. In general terms, due to increased demand, low steel inventories and somewhat better steel prices, the outlook for 2014 appears to be better than for 2013. Over the long term, demand for steel is expected to rise by 3.7 percent per year up until 2025. The demand for high-quality iron ore products is growing, since they enable greater flexibility in the steelmakers’ raw-materials mix. Stringent environmental regulations drive demand for high-quality products such as lump ore, pellets and high-grade fines. As a consequence, the difference in price between high-grade and low-grade iron ore products also increases. Over the long range no fundamental change has occurred on the iron ore market. Growth in China and the rest of the world is also expected to continue to drive demand for more steel and, consequently, for iron ore.

The world’s four largest iron ore producers, Vale, Rio Tinto, BHP Billiton and FMG, together account for nearly 45 percent of annual iron ore production and more than 70 percent of global seaborne trade in iron ore. LKAB’s deliveries of 25.5 million tonnes in 2013 represent a global market share of about two percent. In terms of volume, LKAB is therefore a niche player. Much of the company’s competitive advantage is due to our position as a technology leader and a supplier of added value in the form of high, consistent product quality and assured deliveries.
Europe’s biggest iron ore project is in Svappavaara

LKAB has decisions in place to build and operate three new mines in the Svappavaara field, south of Kiruna: Gruvberget, Mertainen and Leveäniemi. Gruvberget is already in operation. Mertainen have after several years in the environmental court been granted permission to open and operation will commence in 2016 while the Leveäniemi mine is in the middle of the permitting process. The total investment amounts to more than € 1 billion in the three mines including expansion of railroad capacity and ports. The LKAB 37 growth programme will result in 500 new direct jobs and 1000 indirect jobs, in total 1500 new jobs.

New exploration discoveries made during 2013 increase the ore base by nearly 100 million tonnes of magnetite in two of the new mines in Svappavaara. Mineral asset in Leveäniemi have increased by 76 million tonnes, while assets in Gruvberget have increased by 21 million tonnes of magnetite. The magnetite ore in Mertainen has been known since the turn of the twentieth century and test drilling has been conducted on several occasions during the 1900s and 2000s. Testing to define the extent of the mineralization to the south and at depth continues.

Göran Bäckblom
Vice President Public Affairs LKAB Group
LKAB

The new Gruvberget mine is in operation since 2010. Annual production is 2 million tonnes of magnetite iron ore with an average grade of 58%. The anticipated mine life is 7 years.

Leveäniemi mine was previously in operation 1963-1984. The plan is to re-open the mine. Permits are pending. The planned annual production is 12 million tonnes of magnetite iron ore with an average grade of 44% and 15 years mine life.

Operating permit for the new Mertainen mine was granted in 2014. The mine will become operational in 2016. Annual planned production is 10 million tonnes of magnetite iron ore with an average grade of 36%. Planned mine life is 10 years.

Photos: Rúnar Guðmundsson
Boliden expands its exploration portfolio

Boliden’s future is strongly linked to our ability to secure new discoveries.

Exploration is the first step in Boliden’s value chain. This means that a long-term consistent exploration level is crucial in order to achieve our strategic goals and consequently securing our future.

Boliden’s strategic goals for exploration are to:
• Add mineral resources that will enable each mining area to secure >10 years of ore production and provide possibilities for organic growth.
• Contribute to organic growth in mining production by building up and monitoring a project portfolio comprising of in-house and external projects.
• Identify new areas for field exploration and joint venture opportunities outside of our existing main areas.

In order to achieve this, Boliden has continued to focus on “close-by existing mine” exploration in Sweden and in Ireland, which for example has lead to the opening of the Kankberg mine, the discovery of the new large low-grade copper deposit Laver and the two large expansions of Garpenberg and Aitik. The increased exploration activities during the last decade have resulted in a substantial addition of mineral resources and mineral reserves. Most of our areas show a positive trend, and we still see a great potential for further discoveries. In October 2014 Boliden acquired the Kylylahti mine and exploration licenses in Finland which holds great potential to add new resources, both near mine and in field.

The Boliden area

The exploration results in the Boliden area have gradually increased over the last seven years. The mineral reserves are still lower than desirable and there are continued efforts in both near mine and field exploration. Although Boliden has been exploring in the area since about 1915, we still see great potential here. The newly opened Kankberg mine added Tellurium (Te) as a new metal that Boliden produces.

Aitik and Norrbotten

The mineral resources in Aitik have increased as a result of successful exploration and increased metal prices. The Aitik deposit is evidence that low-grade copper deposits with large tonnage exists in Norrbotten. Current ore reserves stands at 1085 Mt grading 0.22 %Cu and 0.14 ppm Au. Our exploration in Laver (100 km north of Boliden) has proved that Aitik is not the only deposit of this kind. We have also seen promising exploration results from other targets in Norrbotten. Our long term target is to support the Aitik mill with enough mineral resources for the Aitik 45 Mtpa expansion, but also define possible new mining areas.
Garpenberg and Bergslagen

In the last years, the mineral resources and mineral reserves in this area have increased dramatically and the near mine exploration has made the Garpenberg expansion possible. The mine will be able to produce at least 2.5 Mtpa of ore. There is also field exploration ongoing in Bergslagen and the acquired knowledge now starts to generate new potential target areas. The exploration in the region indicates great potential for several different mineralization types, containing zinc, lead, silver and copper as the main metals of economic interest.

Rockliden

Rockliden is a classical massive sulphide polymetallic deposit similar to what we find in the Boliden area and was discovered by Boliden in the beginning of 1980’s. From a global perspective, we know that these kinds of deposits rarely occur alone. In 2007, exploration restarted and the results are positive. We currently have a mineral resource at 10 Mt and a geological potential down to 900 m depth in Rockliden. However, the metallurgical problems, especially with antimony, require specific process research and development.

Tara and Ireland

In Ireland, during the last ten years, the strategy has been to focus on near mine exploration and finding new zinc and lead orebodies in our extensive ground holding. At Tara this is particularly important since mineral reserves and resources have decreased slightly over the last few years. During 2011 and 2012 extensive seismic surveys have been performed close to the mine site. The seismic surveys have proven to be extremely useful and in 2013 and 2014 we focused on drilling the defined targets.

Finland

In October 2014 Boliden finalized the acquisition of the Kylylahti mine and Luikonlahti mill from Altona Mining in the Outukompu field in eastern Finland. Work has now started to expand our exploration activities into Finland, and the first focus will be to increase ore reserves to 10 years of production. Exploration efforts in the area have been limited since the 1980s. The potential for new discoveries below 400 m depth have not been explored in any detail.

Jan Moström
President Boliden Mines
Colt Resources helping to boost the country’s economic recovery

Colt Resources has invested in two projects (Boa Fé – Gold and Tabuaço – Tungsten) in Portugal that have provided hundred of jobs for local people, thereby helping to boost the country’s economic recovery.

Boa Fé – Gold

Location
The Boa Fé Gold Project is located in the Alentejo Region of Portugal, approximately 100 km east of the Lisbon, near the town of Santiago do Évora. The current license area encompasses 47 km², with an additional 728 km² of exploration concession (Montemor) staked surrounding the Boa Fé license area. Both licenses were fully approved by the Portuguese mining authorities on November 2nd, 2011.

Geology and Mineralization
The known Montemor gold deposits are located within a segment of the Boa Fé shear corridor, considered as part of the wider Montemor shear zone that crosses the Ossa Morena Zone, an important tectonic and metallogenic domain in southern Portugal. Gold mineralisation at Boa Fé – Montemor is considered to conform to the orogenic gold model and occurs in association with several NW-SE trending shear corridors, which make part of the wide Montemor shear zone. Most of the gold deposits outlined to date are located along the northernmost of such shear corridors, referred to as the ‘Boa Fé shear corridor’.

Mineral Resources
On March 4, 2013, Colt reported the results of a Mineral Resource estimate prepared by SRK for the Chaminé, Casa Novas, Banhos, Braços, Ligeiro and Monfurado deposits in the Boa Fé – Montemor gold project, using data from both historic drilling and the 2011/2012 exploration drilling program carried out by Colt. The Summary Mineral Resource Statement for the Boa Fé gold project is provided in Table 1.

Preliminary Economic Assessment – May 2013 ("PEA")
In May 2013, Colt published a PEA prepared by SRK Consulting that addressed the six deposits for which NI43-101 compliant Mineral Resource Estimates have been prepared. Four different processing scenarios were studied and the most attractive, Scenario D, involves conventional open pit mining followed by processing by gravity and flotation and gold recovery using Halogen.

Colt’s prefers scenario D, demonstrates post tax NPV5% results of US$64m, IRR of 33% and cash costs of US$666/oz.

Upside Potential
Since receiving approval for the licenses at Boa Fé and Montemor in late 2011, Colt has focussed the bulk of its work on the previously identified deposits representing a total strike length of approximately 2 kilometres. Regional geophysics combines with regional geochemistry and field mapping has indicated good potential to identify similar deposits along the entire strike (30 kilometres) of the shear within the 100% controlled ground controlled by Colt. Furthermore, the known deposits are believed to continue to greater depth. Current drilling has not systematically tested the deposits below 150m from surface thus there is further potential for economic mineralization nearby.

The EIA (Environmental Impact Assessment) for the property was approved on July 1, 2013 subject to several additional studies that are ongoing but which must be completed before a full mining license application can be made.

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<th>Mineral Resource Category</th>
<th>Quantity (tonnes)</th>
<th>Average Grade Au g/t</th>
<th>Contained Metal Au OZ</th>
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Table 1: Mineral Resource Statement for the Boa Fé/Montemor Gold Project (March 4, 2013)
Tabuaco - Tungsten

Location
The Tabuaco Tungsten Project (100% Colt Resources) granted to Colt on February 20, 2013, is located within the Tabuaco Experimental Mining Licence (“EML”). The area is situated in the North Central region of Portugal, approximately 300 km north north east of Lisbon, 100 km to the east-south east of Porto. The current license area encompasses 45 km². The Tabuaco project is located in a port wine growing area of varying topography, overlooking the banks of the Tavora River. The Project area is divided into three deposit areas the Sao Pedro das Aguias-Hereditas resource area (“SPA”) and the Aveleira and Quinta exploration areas. On August 24, 2011, Colt acquired 100% of QSPA (http://www.senhoradoconvento.com/) thereby securing key surface rights covering approximately 140 hectares at its Tabuaco project which includes an operational winery and a 13 century convent.

Geology and Mineralization
The Tabuaco EML is situated at the border zone of two major geologic units in the Central Iberian Zone (“CIZ”) of northern Portugal. The region is noted for tungsten and tin occurrences and has seen a number of past artisanal workings. Mineral deposits within the Tabuaco EML and surrounding area include skarn tungsten, tin & tungsten bearing veins and orogenic gold. The Tabuaco project is considered a skarn Tungsten deposit. The Tabuaco geological model used for exploration is best described as a contact metamorphosed tungsten skarn model. An aplite/skarn interface is present with the mineralisation proximal to the granite boundary.

There are two main skarn horizons: upper and lower skarn, separated by schist. There are also numerous lenses or pods of tungsten bearing skarn material above and below the main horizons along with tungsten-bearing silicified lenses with carbonate.

Mineral Resources
On October 3, 2013, Colt reported the results of a Mineral Resource Estimate prepared by SRK for the SPA and Aveleira deposits in the Tabuaco tungsten project, using data from the 2012/2013 exploration drilling program carried out by Colt. The Summary Mineral Resource Statement for the Tabuaco tungsten project is provided in Table 2.

Preliminary Economic Assessment – October 2013
In October 2013, Colt published a PEA prepared by SRK that addressed the two deposits for which NI43-101 compliant Mineral Resource Estimates have been prepared.

Six different processing scenarios were studied, the most attractive, scenario B3 involves conventional underground mining methods followed by processing that includes gravity recovery, flotation and acid digestion followed by precipitation of Tungsten containing powders as required by the end user.

Colt prefers option B3, demonstrates post tax NPV5% results of US$70.3m, IRR of 30.7% and cash costs of US$206.9/MTU.

Upside Potential
Since receiving approval for the Trial Mining licence at Tabuaco in March 2013, Colt has accelerated work on the project towards mining feasibility and beyond. The delineated mineral resources are believed to represent a fraction of a larger resource base hosted in a sequence of mineralized skarns that continue for several kilometres to the north. The entire zone is 100% controlled by Colt.

Drilling in June/July 2014 has been reported to have intersected a previously undetected zone of mineralization located between the two previously identified deposits. Colt remains optimistic that this zone will form the basis of additional resources that will add to the overall resources at Tabuaco and that the potential exists for similar zones to be identified in the near term.

The “PDA” for the property was finalized in October 2012, which provides the framework for the environmental studies to be completed during the EIA process. The EIA must be completed before a full mining license application can be made.
International Conference on New Technologies and Policies for Mining and Mining Products

“Pushing boundaries beyond - Circular by 2020?”

The role of New Technologies and Policy Approaches for a future mining industry in Europe

9 March 2015, 9:00h - 17:00h

Venue:
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Euromines

Euromines is the recognized representative of the European metals and minerals mining industry. The members’ main objective is to promote the industry and maintain their relations with European institutions at all levels. Euromines provides services to its members with regard to EU policy and forms a network for cooperation and the exchange of information throughout the sector within Europe. The association also supports contacts with the mining community throughout the world.

Euromines members are large and small companies who with their subsidiaries in Europe and in other parts of the world provide jobs to more than 350,000 people. Their activities and operations produce more than 42 different metals and minerals.

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