

Seeking self sufficiency

As Europe seeks to reduce its reliance on mineral imports, exploration activity its central region is picking up

BY VERENA KOLROSER, JAROMIR STARY, KRZYSZTOF GALOS, AKOS ZOLTAY, PETER BALAZ AND VERONIKA SOCHOROVA

THE European Commission has reviewed the progress of various raw-materials, resources and waste policies during 2010.

It has now produced the EU2020 Strategy, made up of seven Flagship Initiatives. Key to the mining sector, are the Industrial Policy, Resource Efficiency and Innovation Flagships – each of which takes up its part of the European Union's Raw Materials Initiative.

The EU working groups, which under the Raw Materials Initiative analysed the criticality of raw materials for EU manufacturing and best practices in land-planning, published their reports in June 2010.

Together with the European Commission's new Resource Efficiency Flagship, this work can place the EU as the "international partner of choice" for mineral resource management including sustainable development of primary and secondary mineral resources.

Under the Raw Materials Initiative, the industry has called for national minerals policies in EU member states (to create awareness of society's dependence on minerals) as well as active management of land for multiple uses (including mining). There also continues to be an ever greater need for efficient and timely permitting systems across the EU member states.

AUSTRIA

After an initial slight evidence of a change in the economic cycle towards the end of 2009, last year can be assessed as a generally positive period for the Austrian mining sector due to economic growth.

Companies selling to the steel industry, for example magnesite and iron-ore producers, particularly benefited from the considerable growth of the steel industry (although there was pressure from rising energy and raw material costs). Access to raw materials on the world market has been limited due to the huge demand from emerging markets, especially China, Brazil and India, as well as China's tightening export restrictions.

The Styrian Erzberg iron-ore mine, the largest open-pit mine in Central Europe (owned by VA Erzberg GmbH), increased its production of iron ore in 2010 slightly to 2Mt. Nevertheless a proposed pelletising plant project on the Styrian Erzberg has been cancelled.

The project would have accounted for more than 120 additional jobs at the mine, but was cancelled as a result of the expected major financial impact of the new EU-Emission Trading Scheme.

Europe's largest tungsten (scheelite) mine is owned by Wolfram Bergbau und Hütten AG and situated in Austria's Felbertauern valley.

After a reduced output in 2009 due to the economic crisis and the reduced demand from customers (especially for tools for the automotive, aviation and engineering industries), production of scheelite concentrate was increased to 3,812t in 2010.

The huge Chinese dominance on the market has raised raw materials quotations, and further growth is expected in the future.

Magnesite is extracted by two companies in Austria. The world market leader in refractory products, RHI AG, operates five plants and three mines, while Styromag Steirische Magnesit Industrie GmbH runs three magnesite mines. The Austrian magnesite mines extracted about 738,000t of raw magnesite in 2010, an increase of 46% compared with 2009.

The growth was mainly influenced by the positive development in the steel industry in Austria as well as across Europe, North America and Asia. RHI especially benefitted with an above market growth rate in the steel industry in North America, Brazil and Argentina, as well as in Asia.

The raw materials prices for the magnesite industry (especially magnesite, bauxite and graphite) are on par with 2008 prices at present, and are expected to increase further based on rising demand and Chinese export restrictions.

European lithium deposits, located in the Carinthian Koralpe and owned by the Kärntner Montanindustrie GmbH, are also being evaluated for possible development as a result of the growing interest in lithium for batteries.

The Austrian mining industry widely welcomes the second raw materials initiative, presented by the EU-Commission in February 2011.

It underlines the importance of raw materials for the EU-member states as well as the safeguarding of a sustainable availability of raw materials at market-driven prices.

Furthermore, the promotion of a sustainable supply within the EU and, as a consequence, the development of improved conditions for the Austrian mines as well as for the downstream industries, will be of major importance.

Nevertheless, from the Austrian perspective, the enlargement of the definition of raw materials to include energy raw materials as well as renewable raw materials poses risks due to the inherent differences in these types of raw materials.

It is also argued that, the speculation on raw-materials financial markets has to be analysed independently of the physical raw-materials supply.

The Austria mining industry, therefore, would have preferred a separate initiative with adjusted measures for the different raw materials as well as for the situation on financial markets.



Part of NWR's coal processing facility in the Czech Republic



A truck transports ore at one of VA Erzberg's mines in Austria



CZECH REPUBLIC

Mining and quarrying play an important role in the economy of the Czech Republic. The country is self-sufficient in coal, construction minerals and some industrial minerals.

The life expectancy of recoverable coal reserves is quite low (barely 20 years), and that of the highest quality industrial minerals only slightly longer (estimated at several decades).

With the exception of routine mining and detailed exploration at existing deposits, prospecting for resources of metallic ore, coal and most industrial minerals is not currently being conducted. Meanwhile, a number of remediation and reclamation projects are underway, especially at abandoned coal and uranium sites.

Long-term and intensive mining activities, which ceased in 1994, have nearly exhausted the metallic ore resources in the Czech Republic, and with a few exceptions, only low-grade ores remain.

The Kasperke Hory gold-tungsten deposit, which is exceptionally large and rich from a European viewpoint, is the most important and prospective domestic resource.

Other large gold deposits, such as the Mokrsko or Vacikov deposit (mineable as open-pit), are also very promising given the current high prices of gold. However, the exploitation of all of these deposits is restricted at present due to unresolved conflicts arising from nature protection laws.

On the other hand, the Czech Republic may have significant potential for undiscovered resources of some rare elements (Li, Rb, Cs, Zr, Hf).

Romania produces small amounts of uranium, but apart from the Czech Republic remains the sole producer of uranium concentrate in the EU. Mine production has been decreasing continually, amounting annually to about 250t of metal.

The Rozna deposit is the only uranium (vein-type) deposit that is currently being exploited. Extraction, by underground mining methods, is being conducted by state enterprise DIAMO. Recoverable reserves are limited and expected to last for less than three years.

According to official statistics, uranium resources in the country appear to be quite substantial (over 135,000t), the majority of which are sandstone-type deposits (estimated at 133,500t).

The Czech Republic's coal needs are covered entirely by domestic production.

Coal predominantly brown (sub-bituminous) material accounts for about 60% of domestic electric energy and heat production.

Brown coal deposits are concentrated in the basins of the Krušné Hory Mountains, but production is gradually decreasing (44Mt in 2010) and the lifetime of recoverable reserves is estimated at less than 20 years.

At present, all bituminous coal mining is concentrated in the Czech part of the Upper Silesian Basin. Bituminous coal production is declining as well (11Mt in 2010), and the life expectancy of exploitable reserves is very similar to that of brown coal.

Mine production and reserves of crude oil and natural gas have limited importance and cover 2–3 % of domestic needs.

With the exception of exploration conducted at existing mine sites, prospecting and exploration is not being undertaken in the Czech Republic.

Meanwhile, large remediation and reclamation activities and projects, funded by both the government and mining companies, are under way at abandoned underground and open-pit mines.

HUNGARY

In 2010, 1Mt brown-coal, 8.42Mt lignite and 0.34Mt ore (bauxite and manganese) were mined in Hungary.

Brown coal output fell 5%, although lignite

production increased by 1.3%, and still has potential in the Visonta and Bükkábrány open pits of Mátra Power Plant Corp.

Chinese buyers are considering restarting the Recsk copper-zinc-gold mine, which was closed more than a decade ago (after flooding).

Historically, Rudabánya was a site of considerable iron-ore mining, but there are still considerable barite resources at this site.

In addition, Genesis Mining Corp is working towards the reprocessing of mine waste and tailings dumps in the region. This is in compliance with EU objectives to prevent arsenic contamination entering drinking water supplies.

Within this plan, and in addition to the repeated exploration of the known resources of 47Mt iron, copper, lead and baryte resources, the exploration and mining of copper, lead, zinc and silver has been progressing in the region.

Investors are also interested in beneficiation of raw materials to provide added value.

In Rudabánya, the barite can be used in the production of heavy concrete used to protect against radiation in nuclear power plants.

This could offer invaluable opportunity for defence against radiation from power plants catastrophes such as Chernobyl or the recent disaster in Japan.

By upgrading the coal, Mecsek Szénmedence (Mecsek Coal-Basin) has also become feasible. A mine is being constructed and was opened in the March quarter at Nagymányok. The mine is being developed as an open pit but the aim is to look eventually at an underground operation.

The development of new projects faces some hurdles, however, particularly as a result of the spill of 1.0 million m³ of tailings from the Ajkai Timfoldgyar Zrt alumina refinery in October last year.

Like the cyanide spill at Baia Mare in Romania more than a decade ago, this spill has tarnished the industry's reputation. A consequence has been that cyanide mining is forbidden in Hungary.

Areas available to mining are also limited by legislation, including the EU's Natura 2000. There are also restrictions relating to the Tokaj World Heritage site.

A further development is that the Hungarian Mining and Geological Office last year declared energy as a 'closed area', which limits access to the acquisition of concessions. However, the necessary legal changes have not been implemented, and the regulation of environmental impact studies and marking of concession areas have not yet been affected.

Nethertheless, the concession procedure itself is also extremely time-consuming and, as a result, mining development has come to a standstill.

For these reasons, a national mineral property-management strategy is still required.

POLAND

Poland is an important producer of numerous mineral commodities, being ranked as the EU's largest producer of hard coal, coke, copper concentrates and silver, as well as being the only EU producer of rhenium.

The approximate value of minerals production in Poland in 2009 was Zt52.4 billion (US\$19 billion), with 54% from fuels, 23% from metallic raw materials and 23% from industrial and construction minerals.

The trade balance for mineral commodities has been consistently negative in Poland for years. Recently it deepened sharply, primarily due to the rise in crude-oil and natural-gas prices, to Zt55.8 billion. There was an improvement to Zt38.2 billion in 2009, due to lower oil and gas prices. A positive value in the trade balance is reported only in the metals sector (up Zt4.5 billion in 2009).



KGHM is the largest copper producer in Europe

Coal is the most important mineral commodity produced in Poland. However, production fell from 100Mt in 2004 to only 76.6Mt in 2010.

Thermal coal comprises 85% of output and coking (metallurgical) coal 15%. Approximately 8.5Mt of hard coal was exported in 2009, while the rest was sold on the domestic market. Imports of coal, no longer limited by import quotas, rose to some 11Mt in 2009.

Poland's hard-coal industry consists of three large state-owned companies; Kompania Węglowa SA (KW), Katowicki Holding Węglowy SA (KHW) and Jastrzębska Spółka Węglowa SA (JSW). There is also a smaller state-owned company, Południowy Koncern Węglowy SA (PKW), one stock-listed company, LW Bogdanka SA, and one small unlisted company, Siltech Ltd.

KW operates over a dozen mines in the eastern, central, northern and western part of the Upper Silesian Coal Basin (USCB), with total capacities over 40Mt/y (mainly thermal coal), making it the largest mining company in Europe.

KHW comprises of five mines in the central part of the USCB, with a total capacity of over 15Mt/y of thermal coal. JSW operates six mines in the southwest part of the USCB with a total capacity of over 15Mt/y (mainly coking coal). LW Bogdanka operates the 5.5Mt/y Bogdanka mine in the Lublin Coal Basin. The company was privatised in 2009 through a majority share sale on the Warsaw Stock Exchange, while coking-coal producer JSW will be privatised this year through the same exchange. Privatisation of the other coal companies in the near future remains uncertain.

KGHM Polska Miedź SA is Poland's only domestic

producer of refined copper, and is also the largest copper producer in Europe. It currently ranks as the ninth-largest world producer of copper, and the third-largest world producer of silver.

KGHM's copper-ore production exceeds 30Mt/y, with copper concentrate production of 1.8-2.0Mt/y. Copper content in the concentrates was 426,000 t in 2010.

Production of refined silver is around 38.5Moz/y, with accompanying production of gold, selenium, lead, platinum, copper sulphate, nickel sulphate and, recently, rhenium.

KGHM has made a significant investment in the development of a deep copper-silver deposit called Głogów Głęboki Przemysłowy. The deposit lies to the north of the active mines at depths in excess of 1,200m. The mine should enable KGHM to maintain production in the area until 2040-2050.

Apart from the planned domestic investments, KGHM plans to develop its resource base abroad. KGHM last year paid US\$37 million to purchase a 51% stake in the joint venture Afton-Ajax copper-gold project with Canadian partner Abacus Mining & Exploration Corp. According to a scoping study, the project is estimated to have 1.56Mt of contained copper and 2.9Moz of gold. Start-up is planned for 2013 at a rate of 50,000t/y of copper and 100,000oz/y of gold. A complete feasibility study is to be conducted by the end of 2011.

Meanwhile, the traditional zinc-lead mining region of Upper Silesia-Cracow is likely to become exhausted in the coming years. The region is still mined by ZGH Bolesław, which delivers over 90,000t/y of zinc and over 30,000t/y of lead in concentrates.

In 2011, ZGH Bolesław SA is planning to be privatised, probably through the Warsaw Stock Exchange.

Recently, concessions for exploration of zinc-lead ore were granted for Canadian company Rathdowney Resources Ltd. The areas Zawiercie and Rokitno are located 20-30km to the north of ZGH's existing Pomorzany mine.

Rathdowney says that the first phase of work planned at the project involves an extensive ground IP survey, to refine drill targets and identify areas of mineralisation, followed by a campaign of confirmation drilling in order to define a resource estimate.

SLOVAKIA

Mining and quarrying of minerals contributed €329.5 million (US\$466.3 million), or 0.52%, to Slovakia's Gross Domestic Product (GDP) in 2009.

Minerals and mineral-based products represent an important item of foreign trade of the Slovak Republic, and currently employ over 6,800 people.

Total geological reserves deposits exceed 16,357Mt,

including 1,151Mt of mineral fuels, 185Mt of metals and 12,432Mt of industrial minerals.

Hornonitrianske bane Prievidza JSC, with an annual production volume of about 2Mt, is the largest producer of brown coal in Slovakia. The principal product is coal powder for energy-production.

Hard-coal consumption, meanwhile, has been traditionally wholly supplied by import (around 4Mt at a value of €418 million in 2009), especially from the Czech Republic and Russia.

Although Slovakia has proven reserves of uranium, their exploration and potential extraction is complicated by environmental and land-access issues. In the past, there was extensive exploration with some low volumes of uranium mining (total output of about 210t), dating back to the Cold War era.

At present, non-governmental organisations have campaigned strongly against the exploitation of Slovak uranium deposits.

In 2008, the government approved an energy security policy document that emphasises the continued use of nuclear power as part of the country's energy mix. The document notes that legislative and economic support of efficient and rational use of domestic sources of uranium ores has the potential to decrease the country's considerable dependency on supplies of energy resources.

Slovakia currently has four nuclear reactors providing roughly 50% of its domestic energy needs. The country is currently constructing reactors three and four of the Mochovce nuclear power plant (expected to be completed in 2012 and 2013), and has two more reactors planned for development by 2025.

At present, there is only one metal deposit being mined in Slovakia. Gold is mined and processed from the Banská Hodruša deposit by Slovenska banska Ltd. After recent exploration, new reserves were estimated and the majority of gold concentrate produced is being exported.

There is no iron-ore production in Slovakia at present as the sole iron-ore producer, Siderit Nizna Slana, terminated all mining and processing activities in October 2008 due to long-running economic problems.

Exploration is growing in Slovakia, however, with some international investment.

Current metal exploration licences include precious metal, base metal, nickel, cobalt, tungsten, molybdenum and rare earths.

EMED Mining Public Ltd is currently focused on exploring for gold deposits in central Slovakia. The company's Biely Vrch project has an initial JORC-resource estimated at 17.7Mt at an average grade of 0.81g/t gold, containing 461,000oz in the indicated category and 24Mt at 0.77g/t gold, containing 596,000 oz in the inferred

Company profile

RATHDOWNEY

Rathdowney Resources Ltd (TSX-V:RTH) is a base-metal exploration and development company focused on finding and developing the next generation of zinc deposits in the ore fields of Poland and Ireland.

Rathdowney is actively supported by Hunter Dickinson Inc. (HDI), which has a world-class track record in global exploration, discovery and mine development.

In June, Rathdowney will commence drilling of substantial historical zinc-lead resources in Poland, and, in April, exploration drilling began in Ireland to test 45 compelling drill targets for zinc and lead.

Rathdowney has two contiguous exploration permits

in Poland that cover approximately 100km² in the Upper Silesia zinc-lead mining district. The district has reported historic production of over 30Mt of zinc and lead metal or about 66,000 billion pounds of zinc equivalent.

The permits contain historical resources that are substantially large enough to potentially support long-life mines. For the Olza project, based on these historical resources, Rathdowney has an exploration target of 20Mt to 100Mt grading 6% zinc equivalent.

The area has well developed infrastructure, along with highly skilled mine-labour and a nearby state-owned concentrator and zinc smelter complex, which is connected by rail to the Rathdowney concessions.



MODERN COAL PRODUCER

New World Resources plc (NWR) is Central Europe's leading hard coal and coke producer, supplying 5.3Mt of coking coal, 5.5Mt of thermal coal and 1.1Mt of coke in 2010.

The company has 396Mt of JORC-compliant reserves and produces quality coking and thermal coal for the steel and energy markets in central Europe through its subsidiary OKD AS, the largest hard-coal mining company in the Czech Republic.

NWR's coke subsidiary, OKK Koksovny AS, is Europe's largest producer of foundry coke.

After a difficult period in 2009, demand for coal and coke in the central and eastern European markets rebounded strongly in 2010 and the company successfully increased its sales volumes and prices.

NWR mined 11.4Mt of coal with three fewer operating longwalls compared with 2009, reaping the benefits of its recent capital investment in longwall mining equipment.

The new longwalls produced on average approximately 2,800t of coal per longwall per day, up just over 72% when compared with the old equipment.

The company expects demand for coking coal in the region to remain robust, driven by continued recovery in the automotive sector as well as the continued investments in infrastructure.

Recovery in central Europe's industrial sectors will also underpin demand for thermal coal. NWR expects

to produce approximately 11Mt of coal and 800,000t of coke in 2011.

Globally, coking coal is in short supply as China and other emerging economies continue to drive world demand.

In 2010, the robust recovery in the Russian and Ukrainian domestic markets resulted in a decrease in exports of thermal coal from those countries into the regional market, and the increased demand was largely satisfied by the Polish and Czech producers.

Further afield, increasing volumes of coal are being imported to the region from seaborne markets to plug the missing production, but logistical constraints and high transportation costs will keep these imports limited.

NWR has significant opportunities for organic growth within its existing licence portfolio in Poland. There has been good progress made during 2010 in developing these investment projects, particularly Dębieńsko, where a project

team and group of advisors are now in place and undertaking a detailed feasibility study. Land and infrastructures acquisitions are also underway.

Dębieńsko and Morcinek, a second Polish project, are a significant part of the growth strategy, helping to offset higher costs from deeper mining at the Czech operations.

There are also considerable unexploited hard-coal resources in the Czech Republic, which would add to reserves and extend the existing mine life.



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HDI RATHDOWNEY

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Exploration drilling underway in Ireland with three drill-rigs to test 45 targets.



TSX-V: RTH
rathdowneyresources.com

EMED is progressing exploration at its Biely Vrch project in Slovakia



category. Last year, the firm updated the project's scoping study, selecting a new site for ore leaching and increasing initial capital costs to US\$64 million.

The study found the project could produce approximately 60,000oz/y for ten years, leading to annual expenditure in the local region of approximately US\$35 million. The company is progressing the project towards a feasibility study and permitting with the Slovakian authorities is underway.

Global Minerals Ltd announced in March 2011 that

drilling has commenced on the company's high-grade Roznava-Strieborna silver project.

The projected target area is outside the current resource estimate, which is estimated at 1.9Mt (measured and indicated) at an average grade of 232g/t Ag, 1.1% Cu, 0.7% Sb and 33.6% Fe, and 1.5Mt (inferred) grading 180g/t Ag, 0.9% Cu and 0.7% Sb.

Exploration and expansion drilling is planned to follow the current drill programme in order to test for new veins, as well as possible vein extensions in close

proximity to the current resources and underground workings.

Energy minerals exploration claims include mineral oil and natural gas and uranium. Tournigan Energy Ltd is focused on uranium exploration in the eastern Slovakia areas of Kuriskova and Novoveska Huta.

In April, the company updated the resource estimate for its Kuriskova project.

The indicated resource estimate now stands at 2.3Mt at a grade of 0.55% U₃O₈ for contained 28.4Mlb U₃O₈, with an additional inferred estimate of 3Mt at 0.18% U₃O₈ for 12.6Mlb U₃O₈.

Tournigan is currently preparing a prefeasibility study for the project after a 2009 preliminary assessment suggested it could produce 1.3Mlb/y U₃O₈ over a 15-year mine life. Initial capital costs are estimated at US\$168 million.

The firm is also working on a resource estimated for its Novoveska Huta project this year.

Despite the relatively low contribution of mining to GDP, extraction of industrial minerals and construction materials cover most of the country's domestic requirements, and even offer significant exporting capacities. Production of coal is considered significant for the country's energy security.

There is still significant potential in uranium exploitation, although land access and non-governmental organisation environmental activities remain important concerns for new exploration and mining projects.

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*Indicated resource contained in 2.33 million tonnes, Inferred resource contained in 3.1 million tonnes, (Tetra Tech, Inc. April, 2011)

Tournigan's Uranium licences in Slovakia

