Opportunities abound in Slovakia

The Jelsava magnesite processing plant

Located in central Europe, Slovakia has a budding mining industry and hosts one of the world's largest magnesite deposits

SLOVAKIA: FAST FACTS

Capital:	Bratislava
Population:	5.4 million
Real GDP growth rate, 2008:	6.4% (estimated)
Main commodities:	Magnesite, brown coal, limestone

TWENTY years after the fall of its communist regime, Slovakia is one of the fastest-developing states in central Europe. Its strong economy enabled it to adopt the Euro at the start of the year – only the second country that joined the European Union (EU) in 2004 to do so.

After its 'velvet divorce' with the Czech Republic in 1993, Slovakia was seen as having little chance of strong economic development, but this was wrong. In 2007 it had the highest GDP growth in the EU, and the second highest in 2008. However, it has been hit by the economic crisis: its gross domestic product declined by 5.3% in the June quarter, according to the Statistical Office of the Slovak Republic.

BY VERONIKA ŠANDOVÁ

MINERALS IN THE SLOVAK ECONOMY

Minerals and mineral-based products are the basis of production for metallurgical, electrical, chemical, brick, ceramic, tile, glass and other industries in Slovakia. In 2008, the mining and quarrying of minerals contributed 0.56% to gross domestic product (GDP) at current prices (a moderate growth when compared to 2007).

Minerals and mineral-based products are important to the Slovak Republic's foreign trade. Due to a high import volume of mineral fuels (crude oil, natural gas and hard coal) and metals (iron ore, zinc and materials for aluminium, iron and ferroalloy metallurgy), the foreign trade balance has been consistently negative. The domestic consumption of these minerals is covered mainly by imports.

On the other hand, the production of industrial minerals (magnesite, limestone, dolomite, gypsum, bentonite and barite) covers a substantial volume of domestic consumption.

For 2008, the total geological reserves of registered mineral deposits exceeded 15,665Mt, of which 11,762Mt were industrial mineral reserves. Total production reached 36.8Mt in 2008. There are 633 registered reserved deposits of mineral fuels, metals and industrial and construction minerals.

ENERGY MINERALS

Slovak geological reserves of energy minerals are limited to brown coal, lignite and uranium. Currently, only brown coal and lignite are being produced. Although Slovakia has proven reserves of uranium, their potential extraction is complicated due to environmental and land access issues, and also due to the bad reputation of mining that lingers on from the communist era.

According to the Register of Reserves of Mineral Deposits of the Slovak Republic, 91 reserved deposits of mineral fuels were registered in the country. Its total geological reserves reached 1,149Mt, of which about 532Mt (46%) are classified as economic reserves.

Brown coal production: Deposits of brown coal occur at various geological levels of the Horná Nitra fold, the South Slovak Basin, the Danube Basin and the Vienna Basin. Lignite deposits are present in the Vienna Basin, in marginal parts of the Danube Basin, in the Žiar fold of the Central Slovak Basin and in the East Slovak Basin.

Domestic brown coal production covered about 70% of the demand in the Slovak Republic and the rest is imported almost entirely from the Czech Republic (93%).

Hard coal consumption has traditionally been covered entirely by imports, mainly from Russia (77%), the Czech Republic (11%) and Poland (11%).

Hornonitrianske bane Prievidza is the most important producer of brown coal in Slovakia – around 2Mt/y – through its company Upper Nitra Mines. The principal product is coal powder for energy-producing purposes. In addition, graded coal for general use is also produced. The most important customer for energy-producing coal is Slovenské elektrárne (Slovak Power Stations) and its Elektrárne Nováky (ENO) power plant.

The company has been mining in the Upper Nitra region for 100 years.

One of Hornonitrianske bane Prievidza's collieries suffered the country's worst mining disaster since independence in 1993 when 20 workers were killed in August, 2009. The miners died in an explosion at the Handlová colliery in the Trenčín region. Nine others suffered minor injuries. The incident happened in the Eastern Shaft, but it is believed that company production will not be affected. The Slovakian Higher Mining Office is conducting an investigation.

EMED Mining hopes to develop its 1.1Moz Detva gold project within three years

Uranium exploration: In the Western Carpathians, uranium deposits occur in the Permian formations of two types. Uranium-molybdenum deposits, situated in the northern part of the Spišsko-Gemerské Rudohorie Mountains, have been explored since the 1950s.

The only minable deposit of uranium was Novoveská Huta, which was previously mined for copper but is now closed. The last discovered uranium deposit of this type is Košice-Jahodná – its reserves are currently classified as potentially economic.

Other uranium deposits and occurrences are situated in the Permian complexes in the northern part of the Nízke Tatry Mountains and Kozie Chrbty Mountains. Some of the deposits were mined in the past. The existing proven reserves are classified only as potentially economic and are not registered by the state.

There is currently no uranium mining in Slovakia, however intensive exploration is being conducted. For example, Tournigan Energy Ltd announced in July that an independent scoping study at its Kuriskova uranium deposit found it could sustain a 15-year underground mining operation.

Annual production was estimated at 636t of U_3O_8 and 42t of molybdenite (1,100t/y U_3O_8 during the first five years) in their respective concentrates. Pre-production capital costs were estimated at US$168 million, and average cash operating costs were estimated at US$32/lb of U_3O_8 (US$17/lb during the first five years of production), including molybdenum credits at an assumed US$12.50/lb Mo, but excluding royalties, estimated at US$3/lb U_3O_8 .

The company said that the Kuriskova property had excellent potential for expanding the size and overall grade of the deposit through further exploration. It also said that the development of the Kuriskova uranium project could provide Slovakia with a secure source of uranium for approximately 30 years at its current consumption rate.

Uranium mining has a controversial history dating back to the Cold War. Non-governmental organisations have campaigned strongly against the exploitation of Slovak uranium deposits. In October 2008, the government approved an energy security policy.

This policy emphasises the continued use of nuclear generated power as part of the country's energy mix and states: "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."

There is concern that the country secure abundant resources of fuel elements that are offered only by Russia or France in Europe. With regard to mineral resources, it is possible that producers of these fuel elements may request customers to provide raw uranium as a form of payment in the future.

Legislative and economic support for the effective and rational exploitation of domestic reserves of uranium ores, in countries that have them, can lower high dependency on the supply of energy resources, the prices of which have risen sharply on world markets in recent years. Countries that will be capable of producing their own uranium might attain a favourable position due to the rising prices of uranium.

METALS

In the past, Slovakia had many economically important metallic deposits and, particularly, gold production was of crucial importance to Europe during the Middle Ages.

Today, most of these deposits are exhausted. Only the iron ore in the Nižná Slaná deposit, partly complex silver, copper and iron ore in the Rožňava–Strieborná deposit, and gold ores in Kremnica are regarded as economic. In 2008, the gold ore reserves in the Banská Hodruša deposit were almost completely exhausted, and only mining from safety pillars took place. Exploration for new reserves is under way.

According to the Register of Reserves of Mineral Deposits of the Slovak Republic, there are 46 reserved deposits of metal registered in Slovakia. Total

Strkopiesky Batizovce's Batizovce sand and gravel pit

SLOVAKIA – A MODEL FOR BUSINESS SUCCESS

TEN years ago, Slovakia embarked on an ambitious plan of intense structural reforms with the vision of becoming one of the best business locations within the EU. Today, Slovakia is widely regarded as a success model for other EU countries for creating an investment and business-friendly environment.

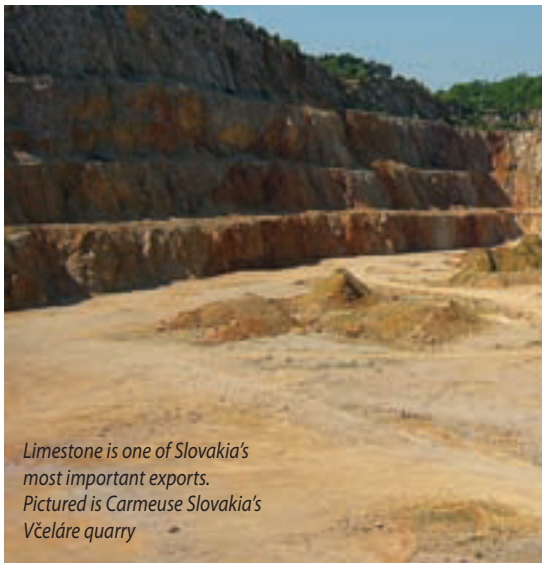
Slovakia is continuously improving its infrastructure. Current investment opportunities exist in such sectors as machinery and precision engineering, the automotive industry, metallurgy and metal processing, electronics, chemistry and pharmaceuticals, research and development and technology centres.

Slovakia's accession to the EU in 2004 spurred many changes. The World Bank has judged Slovakia's Labour Code as one of Europe's most flexible. There is no longer a currency risk as the country now uses the Euro, and the inflow of funds from the EU is not going to dry up any time soon.

As a result, foreign direct investment (FDI) in Slovakia has increased dramatically in recent years. Investment projects have had a substantial impact on the economic growth of the country. As of 31 December, 2008, the total volume of FDI inflow to Slovakia reached €25.6 billion (US$38.1 billion).

Slovakia's main advantages for foreign investors are: a relatively inexpensive and skilled labour force, low taxes, a 19% flat tax for corporations and individuals, no dividend taxes, a liberal labour code and a favourable geographical location. Membership of the eurozone reduces currency exchange risks and tightens the fiscal discipline of the member countries, which results in more opportunity for a stable economy.

With an investor-friendly government, stable economic indicators, a strategic location at the centre of Europe, and a relatively highly educated and skilled workforce, it is little wonder that investors are flocking to Slovakia.



Limestone is one of Slovakia's most important exports. Pictured is Carmeuse Slovakia's Včeláre quarry

geological reserves reached 185Mt, of which only about 10% are classified as economic reserves.

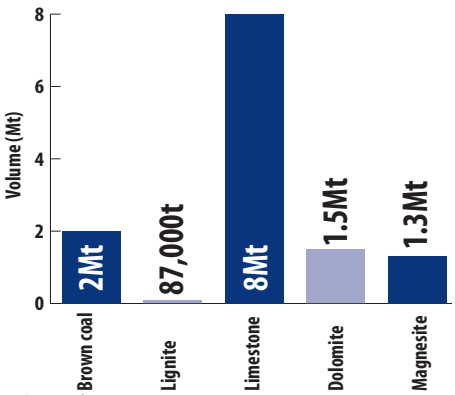
GOLD TRICKLES THROUGH

Peak gold production in Slovakia occurred during the 12th and 14th centuries. Today, estimates of total gold production vary, but could be around 34t – or much higher, according to the Slovak Geological Survey.

Gold was mined and processed only in the Banská Hodruša deposit in 2008 by Slovenská banská, spol sro Hodruša Hámre with 6,365oz of gold produced. Mine activity was focused on extraction of residual reserves, mine liquidation works and new geological survey.

Currently, extensive geological exploration for precious-metal mineralisation is being conducted in various locations, and not only in the metallogenic region of the neovolcanites of Central Slovakia.

The Kremnické Vrchy Mountains, Banská Štiavnica stratovolcano and Poľana-Javorie, and also the neovolcanites of East Slovakia – in the ore district of Slanský Vrchov Mountains (Zlatá Baňa) – are also being explored by foreign and domestic companies. Currently, the result of intensive exploration for gold-silver mineralisations in Kremnica, conducted over several years, produced a surface-mined deposit with economically important reserves.



Volume of extraction in 2008

AIM-listed EMED Mining Public Ltd is continuing to move its Detva gold project towards development. The company hopes to develop the 1.1Moz resource (41.7Mt at 0.79g/t gold) at its Biely Vrch gold deposit within three years. Historically, the company's prospects yielded over 120Moz of silver and 3Moz of gold.

In July, the company reported that it was developing a scoping study, to assess the economics of the Biely Vrch resource, and drilling several highly-prospective porphyry prospects. Low-detection geochemical methods are being applied to these areas for the first time, together with open-pit bulk mining concepts.

The principal targeted mineralisation style is low-grade, bulk-mineable porphyry gold.

In May, the company reported that Biely Vrch is essentially a gold only deposit, approximately 75% of which is oxidised. This is expected to aid cost-minimisation and metallurgical recovery, the company said.

In May, EMED managing director Harry Anagnostaras-Adams said: ""We have decided to advance our project development planning at the Biely Vrch deposit to the next stage of feasibility study based on very exciting exploration results. Current gold prices of approximately US$940/oz (spot) along with higher futures market prices and relatively low key input costs such as diesel are highly favourable for the potential economics of the project.

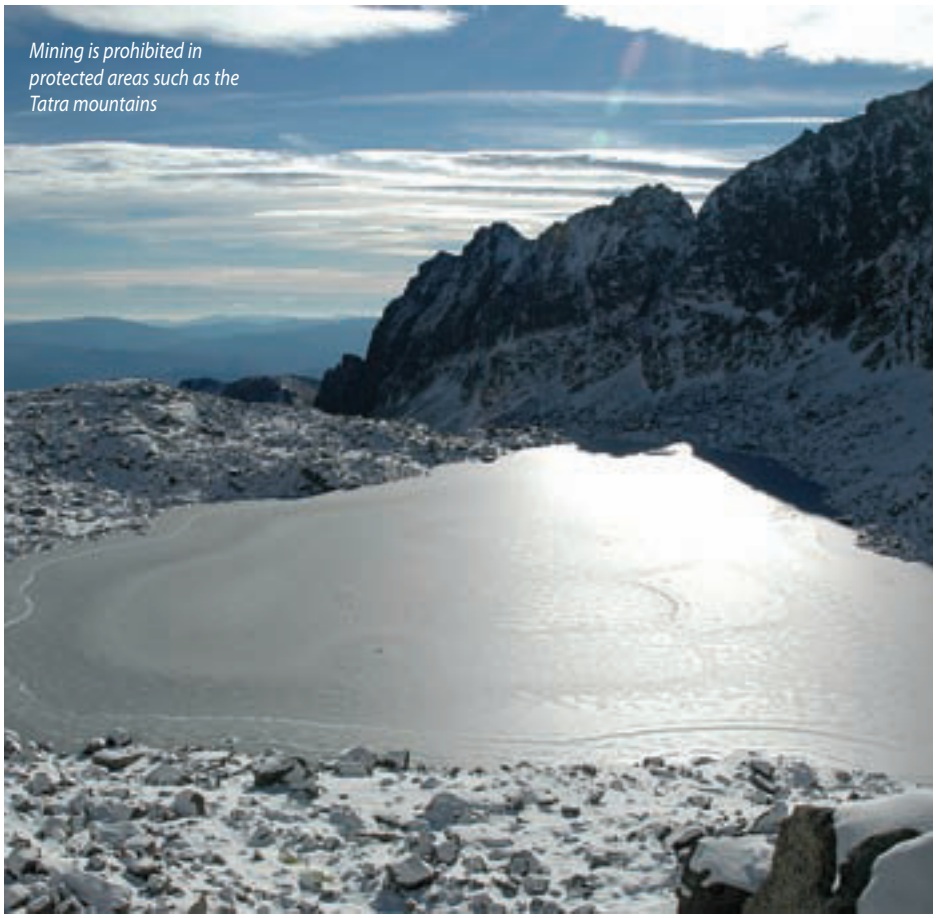
"EMED Mining's licence holdings in Slovakia are in the heart of the Central Slovakian Volcanic Field. This district has previously yielded over 9Moz of gold when account is taken of historical production together with the published resources. We have demonstrated that this area is a highly prospective gold region with a long history of gold production."

Tournigan Energy also has the Kremnica gold project in Slovakia, but it has signed a definitive option agreement with UK-based Ortac Resources plc whereby Ortac may acquire in four stages up to a 100% interest in Kremnica. Tournigan said it had sold Kremnica, an historical mine, to focus on its Kuriskova uranium project.

There are three types of gold deposits in Slovakia: deposits of pre-Tertiary age, Tertiary deposits and post-Tertiary deposits. Details of the gold mineralisations in Slovakia:

- Significant precious and base metal mineralisation is associated with Neogene volcanism in the West Carpathian region.
- The Kremnica deposit represents silver-gold mineralisation of vein and veinlet type. The gold content is about 2ppm and silver ranges between 10-20ppm.
- The Banská Štiavnica deposit represents base metal mineralisation with an expressive zonal arrangement – silver and gold mineralisation is concentrated at higher (below-surface) levels. Gold-sulphide (Au, Ag, Pb, Zn, Cu) and quartz-carbonate (+Au, Ag) veins are also of this formation type. Except for those traditional epithermal Au-mineralisation types, a new type of late epithermal Au-mineralisation with an Au content of 5-20ppm was discovered and exploited at the beginning of 1990s.
- The gold reserves of the base metal deposit of Brehov, situated in the East Slovak neovolcanites, are currently classified as potentially economic. The mineralisation is associated with sub-volcanic diorite and granodiorite bodies.

Holcim Slovakia's Rohožník-Vajarská limestone quarry



Mining is prohibited in protected areas such as the Tatra mountains

IRON ORE PRODUCTION DECLINES

Domestic iron ore production (392,000t) covered about 6% of the demand in Slovakia in 2008, and the majority of domestic iron ore consumption was covered by imports. Mining company Siderit Nižná Slaná terminated all mining and processing activities in October 2008 due to economic problems. There is no mining company exploiting iron ore in Slovakia at present.

There is, however, much potential. The most significant iron ore deposits occur in Palaeozoic rock complexes in the Spišsko-Gemerské Rudohorie Mountains. Deposits of minor economical importance are situated in the neovolcanites of Central Slovakia, in the contact with sub-volcanic intrusive bodies with Mesozoic carbonate rocks.

Economically, the most important iron ore deposit is Nižná Slaná – Manó – Kobeliarovo, situated in the western part of the Spišsko-Gemerské Rudohorie Mountains. The hydrothermal – metasomatic deposit type, in the form of a lens, occurs in Early Palaeozoic rock complexes.

The major ore mineral is siderite, the iron content varies between 32-36%, and the average content of manganese is about 2.2%. A significant siderite deposit of this type was Železník, which was exploited in the past.

INDUSTRIAL MINERALS

Industrial minerals form a very important part of Slovakia's mining reserves, making up some 75% of total reserves – 11,762Mt – with 90% classified as economic reserves. From an economic perspective, the most important industrial minerals extracted in Slovakia and

Mining Journal

Investor Seminars

www.investor-seminars.com

Base Metals Day

Friday, October 9 (Morning event)

Exclusive mining seminars in the world's financial centres

Since the dramatic fall in base-metals prices during the second half of last year, there has been an encouraging recovery in 2009. Zinc and copper have been noteworthy achievers, and the price of nickel also rose in the second quarter. Restocking continues to underpin these metals prices and, although metals consumption remains depressed, investors are once again showing interest in the sector.

The BASE METALS Investor Seminars event will provide our investor audience with access to some of the hottest information around. It is free to attend, is tightly defined, and puts BASE METALS in the spotlight.

All the Mining Journal Investor Days are free for investors to attend and will provide invaluable insights into these exciting sectors.

Early registration for these events is essential as we only have limited places available.

Presenting companies

We are pleased to announce that the following companies are taking part in October's Base Metals Day:

Further companies to be announced shortly

AUGUSTA RESOURCE CORPORATION

FRONTIER MINING LTD

SELWYN RESOURCES LTD.

Donner Metals Ltd

London – schedule 2009

Fund Managers' Choice Day
Wednesday, Nov 4

Australia Day
Monday, Nov 30

These events lead up to Mines and Money London on December 1 and 2.

Seminar venue:

The Lincoln Centre

18 Lincoln's Inn Fields

London

WC2A 3ED

To register and for more information, contact:

Sales and sponsorship opportunities
gareth.hector@aspermontuk.com
(Advertisement & new media director)
Tel: +44 (0)20 7216 6057

Delegates and logistics
natalie.wootton@aspermontuk.com
(Marketing executive)
Tel: +44 (0)20 7216 6088

To register, please visit the website
www.investor-seminars.com

VSK's Markusövce–Sąfárka gypsum open pit

exported mainly within Europe are magnesite, limestone and dolomite. Other industrial minerals of significant importance and/or potential are silica sands, gypsum, rock salt, bentonite and zeolite.

According to the Register of Reserves of Mineral Deposits of the Slovak Republic, 298 reserved deposits of industrial minerals were registered in Slovakia. Industrial mineral mining (13.4Mt) accounted for almost 36% of the total mine production in 2008.

MAGNESITE PRODUCTION

SMZ as Jelšava (Slovak Magnesite Works Inc Jelšava) is one of the top European and world producers of loose basic monolithic refractory mixes with its own resource base. The deposits of magnesite rank among the largest in the world. With its specific mineral properties, it represents a unique source of ferric magnesite, used to produce basic refractory bricks in the cement industry and basic monolithic mixes in the steelmaking industry.

With its 100-year history, the magnesite plant in Jelšava is the most important magnesite producer in Slovakia. The majority of production is used in metallurgical, ceramic, chemical and construction industries and agriculture. Currently, more than 80% of total production is exported.

Slovmag as Lubeník, a joint-stock company owned by Russia's Magnezit Group, is a producer of shaped and unshaped refractory products with its own resource base. The products from the Lubeník plant are used in heat aggregate linings in iron, steel, cement, lime, glass and other industries, and a smaller part of the production is used in agriculture.

Crystalline magnesite deposits of the Western Carpathians are among the largest in Europe. The most important deposits are in Carboniferous rock complexes. Magnesite deposits of major economic importance occur in a long strip in the central and eastern part of the Slovenské Rudohorie Mountains, where the large Jelšava – Dúbravský Massif and Košice – Bankov Lubeník deposits are situated along with other smaller deposits.

The major minerals are magnesite and dolomite, accompanied by chlorite, talc and graphitic substance. Admixtures of limonite, goethite and hematite, produced by the weathering of magnesite (breunnerite) and dolomite, represent undesirable impurities. The deposit bodies are lens-shaped and single lenses are often tectonically fractured. Most of the magnesite produced is exported (Ukraine 44%, Germany 11%, Czech Republic 11% and Russia 11% in 2007).

EMED Mining's Biely Vrch deposit and surrounding prospects historically yielded 3Mt of gold

MINING IN PROTECTED AREAS

MINING operations are prohibited in protected estates, nature reserves and nature monuments. In the case of national parks, mining operations and operations employing mining methods are prohibited, and an approval from the nature protection agency is required for technical-geological work.

In protected landscape areas, mineral exploitation is not prohibited by law, but an approval from the nature protection agency is necessary for the activities listed above.

Veronika Šandová is a communications manager at EUROMINES – European Association of Mining Industries, Metal Ores and Industrial Minerals in Brussels. Geological data, production and raw materials trade data – courtesy of State Geological Institute of Dionyz Stur – 2008, 2009