

Turkey – a star in the making

BY KERIM SENER

IN 2008, the Republic of Turkey celebrated its 85th anniversary. In under a century, Turkey has transformed from a bankrupt state into a powerhouse of the global economy. Despite decades of political mismanagement and the odd military coup, the country has experienced a tremendous and sustained burst of development, triggered by massive consumer demand in the early 1980s.

The country contains evidence of a rich mining history dating back almost 9,000 years, and it is apparent that the extraction and smelting of copper ores in Anatolia contributed to the rise of civilised man and the dawn of the Bronze Age. For millennia, Anatolia was home to the ebb and flow of many great civilisations, all of which relied on the rich geology and mineral potential that lies beneath what is modern Turkey.

Mining now constitutes a critical part of the Turkish economy, and contributes significantly to the supply of raw industrial materials and energy products to domestic heavy industry. Mining has historically contributed about 1.5% of total GDP, but this figure could be increased substantially if domestic processing capacity were increased and if mineral exports were shipped in more beneficiated states. Total foreign investment in the Turkish mining sector is estimated to be US\$1.7 billion, while the market for related equipment and services is approximately US\$1.8 billion.

Turkey accounts for an important share of world industrial mineral output and produces about 70 different mineral commodities from a few thousand mines. Recently, the country has been recognised as an important destination for gold exploration and devel-

With a rich geology still largely unexplored, a positive economic environment and a government supportive of mining companies, there seems to be no stopping Turkey – especially as it moves towards accession to the EU

opment companies. Several new gold mines have come on stream in the last decade and have now become Europe's biggest producers, eclipsing the combined production of previous leaders Sweden and Bulgaria. Gold is now one of the most important commodities produced in Turkey.

POSITIVE ECONOMIC ENVIRONMENT

Turkey boasts the 15th-largest economy in the world (measured by GDP, purchasing power parity) and is often considered an alternative BRIC state. It has a youthful, well-educated and fast-growing population. Standards of living have improved dramatically since 1980 and recent economic reforms have encouraged consumer growth and inspired great social creativity.

Since EU accession talks began (*see box, p22*), various legislative reforms have been introduced to liberalise economic sectors, privatise state operations, improve trade regulations and reduce government intervention. These reforms have helped attract record levels of foreign direct investment (US\$22 billion in 2007) and caused a reduction in CPI inflation (8.4% in 2007). Other initiatives have been the streamlining of incorporation laws, which means it now takes an average of six days to form a company, the relaxation of foreign investment regulations and the introduction of an improved mining law. As a result of this positive environment, there has been a large influx of foreign capital into the country's mining sector.

State mining royalties payable on production vary from 2% to 4% (depending on the commodity) of the pit-head sale price, although the figure is modified if

TURKEY'S CONTRIBUTION TO ANNUAL GLOBAL PRODUCTION*

Boron minerals	71%
Feldspar	35%
Antimony	21%
Perlite	17%
Magnesite	14%
Pumice	11%

* figures provided are the average production for the five-year period 2003-2007, for which data is available

the resources lie within forestry ground (33% increase in royalty) or if a plant is constructed on site (50% reduction in royalty).

MINING LAW SET TO BE REVIEWED

In January 2009, a decision by the Turkish Constitutional Court required that the mining law be reviewed this year. The principal issue is the mechanism by which environmental permissions are granted for mining and exploration activities and how the environmental regulations work in conjunction with the mining law. During this review, which is expected to last one year, the 2004 law and environmental regulations will remain valid. While causing some uncertainty in the sector, the revised regulations should be welcomed. The existing disjointed mechanisms of environmental permitting have left operators open to criticism and resulted in several court cases involving the validity of environmental impact assessments.

In 2004, legislation concerning value-added tax (KDV) was introduced to provide an incentive to gold

TURKEY: FAST FACTS

Capital: Ankara
Population: 72 million
GDP: approx. US\$900 billion in 2008
Main commodities: Coal, copper, gold

Although Konya is still in its early stages, Stratex has high hopes for the project, a joint venture with Teck Cominco, with drilling completed at Gölçük and Karacaören. Pictured are people on a field trip examining drill-core from Konya

and silver explorers, enabling the reimbursement of KDV on certain exploration expenditure. However, this legislation did not permit the reimbursement of KDV charged by the Istanbul Gold Refinery for processing, so producers were effectively forced to export their doré for refining outside of Turkey. In February 2009, an amendment to the tax regulations exempted the Istanbul Gold Refinery from charging KDV, ending this awkward export arrangement.

DIVERSE MINING PRODUCTION

By tonnage, lignite and coal, marble, feldspar, iron ore, boron minerals, pumice and chromite production dominate the mining industry of Turkey. While production of these major minerals has traditionally been in the hands of Turkish entities, a significant level of foreign investment in these and other commodities has occurred in recent years. For example, Exxaro Resources Ltd has recently allocated R110 million (US\$11 million) to acquire and explore zinc, lead, copper and iron deposits in Turkey.

Coal is the most significant mineral commodity produced in Turkey and is mined almost exclusively by state-owned operations. Approximately 57Mt of lignite, 2.8Mt of hard coal and 0.6Mt of bituminous shale is produced annually (figures provided are the average production for the five-year period 2003-2007, for which data is available). Anthracite and bituminous coal is mined by Türkiye Taşkömürü Kurumu which operates the Karadon, Üzülmaz, Kozlu, Armutçuk and Amasra mines. These mines are contained within the largest coalfield in eastern Europe, which lies near Zonguldak on the Black Sea coast. The mines produce high-quality coking coal which is used by nearby iron and steel factories. Lignite is produced primarily in western Turkey by Garp Linyitleri İşletmesi Müessesesi Müdürlüğü which operates the Tunçbilek open-pit and Ömerler underground mines, and Ege Linyitleri İşletmesi Müessesesi Müdürlüğü which operates the Soma mines. A number of smaller coal-mining operations are owned by private companies.

Iron ore is sourced almost exclusively from the high-grade (60-66%) mines of the Divriği region in eastern Turkey, which are operated by Erdemir Madencilik San.

ve Tic. AŞ. Most of the ore is transported 900km to the Ereğli (2.8Mt/y capacity) and Karabük works (1.9Mt/y capacity), in the Black Sea region or to the Iskenderun works (1.6Mt/y capacity) on the Mediterranean coast. Turkish domestic iron-ore production is not sufficient to meet demand and the country relies on imports of iron-ore concentrates. Bauxite (50% aluminium) is mined from the Seydişehir and Akseki mines in Konya by Eti Alüminyum AŞ, which is owned by Cengiz Holding Co.

Chromite is produced from several deposits across the country, notably by Yildirim Holding Inc (Eti Krom), Çevikler, Dedeman and Besler-Bilçaç. Eti Krom is the largest refractory chrome-ore supplier and the only high-carbon ferrochrome producer in Turkey, producing 0.7Mt/y. Dedeman Madencilik mines high-grade (45-46%) chromite from the Toruntepe, Pınarbaşı and Pulpınar (Kayseri) mines and the recently-acquired Aladağ (Adana) mining cooperative (reaching 0.2Mt/y). A surge in chromite supply was recorded during 2007 and 2008, but with reduced demand in 2009 it is expected that several smaller producers will close.

The largest copper producer in Turkey is Cengiz Holding, which operates the Murgul and Küre mines (combined 4Mt/y of ore) and the Samsun copper smelter. Other significant producers of base metals are the Inmet Mining Corp-owned Çayeli Cu-Zn

“With Turkey’s ever-growing infrastructure, extremely positive mining code and excellent tax framework, there are few better countries in which to explore today”
*Bob Foster,
Stratex International*

European Nickel’s Çaldağ project is the largest foreign direct investment in the Turkish mining industry to date, the company says



European Nickel has finally been granted forestry permits for its Çaldağ heap-leach nickel laterite project

mine (32,700t/y copper and 47,600t/y zinc in 2008) and the Çanakkale Madencilik Koru Pb-Zn mine.

European Nickel plc is developing the Çaldağ heap-leach laterite nickel project in Manisa province, which is projected to produce 20,400t/y of nickel and 1,200t/y of cobalt. In February 2009, the project was finally granted its forestry permits following an

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ISLAMIC REPUBLIC OF AFGHANISTAN

Ministry of Mines



REQUEST FOR EXPRESSION OF INTEREST HAJIGAK IRON DEPOSIT

The Islamic Republic of Afghanistan, through the Ministry of Mines, is offering the mineral rights to the Hajigak Iron Deposit and the surrounding lands exhibiting exploration potential through a Tender Process. The process is expected to culminate in the granting of exploitation and exploration concessions via a Mining Contract.

According to the Afghanistan Geological Survey and the British Geological Survey, the world-class Hajigak iron deposit(s) have an estimated resource base of some 1.8 billion tons at an estimated grade of 62% Fe (using the Russian classification system). These resources occur in 16 ore bodies, as much as 5km in length 380m wide and more than 550m down, along a zone over 32km in length. Previous feasibility studies indicate that the bodies are amenable to open pit mining methods. Resources of coking coal are available, providing the possibility of creating an integrated iron and steel facility. The deposit is located in the mountainous Bamiyan Province, 130km west of Kabul.

Given that natural resources are a priority for the economic development of Afghanistan, the Ministry is interested in those companies that will commit to development of the Hajigak deposit on an accelerated basis. The eventual operations are expected to include a coal mine, a power generation facility, the iron ore mine/processing facilities and transport assets for iron ore and end products.

Preliminary data about the Hajigak deposit will be available at the Ministry's offices by March 20, 2009 and online on the Ministry's website at <http://mom.gov.af>.

Applicants are expected to be international investors or groups with a proven track record in ownership, financial capability and technical competence in iron ore exploration and development of the mining, processing and marketing of iron, steel and finished products.

To pre-qualify, prospective bidders must submit verifiable evidence of their Technical, Managerial and Financial capacity to explore, develop and mine the Hajigak deposit, including, but not limited to:

- Successful investment and technical management of iron ore exploration and development;
- Developing and operating successful mining and mineral processing facilities, in an environmentally responsible manner with positive engagement with all stakeholders; and
- Financial capacity to develop and operate large capital projects.

The Ministry of Mines has identified development objectives for the tender. Award of the Mineral Rights will be made to an entity that can provide:

- ✓ Sustainable development of the deposit(s) generating long-term royalty and tax revenue;
- ✓ Infrastructure improvements benefiting the mine operations and the country as a whole;
- ✓ Operations emphasizing responsible environmental, social and employment programs;
- ✓ Effective exploration of the exploration concession areas with the goal of identification of new iron resources; and
- ✓ Creative approaches to the project's development are encouraged.

METHOD OF APPLICATION

Interested parties should indicate their interest by providing the following documentation and information in English and/or Dari:

- Full name of company and contact person, postal address, telephone / fax numbers and e-mail address
- Ownership structure of company;
- Audited financial statements for the past five (5) years and most recent management or annual company reports that summarize company activities and operations;
- Technical and operational capabilities including number of years in iron exploration, iron mine development and processing of iron ore;
- Composition and profile of management and technical team showing qualification and years of experience in iron ore exploration and / or mining, metallurgical processing, and the environmental and social disciplines; and
- Experience with exploration and development of similar size deposits in developing countries.

The applicants are also encouraged to submit an Executive Summary up to five pages in both English and in Dari. Voluminous corporate reporting documentation (10-K, 10-Q, AIF, Annual Reports, etc.) can be submitted in English. An original and five (5) copies of the Expression of Interest in a sealed envelope, clearly marked "EOI HAJIGAK TENDER" at the top right hand corner shall be delivered to the address below not later than April 30, 2009. Applicants are advised that typical document courier services require at least one calendar week for delivery to Kabul, and that the work week is Saturday through noon on Thursday.

Afghanistan Ministry of Mines and Industry
Mr. Hafizullah Afzaly
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Kabul, Afghanistan
Tel: +93 202 102 410 or +93 202 100 309
FAX: +93 202 934 420
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Upon receipt of the Expressions of Interest from interested parties, the Ministry will evaluate and pre-qualify applicants for the Hajigak deposit. Successful applicants will be notified by the Ministry of Mines on or before May 20, 2009. The list of successful applicants will also be posted on the Ministry's website.

Thereafter, pre-qualified applicants will be issued a Bid Package for the Hajigak deposit. Details of the bidding procedure will be contained in the Bid Package.

Gustavson Associates is the Transaction Advisor to the Ministry of Mines. All applicants are requested to send an email confirmation of the submittal of their Expression of Interest that includes the date submitted and courier tracking number, if applicable, to hajigaktender@gustavson.com



Antolia Minerals has finalised a C\$58 million financing agreement which will be used to fund construction and start-up of its Çöpler gold project

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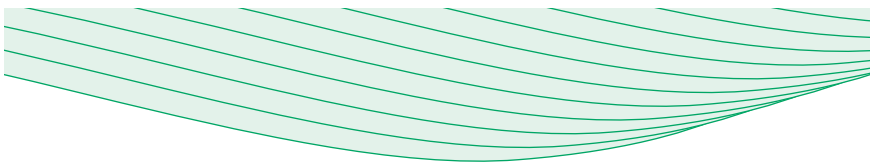
unprecedented two-year delay. The company has announced a framework financing agreement for development of the project with Chinese partners Jiangxi Rare Earth and Rare Metals Tungsten Group Co Ltd, via a guaranteed US\$350 million debt facility.

The company reported in February that over 80% of the engineering design work had been completed and US\$70 million had been spent on engineering design, roads, water, power and long-lead items. European Nickel will invest in a three-year US\$16 million sustainable development investment programme with the local government. Çaldağ will use treated water to reduce the mine's use of the region's limited water sources. Managing director Simon Purkiss said in the February announcement that the project represented the largest foreign direct investment in the Turkish mining industry to date. "It will bring real and tangible benefits to all stakeholders," he said. (See p12-13.)

PRECIOUS METALS

Gold production is under way at five sites in Turkey. Kisladag is operated by a subsidiary of Eldorado Gold Corp. The mine contains proven and probable reserves of 5.5Moz. The deposit will be mined at a rate of 240,000oz/y for 15 years, at a cash cost in the region of US\$250/oz. The mine became operational in mid-2006 and, despite temporary closure between August 2007 and March 2008 following a dispute over its environmental impact assessment, has already extracted about 396,500oz. Gold is also produced from the Ovacik (200,000oz/y),

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European Nickel gets the green light for Çaldağ

The approval of the forestry permit for the Çaldağ project signals a green light for development, pending completion of project finance with European Nickel's Chinese partners.

This will be the largest direct foreign investment in Turkey's mining industry and will bring tangible benefits to the local communities through jobs, skills training and community development programmes.

The project cost is estimated at US\$428 million for 20,400tpa of contained nickel production over 14 years, which translates to a low capital cost of US\$6.12 per annual pound of nickel.

European Nickel offers near-term nickel production using low cost, proven heap leach technology





Kiziltepe is one of the main deposits at Ariana Resources' Sindirgi gold project. Pictured is the Arzu south vein

GOLD COMPANIES LEAD EXPLORATION

Long overlooked, the country is now attracting the sort of exploration attention its rich geology deserves. Interest in the exploration sector has been spurred by the activities of several gold companies, both domestic and foreign owned. While many of the larger companies, including Newmont Mining Corp, Rio Tinto and Teck Cominco Ltd, remain active, it is the junior exploration companies that have drawn the most local and foreign interest in the last few years.

From just a handful of companies in 1990, there are now at least 24 gold exploration companies operating in Turkey. This exploration activity has seen Turkish gold resources/reserves increase from 16t in the early 1990s to 700t by 2007, and has resulted in the start-up of four hard-rock gold mines. Other important gold development projects include Efemçukuru and Kaymaz, in western Turkey, and Çöpler in eastern Turkey.

Anatolia Minerals Development Corp is developing the Çöpler project, which is currently the largest undeveloped gold deposit in the country (2.8Moz proven and probable reserves). Anatolia plans to produce 1.3Moz over an eight-year mine life at a cash cost of about US\$254/oz. The first gold pour is expected in 2010, with full production of about 175,000oz/y of gold by 2011. The company recently announced the completion of a bought deal financing for C\$58 million, which will be used to fund construction and start-up of Çöpler.

In addition to mining at Kisladag, Eldorado is developing the Efemçukuru project near Izmir in western Turkey. The deposit contains proven and probable reserves of 1.2Moz and mining is planned over a period of nine years. Efemçukuru has received its environmental impact assessment certificate and the company has initiated construction of the mine.

Ariana Resources plc is developing the Tasvan


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Mastra (150,000oz/y) and Küçükdere (80,000oz/y) mines which are operated by Koza Altin Isletmeleri AŞ, and from the Sart alluvial deposits operated by Pomza Export San. ve Tic. AŞ. The combined production of these five mines was about 10t of gold in 2008.



Eti Gümüş AŞ (owned by Yildizlar SSS Holding) produced 283t of pelleted silver from its Gümüşköy mine in Kütahya Province, following a large-scale expansion of the plant in 2008. This mine is the largest silver mine in Europe and satisfies 80% of internal Turkish primary silver demand. The future production target of the company is 350t/y of silver.

Following extensive drilling, Ariana has declared a resource of 186,000oz Au equivalent at its Kiziltepe deposit





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(215,000oz Au equivalent) and Kiziltepe (186,000oz Au equivalent) gold deposits in western Turkey. Trial production has now commenced from the Kiziltepe project in partnership with Eti Gümüş AŞ. The initial agreement with Eti entails a large-scale (5,000t) process trial of Kiziltepe ore using the Gümüşköy processing plant, owned by Eti and located in Kütahya Province. Gold produced from the operation will be divided on a 50-50 basis between the parties. Gold retained by Ariana is expected to be refined at the Istanbul Gold Refinery.

Meanwhile, preparations are under way for a scoping study on a 30,000oz/y heap-leach operation on the Tavsan project. Large parts of the prospect remained undrilled and there is clear potential for further resource upside. Ariana is also involved in an exploration joint venture with European Goldfields Ltd in northeastern Turkey, exploring the Ardala Cu-Au porphyry, among other targets.

Stratex International plc is exploring several locations across Turkey, notably the Altintepe (472,318oz Au), Inlice (262,300oz Au) and Karaağaç (156,798oz Au) deposits. Syrah Resources Ltd had intended to enter into a joint venture with Stratex on the Altintepe and Inlice projects, but withdrew following project due diligence. Recent exploration results have included 93.60m at 5.61 g/t Au from the Öksüt prospect, a new Stratex discovery.

Stratex chief executive Bob Foster said: "The exploration potential of Turkey is huge, and Eldorado Gold's Kisladağ porphyry gold discovery is a marker for that potential."



Continued on page 22 Ariana Resources has started trial production at its Kiziltepe project with Eti Gümüş AŞ



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Four Project Areas



Tac & Corak - Advanced Stage Projects

Over 2.3 Million Oz Au Eq. Resource - 1.8 M Oz Capped Gold
Updated Resource Estimates Early Q2 2009



Celtik & Cevreli - Exploration Stage Projects

Celtik Discovery - 18.5 Metres of 6.51 g/t Au & 0.9% Cu
Follow Up Drilling at Celtik and Initial Drilling at Cevreli Q3 2009



Less Than 15% of the Yusufeli Property Explored to Date

Tac & Corak Deposits - Open for Expansion
Celtik & Cevreli Projects - Strong Discovery Potential



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FOCUS



Ariana Resources says its Sindirgi project has the potential for a large epithermal system

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"The country remains grossly under-explored, especially given its prime location in the central part of the Tethyan Metallogenic Belt, probably the largest and most metal-endowed zone of plate convergence and magmatism in the world, stretching 16,000km from the Alps to the Himalayas and South-East Asia."

He concluded: "With its excellent and ever-growing infrastructure, extremely positive mining code, and excellent tax framework, there are few better countries in which to explore today."

Mediterranean Resources Ltd announced towards the end of 2008 that it had signed a letter of intent with Cengiz Holding to earn an initial 20% of the Tac (1.2Moz Au equivalent) and Çorak (1.1Moz Au equivalent) properties in northeastern Turkey. The

TURKEY'S PROGRESS IN EU ACCESSION

During the past several years, the Republic of Turkey has been going through a comprehensive process of economic reform and restructuring to prepare for its accession to the EU. Turkey's desire to join the EU has its roots back in the late 1950s. Turkey was declared a candidate destined to become a full member in 1999. Since then, Turkey has undergone a thorough reform process geared at meeting the membership criteria as stipulated by the EU. Negotiations started on October 3, 2005. To be admitted to the EU, Turkey must fulfil a number of benchmarks - grouped by 'chapters' - set by the EU. Since the start of negotiations, ten chapters have been opened, with one provisionally closed. The latest meeting Turkey had with the EU was in December 2008. At that meeting, two new chapters were discussed. They cover 'free movement of capital' and 'information, society and media'. The Turkish government has placed particular emphasis on structural reform efforts. Starting with the financial sector, and with the accelerated privatisation process, the government has made sweeping reforms across agriculture and social security, energy and telecommunication sectors. The economic programme focuses on restructuring the financial sector at large and removing the obstacles for private-sector-led growth. Thanks to the strict implementation of the programme, the Turkish economy has become much more institutionalised. Economic agents are now more conscious of the importance of sustaining the programme and the results it can deliver.



With special thanks to Ata Ackil, Vice-Dean, Engineering Faculty, Suleyman Demirel University, Turkey, for his contribution to this section

TURKEY: MINING 101

While mineral resources in Turkey belong to the state, the right to explore and extract minerals is delegated to legal entities or individuals through a system of exploration and operation licences. Licences are issued according to five mineral/material groups and are permitted to overlap, although no area can be held for the same mineral group by more than one entity at the same time. Group 4 licences permit exploration and extraction of most minerals and metals (including precious metals), and all energy minerals/materials.

Exploration licences are granted for a maximum five-year period and operation licences for ten to 60 years. While it is possible to mine 10% of the resources held within an exploration licence, the legal requirement to mine is not expected to be fulfilled until the third anniversary of an operation licence.

agreement entails expenditure of US\$2 million within 12 months and the provision of a bankable feasibility study on Çorak. Although these projects are located immediately adjacent to the Çoruh River, their location is not currently considered an issue from a mining perspective, although the Yusufeli dam, if built, could affect future development.

The indicated resource estimate for Corak outlined 542,163oz of gold on a gold equivalent basis at an average grade of 1.74g/t using a threshold value of \$13/t contained metal value. An inferred resource was also outlined of 606,925oz of gold on a gold equivalent basis at an average grade of 1.6g/t and \$13/t contained metal value.

Tac, which lies 8km northeast of Corak, has an indicated resource of 1Moz of gold at an average gold grade of 1.61g/t using a threshold value of \$13/t contained metal value. The inferred resource is 123,965oz of gold on a gold equivalent basis at an average grade of 1.71g/t and \$13/t contained metal value.

Mediterranean is also at the eastern end of the Yusufeli Trend, at the Celtik project. Assays from three holes confirmed a significant new discovery at

Celtik, with multiple intercepts from surface to 31m. An intercept of 18.4m assayed 6.51g/t Au and 0.9% copper.

Aldridge Minerals Inc is exploring the Yenipazar



Stratex has identified three new porphyry targets within the Konya volcanic belt (pictured) with preliminary drilling completed at two of these, Gölcük and Karacaören – part of the Konya project

polymetallic deposit in central Turkey, for which an indicated resource of 25Mt at 1.09g/t Au, 32.8g/t Ag, 0.32% Cu, 1.12% Pb and 1.47% Zn has been defined. Aldridge is earning up to 65% interest in the project by completing US\$6 million in work expenditures and cash payments to Anatolia Minerals over a six-year period. Aldridge also owns the Derinkoy gold property near Artvin.

Centerra Gold Inc has recently announced two separate exploration joint ventures with Eurasian

Minerals Inc and Kefi Minerals plc in which Centerra will earn an initial 50% of each project, with management control remaining with the local partner in both cases.

Eurasian is exploring the Akarca, Samli and Elmali properties in western Turkey, with the joint venture aiming to spend US\$5 million over a four-year period on this project. Kefi is exploring the Yanikli prospect in Artvin, with US\$3 million to be spent on this joint venture over three years. Centerra is considering when would be the best time to pursue the next stage of work after the winter recess.

Initial drilling results at Yanikli confirm that the selected targets are mineralised with gold and base metals and warrant follow-up. Kefi reported in February that all assays had been received from the first-phase diamond drilling programme at Yanikli. "The five-drillhole programme was designed to test strong gold/base-metals anomalies from soil and rock chip surveys," the company said. Drilling results included a maximum gold intercept of 2m at 20.9g/t Au and 47.4g/t Ag. Other significant gold intercepts include 14m at 1.0g/t

"During the past several years, the Republic of Turkey has been going through a comprehensive process of economic reform and restructuring to prepare for its accession to the EU"

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Au from 42m (including 1m at 9.9g/t Au from 44m) and 33m at 0.3g/t Au from 62m. Follow-up drilling is planned for later in 2009.

Nuinsco Resources Ltd is currently earning a further 50% of the Berta copper-gold project from Xstrata plc. Recent drilling results – including 711m at 0.28% Cu, 0.07g/t Au; and 459m at 0.17% Cu, 0.17g/t Au – have demonstrated the presence of a large mineralised system of low grade. Nuinsco will have earned 100% of the property after funding C\$2 million of additional exploration and an independent scoping study within four years, although Xstrata will retain a back-in right.

(Left) Kefi Minerals is drilling at the Yanikli prospect at Artvin for its joint venture project with Centerra Gold; (Right) Kefi Minerals has also been exploring in Western Turkey at its Derinin Tepe prospect

Photos: Kefi Minerals

Empire Mining Corp entered into an earn-in agreement in the Bursa copper-molybdenum-gold porphyry property in western Turkey. Subject to spending US\$7.5 million on exploration over a six-year period and delivery of a prefeasibility study, Empire will earn a 65% interest in the project from Anatolia Minerals. Recent drilling has provided encouraging intercepts such as 99.7m at 0.50% Cu and 0.007% Mo,

and 0.10 g/t Au from surface.

In late 2008, Merrex Gold Inc and its strategic Turkish partner, AgeanGold Madencilik Ltd, optioned to Roscan Minerals Corp a 50% interest in the Efemçukuru, Odemis, Ordu and Kure properties in exchange for an investment of C\$1 million in combined exploration expenditure over three years.

Since exercising its back-in right from Fronteer Development Group in late 2007, Teck Cominco has maintained its 60% interest in three advanced projects in the Çanakkale Province of northwest Turkey. Teck is committed to funding a US\$3 million exploration programme at Halılağa and a US\$1 million programme at Ağı Dağı and Kirazlı. The region has been the subject

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Early drilling at Öksüt in central Turkey



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EVAPORITE WIDESPREAD ACROSS THE COUNTRY

Evaporite deposits, including those for boron-minerals (tincal, colemanite and ulexite), sodium (trona) and strontium (celestite), are widespread across Turkey. Boron minerals are derived from deposits in the Balıkesir, Eskişehir and Kütahya provinces and are mined by the state through Eti Maden İşletmeleri Genel Müdürlüğü. This entity has exclusive rights to explore for and produce boron minerals in Turkey following a government decree of 1983. The Ciner Group operates Eti Soda, which intends to extract trona from the Beypazarı deposit in the Ankara area. Capital investment in the development of the deposit was under way in late 2008, with the aim of producing 1Mt/y soda ash and 1Kt/y sodium bicarbonate. The deposit contains reserves second only to those in Wyoming, US, and will become a globally important source of sodium carbonates.

of much negative attention from environmental activists and the Turkish media in the past year, and there is a risk that future development may be affected.

Chesser Resources Ltd is earning an initial 51% in a farm-in agreement with Eurasian Minerals on the Sisorta project in northern Turkey, for which Chesser must spend US\$4 million over a three year period. Recent drilling results include 35.2m at 3.60g/t Au from 113m, and 34.7m at 1.62g/t Au from surface.

Two private Canadian companies are also exploring in western Turkey. Valhalla Resources Ltd is exploring the Karagöz and İkiztepe-Sarp properties in joint venture with Anatolia Minerals. Ottoman Gold Ltd is exploring a licence near Ödemiş in western Turkey.

A number of Turkish companies are also exploring

or mining gold. Koza Altın İşletmeleri AŞ operates three gold mines and is now developing the Kaymaz (248,000oz) and Kaplan (1.1Moz) deposits. In October 2008, Koza purchased 57 exploration licences from Newmont, including those comprising the Diyadin project in Agri Province, for a total of US\$3.5 million – of which US\$1 million was paid up-front. Other Turkish gold exploration companies include Pregold Madencilik AŞ, a subsidiary of the Goldart Holding Group, Global

Madencilik ve Taşımacılık San. Tic. AŞ and Oremine Resources Ltd.

ENVIRONMENTAL ISSUES

It would be difficult not to be very encouraged by all of these positive developments. However, encouragement

must be tempered with the knowledge that there have been several high-profile legal cases involving foreign-owned mining companies in recent years. These cases have typically hinged on environmental issues (Ovacik, Kisladağ, Efemçukuru, Çaldağ, Cerattepe) and, apart from the Çaldağ case, all have involved gold mining companies. But it is important to note that Turkish companies have not been immune to similar environmental issues. The very recent temporary closure of the Ovacik mine, and intense media attention following drilling by a Turkish company of a project in the vicinity of a national park, are cases in point.

These examples demonstrate how prominent the mining sector is in the public eye, and any debate on environmental issues demonstrates the vibrancy of the sector and the importance of local environmental concerns. While such cases have no doubt caused unwanted setbacks for the companies involved, the process of environmental review and debate has, usually without fail, resulted in a green light, and many of the projects concerned are now operational or nearing start-up.

The one exception to this is the ongoing uncertainty surrounding the Cerattepe project of Inmet Mining. Rather oddly, the various decisions concerning the exemption of the operating licences from environmental assessment regulations have, at various times, involved three different provincial courts and this has compounded transparency issues in this unusual case. The project has now been shelved by Inmet following the most recent ruling by the Rize Administrative Court. There is now a risk that the operational licences containing the project will be cancelled.

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There is 1.2Moz gold (equivalent) at Mediterranean Resources' Tac project

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A BRIGHT FUTURE

The mining industry of Turkey has evolved dramatically during the last 20 years. The introduction of the new mining law in 2004 and the encouragement of foreign investment helped bring about a new era in Turkish mining and a large growth in output. In particular, the trigger for the incredible activity seen in the gold sector was certainly the start-up of mining at Ovacik in 2001, which signalled that gold mining in Turkey was a possibility.

Yet set against this very positive backdrop are some concerning issues. The revisions required for the mining and environmental regulations, ongoing but dated debates about foreign ownership of mineral resources, focused environmental activism and the state of the global economy have helped stir up a great deal of uncertainty for the sector in recent times.

However, as long as the revised mining and environmental regulations, when they are introduced, remain geared towards effective exploration and mineral extraction, and several positive steps are taken to reassure investors in the sector that their assets can be developed without unnecessary set-backs, the future of Turkish mining remains very bright.

Kerim Sener has a PhD in geology and is managing director of Ariana Resources plc, a gold exploration and development company focused on Turkey

Mediterranean Resources has signed a letter of intent with Cengiz Holding to earn an initial 20% of the Tac and Çorak (pictured) properties



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