

## TUNISIA

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Tunisia is a low-lying country bordered along much of its eastern extent by the Mediterranean Sea. It is the smallest of the north African 'Maghreb' countries and supports a population of only 9.4 million, with all but a small nomadic population confined to the cities. The executive President and National Assembly are elected by universal adult suffrage for five-year periods. Next elections for President and National Assembly will be in 2004.

Oil and gas are key factors in the country's economy, which has seen significant growth in industrial GDP in recent years. The estimated GDP real growth rate for 2001 was 4.8% and per capita GDP in the same period is estimated at US\$6,600. Tunisia's main oil-producing fields are El Borma, Ashtart and Sidi el Kilani, and gas is produced from El Borma and the offshore Miskar field. An oil refinery is located at Bizerte and there is a growing chemicals industry.

Non-fuel minerals contribute some 3-4% of the country's GDP, the most important product being phosphate rock, which also underpins the chemicals industry and provides substantial export revenues from fertilisers. Mining of iron ore supports a small but important iron and steel industry and the country also produces zinc and lead.

Phosphate mining occurs primarily in the Gafsa area where the phosphate beds are exposed on the flanks of elongated dome-like anticlinal structures. The beds can frequently be traced for tens of kilometres along one or both flanks of these structures, which extend eastwards for more than 130 km from the Algerian border near Tamerza. Mining is by open-pit and underground methods, two of the more recently developed mines being Kefeddour and Moulares. Production is controlled and operated by the parastatal Compagnie des Phosphates de Gafsa, which has nine operating open-pit and underground operations in the Gafsa region. Tunisia is second only to Morocco in Africa in terms of its phosphate production, producing almost 8 Mt/y. Estimated reserves are 3,500 – 4,000 Mt of phosphate.

The single most important zinc-lead operation is the Bougrine carbonate-hosted deposit, which was re-opened by Toronto-based Breakwater Resources in 1998 after being closed down by Metall Mining in 1996 in response to low metal prices. The mine produced 74.3 Mlb of zinc (as concentrate) in 2002 (2001: 83.4 Mlb) and 10.1 Mlb of lead (14.2 Mlb) from 423,414 t of ore milled (411,052 t). The average grade of the zinc concentrate during 2002 was 54.7% Zn. Mine operating costs per tonne of ore milled were US\$32.19 in 2002 and total cash operating costs were US\$0.36/lb of payable zinc. The mine had an operating loss of US\$8.5 million. Proven and probable

reserves at the end of 2002 were 1.19 Mt averaging 11.6% Zn and 2.0% Pb, with a further resource of 1.3 Mt at slightly higher grades.

In the early part of 2000, Breakwater also commenced a diamond-drilling programme on the nearby Kebbouch-Sud property about 12 km from Bougrine, following up a hole previously drilled by the Tunisian Government which intercepted 10.1% Pb over 14.4 m. Early results released by Breakwater included 2.5% Zn and 0.5% Cu over 12.7 m, 8.7% Zn and 0.8% Cu over 2.6 m, and 5.0% Zn and 0.7% Cu over 31.0 m. No further results have been declared publicly.

A Canadian company Consolidated Global Minerals Ltd (CGM) has an option-to-purchase agreement to acquire a 100% interest in the Djebba zinc-lead project. The Djebba property extends over 16 km<sup>2</sup> in the Beja district (Atlas Mountains) of north-western Tunisia, about 110 km from Tunis. A previous resource estimate for the carbonate-hosted zinc-lead mineralisation at Djebba demonstrated about 2.66 Mt at a grade of 6.14% Zn and 3.34% Pb. Zinc mineralisation has been reported over a strike length of at least 2 km and appears to be open along strike for as much as a further 2 km.

CGM has also entered into an option-to-purchase agreement to acquire a 100% interest in the Fej Lahdoum zinc-lead project. Fej Lahdoum consists of four adjacent and contiguous blocks totalling 197 km<sup>2</sup>: Jebel Fej Lahdoum, Kef Dougga, Kef El Adhama and Ain Jem-mala. The Jebel Fej Lahdoum permit area encloses the currently active Fej Lahdoum Zn-Pb mine, owned and operated by an agency of the Tunisian Government. The blocks straddle a 30 km-long geologic structure that contains nine large geochemical anomalies, and two known orebodies. The Dar N'Hal Nord orebody is open along strike and to depth, with the current resource totalling 2.0 Mt at a grade of 5% Pb and 8% Zn. The Dar N'Hal Sud orebody is likewise open along strike and to depth, with current reserves of 500,000 t at 13% Pb and Zn (combined). CGM also reports nine major surface geochemical anomalies that range in size from 0.5 km<sup>2</sup> to 3.5 km<sup>2</sup>.

CGM also has an option on a permit area, 16 km<sup>2</sup> in size, adjacent to and incorporating the Bou Jabeur mine. The permit covers the eastward extensions of the geologic structures that host the Bou Jabeur ore bodies. Bou Jabeur, a 1,000 t/d mine and mill, currently operated at 150 t/d, has reserves estimated at 4.2 Mt at 1.3% Pb, 3.9% Zn, 30.09% BaSO<sub>4</sub> and 8.18% CaF<sub>2</sub>. CGM must spend C\$500,000 in evaluating both of the two mines in order to exercise the options.

In early 2001, Aurora Gold Corp. signed an agreement with Billiton plc relating to Aurora's Hammala and Kebbouch exploration permits, some 170 km southwest of Tunis. The property covers an area of 42 km<sup>2</sup> that encompasses substantial soil geochemical anomalies overlying strata equivalent to those hosting Bougrine. The agreement enabled Billiton to earn up to a 70% interest through exploration expenditure.

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