

MOROCCO

*By Kyran Casteel
Mineral Industry Intelligence & Information
Woburn Sands, UK*

Hailed as the country's first free and fair vote, the 2002 general election returned previous Prime Minister Youssoufi's party with more seats than any other but again too few to form a one-party government. Given the economic problems Morocco still faces, the increasingly confident King Mohammed VI called on a non-party establishment technocrat to head the new coalition. Monsieur Driss Jettou has long experience as a senior government minister and as a member of major corporate boards of directors, including a stint as head of Office Cherifien des Phosphates (Groupe OCP). Figures indicating that tourism – which had previously helped drive the economy forward – had not only stabilised after the effects of 9/11 but had resumed growth were welcome early news for the new administration.

Spearheading the development of foreign relations in 2002, King Mohammed visited Russia and made a second visit to the US, where President Bush suggested a free trade agreement that would be the first between the US and an African nation. Such a deal may prove incompatible with the already planned Moroccan-EU free trade agreement but the same does not apply to the proposed Morocco-Tunisia-Egypt-Jordan free trade zone, the subject of a draft agreement drawn up during 2002. As regards the Western Sahara, UN Envoy James Baker presented the concerned parties with new proposals early in 2003.

The King identified unemployment as Morocco's major problem and stressed the need to attract more foreign investment. These are key issues for the minerals sector in addition to the immediate marketing difficulties of 2002. The country's major mining organisations worked hard to offset low prices in order to achieve satisfactory corporate results and national foreign exchange earnings whilst maintaining employment in the sector. Meanwhile, mining still offers opportunities for economic and social development in arid and mountainous areas of the country that lack other potential, and remains a significant focus for national development.

Mineral production

Both the dynamic nature of the minerals sector and the weakness of world markets were evident in 2002. Total mine production recorded by the Ministry of Energy and Mines was 24.3 Mt, 4.5% more than in 2001 when mineral resources made a 2.77% contribution to national GDP, not including conversions of concentrates to derivatives. But mining sector turnover fell by 3.4% to US\$1.93 billion.

Although more than 80 companies in Morocco produce 20 different mineral products, employing 37,445 people in 2001, Groupe OCP accounts for the bulk of both mined ore and derivative products output. Through January-

September 2002, all minerals contributed 37% of total Moroccan exports by value, with phosphate rock shipments accounting for 84.5% of minerals export revenue and 31.4% of total export value. Other industrial minerals chipped in 5.7% of the mineral exports and metallics 9.8%. OCP's exports of phosphoric acid contributed 33.6% of total exports by value and solid fertilisers 29.4%.

Metallic mineral and concentrates production is dominated by the private sector ONA Group through its mining holding company Managem (Table 1). ONA is also a major shareholder in steel producer Sonasid and a partner in Lafarge Maroc, which supplies over 40% of Morocco's grey cement. Construction of a second cement works at Tetouan, with a capacity of 960,000 t/y is scheduled for completion in 2003 and involves the Managem engineering unit Reminex, as does engineering of a 600,000 t/y electric steel plant for Sonasid at Jorf Lasfar that will supply the company's two rolling mills.

Phosphates (Table 3)

While the world market for phosphate products has reduced in recent years, the overall surplus of rock available for export has not; phosphoric acid capacity in particular has continued to increase. For the Moroccan Government, any significant reduction in phosphate capacity or employment to improve short-term financial performance is not an option. Therefore, Groupe OCP's main market strategy is to maintain the capacity flexibility needed to secure its outlets by matching changes in overall and specific geographic demand and in the required product mix. This policy enabled Morocco to increase its share of a reduced world export market for phosphate rock in 2001 to 35.1%, despite China sharply increasing its export sales. At the same time, OCP has moved to reduce cyclicalities by forging deeper customer relationships to maintain the level of a proportion of its deliveries. And it is meeting its social obligations as well as the need to be a low-cost operator through a programme of enhancing employee skills and equipment productivity.

Groupe OCP operates three mining centres – Khouribga, Benguerir/Youssoufia, and Boucraâ/Laâyoune – and two sites dedicated to converting phosphate rock to chemicals, Safi and Jorf Lasfar. Significantly higher production through most of 2002 allowed OCP to increase phosphate rock exports reportedly by 4.8% to over 11 Mt, worth US\$400 million. Phosphoric acid sales tonnage increased even more, climbing by 7.5% to 1.58 Mt, but weaker prices meant that revenue rose only 3% to US\$458 million. Phosphate fertiliser products exports totalling 2.5 Mt earned a further US\$416 million. Whereas rock exports accounted for 88% of total deliveries in 1980 they now absorb less than 50%. These relativities underline the wisdom of OCP's 25-year programme of raising rock conversion capacity. To ensure the availability of rock supply in tonnage and required grade terms, OCP is developing a new mine at Sidi Chennane in the Khouribga area and a new surface mine within the Youssoufia complex. In addition a new flotation plant is planned for Ben Guerir.

In 2002, the Euro-Maroc Phosphore partners, comprising OCP, Belgium's Prayon and the German firm CFB, agreed to double capacity at Jorf Lasfar.

OCP extended its participation in overseas fertiliser production with the purchase of a 74% stake in the Indian fertiliser manufacturer Paradeep in joint venture with the Birla group. This is expected to secure sales of 800,000 t/y of phosphate and 200,000t/y of phosphoric acid.

Other industrial minerals (Table 2)

Although they are limited in tonnage and value terms compared with phosphate, Morocco does contribute significant amounts of other industrial minerals to the world market. A feature of this sub-sector is the large number of small-and medium-sized operators (PMEs). They account for 12% of all mineral sector employment, 31.4% if OCP is excluded.

The major product is barites, with Comabar being the largest producer but PMEs contributing 68%. Next in terms of export value is fluorspar mined by the Managem subsidiary Samine, which has increased production following a move to a new ore area and installation of a sulphide flotation circuit. Manganese dioxide mined by SACEM is the third largest export earner, although only sixth in tonnage terms. Bentonite, 90% of it mined by PMEs, ranked fourth by value in 2001 but may have been overtaken by salt in 2002: rock salt mined underground and sea salt, together, rank second to barites in tonnage terms and an increasing volume is being exported. Other significant exports include smectite clay, ghassoul and, since mining started in 2002, celestite. Pyrophyllite output grew sharply in 2002 but talc production declined.

Compared with the equivalent period of 2001, total industrial minerals output of 766,966 t in the first nine months of 2002 was 12% higher, with all products except bentonite registering gains; total sales were 11.9% higher in tonnage terms but overall value was down by 3.3%, while exports rose 18.2% in volume but declined by 4.8% in value. The proportion mined by PMEs during the first nine months rose from 31% in 2001 to 39% in 2002.

Metals

Morocco's largest metallic mine is El Hajjar, a zinc operation owned by Managem subsidiary, Cie. Minière des Guemassa (CMG). The mine had previously used both on sub-level stoping and cut-and-fill methods extensively, the latter, are now used for most production. The change has tended to reduce concentrate output. In addition, zinc prices have been depressed. In contrast with El Hajjar, investments in mine mechanisation and new processing plant at Imiter have helped Soc. Metallurgique d'Imiter (SMI) to improve its performance. As a result, SMI's silver overtook zinc as Managem's greatest revenue earner in 2001, contributing 28% of turnover. However, with lead and copper at El Hajjar adding 4% each to zinc's 22% contribution, CMG remained Managem's largest earning company.

CTT, merged with CMBA as a single entity in 2001, now converts most of the cobalt concentrates produced at Bou Azzer, as well as re-treated tailings to cathode by hydrometallurgical processes and cobalt cathode output rose to 1,341 t in 2001. Cobalt metal plus concentrate sales accounted for 17% of turnover and the operations also yielded nickel and arsenic. Gold contributed

10% of turnover and fluorspar 8%. The CMBA complex at the CMG site also houses the Sommital copper sulphate manufacturing unit and the unit converting purchased calamine ore to zinc oxide, which was officially opened early in 2003. Miscellaneous earnings constituted 7% of 2002 turnover. The overall effect of metal price movements and capital investment on Managem in 2001 was complex. Funded turnover fell by 3.2% from the 2000 level to DH1,690 million but production earnings fell by about 42%.

During what was the second year of ONA's 2001 – 2003 strategic business plan, Managem continued to expand the scope of its activities. Although both CMG and Akka have been successful developments, the Group realised some time ago that its growth potential within Morocco was limited by the typically small to medium size of ore bodies found to date. On the basis of financial resources, technical expertise and cultural links, Managem decided to seek gold targets in West Africa as a first international venture and in 1999-2000 built a 53.28% interest in the Canadian junior mining company Semafo. Through Semafo, the Moroccan group manages the 60,000 oz/y Kiniero open-pit gold mine (formerly known as Jean Gobelet) in Guinea, which opened in April 2002. Two other Semafo gold projects are well advanced, Samira in Niger and Mana in Burkina Faso. Meanwhile, in Morocco, Akka Gold Mining is adding a second production unit, Ifarar, to the main Iourirn Centre, and production in 2003 is projected to be 360,000 t ore. At the former Bleida gold exploration is making encouraging progress.

As well as consolidating its position as a gold miner, Managem continues to invest in a number of operations that maximise the overall potential of its properties. Development of the Draa Sfar underground zinc mine 35 km west of Marrakech continued apace, while testwork established the modifications necessary at the CMG concentrator in order to treat a mix of El Hajjar and Draa Sfar ores. These changes are under way. Draa Sfar has reported measured resources of 5.3 Mt at 6.98% Zn, 2.82% Pb and 0.29% Cu.

Two other significant players in Morocco's non-ferrous metals sector are Cie. Royale des Asturienne des Mines, a subsidiary of the French group Nord-Est, and the Morocco-UAE investment vehicle Soc. Maroc Emirats Arabes Unies (Somed). Asturienne owns 51% of Cie Minière de Touissit (CMT), which in turn partners Somed in the lead and silver smelting company Soc. des Fonderies de Plomb de Zellidja (SFPZ) based at Oued El Heimer in northern Morocco. Somed also owns 80% of the secondary lead smelting firm Soc. Africaine des Metaux et Alliages Blancs. Small tonnages of lead and zinc mined by artisans are handled by the state-owned organisation Cadetaf.

In 2002, CMT operated both the older Touissit and newer Tighza lead mines, supplying 55,000 t lead/silver concentrate, but shut Touissit early in 2003, thereby reducing in-house feed to the smelter to about 35,000 t. Tighza also produces some zinc. Meanwhile, SFPZ has invested US\$20 million in improvements to the smelter that will help increase its throughput capacity to 160,000 t/y and high grade lead ingot capacity to 100,000 t/y. The feed shortfall will be made up partly by buying concentrate from the Guemassa plant but mainly by imports. Production at Zellidja is currently running at about

85,000 t/y of lead and 70,000 kg/y of silver. SFPZ typically exports more than 95% of its production. Lead metal exports in 2001 were valued at DH339 million. In a separate development, CMT has acquired from BRPM the former Zgounder silver operation which closed in 1977.

Minerals development

Government, parastatal agencies, domestic and foreign private-sector firms are all active in the resource development process. The Ministry of Energy and Mines, which incorporates the Geological Survey, is proceeding with a national Mining Development Plan. The Bureau de Recherches et de Participations Minières (BRPM) manages mineral exploration and the licensing of commercial exploitation, and the Office Nationale de Recherches et d'Exploitations Pétrolières (ONAREP) does the same for petroleum and natural gas. However, there are plans to merge the two closely-linked organisations in the near future. Groupe OCP remains responsible for the crucial phosphate industry.

BRPM focuses on exploration to the point of defining exploitable ore bodies, which are then tendered for development. Some private-sector bidders form joint ventures with BRPM to undertake these projects (for instance Akka Gold Mining) and these, added to those already BRPM-owned ventures that have not yet found private sector buyers, yield the Bureau an annual portfolio income of around DH60 million. BRPM also provides exploration drilling and laboratory services for mining companies, and mine development services both for the industrial mines it still manages and for third parties.

In 2001, BRPM explored 27 targets, 12 of these being gold mineralisation (in some cases with silver and copper), 13 being base metals including copper, lead, zinc and tin, and two being industrial minerals. During 2002 the Bureau continued the strategy of collaborative mineral exploration effort, which has helped introduce modern technology, but has had to seek a new partner to replace Outokumpu since the Finnish group decided to wind down its mining branch. Meanwhile, in April 2002, the Irish exploration company, Ormonde Mining, agreed a 40:60 joint venture with BRPM on a gold property in the Tamlalt area.

Other significant activities within BRPM's ongoing partnership programmes include: training programmes provided by Japan's International Co-operation Agency; the definition of copper targets through a partnership with Centrum Badawczo Projectowe Miedzi (Cuprum) of Poland; a range of geographical, geological and other studies with the Geological Institute of Poland; exchanges of information and personnel with the Polytechnic University of Madrid; reconnaissance work on clay indications in three Tertiary basins with Italy's Caolino Panciera region; and collaboration on mining services with Iran Itok Co.

Energy

Despite *per capita* energy consumption still well below world average levels, Morocco's national energy offtake more than doubled between 1980 and 2001. About 97% of the approximately 10 Mt of oil equivalent utilised in 2001

was provided by importing 8.5 Mt of petroleum products, 4.7 Mt of coal and 1,564 GWH of electricity. The net energy imports bill in 2001 was about DH16,600 million, split as to 83% petroleum products, 14.5% coal and 2.5% electricity. With Minister Boutaleb responsible for energy supply, geological survey and mining, the government has a unique appreciation of the politically and psychologically important approximate value balance between energy mineral imports and mineral sector exports, the latter totalling DH15,588 million in 2001.

There is limited hydrocarbon production: approximately 13,000 t of condensate and crude oil and 50 MNm³ of natural gas in 2000. Building coal-fired electric power plants has reduced consumption of more expensive oil and the mineral industries have been switching from petroleum fuels to coal wherever possible as well. Petroleum products contributed only 61% of energy consumption in 2001 compared with 82.5% in 1980. Nevertheless, finding more oil and/or gas is a very high priority for Morocco and during 2001 Onarep formulated a new more focused exploration strategy. Amschutz, Enterprise Oil, Kerr McGee and TotalFinaElf all signed new reconnaissance agreements, and Energy Africa/Taurus made a petroleum operating agreement covering three permits offshore from Tiznit.

Table 1
Managem Metals and Fluorspar Production

	1998	1999	2000	2001
Cobalt – cathode (kg)	241,681	472,196	1,206,716	1,340,865
- concentrate (t)	729	4,588	11,378	15,725
Copper (t)	31,719	25,170	23,150	19,120
Gold (kg)	53.25	406	334	1,239
Lead (t)	35,635	35,140	30,470	26,610
Silver (kg)	240,412	226,642	246,204	238,043
Zinc (t)	210,936	208,056	191,128	165,780
Fluorspar (t)	n.a.	83,100	76,991	96,500

Source: Managem

Table 2
Industrial Minerals Production (t)
(excluding phosphate products)

Product	2000	2001	January-September	
			2001	2002
Barytes	343,557	467,056	323,994	361,234
Salt	162,385	233,816	157,760	203,053
Fluorspar	76,991	96,500	73,500	72,330
Bentonite	43,152	71,741	79,934	65,754
Smectic clay	30,665	40,664	31,024	34,043
Chemical manganese	25,830	13,757	13,150	16,274
Pyrophyllite	24,359	21,402	12,242	21,579
Talc	4,069	5,844	3,233	3,210
Ghassoul	2,476	2,270	1,802	2,013
Celestite	na	na	1,350	3,780

Table 3
Phosphates Product Output ('000t)

	1998	1999	2000 ^r	2001
Phosphate rock	22,644	22,163	21,378	22,222
Phosphoric acid	2,668	2,696	2,731	2,819
Diammonium phosphate	1,278	1,205	1,237	1,546
Monoammonium phosphate	84	198	349	368
Triple superphosphate	542	485	632	550
NPK fertilisers	206	200	195	239

Source: Groupe OCP. ^r Revised