

CÔTE D'IVOIRE

By Alexandra Harrison

Exploration Consultants Limited, Henley-on-Thames, UK

Côte d'Ivoire (Ivory Coast) is an independent republic of almost 16 million people. One of the larger countries of West Africa, with an area of some 322,000 km², it borders the Gulf of Guinea and is bordered inland by Liberia (to the west), Guinea, Niger, Burkina Faso, and Ghana (east). The political and administrative capital is Yamoussoukro but the commercial capital and leading port is the city of Abidjan. A narrow coastal strip is backed by a forest-covered coastal plain rising inland towards a mix of plains and low hills, with a small mountainous area around Man to the West. The highest point is Mount Nimba at an elevation of 1,752 m. Moving north, the land becomes savannah. The tropical climate is affected by distance from the sea, coastal areas have wet seasons from May to July and in October to November. In the central areas the periods are March to May and July to November, the shorter wet season in the north is from June to October. The official language is French and the former French colony, although gaining self-government in 1958, still maintains close political and economic links with France. There are 60 native dialects, with Dioula the most widely spoken. The main ethnic groups are Baoule, Bete, Senoufou and Malinke. Major religions are Islam (63%), Christianity (12%) and indigenous beliefs (25%).

The Ivory Coast is a republic; a multi-party presidential regime was established in 1960. For more than three decades after independence under the leadership of its first president, Felix Houphouët-Boigny, Ivory Coast was conspicuous for its religious and ethnic harmony, and economic progress in West Africa. However, the country's reputation for stability was shattered when General Robert Guei took power in a coup in December 1999. The first coup in the Ivory Coast in 40 years of independence, it was

followed by two major military rebellions, disputed elections and violence. Presidential elections to restore democracy in October led to yet more violence and a popular uprising that brought Laurent Gbagbo to power. But the new President's triumph has been soured by political and ethnic fighting between his supporters and those of rival opposition leader, Alassane Ouattara, a Muslim.

Main exports are cocoa, coffee, tropical woods, petroleum, cotton, bananas, pineapples, palm oil, fish and rubber-sourced latex. Agricultural products are a key element of the country's economy. Consequently, the economy is highly sensitive to fluctuations in international prices for these products and to weather conditions. Despite attempts by the government to diversify the economy, it is still largely dependent on agriculture and related activities, which engage roughly 68% of the population. Oil also plays an important role, although in recent years the downstream activities have dominated through a major refinery and separate bitumen plant located in Abidjan. GDP in 1998 was US\$11 billion, of which agriculture contributed 25% and industry 22%, with manufacturing comprising the bulk (19%) of the latter.

Underlain almost completely by Archaean and early Proterozoic rocks, the Ivory Coast has considerable mineral potential, with important occurrences of gold, diamonds, iron, nickel, cobalt, copper, manganese and bauxite having been identified. Like much of West Africa, however, it is gold that has been at the forefront of exploration since the introduction of a new favourable mining investment code in 1995.

Gold

Ity Mine is the country's major gold-producer, owned by Normandy Mining Ltd (51%) and by the state mining company Société d'Etat pour

le Developpement Minier de la Ivory Coast (SODEMI) (49%). The low capital cost, high-grade, open-pit-heap-leach operation commenced production in 1991. During 1999-00, a total of 269,267 t of ore was stacked for treatment resulting in production of 43,410 oz. Nearby additional resource potential has been identified in a 14 km-long anomalous zone. Gold production is expected to increase to 65,000 oz/y following the completion of a crushing and agglomerating plant relocation and expansion project. A plant upgrade is planned for later this calendar year.

The other operating mine, Angovia, opened in July 1999, is owned by CMA, a wholly owned subsidiary of France's BRGM. The reserve was originally estimated at 2 Mt of ore at a grade of 4 g/t gold, giving a mine life of about six years.

The Afema mine, situated in the southeast of the country, has closed temporarily due to the current gold price. SODEMI (32%) and Eden Roc Mineral Corp. of Canada jointly own Afema, which produced approximately 30,000 oz/y (935 kg) of gold.

Etruscan is acquiring the Ivorian assets of Diversified Mineral Resources which comprise the Agbaou, Hiré, Loho and Sirasso permits. The Agbaou deposit is the second largest undeveloped gold deposit in Cote d'Ivoire. High grade intercepts of 5-37 g/t are over widths of 8-28 m. Hiré hosts drill intercepts of 3-8 g/t over widths of 8-36 m. The Loho and Sirasso permits host a number of untested regional geochemical anomalies within favourable Birimian volcano sedimentary belts

Ashanti Goldfields Co. was granted a three-year exploration permit on the Allangoua permit in the southeast close to the Ghanaian border. A RAB drilling programme has commenced, with the focus being on old artisanal workings. Previous RAB drilling on the Abradine prospect showed that the mineralisation occurs in discontinuous pods with limited tonnage potential. However,

interest remained high, primarily due to the presence of the major Afema Shear Zone in Birimian greenstone-belt rocks.

On Randgold's Nielle permit a 10,000 m programme involving diamond, RC and RAB drilling is currently in progress on the 1.8 Moz Tongon Project. This programme is designed to assess the continuity and test the upside potential of mineralisation along two zones covering more than 4 km of strike length, believed to be extensions of the Syama Gold Belt from neighbouring Mali.

Golden Star Resources is actively exploring on the Tanda (Comoe) project. Golden Star has a 40% interest in the property in joint venture with North Ltd and SODEMI.

Diamonds

Alluvial diamond mining has an official output of 15,000 ct/y, of which three-quarters are said to be gemstone quality. The Ivory Coast has historically produced approximately 165,000 ct/y. All of the alluvial mining is sourced from the kimberlite fields at Tortiya, Seguela and Korhogo. Golden Star Resources has several diamond exploration projects in the Ivory Coast. African Carnegie Diamonds Plc, a subsidiary of Australian Carnegie Minerals NL, has a joint venture with SODEMI (25%) covering the 1,000 km² Bobi and Toubabakou diamond prospects. The area covers several primary kimberlitic dykes and sills. The initial target is a 6 km long stretch along the Legbo River as well as the Bobi dyke that could represent a potential source. The company was very encouraged with the diamond counts, the estimated diamond weights/t and the mineral chemistry of the indicator mineral chromite. Further mineral chemistry studies were undertaken to confirm the favourability of the mantle source rocks. The latest phase of exploration included trenching and sampling of the northwestern part of the dyke followed by diamond drilling. The project has not been active since mid-2000.

Other Minerals/Metals

Production on the Biankouma-Touba nickel deposit was due to commence in 2001, following a feasibility study carried out by Falconbridge Ltd of Canada. Falconbridge has a joint venture with Consolidated Trillion Resources and SODEMI. Reserves of nickel at the Biankouma-Touba nickel deposit are estimated at 293 Mt, with average grades of 1.46% Ni and 0.11% Co. A deterring factor is the location of the site and required infrastructure, including the construction of a railway line to the coast. Falconbridge announced plans to invest US\$500 million in nickel exploitation over five years.

The vast iron ore deposits at Mount Nimba and Mount Kalayo, in the western border area, estimated at 3,000 Mt, have so far attracted little attention due to the grade of the deposits, estimated at an average 40% iron. However, recent negotiations to develop a gas pipeline to service an iron ore pelletising plant on site has been discussed with Normandy Mining, SODEMI and a Chinese investment group. There has also been talk of a rail link between Mount Nimba to the port of San Pedro.

Other commodities targeted for evaluation are bauxite resources of 1,200 Mt, manganese resources of at least 35 Mt and tantalite deposits.