

SIERRA LEONE

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On January 18 2002, the President of Sierra Leone in the presence of other Heads of State from West Africa and a UN Special Representative in the country declared an official end to the civil strife which had engulfed the country since March 1991. This was after the successful completion of demobilisation and disarmament of all combatants. All collected arms were destroyed.

Since the official end to civil strife, the country has made tremendous progress towards achieving sustainable peace by setting in motion a series of events to build and consolidate the peace. In March 2002, the State of Emergency was lifted in preparation for a General Election. This was held in May and was certified far and wide as free and fair. President Ahmad Tejan Kabbah and the Sierra Leone People's Party (SLPP) were returned to power with an overwhelming mandate.

A Truth and Reconciliation Commission (TRC) was set up to engender reconciliation, and a Special Court was also established, with the co-operation of the UN, to try those most culpable for war crimes during the civil strife.

Also during the year, a phased withdrawal of UN forces in Sierra Leone was instituted to ensure maximum stability in the country. This was underpinned by the provision of military aid by the UK in the form of a rapid reaction force contingent and personnel to retrain and deploy Sierra Leone's own military forces. These actions ensured that the country continued to enjoy peace and stability throughout the year, and this in spite of the intensification of conflict in neighbouring Liberia and Côte d'Ivoire. Within Sierra Leone, there is now confidence that adequate security arrangements are in place, not only to ensure continued peace and stability, but also to allow economic activities to recommence throughout the country.

The mineral sector

In the past, Sierra Leone's main exports included rutile, of which it was the second largest world producer, and diamonds. There was also a significant artisanal gold industry. In the minerals sector at present, however, Sierra Leone has only limited artisanal gold and diamond production.

The artisanal and alluvial diamond-mining sector has achieved most publicity because of the association made by non-governmental organisations (NGOs) between diamond-rich areas and conflict in Africa. The UK and US Governments through their respective development agencies, the Department for International Development (DFID) and USAID, regard as a priority improving the productivity of artisanal diamond mining by the local population as a means of raising living standards above subsistence level. A report commissioned by DFID from consultants Amco-Robertson Mineral Services,

outlined a number of options as to the way forward for assistance and re-organisation. The report was published in February 2002, and a consultant was appointed to work with the Sierra Leone Government for one year to finalise and implement possible options. A wide-ranging workshop looking at all aspects of the artisanal, mechanised and kimberlite mine potential of the country and the structure of the marketing framework, including a discussion of the implications of certification and the Kimberley Process, was held in March 2003. USAID has also commissioned a study of the artisanal sector.

The Kimberley Process (KP) was initiated in 2001 following pressure from NGOs, and seeks to implement a system of international rough-diamond certification, supported by industry self-regulation, that should assure buyers that they are purchasing legitimate diamonds.

Sierra Leone established a diamond certification scheme of its own, under UN Security Council Resolution 1306(2000), before the KP certification scheme was implemented. Up until the end of 2002, there were 436 Certificates of Origin issued in Sierra Leone and diamond exports recorded during the year amounted to 351,859 ct valued at US\$41.73 million. This compared with 220,920 ct valued at US\$26.02 million exported in 2001. These figures appear to provide indisputable evidence that Sierra Leone's certification system has been successful thus far, and that smuggling is definitely on the decrease.

Moreover, with the formal adoption of the KP global certification system late in the year and its phased implementation early this year, Sierra Leone's official exports of rough diamonds are expected to increase further during 2003, with a resultant decline in unofficial exports.

It is the formal mining sector, which offers the greatest prospect of significant improvements in the country's economy. The immediate priorities are:

1) *Sierra Rutile Ltd Rehabilitation*: SRL is still negotiating with international lending institutions for a financing package to reactivate its mine and recommence production of rutile. The company has already developed an Environmental and Community Development Programme (ECDP) for the mining area, designed to ensure that the company and the local communities mutually achieve satisfactory long-term objectives in a cost-effective manner. In 2003, OPIC approved a US\$25 million loan for the project, and a €25 million grant due under Sysmin is awaited from the European Community.

2) *Koidu Kimberlite Project*: rehabilitation in preparation for a recommencement of mining of the Nos.1 and 2 kimberlite pipes at Koidu in Kono continued throughout the year. The process was begun by Branch Energy in 1996 but interrupted by the coup in May 1997. Branch is now moving ahead rapidly with this programme, with the intention of commencing production in September 2003.

3) *Mano River Resources*: Mano has identified a number of kimberlite targets from its exploration programme in Kono which commenced in

February 2002, and hopes to move rapidly towards feasibility studies for mining a series of diamondiferous kimberlites.

In addition to these priorities, the government is very keen to encourage the return to the country of other serious exploration and mining companies. In this respect, results announced by Mano River Resources' subsidiary Golden Leo from an exploration programme initiated in February 2002 in its Kono licences, and also its joint venture exploration programme begun in June 2002 with Golden Prospect in its Lake Sonfon gold prospect, are seen as of great significance in helping to attract other investors.

A number of companies maintained their licences on a *force majeure* basis through the difficult years and the government, wishing to encourage a rapid start-up of exploration activities, gave all those companies holding licences three months until mid-June 2002, subsequently extended to August 2002, to put forward exploration plans for their permits. The subsequent review has led to a re-drawing of the mineral permit map of the country.

The government is also working with the World Bank on a review of all aspects of the mineral development industry in the country, looking at the whole structure of the government's involvement in the industry in terms of enhancing Sierra Leone's ability to attract long-term investment in exploration and subsequently in the development of mines. The intention is to move Sierra Leone towards being one of the most favourable countries for exploration and in which mining companies can invest and operate. A workshop was held in 2003 to review options and chart the way forward.

Mining and exploration

The highly prospective Archaean granite-schist belt terrain of the Leonean Shield makes up 70% of the country. The mineral potential was recognised in startling fashion by geologists from the Geological Survey of Sierra Leone in 1926-30. Stream-sediment sampling yielded diamonds, gold, rutile, platinum, iron ore, chromium, bauxite, ilmenite, cassiterite and other minerals. Offshore, there is potential for the continental shelf to host petroleum.

Rutile: rutile mining commenced in 1967 from mineral sands in the southeast of the country. During the period 1990-95, annual output of up to 150,000 t of rutile and 60,000 t of ilmenite represented 25% of world production. The operating company, Sierra Rutile Ltd, was owned by Nord Resources Corp. of the US and Consolidated Rutile Ltd (CRL) of Australia. The mine was closed in 1995 but has been maintained on a care-and-maintenance basis. Since 1996, three studies have been made for the re-opening and expansion of the operations, and a programme involving assistance from the European Union's Sysmin Fund and the World Bank has been proposed. This programme is now being implemented with OPIC providing additional funds for the project.

Hazcare Mining Pty Ltd, a subsidiary of Consolidated African Mines of Australia, has given up on its application for a mining licence for rutile mining at Rotifunk and the project has passed to SRL as an exploration licence. No work is yet planned.

Diamonds: Sierra Leone is renowned for the quality of its diamonds and for the recovery of some spectacularly large stones of very high value, including the 969.8 ct 'Star of Sierra Leone'. Selection Trust was the first company to undertake diamond mining in the country and began production in the Kono field in 1935, signing an exclusive licence with the government. Most production was alluvial but three small diamondiferous kimberlite pipes and a number of dykes were discovered and they were mined to a limited extent. Maximum annual production of around 2 Mct was achieved in the late 1960s, about 50% being contributed by Sierra Leone Selection Trust (SLST).

Recent exploitation in the Koidu and Tongo areas previously mined by SLST has consisted of the mining of eluvial, alluvial and weathered kimberlite deposits by artisanal miners attached to one or other of the factions in the civil conflict; and more recently in association with the chiefdoms. Considerable areas of ground have been extensively dug, including extending the worked area for at least several kilometres around the Koidu/Yengema area, and elsewhere. This has led to the discovery of a number of deposits in areas of the country not previously known to contain diamonds. The Artisanal Mining Licence scheme, which allows for licences of one year to Sierra Leone nationals and majority-holding partnerships over areas of 25 acres or more, continued to operate normally over the south and southeast of the country throughout the conflict and is now being restored to the whole country. However, local government (in the form of the Chiefs) is expected to play an increasing role in the issuing and policing of these licences and will receive part of the revenue through a Community Development Fund.

The known kimberlite pipes and dykes have reserves to 600 m depth, estimated to contain 6.3 Mct at Koidu and 3.2 Mct at Tongo. Branch Energy, which owns a mining lease over Pipes 1 and 2 at Koidu, was on the point of processing a bulk sample at the time of the coup d'état in 1997 and is now re-establishing its operation in the country, as witnessed by its recent joint-venture with Magma Diamond Resources. The intention is that production will commence towards the end of 2003, with a mine life for the pipes of only a few years, but with the possibility of an extension into the mining of the dykes. In this respect it may be that some synergy can be established with other explorers on adjacent properties in terms of developing mining of the dykes.

In 1997, Mano River Resources, in co-operation with the government, proposed an exploration programme for kimberlites in the central part of Kono, including the prolific diamond-mining areas around Yengema and Njaiama Nimikoro. An indicator-mineral survey was completed over the Nimini, Yengema and Njaiama Nimikoro licences during a two-month period between February and April 2002. Results were very positive, with indications from indicators and float material of kimberlite pipe source rocks at a number of target locations within the area, and the mapping of a number of newly-discovered dykes. Two dykes, designated Lion-1 and Lion-2, have been mapped intermittently over a strike length of 5-6 km. Both dykes have yielded macro-diamonds in small bulk samples, with a minimum potential grade from Lion-1 estimated at 0.65 ct/t.

Gondwana (Investments) SA established a small laboratory at its offices in Freetown in preparation for field operations in 2003. The company has completed stream-sediment sampling over seven exploration licences for diamonds.

African Diamond Holdings obtained an Exclusive Prospecting Licence for a high-resolution airborne magnetic survey over an area of 14,500 km² in northeastern Sierra Leone. Flying is to average 1,000 km/d at a modified drape height of 50 m with 100 m centres. Initial geological interpretation is also intended to identify targets for base metals and gold. A second objective is to identify alluvial targets for mining in six Sewa River basin licences totalling 660 km². This project started in April 2003 and by the end of June nearly 50,000 line km had been covered.

Gold: between 1930 and 1955, artisanal and semi-mechanised alluvial gold mining was widespread in the main schist belts of the Sula Mountains, Kangari Hills, Nimini Hills, Loko hills and Gori Hills. Hard-rock mining, in the form of semi-mechanised operations has taken place at Baomahun, in the Kangari Hills, in the Sula Mountains at Dalakuru near Lake Sonfon and at Yirisen. For years, communities around Lake Sonfon had been using gold from Mali and Guinea to perform ceremonies associated with the lake, only to find there that there were plentiful supplies locally!

Artisanal gold mining largely ceased with the introduction of the Alluvial Diamond Mining Scheme in 1956, which allowed local people to mine diamonds legally for the first time. Gold exploration recommenced in the 1960s when the Geological Survey undertook drilling programmes for gold and base metals at Baomahun, Dalakuru and Komahun in the Nimini Hills. Harry Winston of New York undertook a programme of underground development and drilling at Baomahun in the late 1980s, established a pilot heap-leach pad and went into partnership to develop the deposit with Golden Star Resources of Canada. Subsequently, the work was interrupted by the civil disorder in the country and Golden Star withdrew.

Following the election of President Kabbah in 1996, exploration and prospecting licences for gold were granted over almost all the known areas in the country prospective for gold. However, only a few companies commenced work, Mano River Resources and Golden Prospect being the most active. The two companies have now signed a joint-venture agreement covering their respective adjacent Lake Sonfon licences, and have commenced an exploration programme, which is proceeding towards a drilling programme, based on very encouraging results from trenching and geochemistry.

Mano River, through Golden Leo, is also pursuing exploration in the South Pampana and Yirisen area, where there is believed to be a significant resource, and in the Nimini Hills where Ashanti is following up a geo-chemical anomaly delineated by the Geological Survey. The anomaly is associated with a major shear zone on the eastern edge of the Nimini Hills, and Ashanti is in a joint venture with Nimini Mining along strike from Golden Leo's well-targeted

properties. These areas are considered of high potential to host serious gold mines.

Bauxite: bauxite is associated with weathering of hypersthene feldspar rich rocks of the Kasila Group, which forms a NNW-SSE trending belt along the edge of the West African Craton. Sieromco (Alusuisse), began mining at Moyamba in 1963. Up until 1995, production was averaging 1.5 Mt/y at 55-56% Al_2O_3 . Sieromco has handed over control of the mine to the government in return for its liabilities and Sierra Rutile has now taken over the project on an exploration licence in the name of Sierra Minerals Holdings No.1 Ltd. Many of the assets were destroyed during the civil unrest but Sierra Minerals Holdings operation is close enough to the rutile mine that it should be possible to keep costs down by sharing facilities such as workshops.

Sierra Minerals Holdings completed a feasibility report on the old Sieromco deposits in May 2003, and is awaiting discussions with government on the terms to reopen the mine.

Dimension Stone: Olympus Mining Co. Ltd, recently acquired by Matrix International, began a pilot quarry operation near Freetown in 1995, leaving in 1997. It has since returned and, for demonstration purposes, has cut and polished some slabs of 'black granite', described as a 'world class' stone for buildings and kitchens etc. It also has licences in the southeast of the country. A second company, Swalford, has also taken out licences. It appears that South African-based dimension-stone companies are keen to establish a base in West Africa, believing that this will significantly reduce their transport costs to Europe compared with the costs of shipping stone from South Africa. Olympus has now signed a deal with Black Granite Co. in the UK to develop the quarry.

Platinum: three exploration licences cover the Freetown Peninsula layered igneous complex, a target for platinum group metals. Olympus Mining has the smallest area, at the end of the Peninsula, but has made an application to conduct offshore exploration including airborne geophysics. Golden Prospect and Resources Finances are still gearing up to pursue exploration programmes in the Peninsula. As yet, nobody is on the ground.

Petroleum: Sierra Leone revived petroleum exploration by announcing its first bid round in April 2002. The round closed on March 31, 2003 and bids were opened in May 2003. Three companies were awarded four of the seven blocks. No bids were received for three of the blocks. These will be the subject for another bid round.

Previously, the government had entered into an agreement with TGS-NOPEC, a geophysics company, to shoot approximately 5,700 km of seismic surveying off the southern coast of the country. The results have been processed, and the old Mobil and Amoco data have also been reprocessed and packaged for licensing by oil companies. The area covered has been divided into seven blocks each of between 3,500 and 5,500 km^2 to include both shelf and deep water.

Sierra Leone is largely a frontier province for oil exploration as Mobil and Amoco had drilled only two wells in the 1980s. Although both wells were dry they did reveal reservoir-quality sands and mature source rocks (late Albian to Cenomanian shales). An Upper Cretaceous sequence of marine shales is well-documented throughout the western Atlantic from Morocco to Angola. Although the sequence was not encountered in the Amoco and Mobil wells, there is reasonable certainty that they are present in the deeper sections. The area targeted covers the continental shelf, the Sierra Leone Basin, the Sulima Plateau and the Monrovia Fault Zone. Trap sites are numerous and relatively widespread, and mostly associated with Cretaceous synrift and transform-related faulting and unconformities.

A new Petroleum Act, which establishes a Petroleum Unit to Administer the Act under the Office of the President, was promulgated in 2001.