

# The mineral sector in the Dominican Republic

by Olle Östensson

The final report in our series on Central American and Caribbean mining (see also RMR Vol 11 No 1 – Costa Rica and Vol 11 No 2 – Panama) analyses the Dominican Republic. The article is based on a study prepared by the UNCTAD secretariat (document UNCTAD/COM/61), under a project which examines the role of the mineral sector in the development process of developing countries.

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Although the Dominican Republic is not usually thought of as a mining country, mineral exports have in fact played an important role in its economic development. The impact of the mineral export income has, however, not been unambiguously positive, and it could be argued that at times this income has allowed the Government to continue pursuing economic policies which failed to address fundamental economic problems. Furthermore, the mining operations are isolated from the rest of the economy and their effect in terms of lasting economic development are very limited. In the following, past economic development in the Dominican Republic is reviewed with a particular focus on the last two decades and on the mineral sector.

## General economic development

The Dominican Republic shares the Caribbean island of Hispaniola with Haiti. It is the seventh poorest country in the Latin American/Caribbean region. Health and education indicators are generally below the average for the region.

The land is mainly fertile, and 73 per cent of the country's area is agricultural land or pasture. A high proportion of the

population is employed in agriculture and marginal agricultural land has increasingly come to be utilized. Of the agricultural land, about 37 per cent is taken up by four crops: sugar cane, cereals (mainly rice), cocoa and coffee.<sup>1</sup> The remainder of the agricultural land is used for the cultivation of fruit and vegetables and for subsistence farming on very small holdings. The distribution of land is very uneven, with a few large holdings and a multitude of very small farms.

The bulk of manufacturing takes place in the export processing zones. The first zone was established in 1969 in La Romana, and about 30 more have been added since then, particularly in the 1980s. Manufacturing activities in the zones are oriented mainly towards processing of imported raw materials and semi processed products for export, particularly textiles and, to some extent, electronic components.

Tourism is a major source of foreign exchange earnings, corresponding to about 50 per cent of merchandise imports or about twice as much as merchandise exports excluding exports from the export processing zones. Remittances of Dominicans living abroad, mainly in the

Table 1. Sectoral distribution of GDP, 1970-1992 (per cent at current prices)

	1970	1980	1985	1990	1991	1992
Agriculture <sup>1</sup>	23.2	20.1	19.7	17.5	18.0	17.6
Industry	26.1	28.3	25.8	26.2	25.2	26.1
Mining	1.5	5.3	1.7	1.0	0.9	0.7
Manufacturing	18.5	15.3	13.6	13.5	13.5	14.2
Construction	4.9	7.2	6.0	7.4	6.5	7.5
Services	50.6	51.6	54.5	56.3	56.8	56.2
Tota	100	100	100	100	100	100

Sources: Economic commission for Latin America and the Caribbean: *Statistical Yearbook for Latin America and the Caribbean*, Santiago, 1991 (figures for 1970 and for 1980 and 1985 for mining); UNCTAD secretariat: estimate based on constant price data in Banco Central de la Republica Dominicana: *Boletín Trimestral*, October-December 1993, Santo Domingo, April 1994 (mining in 1990-92); World Bank: *Trends in Developing Economies*, Washington, D.C., 1993 (all other figures).

Note: 1. Includes animal husbandry, fishing and forestry.

### **Major mines and mineral deposits in the Dominican Republic.**

United States, correspond to about 15 per cent of merchandise imports.

The country's economy has strong ties to that of the United States. Between one half and two thirds of exports go to the United States, and about one third of imports come from this country. United States enterprises also account for most of the foreign investment.

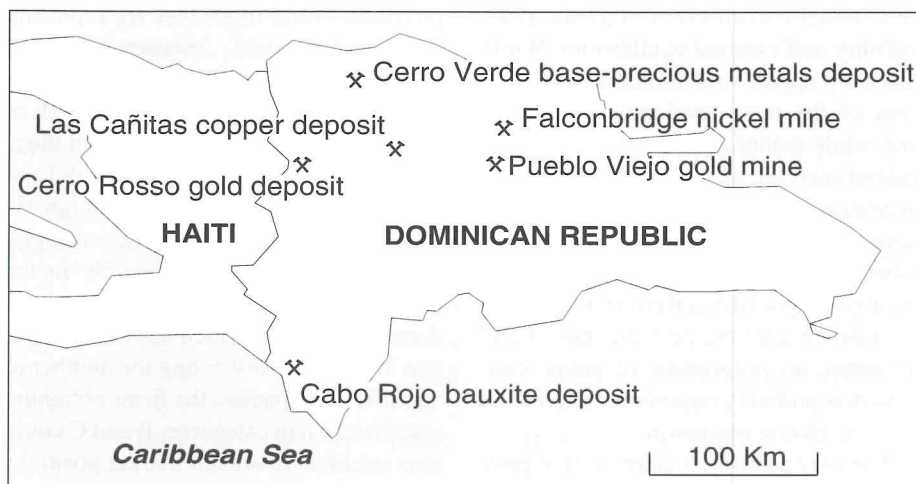
### **Economic development before 1961**

Until the 1870s, cattle ranching and subsistence agriculture were the most important economic activities in the Dominican Republic. In that decade, Cuban immigrants introduced modern methods of sugar cultivation and processing. Companies based in the United States rapidly came, however, to dominate the industry. Sugar production increased as more land was taken over for this purpose, sometimes through the eviction of peasants by force, and as economic institutions and policies were geared to favour sugar production.<sup>2</sup>

Under the dictator Rafael Trujillo, who came to power in 1930, the amount of land under sugar cultivation increased further, doubling from 1948 to 1960, as Trujillo acquired land by methods ranging "from purchase at knockdown price by intimidation or blackmail to outright confiscation".<sup>3</sup> By the time of his death in 1961, Trujillo controlled two thirds of sugar production in the country. As a result of the expansion of sugar production, the amount of land available for the rural population diminished and the average farmsize declined as the rural population increased.

In the early 1960s, the Dominican Republic's economy depended almost entirely on exports of sugar, supplemented by exports of coffee, cocoa and tobacco, all in unprocessed form.

Development of all other sectors, including production of agricultural commodities for domestic consumption, had been held back by the focus on sugar. The small manufacturing sector, mainly



consisting of enterprises founded or acquired by Trujillo, suffered from low productivity and lack of investment funds.

### **Economic development since the 1960s**

Following the assassination of Trujillo in 1961, the overthrow of president Juan Bosch in a coup d'état in 1963, and the civil unrest which ensued and ended with the United States intervention in 1965, Joaquin Balaguer was elected president in 1966. During Balaguer's administration a new development strategy was introduced. It was argued that the traditional model was excessively dependent on the occasional dynamism of the external sector, in particular on the fluctuating incomes from sugar,<sup>4</sup> which accounted for about half of export income at the time. Furthermore, it had failed to generate welfare for large segments of Dominican society. The rapid growth of the population made industrialization necessary in order to alleviate the pressure on agricultural land.

The new strategy was based on the creation of incentives for three categories of industrial activity:

A. Enterprises producing exclusively non traditional export goods (all goods except sugar, cocoa, coffee, tobacco and minerals) in export processing zones;

B. Enterprises producing goods which were not before produced in the country; and,

C. Enterprises producing goods for I which installed capacity was not sufficient to meet domestic demand.

With regard to the export processing zones, the main objective was to provide employment opportunities for the rapidly growing labour force, although technology transfer and foreign exchange income were also cited as objectives. The support to import substituting industries in categories B and C while also relying on arguments concerning employment creation, was mainly justified by the same type of arguments as in other Latin American countries during this period: the tendency for terms of trade to deteriorate due to slackening demand for primary commodities from the rest of the world and the variability of income from commodity exports, and the difficulty of developing domestic manufacturing in the face of external competition. The three categories of firms benefited from fiscal incentives, very high rates of effective tariff protection and preferential access to credit and foreign exchange.<sup>5</sup>

The Dominican Republic achieved one of the highest rates of economic growth in Latin America and the Caribbean during the period from 1968 to 1974. The rate of growth in real GDP was 12 per

cent, under conditions of domestic price stability and external equilibrium. While this may appear to demonstrate the success of the new development strategy, and while manufacturing production did indeed increase at a relatively high rate, as protected enterprises producing for the domestic market expanded production, other factors are likely to have been mainly responsible. Restored business confidence after the previous unrest and an ambitious programme of public construction probably contributed somewhat to the high rate of growth.

The very positive development of prices for the country's agricultural exports was, however, the main factor behind the positive development of GDP. International sugar prices increased eightfold from 1970 to 1974, coffee prices by 30 to 50 per cent, cocoa prices by 131 per cent, and tobacco prices by 37 per cent.<sup>7</sup>

The import substitution strategy suffered, however, from similar weaknesses as in several other Latin American countries where it was applied. Access to cheap credit for those companies that were classified in categories B and C, together with access to foreign exchange at the official rate and the application of lower tariffs on imports of capital goods,

provided strong incentives for replacing labour with capital. Between 1973 and 1977, average capital invested per employee was almost four times as high in category B and C enterprises as in those belonging to category A, which did not have access to cheap credit or foreign exchange at the official rate.<sup>8</sup> Accordingly, employment was created mainly in the free zones. Given the limited size of the domestic market, which appeared to argue in favour of restricting the number of classified companies, the firms obtaining classification in categories B and C could also establish dominant market positions and collect extensive rents.<sup>9</sup>

The provision of cheap credit to classified enterprises also had the effect of raising real interest rates for other borrowers, most importantly agriculture. Furthermore, the anti agricultural bias of the import substitution strategy, particularly the introduction of a dual exchange rate system and the growing overvaluation of the official exchange rate, was reinforced by domestic price controls on food products and the establishment of a food importing programme. The result was depressed prices for agricultural products and a very slow growth in food production. A land reform based on dis-

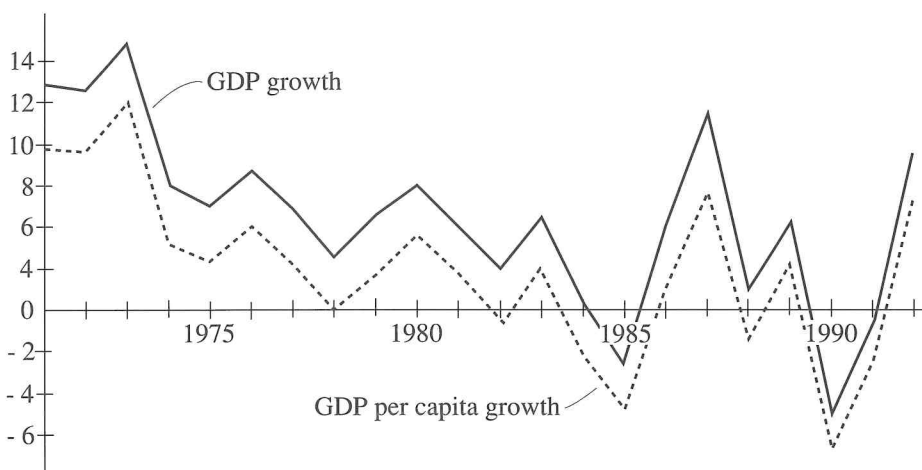
tribution of government owned land (including land expropriated from the Trujillofamily) had been initiated in 1962, but proceeded very slowly.

The increase in international oil prices, combined with falls in the prices of agricultural exports, put an end to the period of rapid expansion. The Dominican Republic is entirely dependent on imports of oil and the oil price shocks of 1973/74 and 1979 had a major impact on its trade balance. Meanwhile, prices of sugar fell dramatically. In addition to declining or stagnant prices for their products, traditional exporters were hurt by a widening difference between the official and the parallel exchange rates, since payments for exports had to be exchanged at the official rate, while imports had to be paid for in currency purchased in the parallel market. The protected companies, which were producing consumer goods for the domestic market, had reaped the initial benefits of the import substitution and were unable to continue expanding or diversifying production. The weaknesses of the development strategy thus became more apparent.

During the 1980s, prices for the traditional agricultural exports stagnated or declined further and the share of fuel in total imports continued increasing, leading to continuing deficits in the trade balance. Growth in most sectors had stagnated, but the Government was unwilling to reduce consumption levels. In addition, the external debt had increased rapidly since the mid 1970s, and since 1977, short term debt accounted for a significant portion of total debt. Accordingly, as international interest rates rose, debt service absorbed a growing portion of foreign exchange income.

In January 1985, parity with the United States dollar had to be abandoned and the official exchange rate, which had come under increasing pressure as the premium paid for dollars at the parallel exchange market premium increased, was subjected to repeated devaluations in the following years. The devaluations

**Figure 1. GDP and GDP per capita growth rates, per cent change on previous year**



Source: World Bank: World Tables.

**Table 2. Dominican Republic exports, 1975 – 1993<sup>1</sup>**  
(per cent of total)

	1975	1980	1985	1990	1991	1992	1993
<b>Traditional agricultural exports<sup>2</sup></b>	74.6	43.4	40.0	17.9	15.4	12.0	12.3
<b>Non traditional exports</b>	25.4	56.6	60.0	82.1	84.6	88.0	87.7
Minerals	16.0	35.2	25.7	19.5	15.7	11.7	17.5
Bauxite	21.8	1.7	0.0	20.0	0.0	–	–
Ferronickel	11.1	9.4	12.7	15.9	13.3	10.2	17.3
Precious metals	23.1	24.1	13.0	3.6	2.4	1.5	10.2
Other non traditional exports	29.4	21.4	34.3	62.6	68.9	76.3	80.2
Of which, from free zones	23.0	10.9	21.6	53.2	60.3	67.9	71.2
<b>TOTAL (MUSD)</b>	920.5	1078.4	949.7	1569.0	1656.4	1753.0	1839.2

**Sources:** UNCTAD: Commodity Yearbook (figures for bauxite and nickel 1975, 1980 and 1985); Centro Dominicano de Promocion de Exportaciones (all other figures for 1975, 1980 and 1985); Banco Central de la República Dominicana: Boletín Trimestral, October December 1993, Santo Domingo, April 1994 (figures for 1990 – 93).

**Notes:** 1. Including exports from free zones. 2. Sugar and derivatives, green coffee, cocoa beans and unmanufactured tobacco.

failed, however, to provide more than a very limited stimulus to exports.

The continued trade balance deficit and increasing indebtedness might have been expected to lead to a financial crisis and reversal of the policies relatively rapidly. However, the Government was able to continue its policies throughout the 1980s as a result of four developments which relieved the pressure on the current account and provided the Government with income that enabled it to pursue expansionary policies. The most important development in terms of the current account was the increase in income from international tourism, which expanded rapidly during both the 1970s and the 1980s as a result of fiscal incentives.<sup>10</sup> The second was the increased income from mining, coming from two major mineral projects: the Falcondo nickel project and the Rosario gold mine. This income was of major importance to the current account and even more to the Government budget. The third development was the increase, in particular after 1975, in remittances from Dominicans working abroad. These remittances reached a level corresponding to a third of merchandise exports in 1985.<sup>11</sup> Final-

ly, local expenditure by enterprises in the export processing zones increased as a result of the rapidly increasing production and employment<sup>12</sup> in the zones. While local expenditure by these companies had to be paid for in local currency obtained at the official exchange rate, this was not a major disadvantage for them, at least not in the 1970s and early 1980s. Foreign exchange income from this source and from tourism grew rapidly. By 1982, they corresponded to almost half of income from merchandise exports and in 1987 they were equal to them.

It proved impossible, however, to postpone the crisis indefinitely. The exchange rate depreciation had raised the domestic currency cost of servicing the external debt, resulting in increasing fiscal deficits. Private domestic investment was crowded out as real interest rates rose. Efforts to stimulate the economy through public investment resulted in dramatically increased inflation from 1988, and the deficit on the current account rose, while international reserves decreased. In 1990, output fell by 5 per cent, inflation was 101 per cent, and arrears to external creditors approached 20 per cent of GDP. In response to the eco-

nomics crisis the Government introduced a stabilization programme that stopped inflation and initiated economic recovery. The main components of the programme, which began in 1990 and continues at present, have included reduction of the fiscal deficit, tightened monetary policy, reforms of the tax system, and trade policy reforms, including, most importantly, streamlining and lowering of tariffs.

The results of the stabilization programme have so far been mainly positive. Growth in real GDP reached 7.4 per cent in 1992, 3 per cent in 1993, and 4.3 per cent in 1994; inflation was brought down to under 3 per cent in 1993, although it accelerated again in 1994; the exchange rate has stabilized after large devaluations in 1990 and 1991; the public sector has showed a surplus or a very small deficit in recent years; and all arrears to external creditors were cleared early in 1991.<sup>13</sup>

### **The present economic situation and problems**

While the stabilization programme has been mainly successful, problems remain, both in terms of macroeconomic

*The Pueblo Viejo gold mine in the Dominican Republic.*



stability and long term growth prospects. Despite continuing growth in tourist income, local expenditure on the part of free zone companies, and private transfers from Dominicans working abroad, the current account deficit is still growing, due to a high and growing deficit in the trade balance. Exports (except from free zones) have decreased each year since the late 1980s and were 43 per cent lower in 1993 than in 1989. While this decline can be attributed entirely to decreased exports of traditional agricultural export products and minerals, manufacturing production and exports outside the free zones have remained stagnant.<sup>14</sup> Thus the foreign exchange constraint may become important in the future, even if the present positive net flow of capital, due partly to high real interest rates, into the country can be maintained.

Other problems, which have been present for a long time in the Dominican economy, also persist. Agricultural production is stagnant, due to the sub eco-

nomie size of many holdings. The insufficiency of extension and rural credit schemes has served to prolong the situation. Inequalities in income have increased and a large proportion of the population lives below the poverty line. Infant mortality is among the highest in Latin America and sample surveys suggest that between a third and half of children under six years of age suffer from moderate or severe malnutrition. Although enrolment rates in primary schools are high, so are late entry, repetition and dropout rates.<sup>15</sup>

## **OVERVIEW OF THE MINERAL SECTOR**

### **Companies and operations**

Since bauxite production in the Dominican Republic ceased in 1991 the metallic mineral sector in the country consists of two companies: Falconbridge Dominicana (Falcondo), which mines nickel ore and produces ferronickel, and Rosario,

which mines gold and silver. Some non metallic minerals, including salt, gypsum, limestone and building materials such as gravel, are also produced.

### **Bauxite**

Bauxite production in the Dominican Republic was begun in 1959 by Alcoa. In addition to bauxite, limestone was mined on the same concession. Production costs were low since there was no overburden and the deposits were of relatively good quality. The bauxite was shipped to Alcoa's alumina refineries in the United States. At its peak, in 1974, production reached almost 1.4 Mt. In 1982, bauxite mining ceased, and the following year Alcoa gave up its concession, mainly because the Dominican Government, like the governments of other bauxite producing countries in the region, had introduced an export levy on bauxite. The size of the levy, 17 USD/t compared with an export unit value of around 35 USD/t, made continued operations unprofitable to Alcoa.<sup>16</sup>

In 1985, the limestone concession was acquired by Ideal Basic Industries, a cement company based in the United States which was interested in securing a supply of limestone. In 1989, the company agreed to mine the bauxite on behalf of the Government and was paid a fixed price for the material. This price did not at all times cover the costs of the bauxite operation, but the company accepted the conditions since it was mainly interested in the limestone deposits. The Government sold the bauxite, mainly to Alcoa, and was usually able to get a price considerably higher than that paid to Ideal.

In February 1991 bauxite production ceased, since the new deposits that Ideal wanted to develop, and which would have enabled the operation to survive for a considerable number of years, had become part of a national park. Limestone production continued until 1993.

### **Nickel**

Nickel ore is mined and converted to ferronickel at Bonao by Falconbridge Dominicana (Falcondo), which is the world's second largest producer of ferronickel after Société Le Nickel's operation in New Caledonia. The company is an almost wholly owned (85.3 per cent) subsidiary of the Canadian company Falconbridge Ltd. Production began in 1971 and has generally been between 20 000 and 30 000 t (nickel contained in ferronickel) per year depending on the state of the international nickel market. The entire production is exported, mainly to North America, Western Europe and Asia.

According to an agreement with the Government in 1969, Government income from Falcondo was to be based on income taxes and dividends and not on royalties. From the start of production until 1987, however, a number of unforeseen developments affected the profitability of the project negatively. The rise in oil prices led to major cost increases while excess supply of nickel on the world market resulted in depressed nick-

el prices. In order to cover losses and keep the company operating, the major shareholders, Falconbridge and Armco Steel (which subsequently sold its share to Falconbridge), who had guaranteed Falcondo's loans, made large loans to Falcondo. Since the prevailing rates of interest were high, Falcondo showed no or very low profits, and the Government did not receive the income from the project that it had counted on. In November 1987, the Government issued a decree levying a special contribution tax on all exports. The amount of the tax was about 25 per cent, with the exact levy varying depending on the development of the peso's rate of exchange against the US dollar. Falconbridge contended that it should not pay the tax since the 1969 agreement excluded Falcondo from all taxes except income taxes. The Government insisted that the tax should be paid. After protracted negotiations, during which shipments of nickel were at times blocked by the Customs Department and Falcondo suspended its production activities, an agreement was eventually worked out in May 1988. Since the Government was unwilling to accept that Falcondo be taxed only on accounting profits, the basis for the imposition of taxes was to be the difference between deemed revenues and costs. Deemed revenues were based on quantity exported valued at the average three month price of nickel on the London Metal Exchange. Deemed costs included a base cost adjusted for changes in crude oil prices and inflation.<sup>17</sup> Subsequently, the Government agreed to accept accounting costs and revenues as the basis for calculation of taxes and to tax the company at a rate of approximately 50 per cent of its financial statement earnings. The new agreement was formally signed in September 1994.<sup>18</sup>

### **Gold**

The gold deposit at Pueblo Viejo had probably already been exploited for some time when the Spaniards started working

it in 1505. Following discovery of richer deposits in continental South America, the deposit at Pueblo Viejo was abandoned in 1525<sup>19</sup> and was only reopened in 1971, when Rosario Dominicana S.A. started gold mining operations. The company was owned by two United States companies (Rosario Resources Corporation and Simplot Industries Inc.), each holding 27 per cent of the shares, and by the Government through the Central Bank (the remaining 46 per cent). In 1979, the Government bought the 54 per cent foreign interest for 70 MUSD. Rosario Resources continued to operate the mine under a management contract for some years after this.

The deposit consists of three types of ore: oxidized ore on top, a transition zone with a mixture of oxidized and sulphide ore below this, and sulphide ore further down. The oxidized ore, which was exclusively mined in the beginning, is relatively soft and can be easily milled without major losses of gold and silver. The ore in the transition zone and the sulphide ore are considerably harder.

Production was about 10 tons of gold and 50 t of silver per year until the mid 1980s, when it started declining. In 1992, only 2.6 t of gold and 13 t of silver were produced. The ore is converted to dor, an alloy of gold and silver, which is shipped to the United States for further smelting and refining.

There were several reasons for the decline in production. Most importantly, when mining reached the transition zone, the rate of recovery of gold and silver fell since this ore could not be ground finely enough with the methods and equipment used for the same amount of precious metal content to be extracted. Furthermore, the sulphur content of the sulphide ore posed problems with regard to sulphur disposal. It was initially proposed to roast the sulphide ore and produce sulphuric acid from the sulphur. This would however entail very high capital costs and there was a great degree of concern among the general public about the risks

to the environment of shipping sulphuric acid, either by train or by pipeline, to the coast for export. Eventually, another process was chosen. In this process, the ore will be finely ground and a sulphide concentrate, containing most of the sulphide material in the ore, will be produced by flotation. Gold and silver will be extracted from the sulphide concentrate through cyanidation and a carbon in leach process. From the remaining concentrate, a zinc sulphide concentrate, containing all of the sulphur, can be produced and sold for export. Since waste rock and tailings will still contain some sulphide material, the process will necessitate investments to ensure that this material does not escape to the surrounding environment.

The process of arriving at a decision took a long time, however, from 1987 to 1993. The fact that the company management had to refer all decisions to the Central Bank and the highest levels of Government is likely to have caused considerable delay in the decision making process. Meanwhile, production and income fell, since only selected, softer parts of the orebody could be mined, and since the recovery of gold and silver was low. Furthermore, the operation, which had been self financing with regard to replacement of equipment, could no longer generate the surplus needed to maintain and replace machinery. Since the company had not been allowed to retain sufficient earnings to ensure capital replacement and necessary repairs, any investment funds had to come from the Government, which did not provide enough funds to maintain the equipment. This contributed to the fall in production. The company's financial situation also became increasingly precarious and it was becoming unable to service its debt.

A decision to restructure the company entirely was taken in 1992. The mine was then closed from March 1993 to April 1994. The objectives of the restructuring include implementation of new production methods and a financial reconstruc-

**Table 3. Production of main minerals, 1975 – 1993**

	1975	1980	1985	1988	1990	1991	1992	1993
Bauxite <sup>1</sup>	886.6	587.6	0	168	85	7	0	0
Nickel <sup>2</sup>	26.9	16.4	30.1	29.3	28.7	29.1	27.5	23.9
Gold <sup>3</sup>	5.7	11.5	10.2	6.4	4.3	3.1	2.6	0.4
Silver <sup>4</sup>	3.0	51.1	50.1	42.6	21.6	21.7	13.0	1.7

**Sources:** UNCTAD: *Commodity Yearbook* (bauxite); Falconbridge Dominicana (nickel); Rosario Dominicana (gold and silver); Banco Central de la República Dominicana: Boletín trimestral, October December 1993, Santo Domingo, April 1994 (figures for gold and silver in 1993).

**Notes:** 1. Thousand tons gross weight. 2. Thousand tons nickel content in ferronickel. 3. Tons gold content in doré. 4. Tons silver content in doré.

tion. Loans have been obtained from the European Union under its SYSMIN scheme for the initial stages of the reconstruction.

### Non metallic minerals

There are about 20 different companies operating in the non metallic minerals sector, producing almost entirely for the domestic market. Limestone has been produced by Ideal, which also produces agglomerate for construction, and by Rosario and a couple of other companies. Gypsum, marble and salt are also produced, mainly by the state owned conglomerate CORDE (Corporacion Dominicana de Empresas Estatales). Finally, the Dominican Republic is one of the few countries where amber is found. The amber, the collection of which is an artisanal activity, is mainly used for local production of jewelry, part of which is exported.

### Exploration by foreign investors

The improving economic situation, together with recent and expected changes in legislation, has had the effect of stimulating interest in the Dominican Republic on the part of foreign investors. Several international mining companies, including Cominco, Canyon Resources, Battle Mountain, Mitsubishi and BHP Minerals, have initiated exploration pro-

grammes for gold and base metals in the country, and in some cases, promising deposits have been identified.

### Economic importance of the mineral sector

The development of mineral production and exports is shown in tables 3 and 4. Since production and export quantities are identical for the minerals shown, except for variations due to stock changes, export values rather than quantities are shown in table 4.

As seen from table 4, mineral sales have made a significant contribution to export income. Mineral exports accounted for between 20 and 40 per cent of total export revenue (including exports from the free zones) in the latter half of the 1970s and in the 1980s. While the increase in mineral export proceeds compensated to some extent for the fall in export revenue from agricultural commodities, it was however not sufficient to prevent a deterioration of the trade balance.

While the mineral sector's share in GDP (generally around 4 per cent) or employment (about 1 per cent) is not especially important, its contribution to Government income has at times been highly significant. Table 5 shows some estimates of Government income from the mineral sector. Since this information is not included in any official statistics, the data have been obtained from a varie-

**Table 4. Value of exports of main minerals, 1975 – 1993 (MUSD)**

	1975	1980	1985	1988	1990	1991	1992	1993
Bauxite	16.7	18.5	0.0	1.7	0.5	0.2	0.0	0.0
Nickel	102.2	101.3	120.7	461.5	300.0	275.0	211.0	133.8
Gold	28.1	227.1	104.4	89.0	52.7	24.1	3.9	
Silver	0.4	32.2	19.4	8.8	3.3	2.8	0.9	0.2
TOTAL	147.4	379.1	244.5	561.0	356.5	313.8	236.0	137.9
Share of total exports, per cent <sup>1</sup>	16.0	35.2	25.7	40.0	19.5	15.7	11.7	7.5

**Sources:** UNCTAD: Commodity Yearbook (bauxite and nickel); Rosario Dominicana (gold and silver); Banco Central de la República Dominicana: Boletín trimestral, October – December 1993, Santo Domingo, April 1994 (figures for 1993).

**Note:** 1. Including exports from export processing zones.

ty of sources and some are estimates. They include only Government income items that are relatively easy to estimate such as taxes on corporate income. They include neither indirect taxes or import tariffs paid by mineral sector companies nor income taxes paid by their employees. Accordingly, the data are likely to underestimate total Government income from the sector considerably. Mineral sector income has been highly variable but it has also been of major importance to the Government, in particular during the period of mounting fiscal deficits in the late 1980s. This income helped to delay the economic crisis that finally occurred in 1990.

While the importance of the fiscal linkage is evident, the mineral sector's production/consumption linkages to other sectors are relatively unimportant in the Dominican Republic. With the exception of basic building materials for domestic use, the sector's output is exported in relatively unprocessed form (although the nickel ore mined by Falcondo is converted to ferronickel). It is highly dependent on imports of equipment, machinery and process inputs. While the large mining operations thus function more or less as enclaves in the economy,

they are of course important to the local economy of the regions surrounding the mines, since they provide local employment (Falcondo and Rosario have together employed slightly less than 2,000 people in recent years, and since their mines

**Table 5. Estimated Government income derived directly from the mineral sector, 1975 – 1992 (MUSD)**

	1975	1980	1985	1988	1989	1990	1991	1992
Bauxite <sup>1</sup>	5.0	10.0	0.0	2.0	1.8	0.8	0.3	0.0
Nickel <sup>2</sup>	-	-	-	123.3	135.2	71.0	62.0	37.4
Gold and silver <sup>3</sup>	5.7	148.0	13.7	56.5	30.5	11.3	2.3	1.4
TOTAL	10.7	158.0	13.7	181.8	167.5	83.1	64.6	38.8
Total government revenue <sup>4</sup>	694.7	954.0	554.7	762.1	964.1	860.3	796.8	1 353.6
Mineral sector income in per cent of government revenue	1.5	16.6	2.5	23.9	17.4	9.7	8.1	2.9

**Notes:** 1. Estimate of Alcoa's tax payments in 1975, based on export levy of 17 USD/t in 1980, based on 10 USD/t profit 1988 – 1992. 2. Negligible tax income and no dividend payments 1975 – 85, annual reports of Falconbridge Dominicana 1988 – 89 and 1992, estimates by UNCTAD secretariat 1990 – 91. 3. Figures from Rosario Dominicana. 4. International Monetary Fund: International Financial Statistics.

are located in the same area they have together accounted for a significant portion of local formal employment), infrastructure and services such as schools and medical care.

### Legislation

The Mineral Law, which dates from 1971, is similar to mining laws in most other countries, based on a system of concessions where the only slightly unusual feature is the very long duration of exploitation concessions (75 years as opposed to 25 years or less in most other countries). Taxation conditions were defined in the law, and were frozen for 25 years following the granting of the concession. In 1993, however, the tax provisions of the Mineral Law were abolished and taxation of mining enterprises was changed to conform with taxation of enterprises in general. Other taxes defined in the law consist of the annual mining patent which is relatively insignificant, and the royalty or minimum tax which is equal to 5 per cent of export sales. Im-



ports of equipment, machinery and inputs to production may be wholly or partly exempted from import duties and tariffs. Provisions for accelerated depreciation for equipment exist.

Unlike the situation in almost all other countries, there are no regulations supplementing the Mineral Law. Consequently, detailed application of the law and the specific conditions under which companies, including foreign investors, can operate, are subject to interpretation of the Mineral Law by the Government authorities and to negotiations.

## GOVERNMENT POLICIES

### The mineral sector as a source of growth

As was discussed in earlier sections, the mineral sector, particularly in the late 1980s, provided the foreign exchange and Government income that made growth possible and helped in postponing the economic crisis. As a result, however, the continued strength of the mineral sector itself risked being compromised, since the income appropriated from it by the Government precluded the investment necessary to maintain and expand production. Falconbridge managed to ensure the viability of its operation through negotiations with the Government, resulting in agreement on a basis for calculation of its taxes which recognized the need to ensure the availability of funds for continued investment. In the case of Rosario, the situation was allowed to deteriorate to the point where a complete reconstruction of the company was necessary.

In the case of both the existing metal ore mines, the changes in the conditions under which the companies operate, together with the need for large investments at Rosario, make it likely that Government income from this source will remain lower than in the past for several years to come. It should be noted, however, that even under the changed operating and taxation conditions, the

mining companies remain major tax payers, in particular since they do not benefit from the same generous fiscal incentives as do other growing sectors such as tourism or processing of agricultural products.

Government income is also likely to accrue from new mineral projects that are currently under consideration or development, but this income is not likely to be significant within the next few years. Furthermore, while it appears that the attractiveness of the Dominican Republic from the point of view of geological conditions is not in dispute, the success of new projects will depend on investors continued confidence in the Government as well as on developments in other countries with which projects in the Dominican Republic have to compete for exploration and investment funds.

While the mineral sector cannot be counted on for infusions of funds to the Government budget of similar size as in the 1980s, it will remain important as a source of export income, in particular once gold exports regain their previous levels. As seen from table 4, mineral exports constituted a significant part of total exports even after the Rosario mine had been obliged to reduce production, and it was the main export oriented activity outside the free zones. With Rosario operating at full capacity, the sector could be counted on to provide 15 to 20 per cent of current account income in the near future, or twice that currently accruing from the free zones in the form of local expenditures by companies in the zones.

The mineral sector has so far failed to make a lasting contribution to economic development in the Dominican Republic in terms of replacing the capital assets embodied in the mineral deposits by other forms of capital. Instead of being invested in the development of infrastructure, new industrial capacity inside or outside the mineral sector or improved human resources, the income went towards maintaining levels of consumption

and public investment which in retrospect proved to be unsustainable. The economic reform process now under way may result in changes which would channel mineral sector income to productive investment more effectively. Appropriate budget policies should also help to channel Government income from the mineral sector to productive investment. Finally, given the variability in mineral sector income, it might be useful to consider the possibilities of separating Government income from this sector from other income and to accumulate funds during high income years to be drawn down during years of low income. Such funds could be used to ensure the continued viability and development of the sector and/or as a source of finance for general development projects, aiming in particular to build up capital, both physical and human, in replacement of the natural resource capital consumed through the mining operations.

The potential for using the mineral sector as a source of both foreign exchange and Government income justifies particular attention being paid to the development of the sector on the part of the Government. In particular, the Government has a role to play in facilitating and supporting sector growth. In this context, it will be important both to attract foreign investment and to facilitate the growth of domestic mining companies.

### Foreign investment

The Government policy on foreign investment has undergone changes in recent years, perhaps partly as a result of the conflict with Falconbridge and the manner in which it was resolved. The Government is now actively trying to attract foreign investment in the mineral sector and several foreign companies have initiated exploration programmes in the country. Taxation conditions have been made more favourable and facilities for drawback of duty payments on imported equipment have been introduced. The more stable economic conditions in

*The Falconbridge nickel mine in Bonao, the Dominican Republic.*

general have of course also contributed to the increased investor interest.

It appears, nevertheless, that more could be done to attract foreign investment. Investors are critical of the Mineral Law which, in the absence of detailed regulations for its application, is considered to leave too much open to negotiation. While very large international mining companies might in some cases appreciate the potential flexibility of conditions, more precise conditions and greater assurance of the stability of these conditions would probably make it easier for all potential investors, including very large ones, to commit funds for exploration and development. The introduction of clear and transparent guidelines and regulations in the area of environmental protection would also considerably reduce investor uncertainty. Another measure that would serve to attract foreign investment would be the upgrading of basic geological information in the form of maps, reports, databases etc.

There is also scope for improvement as regards the benefits that foreign investment in the mineral sector could yield to the rest of the industry, that is, the domestic mining companies. Transfers of skills from foreign investors to domestic companies could be facilitated through the organization of workshops, exchange of personnel and informal training events, and non-proprietary geological information acquired by foreign companies could be made available more efficiently.

**The domestic mineral sector**

The existence of a few large scale operations in the country has not led to the establishment of medium and small scale mining companies. The reason for this is partly the absence of mining traditions. Countries with an important medium and small scale mining industry, such as Australia, Canada, Chile and Peru, generally have a history of mining extending into several decades or even centuries. An-

other reason is that higher education and training opportunities in mining related disciplines are limited.<sup>20</sup>

Only a few Dominicans thus have the experience and knowledge necessary to establish their own mining enterprises. The scarcity of easily accessible geological data may also be an obstacle for smaller enterprises in the sector. Furthermore, it is likely that the abundant business opportunities in sectors such as tourism, combined with high real interest rates, perceived high risks and the significant capital needs of even medium scale mining ventures have resulted in a low degree of interest in the mineral sector on the part of local entrepreneurs. The factors just cited (high risks and capital needs) could of course also be said to justify the Government's involvement in mining. However, while this argument would appear to have had at least some validity in the past (in particular with regard to Rosario), it should carry less weight following the economic reforms,



an important aim of which is to improve the functioning of capital markets.

A more supportive environment for private sector initiatives in the mineral sector is likely to result from the economic reforms. This could be further assisted by a restructuring or, possibly, at least partial privatization of CORDE's mineral interests. Greater efforts on the part of the

Government with regard to improved availability of geological information, training and export promotion would also be likely to have positive effects. Rosario and CORDE could both act as catalysing agents for the development of a private domestic mineral sector in the same way as suggested above in the case of foreign investors, a role which neither of them appears to have played in the past.

## Notes

1. Data on land use are from United Nations Food and Agricultural Organization: *Agrostat*.
2. These policies included a Land Registration Law, which was introduced in 1920, when the Dominican Republic was occupied by the United States, and which led to a very large increase in the land controlled by sugar companies. The sugar companies were also exempt from duties on imported machinery and from taxes on profits, and land needed for the construction of infrastructure necessary for sugar exports was expropriated by the Government for the use of the companies. For a detailed discussion of the factors governing economic development in the Dominican Republic and how they were related to the dominance of sugar production, see Claudio Vedovato: *Politics, Foreign Trade & Economic Development: A Study of the Dominican Republic*, London 1986.
3. Quotation from Ian Bell: *The Dominican Republic*, Boulder, Colorado, 1981, p. 281.
4. The fluctuations in sugar export incomes were a function not only of variations in world market prices, but also of the size of the United States import quotas for sugar from the Dominican Republic. From 1973, export quotas under the International Sugar Agreement added to the variations and unpredictability of export volumes.
5. In 1967, a dual exchange rate system was introduced, with foreign exchange at the official rate (parity with the United States dollar) being made available almost exclusively for imports of capital equipment and intermediate goods. Companies in export processing zones were exempted from foreign exchange restrictions but had to pay local costs of production in Dominican pesos exchanged at the official rate.
6. According to Vedovato (op. cit. p. 129) construction increased at an annual rate of 16.4 per cent from 1968 to 1974.
7. Figures from UNCTAD: *Monthly commodity price bulletin*.
8. Vedovato, op. cit., p. 121.
9. Vedovato (op. cit., p. 123) reports that under utilization of capacity was widespread during the period. This is likely to have been seen by the authorities as an argument in favour of limiting the number of classified firms in any sector.
10. The incentives included complete exemption from corporate or personal income tax on income earned from tourism and exemption from import duties and taxes on goods and material necessary to build, equip and furnish a tourist facility (provided the goods were not available from domestic producers on competitive conditions).
11. World Bank: *World Tables*.
12. Employment in the zones increased from 16 400 in 1980 to 120 000 in 1991.
13. World Bank: *Trends in Developing Economies*, Washington, D.C. 1993.
14. It is not clear to what extent the expansion of manufacturing in the free zones has taken place at the expense of industrial export oriented activities outside these zones, although it appears reasonable to assume that the opportunities offered by the free zones have attracted investment capital which might otherwise have been invested in manufacturing in other parts of the country.
15. World Bank: *Trends in Developing Economies*, Washington, D.C. 1993.
16. According to UNCTAD: *Commodity Yearbook*, the average unit export value for Dominican bauxite during the years 1978 to 1982 was 34.60 USD/t, which means that the levy accounted for almost half of the export value. The average unit export value for all bauxite exporters during the same period was 27.18 USD/t, and those for other Caribbean exporting countries (where governments had also instituted policies intended to appropriate a larger share of the resource rent) were 31.94 USD/t in Haiti (where bauxite mining also ceased in 1982) and 28.62 USD/t in Jamaica (where bauxite mining decreased dramatically after 1980).
17. For a detailed account of the negotiations between Falconbridge and the Government, see Roger L.M. Dunbar: *International renegotiations: the case of the Dominican Republic and Falconbridge*, Natural Resources Forum, New York, November 1991.
18. *American Metal Market*, New York, 7 September 1994.
19. Between 1503, when gold began to be exploited in Hispaniola, and 1520, about 15.5 tons of gold were exported to Spain. Figure quoted in Ian Bell: *The Dominican Republic*, Boulder, Colorado, 1981, p. 329.
20. Only the Universidad Católica Madre y Maestra at Santiago in the northern part of the country educates mining engineers (since the 1970s). ■