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MINERALS INDUSTRY OF NAMIBIA

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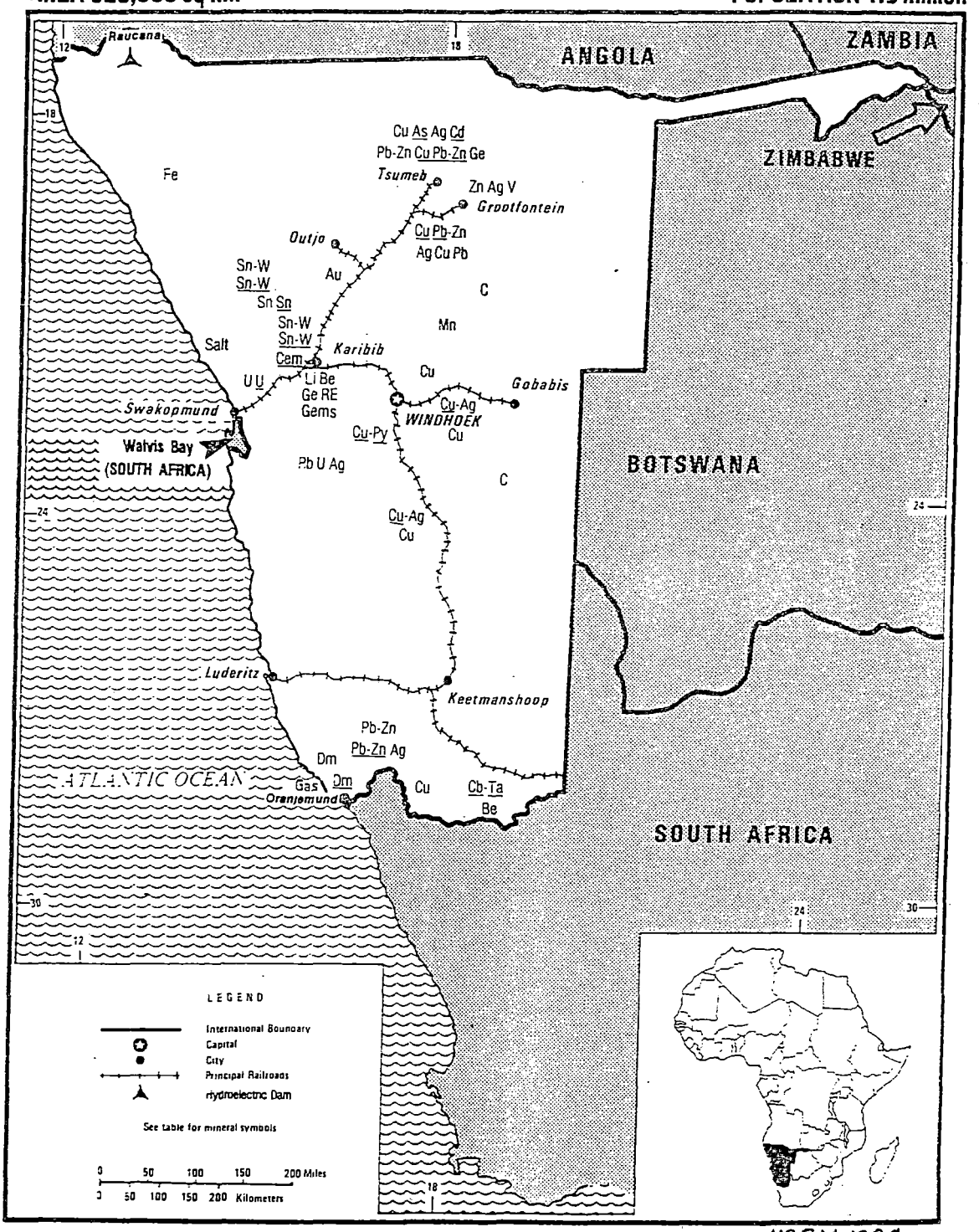
Fig. 13

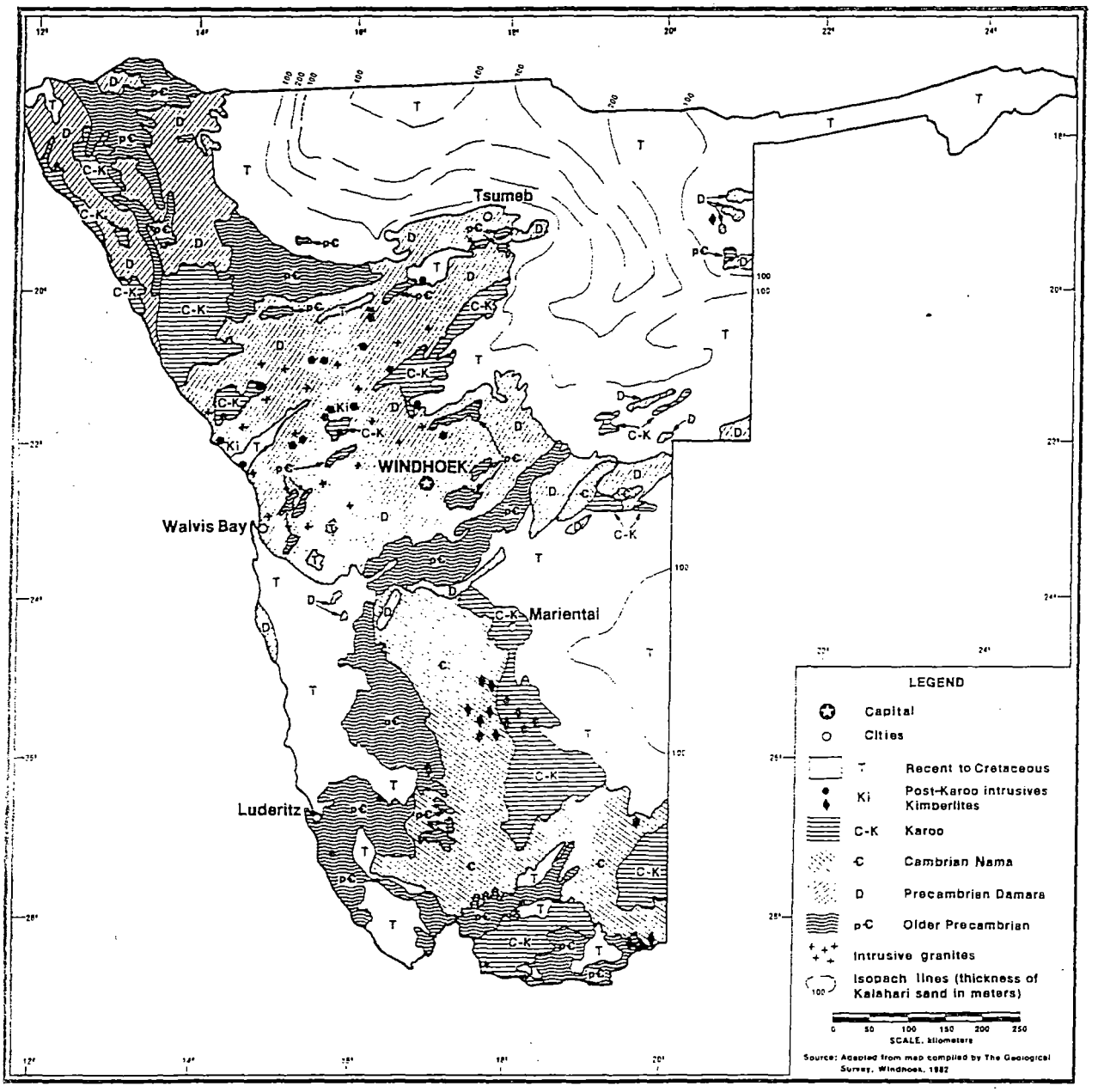
NAMIBIA

AREA 823,000 sq km **POPULATION 1.5 million**



USBM 1984

Fig. 14



Generalized geological map of Namibia.

The Minerals Sector of Namibia

Introduction

Background

Both ferrous and non-ferrous mining was carried out before the arrival of the German colonists at the end of the last century and it is thought that the ancient Kingdoms of the Ondonga and the Ukwanyama were based on mineral trade, iron and copper respectively[1]. In 1851 an explorer, Thomas Galton, noted copper smelting in the Otavi area by Owambo men and in 1855 the Walwich Bay Mining Company mined copper ores in the Windhoek area, but it was not until the turn of the century that major mining started, for copper ore, at Tsumeb by a German company[2].

Namibia was "allotted" to Germany at the Berlin Conference in 1884 on the basis of dubious treaties obtained by Adolf Luderitz, a prospector/explorer, from the local leaders. In 1904-06 there was a series of revolts against the colonisation which resulted in genocide in parts of central and southern Namibia, particularly of the Herero people, to make way for European farmers (ranchers). After the revolt, the railway to Tsumeb mine was completed using forced captured Herero labour. In 1908 the coastal diamond fields were discovered and mining took off.

After the First World War Namibia was taken over by South Africa, under a League of Nations mandate, and the diamond mines were taken over by South African companies. By 1924 mining, mainly diamonds, constituted 44% of the colony's GDP[3]. In 1946 the UN ruled that the former League mandate territories were UN trust territories and should be prepared for independence. South Africa refused and hung on to Namibia, with support from the USA, until 1990.

The nationalist movement SWAPO[4] was founded in 1960 and in 1966 it launched a guerrilla war to liberate the country, first from bases in Zambia and later from southern Angola. In the pre-independence elections SWAPO gained an absolute majority, but not the two-thirds majority necessary to change the constitution. Independence was finally granted in March 1991 and Namibia joined the SADCC in the same year.

The Economy

Table 1. NAMIBIA: BASIC MACRO-ECONOMIC INDICATORS

(Rand)	Unit	1980	1981	1982	1983	1984	1985	1986	1987	1988
Population	M	.96	1.01	1.04	1.06	1.10	1.14	1.18	1.23	1.27
Pop.density	/km2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.5	1.5
Forex Rate	/USD	.77	.89	1.09	1.11	1.48	2.19	2.27	2.04	2.26
CPI		100	115	133	149	162	181	206	232	261
GDP mp	G	1.56	1.51	1.79	1.88	2.11	2.54	2.93	3.08	4.28
GDP/cap	USD	2107	1682	1588	1591	1301	1017	1093	1232	1492
Exports fob	M	1138	947	1009	941	1101	1593	1994	1811	2126
Imports cif	M	888	1067	1107	1024	1177	1269	1543	1808	1946
Trade Balance	M	250	(120)	(98)	(83)	(76)	324	451	3	180
GFCF	G	.44	.43	.41	.36	.33	.37	.42	.48	.65
GFCF/GDP	%	28%	29%	23%	19%	15%	15%	14%	16%	15%
Govt Revenue+	G	.34	.29	.44	.57	.69	.96	1.20	1.31	1.45
SACU receipts					250	250	300	350	350	394
% SACU receipts					44%	36%	31%	29%	27%	27%

Source: IMR SADCC Database 1990, EIU 1990.

The Namibian economy is highly dualistic in nature in that the agrarian and industrial sectors are both well defined. The primary commodity-producing sectors provide the bulk of the country's wealth, while the traditional subsistence agriculture sector produces little cash income and supports most of the population, both directly and indirectly through the migrant labour system.

The main economic activities are mining, cattle ranching, sheep farming (karakul pelts) and fishing. The economy used to be run as South Africa's "fifth province", but during the eighties several national institutions were created. Namibia is part of the Rand Monetary Area (CMA) and the new government has decided to stay in it for at least two years. Namibia is officially not a signatory to the SACU Agreement, but is part of the common customs union and for some time it has been receiving a "grant" from South Africa in lieu of duties that would have accrued to it. However the grant is not calculated on the SACU (1.42) formula and constitutes 27 to 44% of government receipts, but this is estimated to be less than what would accrue under full SACU membership. South Africa accounts for 80 to 85% of imports and 20 to 30% of exports and South African companies dominate the economy. National debt to South African banks was estimated at 320 million USD in 1989 (19% of GDP)[5], but the new government is insisting on a detailed breakdown of all debt to Pretoria before any repayment is made, to determine which debts were contracted to finance the war.

Namibia is potentially one of the wealthiest countries in sub-Saharan Africa with an exceptionally high level of resources per head of population, due to the vast and accessible mineral deposits. However, the economy is very vulnerable to external factors, particularly mineral prices which have been the major cause of the turbulent growth pattern of the economy since 1978. Although it has the highest GDP per capita in the SADCC the distribution of wealth is highly racially skewed, with the small "white" population (about 80,000, 6.6% of the population) owning the majority of the wealth. In 1986 the estimated average daily calorie intake was the lowest in the SADCC with the exception of war-torn Mozambique[6].

The economy's productive capacity is based on the export oriented sectors of mining (principally diamonds and uranium) and agriculture (cattle and karakul sheep ranching). These sectors normally account for over 40% of GDP and roughly 90% of exports and employ 35% of the total labour force. Agricultural "subsistence", in which half of the population is engaged, produces only about 5% of GDP. There are not many countries in the world where mineral wealth per capita is as large as in Namibia. While the territory has a strong mineral resource base, this resource is being rapidly depleted.

The Mining Sector

General

Before colonisation the mining sector was part of an integrated economy, supplying its output to the manufacturing sector, and trade in minerals was developed with ores being moved to northern Namibia for smelting and manufacturing. Minerals were then, as they no longer are, part of an integrated economy.

Ten years after the partition of Africa, mining concessions passed from small prospectors to larger syndicates, financed from Germany, Britain and South Africa. From then on the mining sector became an enormous suction pump, extracting minerals and wealth from Namibia for consumers in Europe. Minerals are almost entirely exported; from a value of 2.5 million rand (21 million 1978 USD) in 1945 they rose to 677 million rand in 1978 (567 million 1978 USD) with the start of the Rossing uranium mine. The foreign currency generated pays for imported inputs and the repatriated profits of the foreign-owned mining companies (as dividends to shareholders).

Table 2. NAMIBIA: BASIC MINING SECTOR DATA

(RAND	Unit	1980	1981	1982	1983	1984	1985	1986	1987	1988
GDP Mining	M	680	452	465	473	547	991	1144	779	1052
% GDP Mining	%	44%	30%	26%	25%	26%	39%	39%	25%	25%
GFCF, Mining	M	112	75	48	41	32	32	75	95	171
% Mng GFCF	%	26%	17%	11%	11%	10%	9%	18%	20%	26%
Mineral Prod.	M	870	627	764	723	842	1272	1629	1309	1528
Mineral Prod/cap		906	621	735	682	766	1116	1380	1064	1203
Min.Exports	M	908	657	755	715	851	1285	1645	1322	1543
% Min. Export		80%	69%	75%	76%	77%	81%	82%	73%	73%
Mining labour	k	19.8	19.2	17.3	16.6	15.6	14.9	14.0	13.0	13.1
% mining lab	%	9.6%	9.5%	8.7%	8.4%	8.1%	7.8%	7.4%	7.0%	7.1%
Min.Prod/lab	kUSD	57.0	36.7	40.7	39.1	36.5	39.0	51.3	49.5	51.7
average wage/an	k	5.51	6.28	7.64	8.42	8.93	10.3	11.5	14.0	18.5
avg REAL wage/an		5.51	5.46	5.74	5.65	5.51	5.68	5.57	6.03	7.09
Mining Revenue	M	183	151	55	64	112	203	267	273	220
% Mng Revenue		54%	52%	13%	15%	19%	25%	26%	24%	19%

Source: IMR SADCC Database 1990, EIU 1990.

The mining industry of Namibia has been the economy's most important productive sector with a current output value of around one and a half billion rand, employing 7% of the labour force, contributing 80% to exports (average 76% for 1980-88) and 25% to GDP (average 31% for 1980-88). Although the mining sector generates enormous wealth, it only employs about 13,000 people due to its capital intensive nature. The mining industry is also a major source of government revenue and for the period 1980 to 1988 it contributed an average of 27% of state receipts.

Average wages for the industry in 1988 were 18,500 rand/annum (about 7,000 USD) or 7,000 deflated 1980 rand, a real increase of 29% from 1980 to 1988. However, while the average annual earnings look impressive there is no equity in the distribution of the earnings and since most black Namibians are unskilled and semi-skilled, they receive much lower average wages. Until 1972 workers were recruited under a harsh migrant labour system where they had few rights. After a series of strikes in December 1971 the conditions of recruitment were changed giving the migrants the right to break contract and to continue a contract without returning to the rural areas. With increasing international criticism, in the late eighties the major mining companies (Rossing and CDM) moved towards the creation of a stable labour force.

The mining industry exports over 90% of its output. Diamonds are the greatest contributor to government revenue through a 10% export duty, a 45% diamond mine tax and a 4,5% surcharge. Export orientation makes the whole economy very vulnerable to world economic recessions as was the case in 1982/3 when revenue from mining fell to 13% and exports to 69%.

The mining industry is dominated by three major companies, all foreign: Consolidated Diamond Mines (CDM), Rossing Uranium and Tsumeb Corporation Limited (TCL), which account for 90% of mineral production in terms of value. This foreign ownership of the mining industry has far-reaching implications for the Namibian economy; the mineral wealth of Namibia has so far not benefited the nationals, but has rather resulted in their exploitation, both economic and political. Because of its nature the mining sector has not been used as a propelling sector in economic development, but only for growth in GDP. However, the high level of foreign capital involvement and the emphasis on exports in the mining industry has led to a large disparity between national income and GDP (1988 GNP = 90% GDP) due to the net outflow of corporate profits and expatriate remittances.

However, the mining companies have contributed to the infrastructural development of Namibia: they have built up towns such as Oranjemund, Uis, Kombat, Rosh Pinah and Arandis to accommodate employees. Also the discovery and establishment of mines has provided government with economic justification and means for extending physical infrastructure into previously undeveloped or underdeveloped parts of the country for the benefit of the non-mining community as well.

The major source of investment in the mining industry are mining companies based in South Africa, the United Kingdom, Canada, France and the United States. Five of South Africa's finance houses have extensive and frequently overlapping interests in diamonds, uranium and base metals exploration and production.

Table 3. MINES, OWNERSHIP AND MINERALS OF NAMIBIA

Company/Mine	Major Shareholder/s	Mineral/s
CDM	De Beers (RSA)	diamonds
Koes Salt	Private	salt
Kombat	Tsumeb Corporation (RSA)	copper, lead
Navachab	AAC (RSA), Metallgesellschaft (FRG)	gold
Otjihase	Tsumeb (RSA), Otjihase Mining	copper, silver
Okorusu	Private (40% UK)	fluorspar
Peralin	Private	marble, gold
Rosh Pinah/IZ	Iscor (RSA), Molly Copper (USA)	zinc, lead,
Rossing Uranium	Rio Tinto-Zinc (UK)	uranium
Salt Company	Private	salt, calcite
SWA Lithium	Metramco (FRG)	beryl,petalite
Tsumeb	Gold Fields of Namibia (GFSA, RSA)	copper, silver tin, arsenic
Uis/Imcor Tin	Iscor (RSA)	tin, tantalite
Usakos	Private	lime

Source: Chamber of Mines 1986, UNIN 1987.

Economic Geology

The oldest rocks in Namibia belong to the Vaalian (> 2 Ga) to lower Mokolian (1.8 - 2 Ga) which contain metamorphic complexes which host mineral occurrences of lead, copper and fluorite in fault zones (Huab Complex), gold in quartz veins, pegmatites with columbite (Nb), tantalite (Ta) and beryl (Abbabis Complex) and kyanite (Hohewarte Complex). The Kunene Anorthosite Complex, located in the extreme north-west, contains few mineral deposits of economic importance[7].

The the calc-alkaline volcanics and intrusives (1.8 Ga) of the Orange River Group contain porphyry copper deposits (Haib deposits) and massive sulphides are found in the Khoabendus Group. The magnetite quartzite of the Namaqualand Metamorphic Complex contains associated exhalative sulphides and the late Proterozoic red sandstones host red-bed copper deposits (Klein Aub Mine). The Damaran Pan-African rifts and the margins of the deep Pan-African basins of the Garieb Complex contain economic sedimentary exhalative sulphides (Rosh Pinah Mine, Namib lead mine and Tsonguari Pb/Zn prospect), while the Pan-African mid-oceanic ridge areas contain volcano-exhalative massive sulphide deposits (Otjihase and Matchless Mines). The Pan-African shelf carbonates have associated pipe sulphide deposits (Tsumeb, Kombat, Adenab and Berg Aukas Mines) while the alaskites of the lower Damaran are uranite-bearing (Rossing Mine), and tin-bearing pegamites occur in the upper Damaran (Uis Mine). The Damaran sequence also hosts hydrothermal tin deposits (Brandberg Mine) and gold lode deposits (Navachab Mine).

The Nama Group has occurrences of uranium and lead-zinc and the Karoo grabens are important for their coal seams but none are currently exploited. The off-shore Cretaceous sediments host gas, and

possibly petroleum, resources (Kudu field). Much of the north-east, east and south-west of the country is covered by Kalahari sands. The recent calcretes contain uranium (Langer Heinrich) and recent (Tertiary) beach deposits which mined for diamonds (CDM) and inland pans contain salt (Etosha)[8].

Legislation

The mineral policies and legislation encourage investment by both foreign and domestic private sector mining companies. Most of Namibia's mining regulations were written by the South African Government as in the Mines, Works and Minerals Ordinance of 1968. Ownership of all mineral resources is vested in the state, and the right to prospect, mine, and dispose of all minerals is vested in the Minister of Mines, but the Mining Code provides easy access to prospecting and mining licences for foreign and domestic companies. A new mining law is being drafted, but it is not expected to be substantially different as regards the mining TNCs.

The policy statement on the code of foreign investment states[9] that Namibia welcomes foreign investment and would prefer joint ventures with local state or private capital, except for mining where a state share of equity will be necessary. At present there are no restrictions on the remittability of profits or on the sale of minerals. Although SWAPO's 1976 program stated that TNCs "...must be prepared to subordinate their profit-maximization philosophy to the goals of the socialist development programme of an independent Namibia"[10], in general, the new government has gone out of its way to allay the fears of foreign investors, it is therefore unlikely that there will be any nationalisation of mining companies or the creation of a minerals marketing authority in the near future. However, the Minister of Mines and Energy, Andimba Toivo ya Toivo, has been reported as saying....

> "...that while nationalisation of some sectors remained a long-term prospect, the government would move cautiously in introducing changes so as not to imperil optimum production levels by the industry."[11]

Mineral Production

Introduction

Table 4. NAMIBIA: MINERAL PRODUCTION

	Unit	1970	1975	1980	1985	1986	1987	1988	1989	70-80	80-89
Arsenic	kt	4.5	6.7	1.3	2.5	2.2	1.9	3.0	2.4	-71%	86%
Cadmium	kt	.23	.11	.09	.06	.06	.05	.11	.88	-62%	889%
Copper (blist)	kt	28.6	39.0	42.3	47.6	50.1	37.7	42.2	37.9	48%	-10%
Diamonds	Mct	1.77	1.61	1.48	.91	1.01	1.02	.94	.90	-16%	-39%
Gold	t				.2	.18	.17	.20	.34		
Lead	kt	70.1	44.3	42.7	38.5	40.0	40.6	44.4	44.2	-39%	4%
Lithium	kt	6.9	51.6		1.9	2.1	3.1	1.6	1.4	-100%	
Marble	kt				.40	.60	.60	.26	.60		
Pyrite	kt				174	190	120	227	197		
Salt	kt	110	210	230	154	136	125	150	121	109%	-48%
Silver	t	38	44	105	83	91	95	108	138	176%	32%
Sodium antimonate		0	0	0	0	0	51	156	73		
Tin	kt	1.01	.76	1.00	1.50	.71	1.10	1.20	.50	-1%	-50%
Uranium	kt	.00		4.77	3.39	3.49	3.70	3.80	3.60		-25%
Vanadium	kt	.42	.56	.00	.00	.00	.00	.00	.00	-100%	
Zinc	kt	46.1	37.7	25.4	30.5	34.1	39.4	37.3	39.3	-45%	55%

Sources: BGS 1975-89, EIU 1990

Production of most minerals has declined in the eighties, due to the global recession and the lack of investment in turn due to the South African occupation and a UN resolution prohibiting the

exploitation of the country's mineral resources. With the lifting of sanctions and the upturn in the metal markets a significant expansion in uranium, copper and gold can be expected and possibly a small expansion in diamond output.

Diamonds

CDM is a wholly-owned subsidiary of De Beers Consolidated Mines of South Africa which works closely with its partner, Anglo American Corporation of South Africa. CDM is the sole producer of diamonds in Namibia and is extremely important to De Beers Consolidated Mines: in the early 1970s their Oranjemund operation generated over 30% of De Beers' worldwide after-tax profits, but in 1980 the share had declined to 17% due to the development of new De Beers group mines, particularly in Botswana.

Control of Namibian diamonds remains crucial to the De Beers mining strategy: they are almost all of gem grade (>95%) and are a key factor in the maintenance of control of the world diamond market by the Central Selling Organisation (CSO). However, the Thirion Report published in 1986 severely attacked the over-mining strategy of CDM (concentrating on high grade ores only) which could lead to the rapid exhaustion of gem grade diamonds. Diamonds are extremely important for state revenue and in the 1988/9 fiscal year CDM was responsible for 41% of all mining revenue to the Namibian government and accounted for 8% of national revenue.

Diamonds are mined by CDM from alluvial coastal deposits north of the Orange River. The proved and probable reserves of gem diamonds available in Namibia may be as much as 30 million carats. The types of assessed reserves include raised beache conglomerates and other terrestial deposits (1-6 million carats) and foreshore deposits (9 million carats), but the greatest long term potential lies with the submarine deposits (10-15 million carats). Production in 1989 at 0.938 million carats is only 60% of the 1,56 million carats produced in 1980, but with the opening of the new Elizabeth Bay and Auchas areas, production should increase by 300 thousand carats per year in the 1990's and submarine mining is also under consideration by both CDM and an independent company. The recovery is about 11,12 carats per 100 tons, and although this is relatively low, it has a high percentage of gem diamonds (95%) of which about a quarter are large diamonds over 1 carat in size.

Table 5. NAMIBIA: CONTRIBUTION OF DIAMONDS TO STATE REVENUE.

	TAX	DUTY	TOTAL	%TOTAL
1979/0	134	41	338	52%
1980/1	101	34	292	46%
1981/2	33	21	436	12%
1982/3	24	22	453	10%
1983/4	27	23	571	9%
1984/5	47	21	687	10%
1985/6	50	39	957	9%
1986/7	121	50	1197	14%
1987/8	114	42	1309	12%
1988/9	60	50	1451	8%
Total	711	343	7691	14%

Source: UNIN 1987, EIU 1989.

Diamond mining is controlled under the Mines Ordinance by the Diamond Board. All producing mines have to deliver all diamonds to the board which then markets the diamonds through the Central Selling

Organisation (CSO) in South Africa. However, in 1990 government officials visited Endiama in Angola to look at their system of marketing at least part of production independently. Diamond sorting and valuation has been transferred from Kimberley in South Africa to Windhoek where Namibians are being trained by CDM.

Uranium

Namibia's known uranium reserves occur in three deposit types: in granitic rocks as at Rossing, in superficial sediments (Langer Heinrich) and in older sediments of the Karoo. The predominant uranium mineral is uraninite which constitutes 60% of uranium deposits.

Rossing mine is the sole producer of uranium in Namibia: the mine is the largest open-pit uranium mine in the world with an average grade of 0,04% uranium pentoxide. This makes Namibia the fourth largest uranium producer in the world outside the Eastern Bloc countries. Rossing uranium produces 17% of the western world's total output. The uranium has been transported secretly to foreign countries in contravention of United Nations decree banning prospecting, mining and removal of Namibia's minerals without the Council's approval.

Rossing Uranium is a subsidiary of Rio Tinto Zinc Corporation of the UK which has 45.6% of the issued shared capital. General Mining Union Corporation (Gencor) and the Industrial Development Corporation (IDC) both of South Africa and Minatome of France are the other major share holders. Through the Capricorn Trust the state has 3.5% of the equity and 50% of the total voting rights. Production in 1980 stood at 5,000 tons but fell to 3,500 tons during 1985-89. The company employs about 3,200 workers and claims to contribute R100 million a year in wages and taxes. The mine accounts for 35% of national export earnings and around one-fifth of the gross domestic product. Uranium prices have been low throughout the eighties and earnings have fallen for Rossing as the long term sales contracts have expired and they have resorted to sales on the spot market. The main uranium customers have long-term contracts and include power utilities in France, Japan, West Germany, Spain and Taiwan.

With the upturn in uranium prices and the lifting of sanctions it is expected that Rossing will be moving towards its full capacity of 6,000 tonnes in the 1990s.

Base Metals

Tsumeb Corporation Limited (TCL) is a wholly-owned subsidiary of Gold Fields of South Africa (GFSA) through Gold Fields of Namibia (GFN). TCL also operates an integrated copper smelter, lead refinery and ancilliary plants for by-products.

The mines owned by TCL include Tsumeb, Kombat, Asis Ost, Asis West and Otjihase. The base metals produced include copper, lead and zinc with byproducts silver, cadmium and arsenic. Otjihase is the largest source of copper concentrate for smelting into blister and a producer of gold (which is recovered from blister). Copper smelting and lead refining are done at Tsumeb mine.

The South African parastatal, the Iron and Steel Corporation (Iskor), produces lead, silver and zinc from Rosh Pinah mine near the border with South Africa in the south-west and all production is exported as a concentrate to South Africa for refining. Iskor also owns the Uis tin mine which also produces columbite/tantalite minerals. The Uis tin deposits (probably the largest tin-bearing pegmatite mine in the world) occur as low grade ore (0.15%). The proved, probable and possible reserves of tin in Namibia are 120 kt which is 2% of world reserves. Tin concentrate from Uis is sent to the Iskor refinery in South Africa.

The proved zinc reserves of 836 kt in Namibia are distributed as follows: Tsumeb 315 kt, Rosh Pinah 90 kt, Berg Aukas 155 kt and Otjihase/Uis/Kombat 270 kt. Three main types of zinc minerals are presently exploited in Namibia, requiring different technologies for beneficiation and extraction. Zinc ores are either sulphidic (Tsumeb, Berg Aukas, Rosh Pinah), carbonaceous or siliceous. Namibia with proved reserves of 670 kt of lead ores accounts for 1.4% of world reserves and 20% of Africa's reserves.

Gold

Gold and silver are produced as byproducts of base metal mining, but Namibia also has several small gold deposits. De Beers, in collaboration with Anglo American Corporation of South Africa, opened the country's first gold mine in 1989, Navachab, at a cost of ninety million rands. It is an open-cast operation and is expected to produce 750 kg/an from a low grade ore containing 2-3 g/t of gold.

Other Minerals

Dasig Mining Company is a South African company involved in mining and prospecting for amethyst, white marble, pink granite at Bonnie Brae and Burgershof in the Otjiwarongo district of central Namibia. Dasig has also acquired all the major sodalite deposits in Kaokoland in the north west where mining has begun.

SWA Lithium Mines owns Rubicon mine near Karibib which produces lithium minerals. The mine is operated by Metramco of South Africa, but the ultimate owner is Klockner of Germany. In 1987 production consisted of 2.173 kt of quartz, 750 t of petalite, 106 t of amblygonite, 53 t of lepidolite and one ton of beryl.

Locally owned companies are also involved in mining and these include: Deblin Mining which produces lead, zinc and silver from a deposit near Rossing, The Salt Company which produces coarse salt from pans near Swakopmund, and Peralin wich produces marble.

Namibia's reserves of vanadium are comparable to those of South Africa, Finland and Peru. Reserves at Berg Aukas amount to 1,7 million tonnes, but they are low grade and there has been no production since 1978.

Cadmium is recovered as a by-product of zinc smelting and Namibian reserves at 5 kt are 0.7% of world reserves. The mineral is partly refined in Namibia and the rest is treated abroad from concentrates and fluedust and sold mainly to the UK and the US. Tungsten is known to occur in Krantzberg and Brandberg West. Namibia's mine production of concentrate varies between 60 and 120 t of contained tungsten per annum from Uis tin mine.

Salt production from the area around Swakopmund has been a relatively important part of Namibia's mineral industry for the past 45 years and the prospect for further production is virtually unlimited on the coastal strip. Salt is produced from salt pans and in 1987 124 kt of coarse salt were produced.

Namibia also has resources of several industrial minerals including arsenic, sulphur, trona, feldspar, fluorine, selenium and phosphorus. A new fluorspar mine opened in 1988 at Okorusu Mountain at the initial rate 50 kt/annum of acid grade fluorspar, owned by local interests and 40% by a UK investor.

Although there are numerous suitable limestone deposits there is still no cement plant and all requirements are imported from South Africa, though the establishment of a local plant is under consideration.

Substantial reserves of sub-bituminous coal have been identified in Namibia in the Karoo basins at Aranos, Toscanini and Caprivi, but are generally low grade (high ash) and deep.

There is evidence of onshore oil potential in the Etosha Region of northern Namibia where Etosha Petroleum holds an exclusive prospecting grant who are re-investigating the area. Several multinational corporations have been prospecting for oil in Namibia and methane gas has been discovered in the Kudu gas field, 120 km off the Orange river mouth.

Conclusion

Mining is potentially the most important sector of the Namibian economy because of its potential contribution towards wider national, social and economic development. Indeed, in order to foster socio-economic development, a substantial part of the resources collected in the form of "rent" from this sector will need to be spent on development in general, and industrial development in particular. Due to the cartelisation of diamonds the opportunity for reaping monopoly rents are large and in fact they are a major contributor to government revenue. Yet the Debswana rent sharing system in Botswana is acceptable to De Beers, meaning that Namibia could still get more of the rent via an equity stake (50% in Debswana).

The mining sector, in general, accounts for more than 80% of exports by value while other sectors (agriculture and manufacturing) account for the remainder. In respect of export earnings, direct and indirect tax revenue and investable surplus, the mining sector provides about half of the national totals and therefore it is important that the mining sector be kept efficiently functioning to facilitate development of other sectors and to build forward and backward sub-sectors related to mining and thereby integrate the sector effectively into the rest of the economy.

Within the mining sector there is substantial room for further value added. Several minerals leave the country as concentrates such as zinc and tin that could be refined locally, and copper is exported as blister to be refined overseas. As almost all diamond output is of gem grade there should be possibilities for the local cutting of a proportion of production as is done in Botswana. Further beneficiation of uranium yellow cake would not be feasible due to the high technology and enormous costs involved.

The legacy of years of colonial domination in Namibia has resulted in a one-sided path of economic growth and a heavy dependence on the mining sector. Given the instability of the minerals market, the depreciating nature of the resources and the substantial possibilities for expanding agricultural and industrial participation in the economy, there is need to broaden the Namibian economic base and make the economy less vulnerable to external shocks and at the same time formulate a path for sustained economic development. Indeed, there is need for caution to avoid the country getting trapped into a false sense of well-being as was the case in Zambia in the first few years of independence.

The almost total absence of indigenous Namibians in any skilled positions in the mining companies, in part due to South African racist education policies, needs to be urgently addressed. At the diploma-level (skilled artisans), in the short to medium term Namibians could be trained outside the country, particularly at SADCC institions (Zambia and Zimbabwe), but in the longer term facilities will have to be created in Namibia. However, it may not be worth creating sophisticated and expensive training facilities for the relatively small number of degree-level graduates required. It may be worth considering usig an already established institution in the region.

The admission of Namibia as the tenth member of the SADCC will strengthen economic cooperation in Southern Africa and at the same time reduce the domination of the South African regime in sub-

Saharan Africa. Namibia is well endowed with mineral wealth and its membership will increase the regional resource base for uranium, diamonds, copper, silver and lead, zinc, coal and natural gas. The admission of Namibia as a SADCC member state has increased regional mineral output: lead will increase by 86%, zinc by 71%, silver by 65%, tin by 55% and copper and gold by about 10% each. The membership of Namibia will also mean the addition of a new mineral, uranium, to the regional range. However, overall, the region will become more dependent on mining and transnational companies, particularly South African TNCs. With Namibia, the SADCC proportion of gem quality diamonds should be enough to put them collectively in a strong position regarding the De Beers cartel.

Nevertheless, an independent Namibia, will greatly enhance and give further impetus to the viability of SADCC. Other than being a source of the strategic uranium, Namibia could also serve as an important market for other SADCC countries and also could, in the long term, provide ports (Luderitz and Walvis Bay) for other landlocked members and thereby reduce pressure on the east coast ports. However, due to the lack of a railway connecting Namibia to the rest of the SADCC, economic interaction with the region will be difficult, although Zambia is already exporting a tiny amount of its copper via Namibia. In addition, it appears clear that South Africa will hang onto the country's only viable port, Walvis Bay, giving them substantial power over Namibia's external trade.

In conclusion, Namibia is a highly mineral dependent country, particularly in terms of exports and state revenue, very similar to Botswana, but unlike Botswana the mineral rent extracted by government has not until now been used to the benefit of the majority of the people (education and social services) instead it has gone to the companies and to enrich the small "white" elite. There are almost no mineral supply manufacturers and no mineral based industries, not even a cement works. The only mineral that is integrated into the economy appears to be salt. Yet, unlike Botswana, Namibia has other resources that it could be developed with mineral surpluses such as agriculture in the north and Caprivi Strip and fishing all along its extensive coastline.

Footnotes

1 CIIR 1983.
2 Chamber of Mines of Namibia/SWA.
3 CIIR 1983.
4 South West African Peoples Organisation
5 EIU 1990. Namibia-Mining
6 World Bank 1990.
7 Geological Survey of Namibia 1982.
8 Miller 1990.
9 Government of the Republic of Namibia 1990.
10 UN Institute for Namibia 1987, page 132.
11 Mining Journal 314/8076, 22 June 1990, page 489.
12 Mining Journal 314/8076, 22 June 1990, page 490.
13 Industrial Minerals July 1987, page 11.
