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SUB-SAHARA AFRICA: ITS ROLE IN CRITICAL MINERAL NEEDS OF THE WESTERN WORLD

A REPORT

PREPARED BY

THE SUBCOMMITTEE ON MINES AND MINING

OF THE

COMMITTEE ON

INTERIOR AND INSULAR AFFAIRS

OF THE

U.S. HOUSE OF REPRESENTATIVES

NINETY-SIXTH CONGRESS

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COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

July 3, 1980

Members of the Committee on Interior
and Insular Affairs
U.S. House of Representatives
Washington, D.C. 20515

Dear Colleagues:

I am transmitting the report of the Subcommittee on Mines and Mining entitled "Sub-Sahara Africa: Its Role in Critical Mineral Needs of the Western World," based on site investigations and discussions with foreign officials in southern Africa undertaken earlier this year.

The United States depends on other countries for more than 90 per cent of several strategically critical minerals, including cobalt, manganese, chrome, and platinum. Recent actions by foreign nations raise questions on the continuity of those mineral supplies. Inasmuch as southern Africa is blessed with a wealth of these mineral resources and is, at the same time, a region plagued by internal and external pressures and conflicts, it becomes increasingly important to recognize the important relationship between our foreign policy and our domestic economy.

Not only should the Committee be aware of the importance of southern Africa's minerals to the United States, but also I believe that we should be alert to see that these supplies do not become the sudden captive of dramatic price increases, embargoes, and other moves that might adversely affect their availability.

The Subcommittee's report focuses on the nations of Zaire, South Africa, and Zimbabwe and is an excellent account of the political, social, economical and mineral situations there. I commend it to your attention.

Sincerely,

MORRIS K. UDALL
Chairman

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

June 24, 1980

Honorable Morris K. Udall, Chairman
Committee on Interior and Insular Affairs
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

I am transmitting the report of the Subcommittee on Mines and Mining on our investigative trip to southern Africa during January 1980.

As you are well aware from your involvement in the Nonfuel Mineral Policy Review, the United States is now dependent on foreign sources in excess of 50% of 24 of the 32 minerals essential to our national economy and security. Southern Africa--Zaire, South Africa and Zimbabwe--has massive reserves of platinum, manganese, vanadium, cobalt and chrome.

Despite the growing awareness of African issues, many questions remain unanswered concerning the stability of this region as a primary source of our minerals supply.

I am confident that a printed form of the Subcommittee's report will prove to be a valuable source of information to Committee Members on our critical minerals situation. Maps have been included to allow for easy reference when reviewing the report.

Thank you for your continued attention to minerals issues.

Sincerely,

JAMES D. SANTINI, Chairman
Subcommittee on Mines and Mining

JDS:scg

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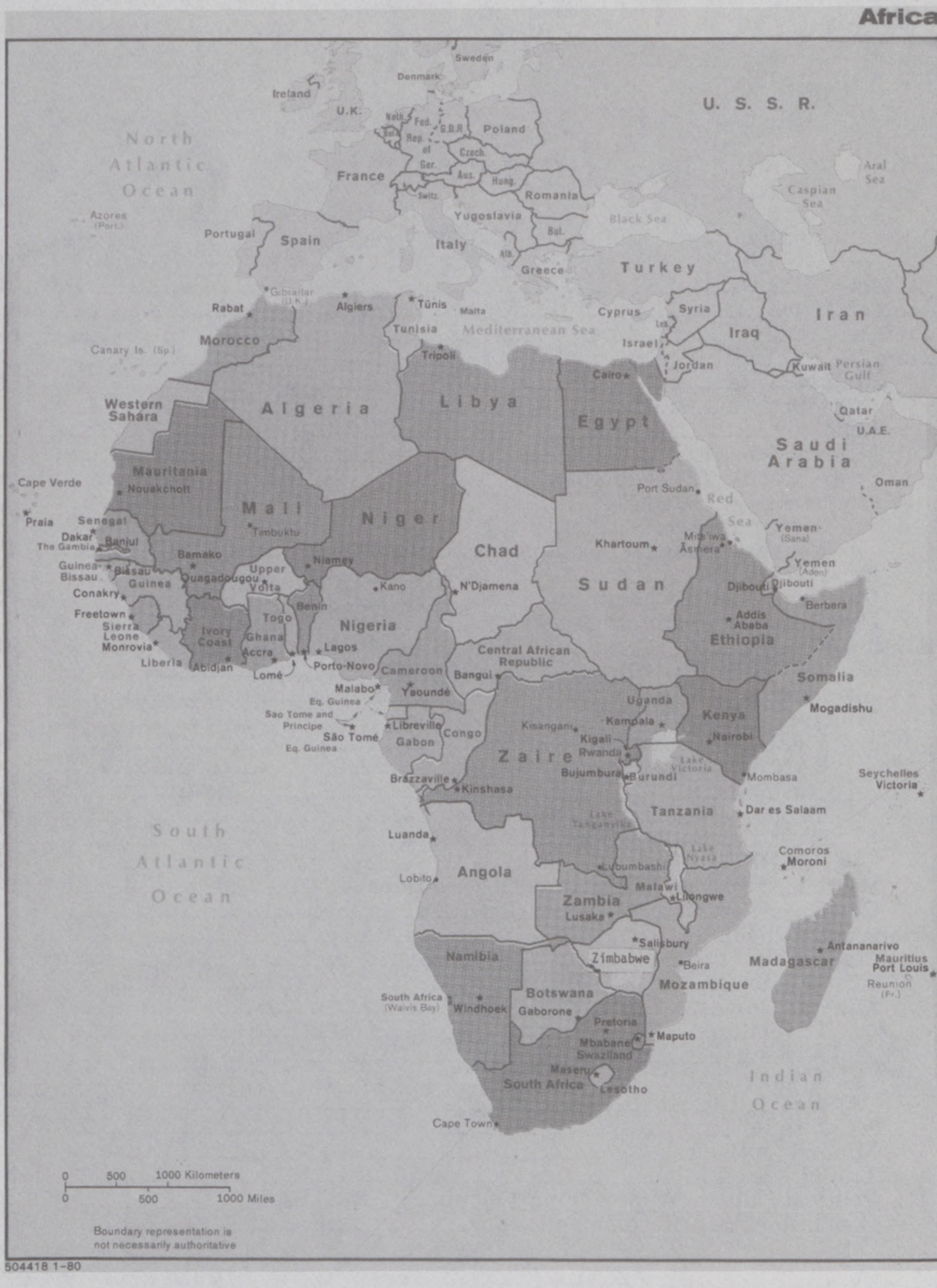
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PREFACE

No issue facing America in the decades ahead poses the risks and dangers to the national economy and defense presented by this Nation's dependence on foreign sources for strategic and critical minerals. America is now dependent on foreign sources in excess of 50 percent for 24 of the 32 minerals essential to national survival. Minerals such as manganese—essential in the production of steel (import dependence 98 percent); cobalt—vital hardener and strengthener of steels (import dependence 95 percent); and chromium—indispensable to the production of stainless steels and the least substitutable of all ferroalloys (import dependence 90 percent) reveal a vulnerability more serious than the energy crisis. While America may develop its own alternative energy resources, in many cases there are no substitutes for the minerals imported from foreign sources, countries which are often unstable at best, hostile at worst.

While the threat of cartel-like actions associated with escalation of prices regarding these critical minerals is a possibility that cannot be discounted, the greater danger is that with the increasing export of domestic mineral processing capacity to producer and other user countries our ability to make decisions for our own self-interest is being lessened. Thus America's mineral industry cannot be further weakened. America already suffers a nonfuel minerals balance-of-trade deficit which in 1978 reached $7 billion, an all-time high. One estimate projects that by the year 2000, America's nonfuel mineral deficit will hit $65 billion.

The point is often made in partial mitigation of these concerns, that America imports its minerals from a variety of sources which will continue to export minerals given their need for foreign currency. Recent events, however, provide ample evidence that the demands of the developing countries are making it increasingly difficult for private investments when the return on such investments is becoming less sure. The threat of contract renegotiation and erratic behavior in the face of an anti-West, anti-industrial bias cannot be discounted. As well, while the bulk of minerals imported comes from a variety of source countries, a host of critical minerals find their origin in a highly localized region.

One such region, a region increasingly referred to as the Persian Gulf of minerals, is that of southern Africa wherein lie massive reserves of platinum, manganese, vanadium, cobalt and chrome—minerals vital to the economic well-being of the United States. Within that region lies 86 percent of the world's reserves of platinum group metals, 53 percent of the world's reserves of manganese, 64 percent of the world's reserves of vanadium, 95 percent of the world's reserves of chromium and 52 percent of the world's reserves of cobalt. Yet the significance of the area to America and to the Western World is belied by the scant attention devoted by the United States to the region, not just as a focal point of political uncertainty but as a vital source of strategic and critical minerals. Despite a growing national awareness of African issues, numerous questions were unanswered: What is the nature of the mineral resource? How stable are the various mineral industries? How stable were the individual governments? How supporting of the mining sector were such governments? What is the possibility of cartel-like activity by such governments? What are the social and economic conditions of those nations?

It was with this background and in search of answers to these questions that the subcommittee made its trip to southern Africa.

SUB-SAHARA AFRICA:

ITS ROLE IN CRITICAL MINERAL NEEDS OF THE WESTERN WORLD

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Central African Republic
Sudan
Cameroon
Gabon
Congo
Uganda
Rwanda
Burundi
Tanzania
Angola
(Portugal)
Zambia
Atlantic
Ocean
Equateur
Haut-Zaire
Kivu
Bandundu
Kasai-Oriental
Kasai-
Occidental
Bas-Zaire
Shaba
Bangui
Zongo
Bondo
Aketi
Lisala
Mungbere
Mambasa
Bunia
Beni
Kasese
Mbandaka
Kisangani
Ubundi
Lac
Mai-Ndombe
Bandundu
Goma
Kigali
Bukavu
Bujumbura
Kigoma
Brazzaville
Kinshasa
Kikwit
Kananga
Tshikapa
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Kabalo
Kamina
Kolwezi
Likasi
Lubumbashi
Dilolo
Luso
Carmona
Moanda
Mpulungu
Lake
Bangweulu
Ndola
Zaire
International boundary
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National capital
Region capital
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Road
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200 Miles
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ZAIRE

Introduction

From January 7 through January 11, 1980, the subcommittee met with U.S. Embassy and Zaire Government officials in the cities of Kinshasa, Lubumbashi, and Kolwezi, and visited mining installations in the latter two areas plus those in Kipushi and Mushoshi.

In the capital of Kinshasa, after briefings conducted by the Ambassador and his staff officers, the subcommittee met with Zaire's Secretary of State for Foreign Affairs Loango Bolela, SOZACOM Director Lukusa Muengula, and Minister of Mines Mbala Mbatu. In addition, the subcommittee met with many of Kinshasa's government, civic, and business leaders.

Most of the time was spent in a 3-day visit to Lubumbashi and outlying mining centers in southern Shaba Province where the subcommittee participated in full and open discussions with senior officials of the Government-owned La General des Carrieres et des Mines (GECAMINES)—Administrative Director Robert Crem, Operations Director Henri Sorel, and Planning Director Lucien Kort. However, the subcommittee was unable to meet with Umba Kyanitala, President of GECAMINES, since he was out of the country during the visit.

After Lubumbashi, the subcommittee traveled to Kolwezi, 250 miles to the northwest, and observed Shaba's principal copper-cobalt mining center that is responsible for production of 90 percent of Zaire's cobalt. The subcommittee toured the Kolwezi production process: the Musonoi and Kamoto North open pit mines, Kamoto underground mine, Kamoto concentrator, and Luilu refinery.

The subcommittee also visited the underground installations at Mushoshi south of Lubumbashi, one of two mines operated by SODIMIZA—20 percent Government-owned with the remainder held by a consortium of six Japanese mining companies. The subcommittee visited GECAMINES' underground operations at Kipushi and the company's health and training facilities in Lubumbashi. A meeting was held with Shaba Regional Commissioner, General Singa Bayange Mosambay, regarding Shaba security.

As in Kinshasa, the subcommittee met with mining officials and representatives from Shaba's business, banking, military, regional, and consular authorities.

Economy

Zaire, Africa's third largest Nation, is potentially one of the richest countries in all of Africa. Although largely unexplored, its known mineral wealth is enormous. Fertile lands can feed its people—as they once did—and earn export revenues. A great river system facilitates inland water transport, while the lower Zaire River holds tremendous (one-half of Africa's) hydroelectric potential. Before its 1960 independence, Zaire had one of the most highly developed and diversified economies south of the Sahara. Since then, its economy has been allowed to deteriorate to a point where it is reasonable to ask if recovery is possible under the present Government. The reasons are many, and while in part external, the overwhelming causes are economic mismanagement and widespread political corruption, which President Mobutu has personally labeled "Zairian sickness."

From a strong export position of cash crops palm oil, cotton, tea, sugar, and coffee and having self-sufficiency in rice and other foodstuffs prior to 1960, Zaire's food production has dwindled to mostly subsistence farming on but 1 percent of the lands, today. Food production is now incapable of alleviating food shortages in the cities, in part because of the lack of adequate transportation which necessitates the importing of food in large quantities (100,000-plus tons of maize annually). While some food is provided under foreign subsidy programs, most is purchased from South Africa and Zimbabwe at an annual cost exceeding $300 million. In 1979, southern Zaire experienced a 200,000-metric-ton food (maize, rice, and wheat) shortfall. An assured supply of food at subsidized prices for employees and families of Zaire's mining operations is an integral part of mine management.

Possessed of an adequate and well-run transportation network before independence, Zaire's present railways, water transport facilities, and road system have deteriorated significantly because of an absence of maintenance, fuel, replacement rolling stock, and spare parts. Lack of good communications (virtually collapsed today in central Zaire and inherently a problem because of language differences) has become a major operational problem in Shaba's mining centers because of unreliable mail delivery and telecommunications.

The state of Zaire's economy is best exemplified by the decline in its aggregate output. Averaging a minus 4-percent growth rate of its gross domestic product over the period of 1975–78, Zaire's most immediate goal is recovery to zero growth. Inflation continues out of control (almost 100 percent in 1978) fueled by high Government deficits, which over the past 5 years reportedly exceeded revenues by one-third. At the same time, import controls to prevent currency outflow slowed acquisition of equipment, technical innovation, and skills. Unemployment in Kinshasa is estimated in the range of 50 to 60 percent.

Perhaps the most fundamental difficulty is Zaire's long-term debt, about $3.5 billion, for which the Nation as of December 1978, was in arrears for $1.3 billion ($250 million owed to private commercial banks). The World Bank had approved $523.6 million in loans to Zaire through mid-1979; development assistance (foreign aid) to Zaire reached $500 million in 1977, principally from Belgium, France, West Germany and the United States; and multilateral and United Nations lending to Zaire is significant. U.S. Agency for International Development earmarked $37.65 million for Zaire in 1979, and total U.S. Export-Import Bank credit and loan facilities to Zaire reached $550 million in late 1979.

The initial signs of serious stress in Zaire's economy surfaced as early as 1973, even in the face of unusually high copper prices, prices that continued until late 1974. During that period, President Mobutu embarked upon an expensive expansion program for projects of uncertain economic benefit which were financed largely by heavy borrowing from foreign banks. At the same time, Mobutu began his ill-fated programs of Zairianization, the shift from foreign to indigenous management by industry and commerce, and nationalization, the transfer of most foreign commercial and agricultural enterprises to Zairian ownership.

A sharp decrease in national revenues brought about by the fall of copper prices in late 1974, aggravated by the rise in cost of imported fuel, left Zaire incapable of meeting its expanding debt-servicing obligations. Despite a 42-percent devaluation in early 1976, transport disruptions of its exports and persistently low copper prices pushed Zaire to de facto bankruptcy by the end of that year. With agriculture no longer able to earn its former export currency, with large budget deficits, rampant inflation, and an unmanageable debt, the burden for economic survival fell on the shoulders of Zaire's mining industry.

The mining industry, however, was unable to respond because of the 1975–78 depressed copper market and its growing operational problems, both internal and external. Internally, years of serious government neglect by failing to plow back sufficient mining revenues had decreased operating efficiency, thus increasing costs. Externally, the 1975 closing of the Benguela railroad through Angola and the 1978 Shaba II disruption and consequent exodus of many skilled expatriates added to the staggering array of GECAMINES' operating problems. Both the Shaba I and Shaba II invasions were by former Katangan gendarmes who left Shaba (formerly Katanga) after the unsuccessful secession attempts in the 1960's.

The situation was serious enough to require the rescheduling of Zaire's government-to-government debts and the realining of those owed to foreign private investors. In August 1979, the IMF approved Mobutu's stabilization plan and granted a standby loan of about $150 million in foreign exchange to be disbursed in five portions over an 18-month period. Some $100 million was earmarked for allocation to GECAMINES and other companies for needed imports.

Mineral Wealth

Zaire's mineral industry is the mainstay of its present economy, accounting for 70 to 80 percent of foreign-exchange earnings and about 35 percent of the GOP. Most of Zaire's mineral wealth and production, including all of its copper, cobalt, zinc, and byproduct cadmium and germanium, is centered in the troubled southeastern part of Shaba Province. Of Zaire's 1979 mineral earnings, cobalt was reported to have contributed about 50 percent, copper about 45 percent, and diamonds about 4 percent.

Outside the copper-cobalt belt, the mining of diamonds, tin, columbium-tantalum, tungsten, monazite, gold, and limestone (for cement production) continued in 1979 but was hampered by the problems elsewhere. There are also deposits of manganese, phosphate, iron ore, chromium, and nickel. A 150,000 metric-tons-per-year aluminum plant, a ferroalloy plant, a ferrochrome plant, and a liquid hydrogen plant planned for the Inga II hydroelectric area on the Zaire River, will probably be shelved because of inadequate funds.

Gold production from one mine in 1979 was reportedly 250 kilograms per month ($48 million at $500/ounce), and development of another deposit awaits financing. Zaire's production of industrial diamonds, primarily bort from alluvial deposits in the Kasai region, ranks first in the world (about 30 percent of 1978 world production by volume) and fourth (over $600 million) in Zaire's export earnings. The value of gem diamonds, 3 percent of present production, is expected to reach the earnings of industrial diamonds, as mining shifts away from alluvial deposits to the reportedly substantial reserves of kimberlite in the same region.

Manganese ore from deposits at Kisenge, western Shaba, has been produced by the Zairian-owned, Zairian-run Societe Miniere de Kisenge since nationalization of its Belgian predecessor in 1973. Dependent upon the Benguela railroad for shipment of this low-cost commodity to the Angolan port of Lobito, exports stopped with disruption of the line by Angolan guerrillas in 1975. Mining continued and 560,000 tons were stockpiled until operations were disrupted by the Katangan occupation of Kisenge during the 1977 80-day Shaba I invasion. These deposits are reported to have a 20-year productive life.

Operations for tin, and strategically important columbium and tantalum are running below capacity because of insufficient capital to replace old or inefficient mining and processing equipment, the frequently disrupted transport systems and the lack of supplies, parts and technicians. The principal mine for all three metals is on a large low-grade deposit, possibly the largest such deposit in the world, near Manono in Shaba, 400 miles north of the copper-cobalt belt. Reserves are estimated at 200 million tons to a 100-meter depth, with lower-grade mineralization continuing downward. Run by Zairetian (50 percent nationalization of former Belgian owner, GECAMINES, in 1968), production in 1978 amounted to 541 metric tons of refined tin and 35 metric tons of columbium-tantalum. Continued operation at Manono without major mining and transportation improvements will be difficult. A feasibility study presently underway calls for a mining rate of 4 to 5 million tons per year to include the added recovery of 5,000 tons of lithium carbonate from formerly discarded lithium minerals.

Shaba's Mineral Production

The copper-cobalt deposits of state-owned GECAMINES are scattered along a curved belt (an extension of Zambia's famed copperbelt), and about 30 kilometers wide and 300 kilometers long from the Zambian border to Kolwezi. Some 200 deposits have been found along the belt in Zaire, although no new major discoveries have been made by GECAMINES or its nationalized Belgian predecessor, Union Miniere, since about 1920. New reserves have been added by drilling on extensions of known deposits often following topographic features that indicate telltale ore-bearing structures.

GECAMINES' copper-cobalt deposits are reported as having a 25-year life of proved reserves (460,000 metric tons of copper per year), plus an added 25-year life of probable reserves. More likely, the reserves are considerably larger, possibly double. The average grade of copper is about 4.5 percent and of cobalt about 0.35 percent, although the latter varies considerably from deposit to deposit, in places going as high as 3 percent.

GECAMINES' copper reserves include those at the Kipushi underground mine (1.4 million metric tons of ore per year) opened in 1925 west of Lubumbashi, which contain no cobalt (5 percent copper, 7 to 9 percent zinc). The reserve total does not include the copper deposits mined at Mushoshi and Tshinsenda that were opened in 1972 and 1977 by the Japanese-run SODIMZA (Zaire ownership is 20 percent), nor the 51 million ton undeveloped Tenke-Fungurume deposit near Kolwezi that averages 5.6 percent copper and 0.45 percent cobalt.

Intensive development of the latter deposit under a concession to a consortium of six foreign companies, Societe Miniere de Tenke-Fungurume (SMTF) began in February 1975, but ended in the following August because of cost overruns, principally escalating transportation costs. Development cost of the planned 130,000 metric tons-per-year copper mine jumped from $500 million in 1974 to $900 million in 1976. The French state-owned Bureau de Recherches Geologiques et Miniere (BRGM) now holds Amoco's 28 percent interest (a total share of 34.4 percent) with principal partners of Charter Consolidated 28 percent, Zaire 20 percent, and Mitsui 14 percent. With all of the uncertainties facing mining in Shaba, especially those concerning transportation, development of the Tenke-Fungurume deposit remains uncertain although reports of a startup under President Mobutu's urging continue to circulate.

Shaba's mining industry accounts for 60 to 70 percent of Zaire's total electric consumption. Most of GECAMINES' electricity is generated at Belgian-built hydroelectric projects in Shaba, but additional, expensive electric power is being imported from Zambia. Since copper production is extremely energy-intensive, GECAMINES' 5 year P-2 expansion project is integrated with the transmission of power from the Inga Dam hydroelectric project on the Zaire River downstream from Kinshasa. The $680 million (Eximbank $398 million), 1800-km, high-voltage DC Inga-Shaba power line to Kolwezi, initially to deliver 509 MW of power to Shaba, is now scheduled for completion in December 1981, 5 years after the original completion date. Those opposed to Inga-Shaba argue that, because line taps enroute for industrial uses are presently not feasible with DC transmission, Zaire's economy is further restricted to mining rather than being broadened.

GECAMINES' goal in the next 2 years, assuming metal prices maintain present levels, is to restore mining and metallurgical facilities to their rated capacity of 470,000 metric tons of copper and 16,000 metric tons of cobalt per year. Substantial ordering of new mining equipment including trucks, drills, and loaders has begun with the 12 long-awaited 170-ton trucks ($623,000 each), which are vital to pit stripping, to be shipped in April 1980. The more ambitious P-2 project, launched in 1974, is to increase the rated capacity by 100,000 metric tons of copper and 6,000 metric tons of cobalt. The latter project, started by a $100 million loan from the World Bank, a $100 million loan from the Libyan Arab Foreign Bank, and a $20 million loan from the European Investment Bank, was 2 years behind schedule in 1977 because of loan and design delays. Scheduled for completion in 1979, the Outokumpu-type flash smelter and the new electrolytic copper refinery at Luilu stood half finished in January 1980.

GECAMINES in 1974, produced a record 472,000 metric tons of copper, 17,500 metric tons of cobalt, and 68,700 metric tons of zinc. In

1975, while production of copper dropped 2 percent, cobalt 22 percent, and zinc 4.5 percent, return from sales dropped a more significant 38.5 percent. Copper production in 1978, the year of Shaba II, plunged from 1977's 472,000 metric tons to 391,000 metric tons while cobalt production increased from 10,200 to 13,100 metric tons. The emphasis on cobalt was again evident in 1979 when copper and cobalt production was 372,000 and 15,000 metric tons respectively. Major markets for GECAMINES's copper include Belgium, France, Germany, and Spain. The subcommittee was informed that Zaire in 1979 sold 2,000 metric tons of cobalt to the Soviet Union for U.S. dollars. It was also reported that Zaire in 1979 sold 200 metric tons of cobalt and 20,000 tons of copper to the Peoples Republic of China also for U.S. dollars.

SOZACOM, the mineral marketing arm of the Zairian Government, reported that in 1980 it will bypass Belgium and not sell through its present U.S. outlet, African Metals Corporation. Cobalt will be sold directly to U.S. consumers (about one-third of its production) through a SOZACOM office which is to be established in New York City. The latter also intends to stockpile cobalt in Zaire and in major market areas, and to discontinue its stockpiles in Belgium. With the present spot-market price of cobalt about equal to the producer price—the spot-market price peaked at $50 per pound in early 1979—SOZACOM is now more interested in long-term contracts with its principal buyers in the United States, understandably at the Zambia-Zaire administered price of $25 per pound. It is clear that Zaire intends to maintain 60 percent of the world's cobalt production (it could easily maintain 70 percent with expanded capacity), but wants to do so at the $25 per pound price.

The certainty of supply of Shaba's minerals—60 percent of the Western World's supply of cobalt—hinges on the resolution of a number of severe operational, financial, and security problems. Officials differed on the priority of solutions, but all agreed as to the vital need for military security, major improvements in transportation, availability of sufficient foreign exchange for replacement equipment and spare parts, and the stabilization of managerial and technical expatriate personnel.

SECURITY

Military security in Shaba is perceived by American government officials to be better than it has been for several years. Unfortunately, invasion or civil disorder could change this subjective assessment. Approximately 100 French and Belgian officers (plus Chinese in the Kisangani area) are retraining and refitting Zairian Army brigades in southern Shaba with nonsophisticated weapons to improve the army's ability to repel invasions like Shaba I and II.

Assistance of foreign troops is clearly a part of Shaba's defense plans. The willingness of the French to render military assistance to Zaire appears unquestionable in light of the lead role that France assumed in repelling the Shaba II invasion and the French deployment in Shaba Province of 2,000 airborne troops from Libreville (Gabon) within 2 hours in a summer 1979 exercise. The latter show of force was clearly intended to reassure GECAMINES' expatriates before the withdrawal of the Intra-African Defense Force, which had replaced French and Belgian forces after Shaba II. Future military assistance from Morocco, whose forces stopped the Shaba I invasion, will depend upon the extent of Algerian and Libyan pressures on Morocco via the Polisario Front in the western Shaba. The stabilizing impact on Zaire of Moroccan intervention seems likely in the future.

An additional stabilizing factor will be Zaire's 1978 agreement with Angola, which President Mobutu later discussed with President Kaunda of Zambia and which calls for each to abstain from armed subversion of the other's territory. Whether President Kaunda signed an agreement is unknown. Whether the agreement between Mobutu and the late Angolan President Neto remains workable in an area where Soviet surrogates are promoting change seems unlikely.

However, it would not take an invasion of Shaba to disrupt mining there. It was acknowledged by mining and American representatives that a few explosive charges placed by terrorists at key installations could be disastrous. The vulnerability of mining is evidenced by a single example. During the 6-day Shaba II invasion, power for the mine pumps, which discharge 2.5 million gallons of water per day for the Kamoto underground workings, was cut off, shutting down ore hoisting for 30 days. In the open pits, the disruption was less, so that a 50 percent resumption of mining was underway in 15 days. While Shaba II did not result in any outright destruction of mining and metallurgical facilities, it took 60 days before mining fully resumed and cost GECAMINES and its personnel $49 million and lost production worth about $28 million.

Any major disruption such as a 30 to 60 day loss of electric substation or line capacity ($5 million of Kolwezi's Inga-Shaba installations were destroyed during Shaba II) during the November–March rainy season could seriously affect open pit mining, especially in those pits where stripping of overburden has not kept pace and where pit sumps have not been maintained. Most of the open pits are below the water table, require substantial pump capacity at their sumps, and during periods of heavy rain are shut down. If repair of electric power facilities is not readily possible, either because of a lack of replacement parts or loss of expatriate technicians, mining in most pits would be shut down from 60 to 90 days with subsequent shutdown of most subsequent stages of mineral processing. Terrorists activities of any significant dimension against foreigners in Shaba or elsewhere in Zaire could easily trigger apprehension and their almost immediate departure.

TRANSPORTATION

The present unreliable transportation system, out of the hands of GECAMINES, would remain a major problem for mineral production even if other uncertainties are resolved. The Zairian national railroad, under the Societe Nationale des Chemins de Fer Zairois (SNCZ), is slowly and surely grinding to a halt because of lack of foreign exchange to purchase vitally needed cars and locomotives, spare parts, and new track. Of SNCZ's 1,600 railroad cars, only about 40 percent are operational. Repair of broken equipment is slow because of the lack of replacement parts and of insufficient expatriates in the repair shops. Presently, with the line from Kolwezi to Lubumbashi

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70 percent operational, a major time loss from faulty track or equipment occurs almost on a daily basis. Delays in deliveries of Kolwezi concentrates to the smelter and refineries at Likasi is a major problem. GECAMINES in 1978 estimated that transportation problems, alone, were adding $68 million annually to the cost of production.

The role of the railroad as an integral part of Zaire's minerals industry and national economy is enormous. For example, in 1979, 40,000 metric tons of coal, 90,000 metric tons of coke, and 180,000 metric tons of maize entered Zaire by rail from Zimbabwe and South Africa. About 30,000 metric tons of Canadian sulfur, along with other essential equipment and supplies, also entered on the same line from South African ports. With only a few weeks supply of essential supplies, a rail interruption for any sustained period would close down operations.

To avoid the time-consuming difficulties that plague shipment by rail, 85 percent of GECAMINES' cobalt in 1979 (100 percent in 1980) was exported by air freight from Lubumbashi reportedly at a cost of $1.50 per kilogram.

It is clear that Zaire will not attain agricultural self-sufficiency without a stable and dependable rail system, which is absolutely essential to the marketing and distribution of food and other agriculture products. Yet, while Zaire neglects its rail system and while its roads are being surrendered back to the bush (one estimate is that usable roads have shrunk from 140,000 km to 20,000 km in the past 20 years), Zaire lavishly funds its state-owned Air Zaire for "prestige" purposes, an apparent misapplication of priorities. Like other transportation, Air Zaire has serious equipment and management problems.

The subcommittee was unable to determine why the Zairian Government fails to make more of its foreign exchange for rebuilding the rail system. It is equally puzzling why Zaire fails to pay its expatriate railroad employees the foreign exchange portions of their salaries for periods of 6 months; this failure results in the needless loss of a reported 4 to 5 of these employees monthly.

GECAMINES' rail routes to port also face problems that originate partly in the colonial politics of rail transportation. The most efficient route, prior to its closure during the Angola war in 1975, is the Benguela line. Before it closed, rail costs to Lobito were 40 percent less than those to other available ports. Until it reopens, the 560,000 metric tons of stockpiled manganese ore at Kisenge cannot be moved economically, and the 34,000 metric tons of refined zinc (worth about $25 million) at Kolwezi (plus an estimated 60,000 metric tons in 1980) will not be shipped to Matadi, Zaire's Atlantic port, or to East London, South Africa, because of the higher cost of available shipping.

Shipping on the 2,800 km National Way, a tortuous rail-water route to Matadi with two intermediate rail-barge transfer points at Llebo and Kinshasa is time consuming (30 to 45 days) and costly. Incapable of handling large equipment, limited in tonnage during times of low water at barge connections, and short of cranes and workers, this route transports 10 percent less than it did when the Benguela line was operating prior to 1975. Needing 4,000 tons of supplies per month, GECAMINES consistently has 30,000 tons (7 months of supplies) backlogged along the National Way.

Shipping over the 3,600 km route to East London, the most used and dependable export route (50 percent of GECAMINES' copper and all of SODIMIZA's copper concentrates) has equipment and operational problems through Zambia. Closure of this route would be crippling to Zaire.

The 2,800 km Tazara rail-and-lake route to the Indian Ocean port of Dar Es Salaam is unreliable because of rail and port congestion in Tanzania. Shipping costs on any of the three routes that were open in 1979 reportedly averaged about $150 per metric ton.

Revitalization of the rail system depends on Zaire's receipt of a $107 million loan with participation by the World Bank, the African Development Bank, the Saudi Arabian Development fund, the OPEC Special Fund, and a West German Bank. One-half of the loan would go for purchase of 12 shunting locomotives, 400 freight cars, and 12 passenger cars. Awaiting signature by the West German Bank and the Saudis, the loan, even if cleared by late 1980, would not provide any material improvements until after 1982.

FOREIGN-EXCHANGE, EQUIPMENT REPLACEMENT, AND SPARE PARTS

GECAMINES' operating problems stem from a lack of consistent Government policies necessary for managing a large mineral complex. Much of management has essentially deteriorated into day-to-day problem solving rather than systems planning. For its equipment, breakdown maintenance has largely replaced preventive maintenance. Nevertheless, in view of its operating problems, GECAMINES production record during the crisis years of 1975–78 is impressive.

GECAMINES since 1976 has been allocated an operating budget of 45 percent of mineral sales; after export duties, wage and salary taxes, export turnover tax, import duties, and administrative taxes, this has amounted to 37 to 39 percent of sales in 3 of the last 4 years. Although it is not assessed a tax on profits and various tax rebates are returned to the company, GECAMINES, because of the lack of foreign exchange and delivery delays, has been unable to keep up with rising operating costs, equipment replacement, and the supply of vitally needed spare parts and operating supplies. GECAMINES, in January 1980, had less than 50 percent of the spare parts it carried prior to 1975, and instead of having 12 to 15 months of supplies it was operating on only 1-week supplies of coal and sulfur and only a 2-month supply of coke. It had but a 3-week supply of maize for its workers. Delivery time for equipment and parts takes from 6 months to a year, and sometimes more. Compounding the problem is the inexperience of administrative and technical personnel who fail to see problems before they develop, fail to order supplies and parts on time, or sometimes order the wrong parts.

In 1979, about 65 percent of GECAMINES copper-cobalt ores came from seven open pits, six in the Kolwezi area and one near Likasi. Two underground operations, the Kamoto (a well designed, highly mechanized mine) and the Kambove, produced the remainder. Ores were beneficiated in four concentrating plants and one washing plant with the new 4-million-ton DIMA concentrator scheduled to come on stream in March 1980 as part of the P–2 expansion project.

The major problem in the open pit operations, as far back as 1975 in the Kamoto-East pit, is the significant lag in overburden removal, an essential ongoing component of safe, continuous mining. Faced with shortages of fuel as far back as 1975 and a shortage of operable trucks and shovels, the six Kolwezi-area pits are 2 years behind in stripping. Yet with a need to maintain capacity feed to the concentrators, the result is oversteepened pit walls—with wall failures in two pits—and fewer mining faces. One estimate of stripping requirements during the next 10 years is upward of one-half billion cubic meters.

To maintain production as operating revenues dropped and as costs rose and in part to increase cobalt recovery beginning with the price rise in early 1978, there has also been considerable high-grading in the copper-cobalt mines as well as in the Kipushi copper-zinc mine. Given the large reserves of GECAMINES and the present price of cobalt, this makes some sense, but the life of the underground operations has been decreased, thereby, and lower grade ore formerly mined will never be recovered.

Expatriate Personnel

The vital need of experienced managerial and technical expatriates to work in Zaire's mineral operations is real. The Zairian Government, recognizing the need for foreign expertise, requires of expatriates only a foreign workers permit, renewable every 2 years, and pays a substantial part of an expatriate's salary in the country and in currency chosen by him. The 60 percent tax paid by GECAMINES on expatriate salaries is a necessary cost of doing business.

Under President Mobutu's program of Zairianization, the number of GECAMINES' expatriates dropped steadily from 1,580 at the end of 1968 to 1,000 at the end of 1977, which is a doubling of the traditional 7-percent turnover. No major exodus of expatriate personnel resulted from the March-April 1977 Shaba I invasion, which was stopped short of Kolwezi, but the first signs of difficulty in recruiting Europeans began to appear after that invasion. The May 1978 Shaba II massacre in Kolwezi had a staggering effect, and the number of expatriates dropped to 500 by the end of 1978. By the end of 1979, however, expatriate employment was back at 750, and the company was advertising worldwide for mid-level engineers in order to bring the number back to the necessary 1,000.

Experienced personnel are difficult to hire for employment in Zaire because GECAMINES is no longer an employer that talented mid-level foreign engineers want to join for a career, much like the difficulties being experienced in Zambia's copper belt. Foreign engineers understandably are reluctant to hire on because of the uncertainties of professional advancement due to Zairianization, the sometimes less-than-easy living conditions, and the apprehension about security. While GECAMINES thus has had to lower its experience requirements for expatriate engineers, it continues to lose established senior engineers.

GECAMINES' Zairian staff increased from 547 in 1968 to 1,924 in 1978. In January 1980, Zairians accounted for 70 percent of GECAMINES' administrative staff and 30 percent of its technical staff. Training of Zairians proceeded from 1962 to 1975, when training programs became victims of cutbacks. Training is now being reemphasized.

General Political Climate

U.S. officials in Zaire do not see any near-term threat of a Shaba invasion like those in 1977 and 1978 by Katangans trained and equipped by East Germans and Cubans and operating out of Angola. The Katangans reportedly are no longer being supported by Angola; some, it is said, have returned peaceably to Zaire.

It is generally agreed that a leadership change in Zaire's Government or any substantial modification of President Mobutu's (complete) control will require antiregime political mobilization from within, with secondary assistance of groups from without. President Mobutu's detractors say that he is incapable of reform; that strong, latent opposition most assuredly does exist; but that he has blocked political exchange by his assertion of absolute, self-ordained constitutional powers, direct and indirect elimination of opposition, or outright repression.

While strong arguments have been made in support of the depth of opposition, its lack of demonstration may in large part be a matter of the national inertia that has been identified with Zaire, a product of ingrained and pervasive apathy, even cynicism or despair. The stillness of opposing voices during the surprise 7-day currency exchange in late December 1979—there were four currency devaluations during 1978—would seem to support this view. While the reform was necessary to fight inflation, to cut into the illegal earnings of smugglers, and to end black market exchange rates that were capturing desperately needed foreign currency, it nonetheless possessed a destabilizing potential.

Conclusions and Recommendations

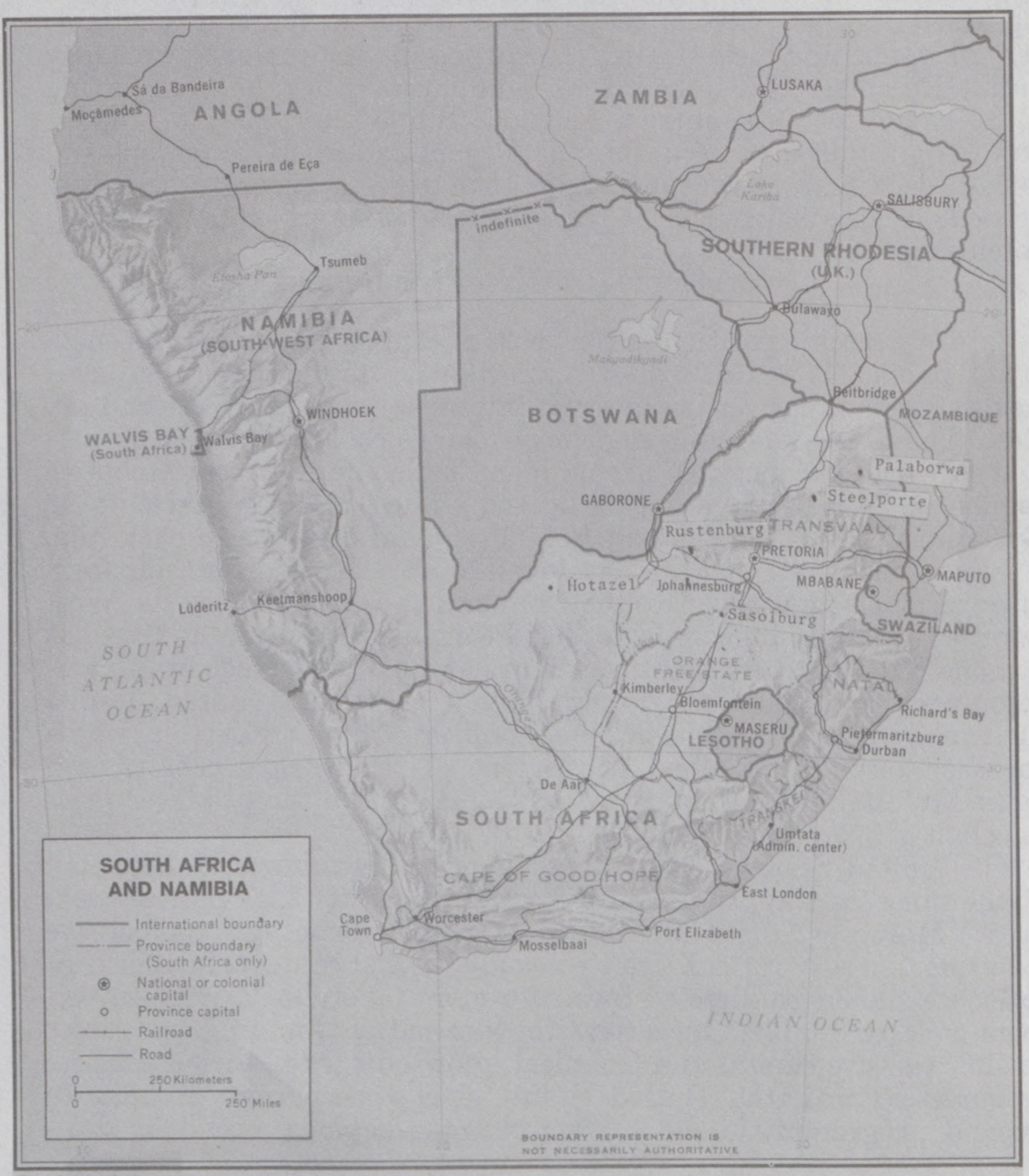
Zaire's strategic position in the heart of central Africa and its enormous potential wealth (most importantly its developed mineral wealth), make that Nation of great interest to both the West and the East. The West, vitally dependent on Zaire's cobalt (roughly 60 percent of world production), has no identifiable alternative to Mobutu's regime in Zaire. Disassociation by the United States would only be symbolic since the French and Belgians would continue to back him.

It is often argued that less developed countries, whatever their form of government, must market their mineral raw materials in the West in order to satisfy their need for hard currency. However, as Iran has demonstrated in recent months, a nonrenewable asset (such as mineral resources) can be used as a foreign policy instrument. Indeed, despite their relative moderate international politics, Zaire and Zambia, which together account for about 65 percent of the world's cobalt, have agreed to establish a mini-cartel so as to maintain the producer price of cobalt at $25 a pound in 1980.

The United States should refrain from undermining Mobutu, but at the same time apply pressure toward a cure for his "Zairian sickness." Moreover, the United States should encourage competitive denationalization of the Zairian economy. In that context, further U.S. influence should be directed toward a more favorable Zairian investment code, to establish incentives for international mining companies to sink venture capital and technical know-how into Zairian mineral resources. Third, the United States should encourage Mobutu to expand programmatic and market-oriented regional economic dealings based on nonexclusive principles. The subcommittee takes the position that undertaking these goals as a part of U.S. policy will improve the availability of minerals to the West, and thus reduce at least in part the risks involved in U.S. dependence on foreign mineral supplies.

It is vital that the United States strongly support the various "Club" investment efforts in order to stabilize the Zairian economy. However, such support should be linked with Zairian agreements to depoliticize the mineral resource base of that country. Thus cost-effective management is expected. Diversion of foreign exchange earnings from mineral exports should not be permitted if productive investments by a mining operation are expected.

Zaire's economic fortune is intimately linked with its mineral production, most importantly that of GECAMINES. Rescheduling and refinancing should not be considered "foreign aid," but rather instruments of bargaining to obtain minerals access and price stability. The subcommittee, therefore, recommends that U.S. assistance to Zaire emphasize mineral development.



SOUTH AFRICA

Introduction

Between January 11 and 16, the subcommittee inspected five major South African mining operations, their associated complexes, and South Africa's newest synfuel plant. In addition, the subcommittee met with representatives of the Ministry of Mines, held briefings with the American Consulate, met informally with representatives of major banking and mining interests, and participated in a consulate tour of Soweto.

American dependency on South African mineral resources is without question. The United States depends on imports for 92 percent of its chrome, 91 percent of its platinum, 98 percent of its manganese, 54 percent of its gold, and 27 percent of its vanadium. The following percentages of these mineral commodities imported by the U.S. came solely from South Africa in 1978: chromite, 48 percent; platinum, 82 percent (includes imports from United Kingdom); vanadium, 87 percent; antimony trioxide, 50 percent; ferrochrome, 80 percent; and ferromanganese, 45 percent. Furthermore, South Africa supplied the following percentages of the free world's imports in 1978: chromite, 40 percent; ferrochrome, 58 percent; manganese ore, 36 percent; ferromanganese, 22 percent; manganese metal, 67 percent; platinum group metals, 91 percent; vanadium, 73 percent; and gold, 67 percent. The major alternative supplier nation of chromium, platinum, vanadium, and gold is the U.S.S.R.

Mineral Deposit Observation and Analysis

From the perspective of the vast mineral reserves, management, and the operational excellence of the mines in South Africa, there are no foreseeable technical problems that could affect U.S. importation of chrome, platinum, manganese, or other locally abundant or geographically unique minerals. The greatest problem confronting South Africa is the political and economic consequences of institutionalized racial segregation.

PALABORA MINING COMPANY LTD.

Palabora is a copper-phosphate-vermiculite (plus zirconium and uranium) operation located in an area of unique geology and has extensive ore reserves. The copper ore grade is relatively low (0.4 percent) compared to Zaire (3.6 percent), yet the efficiency of the operation makes it profitable even at low copper prices. The copper operation consisted of an extremely efficient open-pit operation, with extensive planning for production continuing into the next century.

The total workforce consists of approximately 2,900 blacks (72 percent) and 1,100 whites (28 percent). The management staff is 83 percent white and 17 percent black. The turnover for white workers is 20 percent, and less than 5 percent for blacks. Long-term training programs have been implemented to train black artisans (electricians, welders, etc.) in anticipation of legal changes allowing blacks to hold these skilled positions that were previously reserved through statute for white mine workers. The initial program recently graduated 30 black trainees, with that number to double in 1981.

SAMANCOR

South African Manganese Corporation (SAMANCOR) operates two mines near Hotazel, South Africa, in the Kalahari Field which is considered the largest proven manganese deposit in the world. SAMANCOR consists of a large open pit and an underground mine, producing roughly 25 percent of the free world's manganese. The resources are awesome, stretching 40 miles long, 5 miles wide, and 70 feet thick at the face of the Mamatwan open pit—a mine which advances but 20 meters a year while producing 140,000 metric tons each month. The deposit contains an estimated 93 percent of the Western World's manganese resources and 78 percent of the world total, and offers ore grades from 28 percent to more than 50 percent manganese content. South African reserves are an estimated 2.2 billion tons, according to the August draft report of the Nonfuel Minerals Policy Review. If the deposit viewed by the subcommittee is representative this reserve estimate appears to be grossly understated, and perhaps closer to the 12.1 billion tons indicated by South African Minerals Bureau data.

Associated Manganese Mines of South Africa (ASMANG) and Anglo American at Middleplaats are competing mining companies along the strike of the deposit; all are very efficient operations. To increase production, the companies have only to increase the number of trucks in the pit. SAMANCOR eliminates potential short-term supply interruptions due to labor or mine problems, by carrying several months stockpile inventory of manganese. The two mines employ about 1,000 people, of which approximately 750 are black.

RUSTENBURG

Rustenburg Platinum Holdings is located at the site of a remarkable platinum and chrome-bearing geologic structure, the Merenski Reef. Reserves are estimated to contain 300 million ounces of platinum-group metals, which at present consumption amounts to a 200-year supply. Like SAMANCOR, the magnitude of the Rustenburg resource appears to be underestimated by the August draft report of the Nonfuel Minerals Policy Review. The Rustenburg operation exports 40 percent of its platinum to the United States, principally for catalytic uses in automobiles, petroleum refining, and chemical plants. Under the new synthetic fuels policy, U.S. platinum demands will increase substantially.

These operations, as with all South African mining facilities, appear to be very efficient, both technically and administratively. Coal tar, instead of oil distillates or natural gas, is used in drying the concentrates. Competing operations in the mineralized reef structure assure a viable market, based on demand and costs of production. This has resulted in two long-term contracts with Ford and General Motors, made in 1974, which largely explains the discrepancy between the producer price of $420 an ounce and the spot-market price of over $700 an ounce. Due to the nature of the vast underground workings and the leadtime necessary for infrastructure expansion, it does appear that dramatic, short-term increases in production are possible. The subcommittee was not given work-force production figures because of the extremely competitive nature of the platinum market.

TUBATSE FERROCHROME (PTY) LTD., STEELPOORT, S.A.

The east flank of the Bushveld igneous complex is the same geologic structure that sustains the Rustenburg operation, although several hours apart by air. It is likely that chrome and platinum mineralization extend over large areas of the South African Bushveld complex, which contains an estimated 81 percent of the world's known chrome resources. At this east flank is Steelpoort, which is 15 miles from a series of chrome mines and is the site of Union Carbide's Tubatse ferrochrome smelter. In 1980, the Tubatse smelter is expected to produce up to 120,000 metric tons of high-carbon ferrochrome. This consumes enormous amounts of electrical power at a cost of about $1 million per month. South Africa's ferrochrome capacity of 700,000 tons is more than twice that of the United States.

The black laborers live in newly constructed homes in a complex approximately 10 kilometers from the plant. Union Carbide has initiated an artisan-training program, which currently includes 10 black artisans (30 percent of those employed) who will be qualified in anticipation of statutory change in 1982. The location is remote, and has a low turnover of labor.

WEST DRIEFONTEIN GOLD MINING COMPANY, LTD.

Gold has special significance in the economic independence it affords South Africa. At $500 an ounce, gold pays for all of South Africa's imports plus a $3.5-billion surplus. Every annually sustained $10 increase in the price of gold nets South Africa $240,000,000.

The West Driefontein mine in Witwatersrand is the most profitable gold mine the world has ever known. Alone, it produces nearly twice the entire U.S. production. It is also a remarkably well-managed mine.

Competition for labor in Witwatersrand has helped increase black-labor pay and benefits six-fold over the last decade. Living quarters for blacks are relatively new and excellent for transient immigrant labor under any standard. In addition, wife-visitation hostels have been built within the last year. Housing is heavily subsidized for all workers. Successful integrated sports programs were started within the last 3 years.

There is equal pay for whites and blacks in the same job categories; however, the predominance of low skilled jobs are held by blacks, and blacks do not have equal access to higher skilled jobs. Many white workers are college-trained engineers. The black-labor turnover rate was reported as significantly higher for the gold operations than for the other South African mining operations, given the traditional use of foreign contract labor.

SASOL II

South Africa leads the world in coal conversion for synthetic fuels. SASOL II, located in Secunda Sasolburg, is South Africa's newest coal-liquefaction plant. The complex is expected to be completed in March or April of 1980, and will produce a maximum of 58,000 barrels of synfuel/day, or 25 percent of South Africa's needs. SASOL II will raise this to 45 percent in 1982. The plant will use an indirect process of gasification, synthesis and production, using a rather low-grade, medium-sulfur (1.6 percent) coal. SASOL II will boost SASOL-process consumption to 25 percent of total output of this high-ash, quality coal. Original construction costs are given a $3 billion, with the technology jointly owned by South Africa and LURGI of West Germany.

Water usage is given as 10 gallons of water for every gallon of fuel produced, for a daily need of about 3.2 million gallons. The complex maintains a closed water system to control effluents. No phenols are produced (a plant pollutant) in contrast to the direct process that is used in other countries. Sulfur emissions occur only as a byproduct of the powerplant operations, and are not passed through scrubbers or subjected to any other pollution-control techniques.

Over 23,000 employees form the construction crew for SASOL II and III with an estimated 14,000 permanent operational employees upon completion of both plants.

Political, Social, and Economic Observations

It is estimated that there are 26 million people in South Africa: 71 percent black, 17 percent white, and 12 percent colored and Asian; however, only whites may now participate in the central political process. In addition, it is estimated that between 500,000 and 2 million blacks are unemployed in South Africa, with the addition of more than 200,000 new black workers to the labor force every year. A 5 percent growth in gross national product is required just to absorb these new workers, and the economy increasingly requires skilled and middle-management employees which must be drawn from nonwhite groups.

Additionally, under the Internal Security Act, blacks (actually anyone), can be detained without charge and by executive Order, can be banned for up to 5 years, during which time they may, to various degrees, be precluded from practicing their profession or conversing in public. All blacks have South Africa citizenship until their homeland obtains complete independence at which time South Africa citizenship is forfeited and citizenship is acquired in the independent state. The black homeland states contain only 13 percent of the land. A portion of the exceptionally rich resources associated with the Rustenburg operations and all of Union Corporation's Impala Platinum mine are located in the Republic of Bophuthatswana. These areas are expected to absorb roughly one-half of the population. There is extensive use of curfews and limited-time visas outside black living areas. Black trade unions can now register and bargain.

Notwithstanding Government policy and statutory provisions, the mining industry has been and continues to be at the cutting edge of initiating some advances in the economic life of their black employees.

With the enormous black work force of over 600,000 within the mining industry, its generally remote location, and a strong demand for stable, skilled labor, the mining industry will continue to be in a position to have a significant positive impact on improving the economic well-being of South African blacks.

Certain discriminatory labor laws are being systematically ignored by mining companies in anticipation of statutory changes and in an effort to establish a productive, efficient and stable work force. It appears that the most significant resistance to black advancement comes in large part from the white unions, which operate independently of both the Government and mining corporations. Nonetheless, training programs lasting up to 3 years, and including blacks, have begun in several of the operations visited. The Government did not appear to be enforcing laws that presently prohibit such educational and worker advancement programs. The Wiehahn Commission recommendations in industrial relations relating to mining are expected to abolish the last job-reservation categories. The Government has accepted the Commission's earlier recommendation to authorize black trade unions to register as bargaining agents, and has warned the white mine workers' union that it will not tolerate disruptive antiblack strikes.

The congressional delegation encountered open and intense political dialogue on the racial issue at every phase of the South Africa visit. The greater debate focused on the issue of rate-of-change rather than whether change was desirable or not. A sincere belief was repeatedly expressed that the South African Government had made or was in the process of making important strides in advancing the social and economic well-being of its black population and had not received any recognition or credit for these changes. The changes, regarded as monumental by some South Africans, are disregarded as minimal by most Western observers. South Africans object to outsiders imposing their moral judgments on a South African social problem; the outsiders, they feel, do not understand.

The South African business and political leadership often expressed distress with its continuing and progressive isolation from the western world, despite the fact that South Africa has been so supportive of the West. They perceive and apprehend that they are progressively imperiled by the increasing number of Marxist-oriented governments in Africa. They asked for recognition and appreciation of their critical contribution of strategic minerals to the Western World and their strategic sea-lane location. South Africans frequently question why the United States has failed to include recognition of these fundamental matters in the formulation of its foreign policy. A recurring frustration that the United States was employing a contradictory double standard by persistently castigating an economic/political ally, South Africa, for denying human rights while accommodating and placating an economic and political adversary like the U.S.S.R.

Conclusions and Recommendations

Whatever the validity of these concerns, they were pronounced and prevalent in the political social community with which the congressional delegation communicated. The committee confirms that the

United States and its Western allies are dependent upon South African mineral supplies. Although this dependence is acute in the case of the European Community and Japan, the interruption of supply from South Africa would also directly disrupt strategic and nonstrategic sectors of the U.S. economy. This disruption would be so severe in the case of certain metals that the President of the United States would have almost no other choice but to assume economic mobilization powers, impose resource-use priorities, and provide for domestic production capacity if possible. Neither the stockpile nor substitution would compensate even in the near term for the loss of South African mineral exports to the West in the current post-Afghanistan invasion period in which international resource politics have emerged as a threat to peace.

The mineral resources in South Africa (chrome, platinum, manganese, vanadium, and gold) are continuous over large areas, and reserve depletion does not appear to present a problem for the foreseeable future. South African mineral-resources management maintains stability of contract, and is motivated entirely by market objectives. Their minerals are available as noncartel commodities, thus providing a downward pressure on some of the producer-controlled mineral prices worldwide. Mining technology and availability of capital are among the best in the world. South Africa possesses a vast mineral wealth, and a vital spirit of development and an intellectual and philosophical commitment to the West that should long provide the minerals essential to Western survival.

The future availability of South Africa as a mineral resource supplier is not imperiled by economic factors. America thus has a vital interest in the survival of South Africa as a Western ally.

The United States, too long, has presented to South Africa a somewhat confused and uncertain picture. While the representatives of the United States Government in South Africa appear to have established some effective lines of communication with certain elements of the black community, Government officials and the business community assert that they have, to a significant extent, failed to establish similar communication lines with the Government or with other representative interests in the country. At the same time, such representatives are unable to deliver on the demands of many of the most outspoken of the black leaders. As a result, the United States could find itself in a most awkward and least beneficial position of communicating to the blacks yet being unable to respond to their desires—while at the same time neglecting any communication with either their Government or business leaders. The United States will have thus succeeded in alienating both groups, much to the detriment of America's long-term interests.

There can be little question but that changes in past and some present U.S. policies in dealing with South Africa must take place, both for the peaceful survival of that Nation as well as for basic human concerns. But, past U.S. approaches and policies in dealing with South Africa have been manifestly self-defeating and unsuccessful. If we hope to be a positive force in inducing change, this is hardly to be accomplished by cutting off communications, the U.S. policy in South Africa that has managed to result in the worst of all possible postures.

We have virtually no leverage or influence with this Nation that occupies such a critical role in Africa's future. We can do nothing to persuade or induce the internal, social economic change that is an imperative part of long-term stability. Further, we are alienated from any direct help to a Nation that occupies a critical role in Western World resource reliance. This is a revealing commentary on enlightened foreign policy. That mutually self-defeating relationship should be reversed, but it cannot happen unilaterally. The United States will never spontaneously endorse apartheid. Conversely, the South Africans will not be intimidated into social, economic, and political transformations; for years, the United States has tried and failed with that tactic.

In the future, circumstances seem conducive for meaningful change. But the United States will not have any role in producing change (or help), unless the present course of self-defeating policy is modified. In the immediate future, the United States must begin to do all it can to exercise influence and persuasion through existing business channels.

First, diplomatic communication must be opened with South African political leaders; to ignore the existing political structure accomplishes nothing, as past failure has proved.

Second, there is a need to acknowledge domestically and diplomatically that, while continued improvement is necessary, changes have taken place and should be acknowledged and praised. It seems obvious but necessary in this instance, to point out, that American foreign policy vis-a-vis South Africa would be greatly improved with more "carrot" and less "stick."

Third, the United States should reestablish respectful lines of communication with South African Government and business leaders. Actions which verge on interference by U.S. Government officials in South African domestic politics and policies, no matter how highly motivated or well intended, are counterproductive.

Fourth, given the presence of South African mining operations at the cutting edge of racial progress in that country, and given the extraordinary concentration in their Nation of much of the world resources of many vital mineral products that are important to the survival of the industrial West, the subcommittee takes the position that the U.S. Government should exhibit encouragement and interest in South Africa's undertakings and in their efforts—and that threats of international sanctions against South Africa should be opposed. Closer ties with the South African mineral industries at a time of growing cartelization by mineral suppliers cannot but help America's long-term interests and needs.

The challenge for South Africa is racial and economic equity and stability. The challenge for the United States is to recognize the impotence of the existing policy.


ZIMBABWE
ZAMBIA
MOZAMBIQUE
BOTSWANA
SOUTH AFRICA
MOZAMBIQUE
MALAWI
NAMIBIA (SW AFRICA)
0 50 100 150 Miles
0 50 100 150 Kilometers
Kapiri Mposhi
Kabwe
Lusaka
Kafue
Namwala
Chirundu
Kariba Dam
Kariba
Mulobezi
Choma
Livingstone
Victoria Falls
Binga
Wankie
Lake Kariba
Chipata
Mchinji
Fingoè
Feira
Songo
Cabora Bassa Dam
Tete
Mount Darwin
Mangula
Umvukwes
Zawi
Kildonan
Sinoia
Shamva
Mtoko
Salisbury
New Sarum Airfield
Catandica
Marandellas
Inyanga
Gatooma
Que Que
Lupane
Lonely Mine
Gwelo
Umvuma
Selukwe
Umtali
Vila de Manica
Chimoio
Melsetter
Dombe
Fort Victoria
Zimbabwe
Chipinga
Espungabera
Bulawayo
Nata
Shabani
Plumtree
Gwanda
West Nicholson
Nandi
Chiredzi
Rutenga
Makgadikgadi (Salt Pans)
Francistown
Letlhakane
Beitbridge
Messina
Chicualacuala
Serowe
Mahalatswe
Soekmekaar
Pietersburg

ZIMBABWE

Introduction

The subcommittee visited Salisbury (to be renamed "Harare" within a few months), Rhodesia (now Zimbabwe), and environs from January 16 through January 19, 1980. It was the first such extended inspection by a congressional delegation since the announcement in late 1979 of the Lancaster House agreement establishing the procedures for the cease-fire and subsequent elections. During the subcommittee stay in Zimbabwe, discussions were conducted with the Secretary of Mines, Secretary for Foreign Affairs, and Secretary for Commerce and Industry. The subcommittee met on several occasions with officials and leaders of the mining community, and toured the Trojan Nickel Mine in nearby Bindura. The subcommittee received a complete and thorough briefing from the British Government concerning both the amnesty program and the election procedures.

The Mineral Resource

In the past, fully one-third of the Zimbabwe economy has been based on mineral production, upwards of which 90 percent has been exported. Recent estimates project that 1980 income from minerals will, for the first time, surpass income from agriculture making it Zimbabwe's most important industry. Zimbabwe is blessed, as is much of southern Africa, with a vast storehouse of mineral wealth. The major revenue producing minerals are chromium, nickel, copper, coal, gold, and asbestos, although over 40 different minerals including iron, lithium, tin, and phosphates are also produced. The value of mine output since sanctions were imposed in 1965 reportedly grew nearly 400 percent, and assuming no major state intervention, the mining sector could become the field for large-scale international investments in the 1980's.

CHROMIUM

Zimbabwe's estimated chrome ore (chromite) reserves are 3 billion tons, of which 1 billion tons is high-grade metallurgical ore, the quality to produce ferrochrome. Zimbabwe and South Africa together have about 95 percent of the world's reserves of chromium.

Mineral experts are confident of the chromium potential of the Great Dyke, a geologic phenomenon of ultermafic complexes trending north-south through almost the entire central portion of Zimbabwe. Some chromite mining is on the northern part of the Great Dyke, which has resources estimated at some 10 billion tons, although the complexity of the chromite seams requires a great deal more exploration. Production of chromite is about 1 million tons per year. Zimbabwe should soon possess an annual ferrochrome production capacity of approximately 420,000 metric tons. Together, Zimbabwe and South

Africa hold nearly 40 percent of the free world's capacity. The Zimbabwe Government believes that the export of chrome ore will not be increased because of transportation cost, and that expansion in exports will take place in ferrochrome. Chromium is the least substitutable of all steel alloys, and is vital to the survival of the Western industrial world.

NICKEL

Zimbabwe's nickel industry is a postsanctions development with the first of five mines starting in the late 1960's. According to Zimbabwe Government officials, the Nation possesses nickel reserves of 8 million tons at grades of 0.7 percent or better. Production in 1979 was 16,000 tons. The Great Dyke contains large resources of nickel within its platinum-bearing seams. A recent find, the Hunter Roads deposit, is reported to be the largest deposit on the Great Dyke to date.

COPPER

Zimbabwe officials noted that the Nation's copper lacks many impurities found in much of the world's other copper resources, making it unique for certain uses. In 1979, Zimbabwe produced 30,000 tons of copper. A new 20,000-ton refinery is due to commence operation next year.

COAL

Despite Zimbabwe's obvious nonfuel mineral wealth, perhaps one of its most highly regarded assets to that Nation is its 23 coalfields. The Wankie colliery, Zimbabwe's major coal producer, mined 3 million tons last year. Zimbabwe intends to expand production to 6 million tons annually, and plans to become, within 5 years, a major exporter of coking coal. Although well aware of the achievement of South Africa in the field of synthetic fuels, Zimbabwe is not currently in a position to move in that direction. Instead, Zimbabwe intends a move toward ethanol, with a goal of 15 percent ethanol use by March 1980. Zimbabwe is also considering the development of methanol from its coal fields.

LITHIUM

Until 1965, Zimbabwe supplied 90 percent of the world's requirements for lithium, of which the United States purchased 21 percent. Zimbabwe reports a reserve base of 6 million tons of 3 percent lithium ore. Lithium has seen increasing use in recent years as an additive in aluminum potlines, so as to decrease power requirements in the electrolyte bath. Growth in demand for lithium is likely to parallel that of aluminum. Lithium is also used in glass, ceramics and lubrication, which together constitute 40 percent of U.S. demand. In future years, lithium will see increased usage in space-age technologies, including certain aspects of national defense.

The Mineral Outlook

Zimbabwe possesses strategically important mineral resources, which are highly competitive on a worldwide basis. There is little doubt regarding the very real interest of mining companies in the development of these vast resources. As well, Zimbabwe mining law and its tax code highly favor mineral development. The mining law, much like the U.S. Mining Law of 1872, creates very strong incentives for the exploration and discovery of minerals. It bears noting that Zimbabwe mining law has provided the incentive necessary for mining the small gold deposits which predominate in Zimbabwe as contrasted with the massive gold reserves in South Africa.

However, development of such reserves is highly dependent upon a number of factors including transportation, skilled labor, external capital investment, and a moderate and stable, supportive national government.

Transportation in southern Africa poses unique problems because of the scarcity of railroad lines. In addition, the ports which they serve are insufficient to handle present traffic, let alone the dramatic increases which would occur with the degree of mineral development anticipated in a stable, peaceful Zimbabwe.

While Zimbabwe possesses an abundant supply of unskilled labor—in fact, one of Zimbabwe's major domestic hurdles is the need for 70,000 new jobs each year—there is a shortage of skilled scientists and technicians such as the geologists, the engineers, the operators. The Zimbabwe mining industry has undertaken a substantial training program, but even that cannot supply the need.

Outside capital is another essential element for the development of Zimbabwe's mineral potential, and this aspect of the Zimbabwe economy suffered greatly during the years of sanctions.

Perhaps the greatest concern, and the greatest unknown, regards the future direction of the new Government. A dramatic change in mining law, in tax policy, or in ownership patterns would be a massive blow in the confidence of the mining community thus decreasing the ability to secure essential trained technicians, to retain training-program employees past apprentice levels, and to ensure the expansion of associated jobs; while decreasing the likelihood that foreign investment dollars will enter the Zimbabwe mining industry.

Universal concern was expressed regarding the apparent political and social policies of Prime Minister Mugabe. The fear was often expressed that, should a Mugabe government come to power, the anticipated land reforms as well as an antibusiness orientation would effectively destroy the mining industry. Postelection communications have revealed, however, a cautious optimism regarding the attitude of the new Government toward the minerals industry.

Trojan Nickel Mine

The subcommittee visited the Trojan nickel mine of the Bindura Nickel Corporation of Anglo-American Corporation. Located some 50 miles to the north of Salisbury, Trojan is a microcosm of the Zimbabwe mining industry. Its presence as an active, viable mine, mill, and refinery, is almost alien in a Nation at war with itself, in an area now devoid of the farms which once surrounded it. A bunker punctuates the well-manicured lawn that spreads out before the office building where the tour began. One of the company's major problems—one shared by all mining operations in Zimbabwe—is security.

Trojan has a plentiful supply of unskilled labor, but a dearth of skilled applicants. Each year the mine hired 14 to 15 entering apprentices from the 300 to 400 who apply. Each year the mine hired 40 to 50 for the trainee program from the 6,000 applications. Once they are trained, however, many leave Trojan and Zimbabwe in order to escape military service or to reach a more stable, less uncertain country.

Nevertheless, the total work force demonstrates a tremendous stability, with a turnover rate of only 1 percent. It is interesting to note that the military commitment required of all Zimbabwe males necessitates their absence for a significant period each year. The jobs which Zimbabwe must increasingly provide for its population are clearly available in the mining industry. For example, Trojan nickel employs 3,000 workers, and another 6,000 are employed at the corporation's other mines in Zimbabwe.

The Trojan mine annually produces 12,000 tons of nickel, 1,800 tons of copper, and 96 to 108 tons of cobalt from a medium-size pipelike massive sulfide ore body. Trojan officials desire to expand the nickel and cobalt output, but that would necessitate increased capital expenditures—capital which is not yet forthcoming. The fears at Trojan are that a radical government will be elected, and the incentives for mining will be removed by decree or legislation with the result that the capital and skilled work force will disappear from Zimbabwe in favor of ready markets elsewhere.

The Political Climate—The Approaching Election

The subcommittee arrived in Salisbury, Zimbabwe only a few weeks following the announcement in late 1979 of the Lancaster House agreement and the ensuing cease-fire. The mood in Salisbury was one of uncertainty and tension, yet it was also one of relief, of hope, and of some small confidence in the future.

The British Government, as the chief legislative and executive authority in Zimbabwe, saw its role to be one of creating and maintaining conditions for a free and fair election. The British believed that the process and role were working, expressing surprise and pleasure at the extent to which the cease-fire had taken effect and the Popular Front troops had reported to the assembly points. British officials believed that life was returning to normal and that their efforts to reestablish economic links with other nations had been effective.

It was the conclusion of the British, at least, that the Popular Front clearly desired that the cease-fire, the election, and the transition all work. Cited as evidence was the fact that during the period of the return of Popular Force troops only one land mine had gone off, as well as the fact that 21,000 former soldiers were now in assembly points as part of Zimbabwe society.

Ironically, yet interestingly, the only fatal incident during the subcommittee's days in southern Africa was viewed as a hopeful sign for the future: A party of 30 to 40 was sighted on patrol approximately 2 kilometers from a camp. Contact was made with the Popular Front liaison office at the camp which reported that no one was missing. Had the liaison office reported that the Popular Front troops were missing or belonged to that camp, efforts would have been undertaken to return them to the camp. However, the presence of "strangers" in the area resulted in the entry of a Zimbabwe Government fire force whose contact resulted in 3 to 5 casualties. What appears significant is that the political reality of the camp liaison officer demonstrating his control and knowledge of the whereabouts and activities of his forces had overwhelmed the military pragmatism of protecting former and possibly future Popular Force allies. The British also credited their success to the excellent relationship between British troops and Rhodesian Government forces. That success was attributed, at least in part, to a shared "military tradition" as well as to "gallantry in those first early days when we didn't know where the cat was going to jump."

As the subcommittee arrived in Salisbury, the cease-fire was only a month old, and the return to the assembly points had been only recently completed. Thus, the campaign for the February 27–29 election was just underway. The British Government, through the United Kingdom Election Commission, had taken extraordinary, perhaps unprecedented, precautions to assure that the election will be truly "free and fair." By means of supervision and control at all levels, from the preparation and printing of ballots through their counting and destruction, the British Government "monitored the election from the word go."

The British had undertaken a massive poster, newspaper, and theater educational program designed to assure voters of Zimbabwe that they should vote, that their vote is secret, that they can vote without fear, and that, in a male-dominated society, women can vote—all in an effort to improve upon the 64.5 percent participation by black voters in the April 1979 election. In addition, the British had adopted a voting procedure that included numerous safety precautions so as to ensure the secrecy of the ballot and the fairness of the election.

In order to prevent voters from casting more than one ballot, voters were required to place their hands in a liquid whose residue on the skin is later evident under ultraviolet light. At more than 1,000 voting places in the 56 election districts, voters were subjected to physical search, age determination, display of personal identification where possible, and hand check beneath ultraviolet light. The ballots, specially printed and numbered in England, were authenticated with a special device just prior to being given to the voter who marks the party of his choice—indicated on the ballot by initials and the party symbol. Each night the ballot boxes were sealed and placed under security guard. After the announcement of the results, the ballots were transported to London to be burned. Despite the publicity and the precautions, the greatest concern among election officials was the threat of intimidation hanging over the estimated 2.9 million eligible voters. In the words of one official, "Intimidation is rampant in Africa. All it takes is a knock on the door in the night with but two words 'Watch out'."

Despite British optimism regarding the cease-fire and election, the concern was often expressed that Zimbabwe's future was by no means assured and that the British were naive in their assumptions. Many people questioned the final agreement reached at Lancaster House, disagreed with the compromises, felt the cease-fire was not working, and concluded that the election results could never be truly free and fair because of widespread intimidation. Also, it was suggested that the requirement to conduct an election in February 1980, less than 10 months following one in which 65 percent voted, raises the inference that the first achieved an incorrect result—thus prejudicing the cause of Prime Minister Muzorewa. While many felt that the front-line states (Zimbabwe, Mozambique, Tanzania, South Africa) truly desired an end to hostilities, nevertheless it was felt that the Popular Forces continued to possess the ability to create national instability.

Concerns were also expressed about the future of the civil service—a highly regarded, well-established career service—in what is likely to be a most difficult transition under black-majority rule. For while blacks have been eligible for entry into the civil service since 1960, few have done so.

Recent communications with top level civil servants within the mining ministry offer initial encouragement regarding the administration of Prime Minister Mugabe.

The new Minister of Mines, despite the total absence of a mineral background, has apparently demonstrated a willingness to retain and work with the experienced corps of civil servants within the ministry. Retention of these critical administrative personnel indispensable to orderly transition and potential growth is reflective as well of the degree of their confidence in the new administration.

Conclusions and Recommendations

Zimbabwe may well be but partly down the political/sociological road which is represented at one end by South Africa and at the other by Zaire. Like both Zaire and South Africa, Zimbabwe possesses incredible mineral potential which has been developed in the past and may be developed in the future. Yet, the threads by which civilization and modern industrial society are suspended are much thinner, much more fragile than most westerners ever imagine.

The thinning, not to mention the breaking, of those threads which allow an economy or an industry to function—such as financial incentives, tax policy, transportation network, communications systems, worker safety and freedom—can destroy ever so slowly, but effectively, the ability of a mining industry to fulfill its Nation's own needs, not to mention those of another country. Yet if collapse should occur, the damage will not be to Zimbabwe and the United States alone, for the relationship among southern African nations is highly interdependent at all levels. In particular, Zimbabwe's role as a major supplier of food to southern Africa and its key location for north-south railroad traffic combine to make the survival of a free Zimbabwe a matter of concern not merely to the West but also to the people of all nations in southern Africa.

The massive electoral victory of Robert Mugabe (57 of 80 seats) appears to indicate Zimbabwe voters' choice for the most radical of the Zimbabwe "externals." While subsequent moderate statements of Mugabe could well be tactical—reflective of the need to prevent white retaliation or flight as well as South African intervention, if the ZANU Manifesto of President Mugabe means anything, black majority-rule voters will expect significant change, and soon. Now recognized as the Nation's leader, and anticipating significant foreign aid there appears little to prevent Mugabe from taking "popular measures" against white-owned interests, particularly the mining interests.

It is the position of the subcommittee that the mineral resource base and mineral supply potential of Zimbabwe are not alone those of a white minority. Its chrome and lithium oxides especially qualify Salisbury as a strategic supply source for the West. Moreover, events that could restrict or cut off Zimbabwe's resources from the West are those that could threaten the future of mineral supply from South Africa as well. It is essential that the maintenance of mineral availability from Zimbabwe be of high priority for the U.S. in future relations with that nation, and that this concern be shared by other developed countries that need such minerals. The United States should assume leadership in carrying out this objective with the Mugabe government. Nationalization by Zimbabwe with or without compensation, should be strongly discouraged; foreign aid on the scale that Mugabe is reported to have demanded should be conditional on the continuity of past minerals policy and management of the mineral industry there.