



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

17295

Distr.
LIMITED

PPD.102
29 December 1988

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ORIGINAL: ENGLISH

THE AGRO-BASED INDUSTRIES IN ZAMBIA: KEY CHARACTERISTICS
AND REHABILITATION ISSUES*

Studies on the rehabilitation of African industry

No. 4

Prepared by
Regional and Country Studies Branch
Industrial Policy and Perspectives Division

* The designation employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Mention of company names and commercial products does not imply the endorsement of UNIDO. This document has not been edited.

PREFACE

As part of the programme of the Industrial Development Decade for Africa, UNIDO's Regional and Country Studies Branch is issuing a series of studies determining both the major problems of African manufacturing and the potential for regenerating the sector. The aim is to outline policies and measures that may result in overall improvements and to identify individual plants for assistance. The backbone of the series is formed by a number of country-level diagnostic surveys on the rehabilitation requirements of African manufacturing industries. These have been compiled by teams of experts during four-week field missions. As the surveys contain confidential plant-level information, their circulation is restricted. In order to present the salient parts of the full country surveys to a wider readership, a series of 'highlights' is being issued.

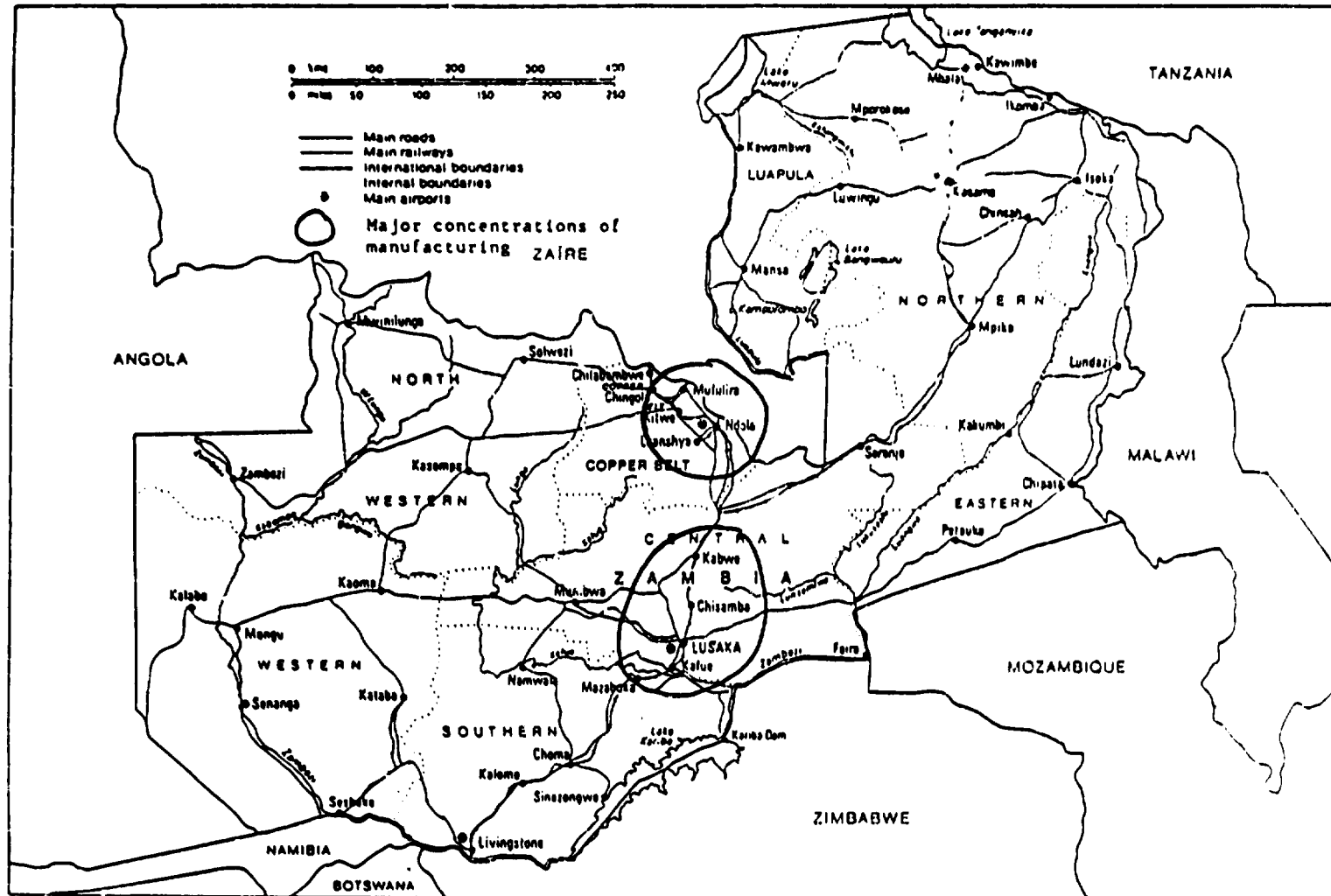
This particular report presents the highlights of the Zambia mission's survey of industrial rehabilitation needs of Zambian agro-based industries. It provides the reader with a general description of the economic and policy environment for industrial rehabilitation, as well as a description of Zambia's agro-related industries and branches. Chapters 5 and 6, providing general observations and recommendations regarding government policy and companies, should be very useful in formulating an agenda for rehabilitation efforts. The full survey should be consulted for detailed suggestions for specific plant-level rehabilitation requirements.

The UNIDO field mission visited Zambia from 21 May to 17 June 1988. The members of the team were: Mr. George Assaf, UNIDO, Team Leader, and UNIDO consultants Messrs. Björn Almquist, Jan Björk, David Chitundu, Basil Igwe, Manenga Ndulo and Ms. Helen O'Neill.

TABLE OF CONTENTS

| <u>Chapter</u> | <u>Page</u> |
|--|-------------|
| PREFACE | i |
| MAP | iii |
| GENERAL COUNTRY INFORMATION | iv |
| LIST OF ABBREVIATIONS | v |
| INTRODUCTION | vi |
| 1 KEY CHARACTERISTICS OF THE ZAMBIAN ECONOMY | 1 |
| 1.1 The copper-dominated economy | 1 |
| 1.2 Economic development trends | 2 |
| 1.3 Assessment of recent trends | 4 |
| 2 THE MANUFACTURING SECTOR | 6 |
| 2.1 Overall characteristics | 2 |
| 2.2 Major problems and constraints | 8 |
| 2.3 Trade in manufacture | 9 |
| 2.4 Policies and institutions relating to the manufacturing sector | 10 |
| 3 FOCUS ON AGRO-RELATED INDUSTRIES | 16 |
| 3.1 Food processing sub-sector | 16 |
| 4 BRANCH PROFILES | 19 |
| 4.1 Meat processing | 19 |
| 4.2 Oilseeds processing branch | 22 |
| 4.3 Stockfeeds manufacturing | 25 |
| 4.4 Package manufacturing branch | 27 |
| 5 OBSERVATIONS AND RECOMMENDATIONS REGARDING COMPANIES | 30 |
| 5.1 The choice of plants | 30 |
| 5.2 Management, organization and marketing | 30 |
| 5.3 Physical plant | 31 |
| 5.4 Spare parts | 32 |
| 5.5 Inputs | 35 |
| 6 GENERAL POLICY OBSERVATIONS AND RECOMMENDATIONS | 37 |
| 6.1 Policy-making and administration of the public sector | 37 |
| 6.2 Regional considerations | 38 |
| 6.3 Costs and pricing system | 38 |
| 7 CONCLUSION AND SUMMARY OF PROJECT CONCEPTS | 41 |
| 7.1 Concluding remarks | 41 |
| 7.2 General project concepts | 41 |
| SELECTED REFERENCES | 43 |

Map of Zambia



Source: EIU

GENERAL COUNTRY INFORMATION

AREA: 752,614 km

POPULATION: 6.85 mn (1986); growth rate 3.5 %

PROVINCES: % of area, population and density, August 1980 census

| Province | Area (% of Zambia total) | Population | Density (persons/sq km) |
|--------------|-----------------------------|------------|----------------------------|
| Central | 12.6 | 9.0 | 5.4 |
| Copperbelt | 4.2 | 22.1 | 39.9 |
| Eastern | 9.2 | 11.5 | 9.4 |
| Luapula | 6.7 | 7.4 | 8.3 |
| Lusaka | 2.9 | 12.2 | 31.7 |
| Northern | 19.6 | 11.9 | 2.4 |
| Northwestern | 16.7 | 5.4 | 4.6 |
| Southern | 11.3 | 11.9 | 7.9 |
| Western | 8.6 | 16.8 | 3.9 |
| Zambia | 100.0 | 100.0 | 7.5 |

MAIN TOWNS: population in '000, August 1980 census

| | | | | | | | |
|--------|-----|----------|-----|----------|-----|-------------|-----|
| Lusaka | 538 | Ndola | 282 | Mufulira | 150 | Kabwe | 144 |
| Kitwe | 315 | Chingola | 146 | Luanshya | 132 | Livingstone | 72 |

1987 GDP AT CURRENT PRICES (ZK mn): 18,080

1987 GDP AT (1977) CONSTANT PRICES (ZK mn): 2,052

1987 REAL GDP INDEX (1978 = 100): 105

1987 REAL PER CAPITA GDP GROWTH RATE (%): -1.3

1985 REAL GDP PER CAPITA (US\$): 114

ORIGINS OF GDP 1987 (%):

| | | | |
|---------------|------|-----------------|------|
| Manufacturing | 21.2 | Commerce | 8.3 |
| Agriculture | 18.0 | Social services | 17.2 |
| Mining | 8.7 | Other services | 26.2 |

EXCHANGE RATE (March 2, 1988): ZK8.05 = \$1

FOREIGN AID PER CAPITA (1985): \$50

INFANT MORTALITY RATE: 8.4%

LIFE EXPECTANCY: (men) 50 years, (women) 54 years

LITERACY RATE: 44%

PRIMARY SCHOOL ENROLLEMENT: 100%

LANGUAGES: English, Nyanja, Bempa, Tonga, Lozi and other local

PUBLIC HOLIDAYS: January 1, May 1, 25, first Monday and Tuesday in July, second Monday in August, October 24, December 25, 26 and Easter and Whitsun

LIST OF ABBREVIATIONS

| | |
|----------------------|---|
| BoZ | Bank of Zambia |
| CFB | Commercial Farmers' Bureau |
| c.i.f. | Cost, insurance and freight |
| DBZ | Development Bank of Zambia |
| EBZ | Export Board of Zambia |
| EC | European Community |
| ERP | Effective Rates of Protection |
| Exim Bank (X-M) Bank | Export-Import Bank |
| FEMAC | Foreign Exchange Management Committee |
| f.o.b. | Free on board |
| GRZ | Government of the Republic of Zambia |
| IMF | International Monetary Fund |
| INDECO | Industrial Development Corporation |
| INDP | Interim National Development Plan |
| ISIC | International Standard Industrial Classification |
| MAWD | Ministry of Agriculture and Water Development |
| MCI | Ministry of Commerce and Industry |
| Min Fin | Ministry of Finance |
| MVA | Manufacturing value added |
| NCDP | National Commission for Development Planning |
| PIC | Prices and Incomes Commission |
| PTA | Preferential Trade Area |
| SADCC | Southern African Development Co-ordination Conference |
| SIDO | Small Industries Development Organization |
| SDR | Special Drawing Rights |
| UAPTA | Unit of Account PTA |
| UNIP | United National Independence Party |
| USAID | United States Agency for International Development |
| VDP | Value for duty purposes |
| ZCCM | Zambia Consolidated Copper Mines |
| ZIMCO | Zambia Industrial and Mining Corporation |
| ZINCOM | Zambian Industrial and Commercial Association |
| ZSI | Zambia Standards Institute |

INTRODUCTION

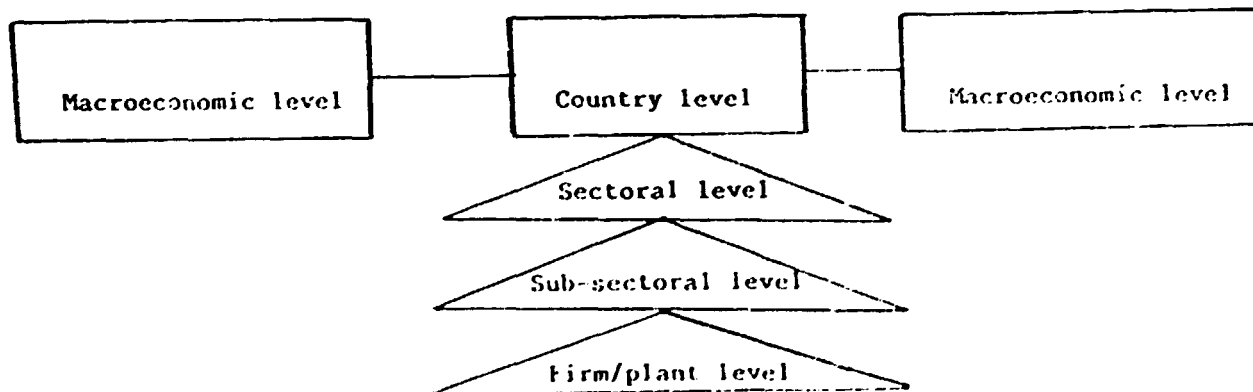
An approach to industrial rehabilitation

Before a serious effort can be made to carry out detailed rehabilitation of industry in Africa, it is necessary to diagnose in depth the precise reasons and scope for the problems, constraints now faced by industry, and the increasing challenges in a particular sub-sector and a particular country.

Until now, much rehabilitation work in Africa has not been systematic or comprehensive. Rather, it has either been viewed as the treatment of a plant's technical problems - without an analysis of the real causes or their ramifications - or as a macro-economic issue only. In the first case, technical assistance activities have often been carried out in isolation, separated from analyses of financial requirements, market possibilities, or the availability of raw materials and intermediate inputs. This approach has frequently resulted in rehabilitation projects and government requests that were too narrowly focused. Often, corresponding international co-operation has been on the basis of such narrowly-defined project concepts. Thus, there is the serious risk of only "patching a leak", with the possibility of another leak developing elsewhere.

The surveys in the Regional and Country Studies programme attempt to move away from this approach - which at times amounts to little more than "plant-level tinkering" - towards an approach aimed at providing a broader diagnosis and recommending a wider range of action. Manufacturing industries do not exist in isolation. They are surrounded by an ever-changing environment. The plant needs to be viewed in this total environment.

For this reason, we have adopted a "top down" approach, starting with an examination of the macro-economic level, descending through the sector, sub-sector and branch levels, and finally arriving at the plant level (diagrammed below).



The key characteristics of Zambia's economy and institutions as well as economic development trends are described first. After examining Zambian manufacturing industry in general, the study then focuses on agro-related industries, particularly those belonging to the food manufacturing sub-sector. The regeneration of these industries has been accorded high priority under Zambia's Interim National Development Plan, while their rehabilitation is also among the sectoral priorities established by SADCC in its regional programme of action.

Three branches of the food manufacturing sub-sector are further examined - meat processing, vegetable oil seeds processing, and flour milling. The package manufacturing branch, while not strictly part of food manufacturing, is also discussed because of its link to various branches of this sub-sector.

Finally, at the plant level, the full survey provides a detailed analysis of the rehabilitation needs of four firms in the Lusaka area. This report includes general observations and recommendations in this regard (Chapter 5).

Through such a "top down" approach, we can be assured that the policy, economic, technological, managerial, financial, and marketing dimensions are fully integrated. The surveys will thus assist African Governments in linking the macro, branch level and project issues in making decisions for rehabilitation.

CHAPTER 1

KEY CHARACTERISTICS OF THE ZAMBIAN ECONOMY

1.1 The copper-dominated economy

Although a wide range of minerals is produced in Zambia - including cobalt, zinc, lead, nickel, silver and a range of gemstones - copper accounts for well over 90 per cent of the value of mineral production. Thus, the mining sector is almost identical with copper mining.

The mines are operated by Zambia Consolidated Copper Mines (ZCCM), 60.3 per cent of which is owned by the state through its parastatal holding company, the Zambia Industrial and Mining Corporation (ZIMCO). The remaining shares are almost totally held by subsidiaries of two groups that started mining in Zambia in the 1920s, the Anglo-American Corporation (27.3 per cent) and Roan Selection Trust (6.9 per cent).

Table 1.1 provides some indicators of the importance of mining in the economy throughout the last 20 years.

Table 1.1: Indicators of the importance of mining in the
Zambian economy, 1966-77 through 1987

| | <u>1966-67</u> | <u>1970</u> | <u>1980</u> | <u>1984</u> | <u>1987</u> |
|---|----------------|-------------|-------------|-------------|-------------|
| Mineral output as % of GDP | 39 | 37 | 16.4 | 13.7 | 15.3 |
| Mineral taxes as % of gov. revenue | 64 | 54 | 1 | 1 | 1 |
| Mining exports as % of total exports | 96 | 95 | 94 | 93 | 91 |
| Employment in mining as % of total employment | 18 | 16 | 16 | 16 | 16 |

During the first decade after independence the mines were major contributors to government revenues in Zambia. However, as can be seen from Table 1.1, they have made a relatively insignificant contribution since the collapse in copper prices in the mid-1970s. Apart from minor recoveries, copper prices have remained low since 1975. Zambian mines have tended to be high-cost operations, and despite heavy borrowing which the state undertook to finance their acquisition in the early seventies, the mines have proved expensive to service since then. As a result of these factors, copper has been produced at a loss throughout most of the 1980s.

The impact of copper extends to all sectors of Zambia's economy and society, most notably the location of the population and economic activities, the activity structure in the economy, income distribution, and the distribution of power between urban and rural areas.

Copper deposits are concentrated in northern Zambia. Rail and road connections transport it to ports east, west and south, resulting in the distinctive T-shaped transportation network. Not surprisingly, other economic activities such as commercial farming, manufacturing and services also tend to be located along this so-called line-of-rail.

The presence of the mines has also had a significant impact on the activity structure of the economy. The capital- and skill-intensive mining sector pays high wages and, because of the development of a strong trade union movement and general skill shortages, these high wages tend to be generalized throughout the modern sectors of the economy. The production of domestic goods and services has risen as higher incomes increased demand for them. Consequently, the construction industry and the production of various services expanded very significantly. Although manufacturing activity did develop, it was basically domestically-oriented import substitution. The sector had to be highly protected because of its high production costs. Manufacturing has remained highly dependent on imports of equipment, spare parts and certain raw materials. These imports have been financed by copper earnings.

The fact that copper exports still consistently earn almost all of Zambia's foreign exchange lies at the heart of the dilemma the Zambian Government faces in relation to its approach to restructuring the economy. The mining sector cannot be neglected since its exports provide the foreign exchange which is so vital for the rest of the highly import-dependent economy. Yet, because the mining industry is extremely capital-intensive, with quality standards, demand, and prices determined at the international rather than the national level, constant injections of capital are necessary to maintain the mines properly. Thus, despite the fact that successive National Plans since Independence have stressed the need to diversify the economy, a high proportion of funds has always been directed towards mining. This policy will continue, as illustrated in the 1987-88 Interim National Development Plan (INDP); the sectoral distribution of projected investment shows that the mining sector's share leads with 20 per cent. Manufacturing is allotted 19 per cent, and agriculture, forestry and fisheries 16 per cent.

1.2 Economic development trends ^{1/}

Starting with the First National Development Plan (1966-70), the Government embarked upon a strategy of economic self-sufficiency involving massive Government investment in the manufacturing and processing of goods which had previously been imported from Rhodesia and the Republic of South Africa. The Plan also provided for huge investment in the development of alternative routes for Zambia's exports and imports through Lobito and Dar-es-Salaam. At independence, the Republics of South Africa and Rhodesia provided the bulk of Zambia's imports, and they ranked second, after the United Kingdom, as buyers of Zambia's exports.

Copper earnings provided the basis for rapid economic growth during the 1964-74 period. Massive investment took place in social and physical infrastructure. The manufacturing sector grew quickly as measures to reduce the dependence on manufactured imports from the Republic of South Africa were implemented. By 1974, the sector accounted for 22 per cent of GDP.

1/ In addition to discussions and material collected in Zambia, the most important sources for this section were: Zambia: Country study and Norwegian aid review, Bergen 1986; EIU, Country profile: Zambia 1987-88, London 1987; and H. O'Neill: Transforming a single product economy: an examination of the first stage of Zambia's Economic Reform Programme, Washington D.C. 1987.

However, the favourable balance of payments situation did not encourage the establishment of industries dependent on domestic inputs. Even the new import-substituting industries relied heavily on imported raw materials, machinery and spare parts. The performance of the agricultural sector, a major potential supplier of raw materials, lagged behind that of other economic sectors as a result of inappropriate policies and a number of crop failures.

The recession that hit the economies of the industrialised world in the mid-1970s resulted in a depressed demand for Zambia's primary export commodity, copper. Copper prices, which averaged US\$ 0.93 per pound in 1974, declined to US\$ 0.59 per pound. The combination of low copper prices and the increased cost of imports produced balance of payments deficits of ZK 429.4 million in 1975 and ZK 648.5 million in 1981. Real GDP declined 0.2 per cent in 1975, 2.8 per cent in 1982, and 1.9 per cent in 1983.

Zambia never benefitted fully from the economic recovery that industrialized economies began to experience in 1983. While prices of primary commodities began to recover in the world market, copper prices generally remained depressed. In addition, bottlenecks in copper shipments severely limited Zambia's opportunities to take advantage of favourable price developments.

Since 1975, the manufacturing sector, with its heavy dependence on imported raw materials, machinery and spare parts, has experienced severe constraints due to foreign exchange shortages. As a result, the sector's share in GDP has never surpassed the peak reached in 1974. Overall capacity utilization decreased to 65 per cent in 1985 and 45 per cent in 1986/87.

Since 1975, in contrast to previous years, Government budget deficits have become a permanent feature of fiscal developments. The bulk of the deficits have been financed by bank borrowing. This has fuelled inflationary pressures and limited the ability of the monetary authorities to control the money supply. Reflecting the chronic balance of payments deficit, the debt service burden by 1985 had exceeded 120 per cent of total export earnings. Consequently, Zambia became unable to service her external obligations. This has severely eroded the country's creditworthiness and made it less attractive to foreign investment.

Between 1975-86 Zambia has had seven IMF-supported adjustment programmes; however, because of Zambia's failure to fulfil its repayment obligations to the IMF, only two stand-by arrangements were fully completed.

In 1985 the Government introduced measures aimed at correcting external and domestic imbalances by realigning relative prices in favour of the productive sectors of the economy. This involved:

- (i) the introduction of the foreign exchange auction system,
- (ii) relaxation of price controls,
- (iii) the gradual reduction of consumer and producer subsidies, and
- (iv) the decontrol of interest rates.

The main objective of the flexible exchange rate policy was to ensure that movements in the value of the Kwacha were kept consistent with movements in relative prices between Zambia and its principal trading partners. The policy was also aimed at reducing the scale of the parallel markets in essential commodities.

During the auction era which lasted from October 1985 to 30 April 1987, the Kwacha depreciated by 56 per cent at the first auction on 11 October, and by 85.5 per cent in November 1985. It was recognized that a combination of restrictive monetary measures and generous supply of foreign exchange was needed to stabilize the exchange rate, but the actual volume of foreign exchange was limited and erratic. It also became clear that monetary institutions and instruments were not adapted to controlling liquidity under such free market conditions. Authorities found the auction system inappropriate as a means to ensure the allocation of foreign exchange into priority sectors and toward essential imports.

The price liberalization measures resulted in social unrest, as the centralization of production and distribution of commodities in the hands of a few enterprises gave these enterprises a free hand in fixing prices at high levels.

Commercial bank lending rates, after being decontrolled in September 1985, soared from a fixed minimum of 17.5 per cent at the end of 1984 to 33.5 per cent at the end of 1986. In spite of the high cost of credit, loans to the private sector expanded by 49.9 per cent during 1986 compared to 11.4 per cent in 1985. The high levels of interest rates which were designed to reduce the demand for credit never achieved that objective. Instead, by pushing up the cost of credit to the Government and the private sector, interest rates only assisted in reinforcing inflationary pressures.

In mid-1986, the rapid depreciation of the kwacha and the decontrol of prices and interest rates became major factors accounting for a series of price increases on essential and non-essential commodities. The rate of inflation increased to 61 per cent by the end of September 1986.

In order to reduce social and political tensions, the Government abandoned the liberal policy measures in May 1987 together with the IMF-supported adjustment programme. As a consequence of that decision, Zambia reverted back to a fixed exchange rate system and pegged the kwacha to the US dollar at ZK 8 = US\$ 1. Price controls were reintroduced, although they applied only to 12 essential commodities. Interest rates were controlled and fixed at a maximum of 20 per cent for lending rates.

To conserve scarce foreign exchange for essential and productive uses, external debt service was limited to 10 per cent of foreign exchange earnings after netting out certain priority payments. A foreign exchange management committee (FEMAC) was introduced in place of the foreign exchange auction.

With these new policies and measures the Government ushered in the new economic recovery programme designed to stabilize the economy.

1.3 Assessment of recent trends

Zambia's dependence on copper for the bulk of her export earnings has made her extremely vulnerable to the vagaries of world copper markets. In recent years, the sharp fall in world copper prices has been a major blow to the country's foreign exchange earnings. This has led to severe contractions in industrial output and the growth of GNP. Unfortunately, the decline in Zambia's economic fortunes has not been arrested by earlier attempts to

liberalize the economy. It is too early to assess the likely impact of Zambia's new economic recovery programme. It is clear, however, that the programme is unlikely to be successful unless particular attention is paid to the following three provisos:

First, measures will have to be taken to boost domestic food supply, increase reliance on local raw materials, and diversify the economy's export base in order to broaden sources of foreign exchange. To achieve this, attention must continue to be paid to pricing policy, particularly agricultural producer prices. Low agricultural prices, designed to reduce food costs in urban areas, have in the past kept rural incomes low and have proven detrimental to the goal of increased agricultural production. Through proper pricing of agricultural commodities Zambia could increase exports, achieve self-sufficiency in food, and acquire a stable resource base for agro-related industries which are so important in supplying the domestic market with consumer goods. A more prosperous agricultural sector would also provide a larger market for industrial products. The results of agricultural policy reforms that have been implemented thus far are encouraging.

Second, measures should also be initiated for a gradual reduction of the Government deficit in order to accommodate the credit needs of the private sector. Current Government expenditure accounts for about 70 per cent of total expenditure. If investment and production are to be increased, then the private sector must command a substantial share of total domestic credit.

Third, the success of the programme will also depend on the degree of flexibility of the key policy measures initiated to cope with the changing economic situation. While a fixed exchange rate may be beneficial for the economy in a number of ways, it may inhibit the growth of exports and the promotion of the productive sectors of the economy.

CHAPTER 2

THE MANUFACTURING SECTOR

2.1 Overall characteristics

Zambia has a relatively large manufacturing sector, which accounted for 21 per cent of GDP in 1985 and 1986. Total output, in constant 1977 value terms, was ZK420 million in 1986 and ZK440 million in 1987. During the first decade after independence, manufacturing was the fastest growing sector (10 per cent per annum in real terms). However, with the fall in copper earnings from the mid-1970s, manufacturing value added began to fluctuate along a declining trend reflecting the unavailability of foreign exchange. Per capita value added decreased from US \$152 in 1975 to US \$110 in 1984. During the 1974-1984 period, negative growth was registered in all branches of industry. Only in 1985 did industrial production again exceed the 1978 level.

The index of production (1973 = 100) increased from 103 in 1985 to 112.3 in 1987. In recent years production growth has been due mainly to the textiles sector. Non-metallic minerals, another growth sector, still has a limited role in manufacturing.

The manufacturing sector employed some 63,000 persons in 1985, or approximately 13 per cent of the total formal sector labour force. Another 500,000 are believed to work in small-scale enterprises in the informal sector.

The 1975 and 1985 shares of major sub-sectors in total manufacturing appear in Table 2.1. Less important but nonetheless significant manufacturing sub-sectors are paper and printing, rubber products, and non-metallic minerals.

Table 2.1: Shares of major sub-sectors in manufacturing
(per cent)

| | 1975 | | | 1985 | | |
|---------------------------------|--------|-------------|------------|--------|-------------|------------|
| | Output | Value added | Employment | Output | Value added | Employment |
| Food, beverage and tobacco | 35.6 | 41.2 | 28.8 | 38.6 | 44.0 | 34.7 |
| Textile and wearing apparel | 9.7 | 7.8 | 17.3 | 12.1 | 10.9 | 17.3 |
| Chemicals | 12.4 | 9.7 | 8.3 | 11.4 | 8.8 | 8.2 |
| Basic metals and metal products | 19.8 | 18.4 | 20.8 | 19.0 | 18.2 | 17.2 |

Source: UNIDO data base.

The figures in the table show that consumer goods dominated the sector from 1975 to 1985. The figures also show that the food and textile sub-sectors account for more than 50 per cent of total manufacturing output, value added, and employment. In the food sub-sector, employment growth has been faster than the growth of output and value added, indicating a decline in productivity.

Between 1975 and 1985 output and value added per worker in the textile sub-sector increased, while chemicals and metals began to play a less important role in manufacturing. The relative decline of these sub-sectors follows their fast expansion during the early 1970s, when high copper revenues were used to initiate the modernization of the economy.

In 1980, 55 per cent of the total number of Zambian manufacturing establishments were located in the Copperbelt, and 30 per cent in the Central Province (including Lusaka). These two provinces, moreover, claim the widest range of industries, with all major manufacturing branches represented. Industrial establishments are concentrated in a narrow belt along the Chingola-Kafue "line-of-rail". A number of factors, including the wide range of industries, a good transport route, and a large percentage of Zambia's population, increases the likelihood of successful rehabilitation there. Inter-industry linkages are more easily established, and a considerable local market for consumer goods exists. Moreover, there is the advantage of access to the repair shops and metal working industries of the Copper Belt, which could be a major source of the "hardware" and expertise for rehabilitation. Although the repair shops concentrate on mining machinery, the accumulated expertise and part of the machinery could be utilized to expand the range of spare parts to cover the needs of other industries.^{1/}

The Industrial Development Corporation (INDEC) accounts for 75 per cent of all registered manufacturing enterprises; the remaining 25 per cent consists of private firms, a minority of which is foreign-controlled.^{2/}

Zambia is a member of the Southern African Development Co-ordination Conference (SADCC) and the Preferential Trade Area, organizations promoting regional co-operation and trade. With regard to manufacturing, Zambia is to concentrate on basic needs industries in SADCC's proposed framework for complementary industries. The organization has also included Zambian enterprises in its selection of industries to be rehabilitated. PTA likewise has started to draw up rehabilitation programmes. Zambia will not benefit from these yet, but the programmes may become a factor in future industrial development in the country.

1/ Suggestions of this nature are made in a 1986 SADCC study entitled: "Mining machinery and spare parts manufacturing, repairing and reconditioning facilities".

2/ It has proven difficult to obtain information about distribution of private shares in parastatal and private companies. The registers of the Ministry of Commerce and Industry are very inaccessible and are not properly updated or classified.

2.2 Major problems and constraints

Zambia's dependence on copper is a basic problem which is likely to remain into the 1990s. As described in sections 1.1 and 1.2, one aspect of this dependence is the high capital requirements of the industry. In the context of rehabilitation, this takes on a particular importance. In conjunction with the World Bank,^{1/} ZCCM prepared a five-year rehabilitation programme during 1986-90. In order to carry out this programme, ZCCM estimated it would require no less than US\$350 million per year in foreign exchange for operations and an additional US\$375 million for investment.

The global economic situation affects copper prices and export volumes, and therefore the availability of foreign exchange. However, it also influences the flow of foreign aid and the availability and cost of credit, which directly affects the manufacturing sector. Rising interest rates on outstanding debt in the early 1980s contributed significantly to current debt problems and scarcity of foreign exchange.

Zambia's terms of trade have been negatively affected by falling copper prices during the late 1970s and early 1980s. With 1980 as base year the index for commodity terms of trade stood at 75 in 1985, while the level in 1973 was 222.^{2/} Falling world market prices for copper are the major explanation for this. (During the 1980s import unit value has in fact also fallen but not as much as the export unit value). The end result was a serious shortage of foreign exchange.

It follows from the above that any comprehensive programme for industrial rehabilitation must take into account the consequences in terms of foreign exchange availability. As the problem will persist for many years, rehabilitation efforts must be limited to certain industries whose production processes require minimal amounts of foreign exchange. Moreover, the rehabilitation programme will have to be designed so that it will attract external finance.

Apart from these problems and constraints relating to Zambia's position in the global economy, the manufacturing sector also faces obstacles to development that are related to the regional and domestic situation:

The landlockedness of the country is a problem that is clearly beyond the control of the Government. Higher transportation costs theoretically could act as a natural shield of protection for the manufacturing sector. However, with the sector being heavily import dependent, the overall impact of the geographic location is negative.

Transportation problems are exacerbated by the regional political situation. Throughout its history, Zambia has been surrounded by political conflicts which have disrupted major transport arteries. The political climate also necessitates a high defence budget; negatively affects investment, especially foreign; and, via its impact on the creditworthiness of the country, contributes to the scarcity of foreign exchange.

1/ World Bank, Zambia, Country Economic Memorandum - Economic Reforms and Development Prospects, 1986.

2/ See I. Karmiloff, Industrialisation in Sub-Saharan Africa, Country Case Study - Zambia, Overseas Development Institute, London 1988.

Decreasing domestic demand for manufactured products has been one result of the decline of the national economy in recent years. This constraint is closely interrelated with past industrial and general economic policies. Those policies, or the lack thereof, help explain the current low levels of capacity utilization in the manufacturing sector.

The shortage of skilled manpower, especially middle-level managers, was found by this mission to be one of the most serious problems facing manufacturing enterprises. It was a major reason for a lack of efficiency or poor management.

Among policy-related constraints, in retrospect, a major policy error was allowing the manufacturing sector to become dominated by capital-intensive, import-substituting industries, and not sufficiently encouraging small- and medium-sized manufacturing enterprises based on national resources. Also contributing to this situation has been an overvalued exchange rate, duty-free imports of capital goods, and negative real interest rates. Other past practices which help explain present difficulties include unrealistic market assessments for industrial investment projects, imbalance between investments in industry and supportive infrastructure, and insufficient development of necessary labour skills and industrial services.

Political interference in the every day running of enterprises was found to be a problem in many manufacturing companies. It is partly a consequence of the ownership pattern and of the above-mentioned shortage of skilled managers.

2.3 Trade in manufactures

Manufactured exports have always accounted for less than 5 per cent of foreign exchange earnings. Table 2.2 shows major manufactured exports and imports for selected years in US dollars. Increasing the exports of manufactured goods is one of the key objectives of the 1987 Interim National Development Plan.

Table 2.2: Major manufactured imports and exports for selected years
(US\$ thousands)

| | 1984 | 1985 | 1986 |
|-------------------------------|----------------|----------------|----------------|
| <u>Exports</u> | | | |
| Textile waste | 3,279 | 8,662 | 1,310 |
| Non-metallic mineral products | 5,762 | 3,374 | 7,512 |
| Iron and steel | 5,800 | 10,421 | 18,483 |
| Machinery | 5,792 | 5,275 | 6,214 |
| Metal manufacturing n.e.s. | 1,886 | 2,022 | 2,832 |
| | <u>22,519</u> | <u>29,854</u> | <u>36,351</u> |
| <u>Imports</u> | | | |
| Petroleum products | 2,316 | 1,478 | 2,159 |
| Chemicals | 58,159 | 98,886 | 137,379 |
| Machinery | 257,160 | 164,870 | 149,767 |
| Transport equipment | 91,768 | 71,169 | 63,509 |
| | <u>409,403</u> | <u>336,403</u> | <u>352,814</u> |

Source: ITC/UNCTAD.

Presently, Zambia's main trading partners are European Community (EC) countries and Japan.^{1/} In the mid-1980s, the EC countries purchased some 60 per cent of exports, and Japan approximately 30 per cent. To a small extent, African and Asian developing countries also play a role in exports.

Regional manufactured exports are not significant. However, under the 50 per cent Retention Scheme, which enables companies to retain foreign exchange earnings to purchase imported inputs and raw materials, many companies have recently been seeking export markets in neighbouring countries. Cement has been exported to Malawi and stockfeeds have been exported to Tanzania.

Zambia imports a much wider range and volume of manufactured products than it exports. If petroleum products are excluded, manufactured imports accounted for 60-70 per cent of total imports during the first half of the 1980s. The EC countries are the main suppliers, providing over 50 per cent of total imports.

Major manufactured imports are:

- petroleum products,
- chemicals,
- machinery,
- transport equipment.

The manufacturing sector is highly dependent on imported machinery, spare parts and industrial inputs. Import coefficients are highest in the chemicals and basic metals industries, which imported 72 per cent and 77 per cent, respectively, of their inputs in 1980. High import dependence has been a major reason for decreasing levels of capacity utilization in the manufacturing sector, because foreign exchange has become increasingly scarce during the 1980s.

2.4 Policies and institutions relating to the manufacturing sector

The Interim National Development Plan (INDP), from July 1987 to December 1988, set the following objectives for manufacturing: to give priority to parastatal and private sector firms which produce products which are essential to human life and the economy; to improve quality; to encourage import substitution and export promotion through domestic resource utilization; to improve capacity utilization of existing plants; and to promote small-scale and medium-sized firms.

The policies which affect the manufacturing sector most directly are industrial development policy and taxation policy. Other policies, of a macro rather than a sectoral nature, include trade policy, regional policy, tariffs, the exchange rate, interest rates and prices.

This section examines to what extent Zambia's policies and institutions succeed in promoting the objectives of manufacturing sector development. In this regard, it is helpful to look at various performance indicators for the macroeconomy and its individual sectors, as well as the general and plant-specific findings of the present study.

^{1/} This section is based on the May 1988 UNCTAD/ITC import and export estimation tables.

According to the INDP, the economy's performance was disappointing during the period 1980-84. The main reason was a decline in investment levels and the volume of imports. The manufacturing sector was described as continuing to be highly import dependent for machinery, spare parts, raw materials and other inputs. The latest performance indicators, as published in the 1987 Economic Report, show that agricultural output declined in real terms in 1987 and that manufacturing sector output increased by only 1.3 per cent.

The findings of this study confirm the low capacity utilization of the manufacturing sector. Other important findings include:

- the level of company taxation on profits is high;
- imports of industrial machinery and spare parts are normally subject to high taxes (import duties plus sales taxes);
- capital requirements for rehabilitation are high relative to investible resources available out of after-tax profits.

Although aggregate performance indicators are indicative of the effect of Zambia's policies and institutions on the manufacturing sector, a clearer assessment can be made by examining specific policies and institutions as they affect the manufacturing sector.

(a) Industrial policy

The New Economic Recovery Programme's industrial policy emphasises the use of domestic inputs, linkages with the agricultural sector, promotion of non-traditional exports, encouragement of small-scale industry, and rehabilitation of existing plants. From an overall point of view, this policy approach is more likely to advance the development of both manufacturing and agriculture than the previous import-substitution policy. With regard to the specific issue of rehabilitation, the Programme is not very explicit. The available documentation and the mission's field experiences indicate that policy makers see rehabilitation not just in technical terms, but also in terms of increasing the availability of management and other skills, and a better supply of inputs.

If the national aspiration of development through greater use of "own resources" were to be applied at the plant level within the manufacturing sector, then the financial and skills shortages which affect so many companies would clearly constitute key constraints both to rehabilitation and to further development. Debts - often inherited from private sector owners bought out by INDECO - low reserves, shortages of working capital, and low after-tax profits preclude most companies in the parastatal sector from financing rehabilitation, let alone expansion, out of their "own resources".

Taking money in the form of taxes from financially weak companies and then giving money back to them to rehabilitate their plant seems needlessly complicated. In the opinion of the mission and the managers interviewed, company taxation in Zambia is high - at present, the rate is 40 per cent. If rehabilitation needs are to be tackled, even in part, by companies themselves, they must be allowed to accumulate sufficient funds for this purpose. Of course, in many cases massive doses of finance will be necessary; outside support will be crucial in this regard. But, as a start, and as an indication of intent on the part of Government to operationalize and generalize the "own resources" approach, the system of company taxation could be re-examined.

This could, for example, involve the introduction of company rehabilitation funds. These funds would be gradually built up by accumulating (part of) the company tax due. The funds, under Government supervision, would be released for well-defined rehabilitation projects and would be supplemented by credits and services from other sources.

(b) Tariff policy and institutions

By the early 1980s, nominal tariffs ranged from a low of zero to a high of 150 per cent. In contrast to the common situation in sub-Saharan African countries, an extremely large range of goods entered Zambia duty-free. A World Bank study^{1/} of the ratio of import duty revenues to import values in thirty-two Sub-Saharan countries from 1972 to 1978 showed that Zambia was the lowest at 6.2 per cent. Whether intended or not, this provided some compensation for the landlocked location of the country. Nominal tariffs were generally lowest on intermediate and capital goods and highest on durable consumer goods; essential consumer goods entered at low or zero rates. The same structure was reflected in effective rates of protection (ERPs). In general, high ERPs have applied to non-food, import-substituting consumer goods, thus encouraging their production. In the absence of competing imports, ERPs raised domestic prices well above those of traded equivalents. According to the above mentioned World Bank study, the value added generated in 1975 in these industries was four times higher than would have been the case without protection. In the early 1980s trade policy was still biased in favour of final goods industries, while it offered considerably weaker incentives for the production of intermediate and capital goods and was unambiguously biased against some potential export industries.

Budgets from the early 1980s through 1988 attempted to respond to changing policy objectives. Customs duties were generally raised to reduce the number of zero-rated items and to increase Government revenues. Duties and sales tax typically account for about half of the budgetary revenues. Quite apart from policy considerations, the falling revenues from copper exports have therefore resulted in fiscal pressure to increase the customs duties. The import duty (and sales tax) on capital goods imports was raised and a minimum rate of 10 per cent was imposed on imports of raw materials and intermediate goods. The former increase was designed to lower capital intensities. While this may appear to be a good idea, increasing the cost of necessary machinery imports only succeeds in constraining rehabilitation still further. Moreover, the duties on spare parts and raw materials reduced ERPs on finished manufactured goods produced in Zambia. These disadvantages were recognized in the 1988 Budget and, as a result, the duty rate on machinery was reduced from 20 to 10 per cent. However, the reduction was not as great as it might have seemed because all imported goods subject to a positive rate of duty also are subject to a sales tax. Therefore, the combined total rate remains high on imported machinery since it is made up of 10 per cent duty, 20 per cent sales tax, plus 2 1/2 per cent "value for duty purposes" uplift.

To encourage rehabilitation and facilitate the importation of necessary machinery and equipment, the Government might consider removing duties on machinery altogether for small-scale companies fulfilling the criteria of the new industrial policy - that is, companies that substitute domestic for imported raw materials and seek out new export markets. Indeed, this seems to be essential as a mechanism for promoting rehabilitation out of "own resources" and for companies seeking to break into the PTA or SADCC markets where some manufacturers, in Tanzania and Zimbabwe for example, already enjoy duty-free entry for industrial machinery.

^{1/} World Bank, Zambia, Industrial Policy and Performance, 1984.

With respect to duties on spare parts, the across-the-board reductions effected on these items in the 1988 Budget were not satisfactory. Zambia produces only a small percentage of the total amount of spare parts needed to maintain plants in good working order. However, progress is being made, especially in the production of less-sophisticated types of spare parts. In the short term, this activity deserves to be encouraged and protected by tariffs. (The length of the period will depend on the level of technical sophistication involved in individual products).

Taking into account the stated objectives and policies of the PTA and SADCC, imports of spare parts which cannot yet be produced in Zambia should enter duty-free. Thus, the tariff structure for spare parts should be differentiated, with high rates protecting import-competing spare parts and zero rates on imports of spares not produced in Zambia.

(c) Exchange rate policy and institutions

The allocation of foreign exchange to Zambia is currently performed by the Foreign Exchange Management Committee (FEMAC). There have been two previous types of administrative allocation. In the 1970s, excess demand for foreign exchange led to the introduction of a complicated system whereby importers had to obtain import licences from the Ministry of Commerce and Industry (MCI) and, separately, apply to the Bank of Zambia (BoZ) through their commercial banks for foreign exchange. These processes were not synchronized, and many more import licences were issued than there was foreign exchange available to purchase the matching imports.

Toward the end of this first period of administrative intervention in foreign exchange allocation, the exchange rate policy itself changed to that of a crawling peg against a basket of currencies. Thus, although firms had to apply for a licence to import, if successful they still were not assured of getting the matching amount of foreign exchange, and the rate itself was not fixed except for relatively short periods.

The auction, from October 1985 to May 1987, was the second period of administrative allocation of foreign exchange. In one important way it was a significant improvement over the first attempt to allocate foreign exchange. Obtaining an import licence became an easy, almost on-demand process. However, the exchange rate floated according to the supply of foreign exchange available each week at the auction and the demand registered at various rates by the bidders.

There are a number of reasons why the auction failed. First, the administrative mechanisms themselves were changed too often, creating uncertainty regarding the Government's commitment to the auction. Second, the auction had been, since its inception in October 1985, the centre-piece of the structural adjustment programme. When the removal of subsidies on mealie-meal in December 1986 caused food riots, the whole adjustment programme, and the foreign exchange auction in particular, came under pressure. The auction was also blamed for the general price inflation, which resulted from the fall in the value of the Kwacha. However, the final and ultimate reason for the auction's failure was an inadequate supply of foreign exchange. The auction was temporarily suspended in March 1987, and was finally abandoned, with the rest of the adjustment programme, in May 1987.

The FEMAC system of foreign exchange allocation differs from the auction in that the exchange rate is fixed at ZK8 to the US dollar.

Manufacturers have mixed reactions to the FEMAC system. Those in "sensitive" manufacturing sub-sectors and others who succeed in obtaining foreign exchange tend to prefer FEMAC to the auction since they obtain foreign exchange at ZK8 to the dollar. On the other hand, many other manufacturers do not succeed in getting selected by FEMAC for foreign exchange allocations. This is usually because they are in sub-sectors (such as trading or "non-essential" imports) which FEMAC considers low priority. Thus, although the price of foreign exchange is now lower than it had been for long periods during the auction, this low price is of no benefit to manufacturers if the overall foreign exchange shortage results in their exclusion from the allocation process altogether.

Since FEMAC was introduced, foreign exchange has become even more constrained because most of the donor support has disappeared. Indeed, given the fact that supply falls so short of registered demand - as evidenced by the differential between the official exchange rate and that obtainable on the parallel market - it is doubtful whether the present rate can be maintained much longer.

The FEMAC system itself, as an administrative mechanism, is working smoothly. The synchronization of the allocation of foreign exchange with the issuing of the necessary import licences is a distinct improvement over the way in which import licences had been issued during the period of the crawling peg. However, the advantage of that system was that while the exchange rate was fixed for certain periods, it was allowed to adjust steadily and periodically. The longer an exchange rate is prevented from adjusting to its equilibrium rate, the greater is the amount by which it has to be eventually adjusted. For this reason, the present fixed exchange rate accompanying the FEMAC allocation mechanism will probably have to give way to some form of adjustable peg before too long.

(d) Interest rate policy

With inflation running at over 50 per cent and interest rates fixed at 15 to 20 per cent, real rates of interest in 1988 are once again negative. This reduces incentives for private saving in the banking system and also tends to impede the development of financial intermediation. As a result, credit which could be used for self-financed rehabilitation will continue to be scarce. A more flexible interest rate policy would be an improvement. However, this will have to await a decision regarding the exchange rate regime.

(e) Pricing policy and institutions

Current pricing policy involves a number of important issues. The cost-plus system established by the Prices and Incomes Commission (PIC) may not promote efficiency or encourage companies to try to keep costs to a minimum. In addition, price controls and delays by PIC in processing requests for price increases have caused some parastatals to operate at a loss. Such losses prevent them from putting aside resources for plant rehabilitation.

Raising the prices of manufactured goods must be synchronized with increased prices of inputs. Sometimes this can involve a fairly long price-adjustment chain. For example, increases in the price of stockfeed concentrates usually necessitate a compensatory rise in the price of stockfeeds - especially if quality reductions are to be avoided. Increases in stockfeed prices, in turn, will raise the costs of producing pigs and other livestock. If pig prices are not raised, pig production will be discouraged.

If pig prices are raised, this will result in increases in the raw material costs of pork producers. With a flexible pricing system, output prices adjust fairly quickly to compensate for increases in input prices. If prices are not allowed to adjust, or if their adjustment is unduly delayed, losses must be incurred at that stage in the chain. This tends to discourage production of the product involved. If this product is used in the production of another product along the line, stoppages occur, or costs increase because more expensive inputs are substituted. At present, given the number of products subject to price control or requiring approval before prices can be raised, there is an urgent need to shorten the time lag in the processing of price increases.

There are a number of reasons why price increases are often subject to long delays, including attempts to contain inflation as well as staff inadequacies at PIC. The mission feels that delays must be investigated and that any staff inadequacies should be corrected. Because of the nature of the linkages between companies within the agro-related sub-sector of manufacturing, collaboration between MCI, PIC and MAWD in the adjustment of prices is essential. The present situation, while it may help to contain inflation by delaying some price increases, also tends to create cash flow problems for companies subject to such delays. This is a contributing factor to manufacturing problems and shutdowns. Also, it prevents firms from accumulating funds which could be used for plant renewal, and it may jeopardize necessary rehabilitation efforts. Pricing policies are thus an essential element of both overall industrial regeneration and successful rehabilitation projects.

CHAPTER 3

FOCUS ON AGRO-RELATED INDUSTRIES

Introduction

Current economic objectives include a greater reliance on domestic raw materials to save foreign exchange, production of goods to meet basic needs, and promotion of non-traditional exports. In general there is a stronger focus on the agricultural sector. The country's abundant land resources permit considerable expansion in this sector, and the policy changes of recent years have already improved its performance. The sector is potentially capable of meeting domestic demand for all major foodstuffs and for many industrial raw materials. Oil seeds, tobacco, tea, coffee and poultry are among the agricultural products that could substantially raise export earnings. Meat products are another potential export.

The food industries and other agro-related industries are thus likely to play an even more important role in the future. Their growth would help Zambia become self-reliant in basic needs, while saving and earning foreign exchange.

3.1 Food processing sub-sector

3.1.1 Overall characteristics

None of the branches of the food industry appear to be very well developed. Further examination of the available records (at the Ministry of Commerce and Industry and elsewhere) would be needed to arrive at a more detailed picture of the various branches. Nonetheless, they do appear to satisfy Zambia's national needs to a large extent and they hold a large potential for the future.

Raw materials are mostly of domestic origin but there are notable exceptions. For instance, in the oils and fats sub-sector, much crude vegetable oil is imported and then refined in the country.

In the food manufacturing sector 78 per cent of firms are privately owned. The remaining 22 per cent are parastatal or partly controlled by INDECO.

3.1.2 Major problems and constraints

Major problems are related to poor capacity utilization, caused to some extent by non-availability of spare parts and insufficient supply of raw materials.

Several branches - such as flour milling, oilseed processing and stockfeed manufacturing - suffer considerable losses from breakdown of equipment and machinery. In the experience of the UNIDO mission, these breakdowns are in part due to excessive quantities of impurities in the raw materials, as well as inadequate plant design. For instance, cleaning equipment is usually not included in the process flow, and interlocking of

electrical installations, as a protection against overloading and breakdown, is not included in installations. Hence, the poor performance of many processing plants is a consequence of inadequate plant procurement and contracting. Installed capacities are invariably not achieved. In fact, individual machinery is seldom tested, either for capacity or performance, prior to final takeover. In most cases, entire processing lines in the plants are not subject to tests required as a part of normal commissioning procedure.

3.1.3 Linkages

The backward and forward linkages in the food processing sub-sector are quite extensive. The stockfeed processing branch, for example, must have strong and reliable linkages to a number of branches, including oilseed processing, grain milling, meat processing, dairy processing, sugar processing and beverages. The inputs from these branches determine to a great extent whether the stockfeed industry is capable of supplying the livestock sub-sector with qualified formula feeds. The absence of linkages, or poor performance in other branches, implies dependence on imported ingredients. The oilseed processing branch and the meat processing branch have fewer linkages, but are of crucial importance with respect to supplying by-products to the stockfeed industry and various foodstuffs to the market.

3.1.4 Policies as they relate to the food processing sub-sector

The Government's emphasis on food processing is evident in the INDP (see Chapter 2.4), which encourages production by both parastatal and private sector firms of products which are "essential to human life". The INDP also specifically gives priority to the promotion of resource-based industries in an effort to promote inter-linkage, especially between agriculture and manufacturing. "Increased capacity utilization" and "improved quality control in locally-produced goods" are general objectives of particular relevance to the rehabilitation of food processing industries.

The Government's interest in supporting development of food processing is also demonstrated by INDP allocations for the sub-sector, accounting for 13 per cent of the total Priority A project finance, 58.6 per cent of Priority B project finance, and 2.7 per cent of Priority C project finance. In monetary terms these percentages correspond to ZK 21.9 million, ZK 23.5 million and ZK 2.8 million, respectively.

Since the 1988 budget, all industrial machinery is subject to 10 per cent import duty, and spare parts 20 to 25 per cent duty. In addition to import duty, a 20 per cent customs sales tax is also levied, plus a 2.5 per cent up-lift for "value for duty purposes" (VDP).

Policies more specific to the food-processing industries are the following:

- As regards access to foreign exchange, the so-called priority activities, including stockfeeds, vegetable oils and fats are given preference.
- "Sensitive" branches such as stockfeeds and edible oils receive a five-year tax holiday.
- A total embargo exists on imports of competing processed foodstuffs. Imports of such inputs as sausage casings and spices are allowed.

- A number of products from the food processing sub-sector are subject to price control. Since 23 May 1988, the controlled items are sugar, salt, mealie-meal, cooking oil, baby milk, and wheat products.
- In the case of food products subject to Statutory Instrument No. 1, 1988, which includes stockfeeds, PIC must grant permission before prices can be raised by producers.

CHAPTER 4

BRANCH PROFILES

The four branches chosen for further study are: meat-processing, stockfeeds manufacturing, oilseeds processing and packaging materials. Processed meat is an important food item, and is one of the non-traditional exports that the Government wishes to stimulate. The stockfeeds industry provides essential products to livestock producers. In terms of access to foreign exchange, stockfeeds and vegetable oils are given priority. Well-developed and efficient oil seeds and meat processing again allow the stockfeeds branch to function without having to import protein and mineral raw materials. Although the packaging industry does not belong to the food processing sub-sector, it is closely related to it. Depending on the type of packaging, this branch has backward linkages to a number of agro-related sub-sectors. The packaging industry has forward linkages to all branches of the food-processing sub-sector.

4.1 Meat processing

4.1.1 Overall characteristics

The meat processing branch incorporates slaughtering and processing of cattle, pigs and poultry. In discussions at the Ministry of Commerce and Industry it was decided to focus on pork products; therefore, this section relates to those products only.

The various pig products, including processed products such as sausages, polonies, cured hams and bacon, account for about 7 per cent of total domestic meat consumption in Zambia. This has not changed substantially over the years. Table 4.1 shows the number of pigs slaughtered in 1986, by province. Slaughtering and processing of pork is primarily done along the 'line of rail', concentrated in and around Lusaka and to some extent in the Copper Belt.

Table 4.1: Pigs slaughtered in 1986, by province

| Province | 1986 | |
|--------------|--------|-----------|
| | Graded | Un-graded |
| Central | | 509 |
| Lusaka | 22,792 | 2 |
| Copperbelt | 1,126 | 4,989 |
| Southern | 537 | 160 |
| Western | 40 | 9 |
| NorthWestern | - | 22 |
| Northern | - | 61 |
| Luapula | - | 6 |
| Eastern | - | 211 |
| Total | 24,495 | 5,969 |

Source: MAWD

4.1.2 Major problems and constraints

The greatest problem in the pork products branch at present is the shortage of slaughtering pigs. Another problem is shortage of spare parts for some essential equipment.

It appears that capacity utilization is low in some firms. Because it is a seller's market, whatever is produced is easily sold. Therefore, storage needs are limited at present. Once pig production increases, however, storage problems are likely to emerge.

It is Government policy to encourage the export of meat products. Major efforts are necessary to promote pig-production and processing and to make it economically viable. Data on pig production are fragmented and do not present a clear picture of current developments in pig farming. Statistics from the Ministry of Agriculture and Water Development's Annual Livestock Report indicate that the number of pigs in the traditional sector has been relatively stable, at around 170,000 head during the period 1983-86. Similar information does not appear to be available for the commercial sector. However, MAWD estimates show that the number of breeding sows in the commercial sector is about 5,200 at present, divided as follows: six large farms, one of them parastatal, with 200 to 600 sows; ten farms with 50 to 200 sows; and a number of medium-sized pig units with fewer than 50 sows. The number of small pig farms has declined in recent years.

Large White and Landrace are the only breeds of significance in the commercial sector. The efficiency of commercial pig production is low in Zambia, even by African standards. The average number of pigs slaughtered per sow each year is estimated to be 11 and the overall feed conversion (total feed consumed divided by total cold dressed weight) is reportedly 7.24. Similarly, the feed conversion ratio for slaughter pigs is reportedly four to one. The main reasons for this are low management standards, low quality of feed, and unreliable supply of feed.

Animal diseases occasionally prevent the transport of pigs or pig carcasses from the Southern Province to other parts of the country. For similar reasons, Eastern Province is presently not even a potential source of pork carcasses or pork products.

In the last ten years a number of programmes have been launched to promote small scale commercial pig farming under the so-called Integrated Pig Management Scheme. The policy is to organize groups of farmers into pig-producing co-operatives, each with a central management responsible for supply of feed and other inputs, as well as marketing and extension services.

The following projects were started under the Scheme:

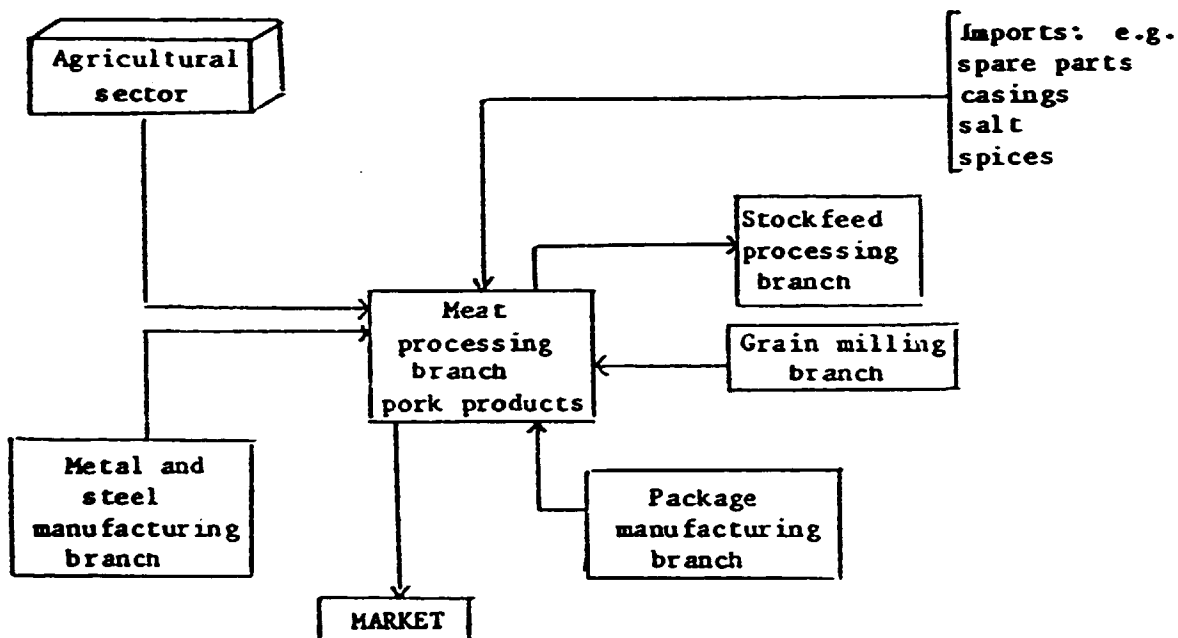
1. An Israeli-sponsored project on the Copperbelt. The co-operative collapsed after Israeli technical assistance was terminated.
2. A German-sponsored integrated programme at Monze in the Southern Province which included management, extension and veterinary personnel, a complete stockfeed plant and a large number of vehicles. Lack of spare parts for the feed mill and for the vehicles resulted in deficient feed supplies and a general decline of the programme.

3. Two other Integrated Pig Management Schemes, one in Kumbe in the Central Province and one in Chipata, Eastern Province, never reached the stage where co-operatives were formed. At present a number of individual farmers are being assisted by MAWD in acquiring feedstuffs and in marketing their outputs.

4.1.3 Linkages

The major linkages to other branches and sectors are illustrated in Figure 4.1.

Figure 4.1: Linkages of the meat processing industry



The meat processing industry has a number of backward linkages but the forward linkages in Zambia are few, and not very well developed.

4.1.4 Spatial distribution

The pork products branch is concentrated in the large population centres along the 'line-of-rail', with three model plants around the Copperbelt, Lusaka and Livingstone. These are Zambia Pork Products (ZAPP), Twikatane Farm Products and Lusaka Cold Storage Ltd. Twikatane Farm Products, ZAPP's major competitor, is a non-profit enterprise operated by a religious sect and located in Lusaka. Its slaughtering capacity is about 20 pigs per shift, some of which are supplied from its own piggery and the rest from sources that also supply ZAPP. There are indications that Twikatane may plan to set up a slaughtering and processing facility in the Copperbelt to supply the Northern area market.

The third-ranking pork producer is Lusaka Cold Storage Ltd., a subsidiary of Galaun Holdings Ltd., Lusaka, whose products are traded under the "Luscold" label. Like ZAPP, this firm procures its pigs from farmers within a 50 km radius of Lusaka, supplementing the output of its own small piggery.

Kyundu Ranch, in Lusaka, is a relatively small operation serving largely the needs of Lusaka's expatriate community. It reportedly has recently opened a small slaughter house about 35 km outside Lusaka.

As much as 90 per cent of Zambia's current output of pork products comes from Lusaka and its environs. Significant pork product producers are located as follows:

- Buccaneer Products Ltd., Ngwerere, Lusaka Rural
- King Farm Products Ltd., Lusaka
- Mumpilo Products Ltd., Lusaka
- Zambia Cold Storage Ltd., Lusaka
- Lendor Agricultural Holdings, Lusaka
- Modern Meat Products, Chingola
- Lyons-Brooke Bond, Ndola
- Copper Harvest Foods Ltd., Ndola
- Mushima, Kitwe

4.1.5 Ownership patterns

Ninety-two per cent of the meat-processing branch is privately owned and the remaining 8 per cent is controlled by INDECO (percentages based on estimated output per employee). It has not been possible to obtain a breakdown of private ownership shares.

4.2 Oilseeds processing branch

4.2.1 Overall characteristics

According to a 1987 USAID study,^{1/} the national oilseeds processing capacity is estimated to be about 214,000 tonnes. The largest processors, ROP and Premium Oils, account for 73 per cent of the total national oil extraction capacity or 157,000 tonnes per year. Medium-sized firms process about 50,000 tonnes of oil seeds per year, representing 24 per cent of total national oil seed processing capacity. The remaining 3 per cent, or approximately 6,000 tonnes per annum, are processed by about 40 small-scale artisanal processing units. Some of these processing units are hand operated, with capacities from 12.5 to 180 kg/h. In its strategy for industrial development, the Interim National Development Plan suggests that enterprises producing cooking oil should be encouraged, as they produce essential consumer goods. Additional quantities of oil cakes would then be available to farmers and the stockfeed industry. At present only about one third of the demand for oil seed-cakes in Zambia is satisfied by domestic sources.

^{1/} USAID, Study of the oil seeds in Zambia, Ministry of Commerce and Industry.

4.2.2 Major problems and constraints^{1/}

The investment plan of the Ministry of Agriculture and Water Development's (MAWD) Task Force projected the production of oilbearing seeds to be some 106,000 tonnes by 1988. However, this figure differs from MAWD's final crop forecast which estimates the total crop yield of sunflower, soyabeans and cotton seed to be 82,000 tonnes in 1988.

The production of groundnuts for oil extraction appears to be about 1,000 tonnes per year. Sunflower production decreased during the first half of the 1980s from 40,000 tonnes per year to 10,000 tonnes, but is now gradually increasing again, stimulated by higher producer prices.

For the 1988-89 cropping season the producers' price for oil seeds increased substantially - by 80 per cent for hybrid and composite varieties of sunflower seed, 43 per cent for unclassified sunflower seed, 29 per cent for soyabeans, and 52 per cent for cotton. It is expected that this increase in producer prices will result in further increases in production. This again would allow for better capacity utilization in the oil-crushing industry. At present, large quantities of comparatively cheap crude vegetable oil are imported to supply the industry, but supply is not sufficient to cover the needs of industry.

In the present context, two issues with regard to domestically produced oilseeds are important: production will have to be stimulated in such a way that the domestic product can compete with the low-priced crude oil imports; and the quality of oilseeds supplied to mills will have to improve. At present the supply contains unacceptable quantities of impurities which cause damage and excessive wear and tear on all moving parts, especially the expeller screws. This invariably results in poor performance of the equipment, frequent breakdowns, and increased need for maintenance.

In sum, the major constraints to full capacity utilization are:
(i) inferior equipment, including non-existing or poor cleaning facilities,
(ii) lack of spare parts, (iii) poor working environment and (iv) periodic deficiency in raw material supply.

4.2.3 Linkages

The pattern of technical linkages in the oil seeds processing sub-sector is quite straightforward. Good quality oil seed is extremely important for the successful performance and development of the stockfeeds sub-sector and hence for improved production of the livestock sub-sector. These major backward and forward linkages are illustrated in Figure 4.2.

Suggestions for future development

Vital ingredients for the stockfeeds industry - protein, minerals, trace minerals, vitamin supplements and veterinary additives - are presently imported.

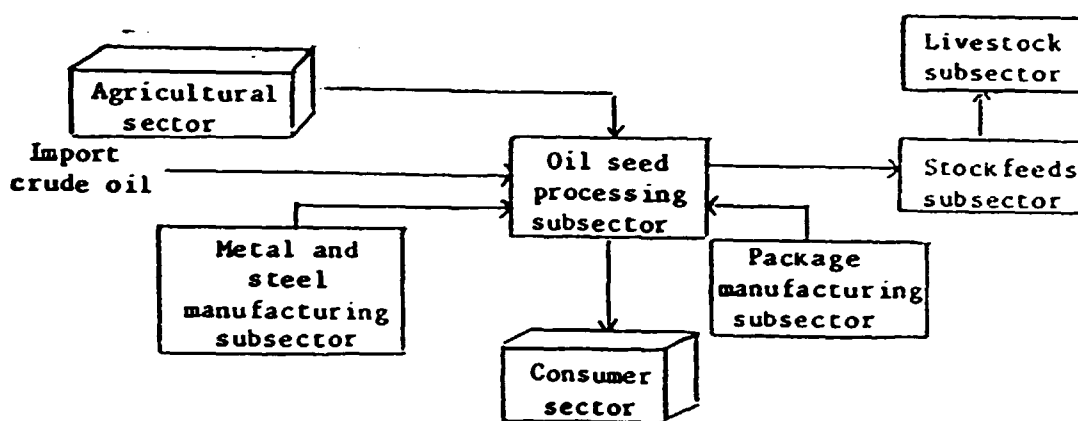
1/ See Oilseeds sub-sector annex, MAWD, July 1985, and MAWD, 2 May 1984.

A substantial portion of the present imported feed ingredients could be substituted by local raw materials, such as high quality bone meal, meat meal, blood meal and lucerne meal.

The UNIDO team is of the opinion that efforts should be made, as soon as possible, to identify domestically available sources of animal proteins, mineral supplements and, to some extent, vitamins. It is thus suggested that a techno-economic feasibility study be carried out with the following objectives:

- (i) to investigate the scope of local bone meal processing to satisfy domestic demand for stockfeed manufacturing. All possible alternatives should be considered, including deboning carcasses at the larger abattoirs, which would also facilitate processing of beef concentrate from the bones before they are turned into bone meal.
- (ii) to determine input requirements for upgrading existing rendering plants and blood treatment installations in abattoirs for production of high quality bone meal, meat meal, and blood meal, and for installing rendering plants or blood treatment facilities in other abattoirs.
- (iii) to process local lucerne meal to be used as a source of vitamin A, and to some extent protein, in feed rations.

Figure 4.2: Linkages of the oilseed processing industry



4.2.4 Spatial distribution

According to the abovementioned USAID study of the oil seeds sub-sector in Zambia, about 89 per cent of the capacity for oil extraction is accounted for by a small number of enterprises located in the Lusaka and Copperbelt regions. One processing plant, located in Kalite in Eastern Province, has about 6 per cent of the national crushing capacity, while another in Choma, Southern Province, has about 2 per cent. Small-scale expellers concentrated in the Copperbelt, Central Province, and Lusaka claim the remaining 3 per cent. The percentage distribution of identified units is as follows:

Table 4.2: Distribution of oilseed mills

| <u>Province</u> | <u>Per cent</u> |
|-----------------|-----------------|
| Lusaka | 27 |
| Central | 15 |
| Copperbelt | 9 |
| Southern | 31 |
| Western | 1 |
| North Western | 5 |
| Northern | <u>12</u> |
| | 100 |

4.2.5 Ownership patterns

The oil seed processing branch is dominated by INDECO which accounts for 75 per cent of the branch; the remaining 25 per cent are privately owned. A breakdown by enterprise within the private sector was not available.

4.3 Stockfeeds manufacturing

4.3.1 Overall characteristics

The Zambian stockfeed industry has not experienced any major development in years. The aggregate operational capacity of existing stockfeed plants in Zambia amounts to 244,000 tonnes per annum, with actual aggregate output at 140,000 tonnes per annum.

Production of stockfeeds declined substantially from 192,000 tonnes in 1980 to 140,000 tonnes in 1987, according to Danish experts studying the rehabilitation of maize and feed mills in Zambia.

The Zambian Standards Institute (ZSI) has established national standards for different types of stockfeeds although these are not yet enforced by regulations. The reason for this appears to be that there is no body to test and monitor a control system. The problems involved in implementing such a system at present would be substantial.

4.3.2 Major problems and constraints

The greater part of the stockfeed industry is dependent on imports of certain ingredients, mainly mineral supplements, trace elements, vitamins, medicated additives, and animal protein. Such imports necessitate foreign exchange and this makes the feed industry extremely vulnerable. Therefore, high priority must be given to substitution of most of the imported ingredients by domestic supplies. Domestic processing of slaughterhouse by-products such as bones, offal, blood, and to some extent condemned meat and carcasses could provide the stockfeed industry with considerable quantities of ingredients to cover the requirements of minerals and protein. However, by-product processing at the slaughterhouses appears not to have received sufficient attention, and existing rendering plants are reportedly not operating efficiently. In addition, product quality is generally sub-standard. The structure of the Zambian slaughtering industry, with comparatively small abattoirs, makes it difficult to attain economies of scale.

It is therefore imperative that the national stockfeed industry utilizes the slaughterhouse by-products and offal as a source of feed ingredients.

The potential for economic utilization of scrap fish and fish offal is less promising but should nevertheless be investigated. Lucerne meal, which can easily be produced in Zambia, is also a good source of vitamin A in stockfeeds.

In summary, some of the major material constraints that would seriously affect the stockfeed industry, in case of disturbances in the import of pre-mixes and concentrates, can be overcome. Reduced reliance on imported stockfeed raw materials would strengthen the backward linkages of the stockfeed manufacturing branch. This would contribute to further industrialization based on locally available raw materials and hence create job opportunities.

Shortage of spare parts creates constraints for the individual stockfeed processor. The lack of spare parts and plant maintenance as well has had an adverse impact on the quality of stockfeeds.

Laboratory facilities are non-existent in most stockfeed plants. Analyses of ingredients and finished products cannot be carried out to the extent that is necessary for effective control and monitoring of production processes. This is particularly important in Zambia where the quality of the feed ingredients varies considerably. The absence of adequate monitoring and quality control means that the quality of stockfeeds is not uniform, and an overly high fibre content is found in poultry and pig feeds. Quality also tends to be inferior because of deficiency in protein. The low quality of stockfeeds in turn has also had adverse effects on the quality of the animals which consume them.

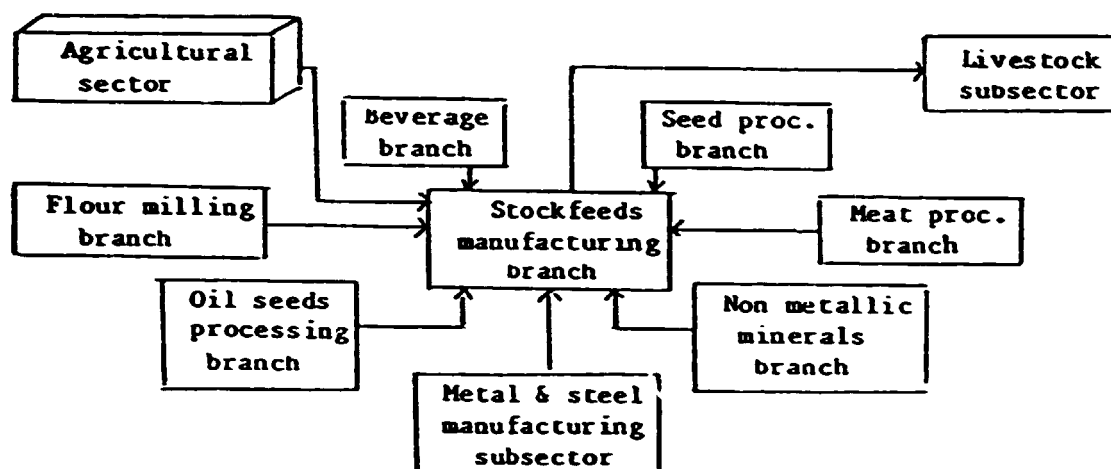
At present there are no national standards for feed ingredients, with the exception of maize which has a nominal formula.

The prices of ingredients are set irrespective of quality, that is of impurities, or protein or fibre content. As a result, in an effort to keep costs down, quality usually suffers. If a national standard for feed ingredients were established, and the price of stockfeeds were related to quality, the future of the stockfeed industry would be brighter. A prerequisite for enforcement of quality standards related to both raw materials and finished products is the establishment of a qualified independent laboratory. Such an establishment could serve the stockfeed industry as a whole since, in many cases, such equipment could not be justified at the plant level.

This complex set of constraints related to quality issues in the stockfeed industry have a significant influence on the development and performance of livestock farming. They also significantly affect the success of future efforts to export stockfeeds once domestic demand is satisfied.

4.3.3 Linkages

The stockfeed industry has backward linkages to the agricultural sector and other manufacturing sub-sectors, as illustrated in Figure 4.3. The performance of the stockfeed industry is influenced by that of several other branches, including flour milling, oilseed processing, and meat processing.

Figure 4.3: Linkages of the stockfeeds industry

4.3.4 Spatial distribution

Most of the stockfeed plants are found along the 'line-of-rail', with the exception of some small plants that belong to the Co-operative Unions located in other provinces.

Of the total processing capacity in Zambia, 50 per cent is located in Lusaka, 8 per cent elsewhere in Central Province, 30 per cent in the Copperbelt, 11 per cent in Southern Province, and 1 per cent in other parts of the country.

4.3.5 Ownership patterns

The stockfeed manufacturing branch is dominated by parastatal companies which account for 95 per cent of the branch; the remaining 5 per cent are private firms. (Percentages are based on estimated output per employee.) It has not been possible to acquire a breakdown of private shares in this branch.

4.4 Package manufacturing branch

4.4.1 Overall characteristics

The package manufacturing branch as a whole produces a wide variety of package materials and types of packages. However, this survey is concerned with bag manufacturing only. The availability of bags for agricultural commodities such as fertilizer and staple foods such as mealie meal and sugar is vital for the entire country.

Zambia's total annual demand for woven bags is estimated to be about 70 million. At present, 60 million of these bags are made from synthetics, and 10 million are made from natural fibre, mostly jute.

The overall domestic production of polypropylene bags appears to be in the range of 25 to 30 million per annum, or about 50 per cent of the demand. Jute bags are mostly imported, with domestic production at approximately 0.25 million.

Bags made from sheet polyethylene are less essential for agriculture and many of the agro-based industries. They are important, however, as lining for fertilizer bags and also for a wide range of packaged consumer foodstuffs. About 6,000 tonnes of polyethylene raw material is used annually in the Zambian bag manufacturing industry. Multi-wall paper bags are not commonly used, and manufacturing appears to be very small scale.

Woven polypropylene bags are manufactured by two firms and jute or kenaf bags by one firm only.

In summary, taking the bag manufacturing industry as a whole, about 98 per cent of the raw material is imported at present. The Government is making efforts to promote the production of kenaf, a fibrous plant which can be grown in Zambia and substituted for imported jute.

4.4.2 Major problems and constraints

The bag manufacturing industry depends almost entirely on imported raw materials, making it extremely vulnerable. The annual cost of foreign exchange is estimated to be about ZK 45 million at present.

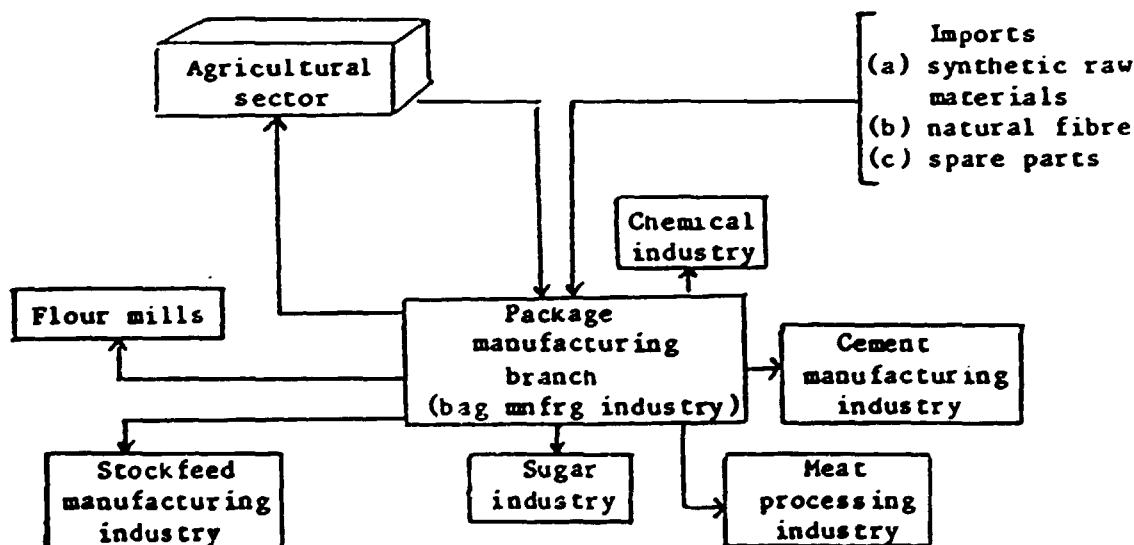
The industry also relies on imports of spare parts for practically all equipment. This situation is likely to continue, except for simple parts which may be manufactured locally in the future.

Dependence on imported spare parts has caused considerable constraints in the industry. When spare parts have not been available, some pieces of equipment have gradually been dismantled and the parts used as spares. As a consequence, the capacity of the plants has been reduced, and bag imports have had to be increased to meet domestic demand.

4.4.3 Linkages

Bag manufacturing has a large number of forward linkages. However, backward linkages to domestic sectors or sub-sectors are extremely weak. Figure 4.4 illustrates the present situation and shows the importance of bag manufacturing to a comparatively large number of manufacturing sub-sectors.

Figure 4.4: Linkages of package manufacturing industry



4.4.4 Suggestions for future development

The present situation of almost complete dependence on imported raw materials is not acceptable for the long-term. Considering the amount of time necessary for switch-over to alternative sources of raw materials for bag manufacturing, policies and guidelines should be established as soon as possible.

An important step in reducing import dependence has been taken by the introduction of kenaf fibre as a substitute for imported jute fibre. The significance of this development cannot be sufficiently stressed.

Based on present experience with kenaf growing, about 12,000 hectares would be required to cover the national demand for hessian-type bags. As a prerequisite, sufficient quantities of seed will have to be produced. Kenaf production must, however, be synchronized not only with development of the national fibre processing industry, but also with production plans for other domestic crops. Subregional (SADCC, PTA) trade in possible substitutes, such as sisal, should also be taken into account.

The availability of suitable quality bags is crucial for the Zambian economy. It is the opinion of the UNIDO team that the long-term supply of bags in Zambia be subject to a comprehensive study to serve as a guideline for further investment.

Within a medium- to long-term perspective, the following issues should be examined to produce a plan of action:

- (i) The extent to which bulk-handling of certain products is likely to be introduced;
- (ii) Future demand for bags;
- (iii) (a) Raw material availability within Zambia and elsewhere in the subregion, (b) technical aspects of product development, (c) environmental considerations, (d) export potential, especially to the SADCC and PTA regions;
- (iv) Suggestions for the development of the Zambian bag manufacturing industry.

4.4.5 Ownership patterns

In the package manufacturing branch 86 per cent of firms are privately owned. Parastatals, in which INDECO is majority shareholder, account for 14 per cent (percentages based on estimated output per employee). It has not been possible to obtain information about the distribution of private ownership shares.

CHAPTER 5

OBSERVATIONS AND RECOMMENDATIONS REGARDING COMPANIES

5.1 The choice of plants

The mission examined four plants in detail in order to specify rehabilitation needs at the plant level. They were:

- a meat products factory;
- a cereals mill;
- a packaging materials factory;
- a stockfeeds plant.

These companies were selected from a list presented by the Zambian authorities of some twenty candidate enterprises representing both the public and private sector in agro-related industries. In making the choice, the mission consulted with the Ministry of Commerce and Industry, the Industrial Development Corporation (INDECO), and the Zambian Industrial and Commercial Association (ZINCOM). Three of the companies were INDECO enterprises; the fourth was privately owned.

The following general observations and recommendations are made with respect to management, organization and marketing, physical plant and spare parts, and inputs.

5.2 Management, organization and marketing

General observations

(a) All of the companies visited suffer from some significant deficiencies at middle-management, foreman, and supervisory levels. Management and information systems are generally inadequate for routine tasks such as accounting, administration, purchases and sales.

(b) The four companies have a weak or non-existent sales organization both locally and regionally largely because it is a seller's market. Rehabilitation and expansion would require improvement in the sales organization.

(c) Institutions relating to foreign trade seem to function well, especially the Export Board of Zambia which was founded in 1985. The Board has presented fresh ideas and has demonstrated a very professional attitude in tackling existing problems.

(d) Zambia's export industry is not sufficiently represented abroad, mainly due to the high costs involved. At present Zambia has Trade Commissions in London, Harare, and Dar-es-Salaam and one Trade Attaché in Maputo, Mozambique. If funds are available another four will be established in Scandinavia, West Germany, the European Community in Brussels, and Geneva, Switzerland (UN Organizations); otherwise, regular embassy personnel handle questions regarding trade and exports. This is considered unsatisfactory.

(e) Budgetting, at all levels, often seems to be wishful thinking rather than a realistic assessment of a company's financial position.

Recommendations

(a) The shortage of qualified personnel, professional training and on-the-job training is a key issue. With regard to the latter, company management should play an active role in promoting a continuous upgrading of skills.

As company management is becoming increasingly complex, it should be investigated whether computer training can be initiated. A good PC-computer system with printer and hard disk of 20-30 Megabyte can be purchased for as little as US\$ 5,000-6,000, with software included. If each company acquires such a system, the management would be freed from many routine tasks, and would be able to concentrate on more essential matters.

(b) The companies should make an effort to improve their sales organization. This investment should be carefully timed to coincide with the physical rehabilitation programme.

(c) The Export Board of Zambia should be given the strongest possible support from both the private and public sectors. Additionally, exporting companies should be allowed to use part of their retained foreign exchange for export marketing activities such as foreign sales promotion.

(d) The number of Trade Representatives abroad should be increased, especially in important neighbouring countries. Adequate funds and opportunities should be provided to actively promote Zambian exports. Representatives should be recruited from industry and have practical experience in international sales promotion.

(e) Budgetting should be realistic and done with the utmost care. Boards of Directors and management should ensure that the budget is closely followed and that deviations are analysed and corrected.

5.3 Physical plant

General observations

(a) All the plants were operating below full capacity. In many cases the concept of capacity itself was described as "achievable capacity" meaning that, given the state of the plant, the starting point for measuring capacity utilization was much below original installed capacity because, for example, machinery had been cannibalized to provide spare parts for other equipment. Even then, in some cases, capacity utilization was well below achievable capacity.

(b) Much of the production equipment in the manufacturing sector is either old and obsolete, performing well below its purported design capacities, or totally out of use because of protracted lack of proper maintenance. There is also evidence that, in several cases, plant design and processes used were unsuitable, and that the design capacities stipulated by the original equipment suppliers were unrealistic and unattainable in practice. Common occurrences include low capacity of specific equipment or entire production systems, technical and operational bottlenecks, and deliberate exclusion of some equipment essential for more efficient operation. Lack of inputs and poor quality of inputs were also among the reasons for low capacity utilization. Markets were not a problem; it was more a question of trying to keep up with demand.

(c) Quality control programmes are either non-existent or haphazardly implemented. A contributory factor in this connection is the general absence of in-house laboratory facilities for analysis of raw materials and finished products.

(d) In general there is a casual approach to plant hygiene, industrial health and safety, and waste treatment and disposal.

(e) In many instances, equipment or entire plants had not been specified properly from a technical point of view in the contracts, or properly commissioned on installation. Nor were they performance-tested and accepted in line with any applicable supply agreements. Accordingly, their attributed performance capabilities are largely fictitious.

Recommendations

(a) Bottlenecks in the production system should be removed through installation of equipment originally omitted, replacement of obsolete or under-sized production units, and redesign of processing schemes for greater efficiency and capacity.

(b) In order to minimize the drastic fluctuations in product quality, each plant should establish an in-house laboratory and implement a quality control programme for routine monitoring and controlling of its raw materials and final products. Existing specialist laboratories should be strengthened and central laboratories should be established in the major provinces and Lusaka to provide special analysis services.

(c) In the interest of personnel safety and health, workers should be provided with protective equipment and its use should be enforced.

Necessary manufacturing and house-keeping measures should be taken to minimize the generation of in-plant solid, liquid, and gaseous wastes. Where such wastes are unavoidable, adequate facilities should be installed for their treatment prior to discharge.

(d) Zambia needs to utilize professional expertise to a greater extent in order to more precisely define and select industrial equipment and processes, prepare and negotiate contracts, monitor and supervise installation and commissioning, and performance-test equipment and plants.

5.4 Spare parts

Shortage of spare parts is a constant problem for all the companies visited. As in most African countries, the shortage of spare parts is also a major problem for manufacturing industry in general. The resulting stoppages are a major source of economic loss. The reasons for the shortage of spare parts in Zambia are as follows:

1) The country has not built up sufficient domestic capacity for spare parts production. Thus major problems are experienced simply because most spare parts for machinery have to be imported, and because there is insufficient foreign exchange for that purpose. As a result, it is not uncommon in Zambia for parts of small value themselves to be unavailable and to cause partial or even total shut-down of a plant.

2) The effects of wear and tear of machinery and equipment are generally greater under Zambia's climatic and environmental conditions than in the industrial countries where the machinery and equipment were originally made. This implies that Zambia requires more spare parts - and in the absence of domestic production has to import more spare parts - than would normally be the case. Moreover, imported machinery frequently does not incorporate design and technical considerations that take into account the conditions likely to be experienced in the Zambian manufacturing sector.

3) The sector often lacks buyers of sufficient experience and technical sophistication to buy machinery and equipment suitable for Zambian conditions. This frequently results in purchases of machinery with inadequate technical documentation and improper codification to identify parts responsible for machinery failures. There is also the not uncommon problem that machinery documentation is often written in a foreign language. Spare parts requirements are not usually included for plant and equipment in feasibility studies or in purchasing contracts.

4) There are often difficulties experienced in finding the right supplier of spare parts, and especially suppliers of spare parts for machinery that is no longer produced.

5) There are difficulties in the timely importation of spare parts, due to payment terms and conditions (such as letters of credit and the necessity of obtaining firm quotations) in obtaining import licenses and other documentation, the length of time taken to deliver spare parts, the length of time taken to clear customs and other bureaucratic hurdles.

6) Even if spare parts are eventually obtained, they are frequently damaged or lost due to inadequate storage, handling or organizational control.

7) There are difficulties due to the fact that equipment is often old, maintenance staff is inexperienced or inadequately trained, and planned maintenance procedures are lacking. The result of these factors is that there are frequent breakdowns of equipment which require the acquisition of spare parts.

8) With very few exceptions, imported industrial machinery and spare parts are subject to customs duties. These customs duties increase the costs of maintaining plants in good working order. As a result, plant maintenance is discouraged and capacity utilization is reduced. However, at the same time, progress is being made in the production of some spare parts in Zambia.

Recommendations

(a) There should be an in-depth investigation and a detailed classification of spare parts production, supply and needs in Zambia. UNIDO could provide assistance to such an investigation.

(b) Production of spare parts should be encouraged and protected, where appropriate, in Zambia and in SADCC. Some protection is necessary in order to encourage the substitution of locally produced spare parts at the expense of imports. However, a distinction would be made between those which are presently being produced in Zambia and those which at present can only be imported. It is recommended that a high duty be imposed on competing imports and that non-competing imports of spare parts be allowed in duty-free.

(c) There should be an in-depth investigation into the possibility of establishing a Spare Parts Agency (SPA) within the SADCC countries. UNIDO could assist in the establishment of such an agency, in conjunction with an international network of experts.^{1/} The SPA would be run on profit-making lines and have the following objectives:

- to act as a focal point for suppliers of spare parts in SADCC countries;
- to assist member countries in solving the identification and documentation problems of stocks of spare parts;
- to locate appropriate suppliers of spare parts in SADCC and abroad;
- to provide and stock necessary spares at an economic cost and on a timely basis by using modern methods of "just in time" inventory control;
- to avoid communication problems due to cultural misunderstandings and language barriers in contracts and negotiations;
- to ensure the purchase of spare parts takes account of the conditions of SADCC countries;
- to act as a focal point for the harmonization of existing national standards, certification systems, inspection and testing of spare parts relevant to SADCC countries;
- to centralize the importation, where required, of essential spare parts and to minimize administrative burdens inter alia by seeking ways to harmonize the treatment of spare parts importations in SADCC;
- to ensure purchased spare parts are properly documented and codified, stored and handled;
- to offer advisory services in the form of training in appropriate maintenance procedures and especially planned maintenance.

Thus, the SPA should have two major functions: procuring spare parts and distributing spare parts to industrial customers. It would operate in a similar, albeit a far more complex, manner as various successful food and pharmaceutical purchasing institutions which save retailers the trouble of having to purchase or store goods. The SPA would also be a central source of information about a wide variety of spare parts and thus save customers the difficulties of having to find and obtain spares from a myriad of sources. With appropriate feed-back from customers as to their needs, the SPA could deliver parts on the basis of a computer system with "just in time" inventory management techniques. These techniques would drastically reduce the need to store spare parts for long periods of time and thus greatly save on inventory costs.

^{1/} For details, see UNIDO, Securing Spare Parts Supplies for Industries: a New Concept to Support Productivity of Industrial Plant Primarily in Developing Countries. 1986

To be able to fulfil the functions mentioned above, the SPA would need appropriate computer hardware and software as well as a staff of experienced specialists in the required technical and economic areas and in the spare parts business.

(d) Within the limits of their resource availability, plants should introduce a workable routine preventive maintenance programme for machinery and equipment. Since spare parts availability is a recognized constraint in this regard, efforts should be made to establish and equip in-house workshops which could fabricate simpler parts and repair some components. The establishment of further central repair workshops for specialized equipment and machinery should be investigated in various provinces. In the Copperbelt, the mining equipment repair shops provide a basis for the strengthening of industrial repair services. Their hardware and experience could also be tapped for the establishment of spare parts production and repair services elsewhere in the country. Measures to improve the availability of spare parts should be co-ordinated with the Zambia/Italy Spare Parts Manufacturing Facility Project which is now under negotiation.

5.5 Inputs

General observations

An important step in reducing import dependence has been taken by the introduction of kenaf fibre as a substitute for imported jute fibre. The significance of this development cannot be sufficiently stressed. Kenaf production must, however, be synchronized not only with development of the national fibre processing industry, but also with production plans for other domestic crops. Subregional (SADCC, PTA) trade in possible substitutes, such as sisal, should also be taken into account.

Raw materials such as maize and sunflower seeds, supplied to industry, are of poor quality as far as cleanliness is concerned. In general, maize and sunflower contain 5 to 10 per cent impurities which result in substantial extra costs for transport and handling, wear and tear, and breakdown of processing equipment. With the present system of payment, the producer has no incentive to deliver clean products.

If impurities were removed at source the benefits would include:

(i) Reduced transport costs and savings of foreign exchange - ZK 5 million and ZK 1.5 million respectively.

(ii) Reduced handling costs of about ZK 0.2 million.

(iii) A saving of 50,000 m³ storage space in warehouses or under tarpaulins, which could be used for clean produce and not for waste.

(iv) Reduced losses of produce during storage; although difficult to assess, this is likely to add up to several million Kwacha.

(v) Reduced wear and tear and breakdown in industry. This can be assessed in terms of lower maintenance costs, lower import requirements of spare parts, and improved capacity utilization of processing industries. The total benefit here may be assessed in terms of millions of Kwacha per annum, a substantial portion of which would be in foreign exchange.^{1/}

Recommendations

(a) As part of a comprehensive study on the long-term supply of packaging material in Zambia, the raw material availability in Zambia and the region, and the various issues related to increased raw material production, should receive special attention.

(b) A plan should be devised as soon as possible to introduce a bonus system for clean farm produce within three to five years. One alternative is to equip the receiving points at co-operative society or district level (depending on payment routine) with simple air/screen grain cleaners, so cleaning would be done before weighing for payment. This would give the farmer an incentive to deliver a better product. It would also be the first step in a long and slow process to gradually introduce payment for quality.

The price increase for clean produce should correspond, at least, to the percentage units of impurities removed. The grain cleaners should be manufactured in Zambia, preferably using a well-known simple design acquired from an established manufacturer. The demand for grain cleaners, the spare parts requirements over the years, and the future possibility for exporting cleaners suggest there is a sufficient basis for establishing a viable manufacturing enterprise.

^{1/} According to Final Crop Forecasts 1983-84 to 1987-88 (MAWD, Statistics Section, 20 May 1988), actual sales of maize and sunflower seed in 1986-87 were 663,612 tons. Assuming an average of 5 per cent impurities, which could have been removed, 33,180 tons of waste were transported for no reason at all. The average transport distance may have been about 150 km, which, at a cost of ZK 1 per ton kilometre, adds up to a total transport cost for waste of close to ZK 5 million. About ZK 1 million to ZK 1.5 million of this directly relates to imports, that is, fuel and vehicles.

CHAPTER 6

GENERAL POLICY OBSERVATIONS AND RECOMMENDATIONS

6.1 Policy-making and administration of the public sector

General observations

The regeneration of Zambia's manufacturing industry depends on overall, long-term recovery of the economy. The applicability of many of the recommendations made in this report must therefore be seen in light of this overall recovery.

Industrial regeneration will be determined to a large extent by the appropriateness of Government policies and the way they are executed. Specific policies, such as those relating to tariffs and other protectionist measures, could be improved.

The Zambian Government's ability to stimulate the manufacturing sector is highly dependent on its capacity to formulate and implement appropriate measures. This capacity is now being reinforced. UNIDO projects^{1/} provide assistance to the Investment Policy Department of the National Commission for Development Planning (IPD/NCDP) and support the strengthening and restructuring of the Industrial Planning Unit (IPU) in the Ministry of Commerce and Industry. IPD/NCDP is involved in pre-investment and project feasibility studies. IPU's activities now cover a wide range of activities, from overall sector plans to specific issues such as market analysis and remedial action assessment for individual industries and advising small-scale industries. It also co-ordinates the activities of parastatals such as INDECO.

Given the size of the public sector, INDECO will continue to be a key organization. Plants that are INDECO subsidiaries have the advantage of easier access to authority and support in legal, financial, accounting and marketing matters. On the other hand, the performance of these enterprises is negatively influenced by the heightened complexity of administrative procedures in the public sector and by the regular reshuffling of managers and other key personnel. The latter is an obstacle to continuity in business operations and to the accumulation of experience at the enterprise level.

Recommendations

(a) A study should be made to establish, on a sector-wide basis, what the potential for (viable) rehabilitation is. This study should be undertaken in the context of a more detailed formulation of restructuring priorities for the sector.

^{1/} Projects DP/ZAM/85/007 and DP/ZAM/85/012.

(b) IPD/NCDP and IPU should continue to receive support to meet the expanding need for planning, support, and project monitoring in the manufacturing sector. IPU could be made the focal point for a full-scale rehabilitation study programme for the manufacturing sector.

(c) Managers in public enterprises should be allowed greater freedom in business decisions. Their employment should also be secure enough to allow them to bring long-term stability to plant management.

(d) Public enterprises would benefit from a stronger industrial advisory capacity in INDECO. This would include both advice with regard to rehabilitation projects and to new investment. INDECO's Economic Evaluation Unit, which has been monitoring the performance of INDECO units undergoing reorientation, and which is finalizing a manual for project implementation and plant diagnoses,^{1/} could become the core of such an advisory unit.

(e) Some restructuring of the system of protection (taxes, tariffs, subsidies) would help to stimulate industrial regeneration. Even if this is basically a domestic matter, international agencies with relevant experience (such as UNCTAD) could supply assistance.

6.2 Regional considerations

General observations

Regional economic co-operation, as demonstrated by SADCC and PTA activities, is an important factor when assessing the scope for rehabilitation. SADCC has recognized the importance of industrial rehabilitation for the subregion. Zambia's Interim National Development Plan recognizes that PTA represents a major opportunity for Zambia's exports. The Export Board and the Ministry of Commerce and Industry are the key institutions involved in exploring the market potential in the PTA countries.

After Zimbabwe, Zambia is the most important importer from SADCC countries, with 19 per cent of total 1982 member imports from within the SADCC region. With regard to exports, Zambia ranked third in 1982, after Botswana and Zimbabwe. In SADCC's proposed complementary framework for the development of basic needs industries, Zambia is to concentrate on food processing, agricultural input, textiles and building materials. A 1986 SADCC/UNIDO conference on rehabilitation identified a series of projects in Zambia, the majority of them in agro-related industries. Also important is SADCC's project to improve the Tanzania-Zambia railways.

6.3 Costs and pricing system

General observations

(a) Because Zambia pursued a strategy of import substitution industrialization, the manufacturing sector became extremely import-dependent over the years. Although the goal of industrial policy is now aimed at reducing such dependence, this will take some time to achieve. Meanwhile, companies in the manufacturing sector are dependent on imported machinery and spare parts - in many cases for the bulk of their raw materials as well - in order to keep their plants operating.

^{1/} Supported by UNIDO under project DP/ZAM/85/004.

(b) The **Zambian manufacturing sector is presently subject to a complex battery of price distortions. These distortions are due to the fact that some products are subsidized, some are subject to price controls, increases in the prices of others must be approved by PIC, while others have their prices determined freely in the market. The lack of synchronization between movements in the prices of the various categories of products creates serious problems for many manufacturers.**

The repercussions spread throughout the sector, and back into agriculture. When input prices increase and output prices are fixed, profits shrink - or even turn into losses. In such cases, the reactions can vary, depending on the type of activity in question. Private sector companies are threatened with closure. Parastatal companies may survive longer with INDECO support but this can hardly be guaranteed indefinitely. Ultimately, selling prices have to cover costs and a level of profits that enable a firm to maintain its plant in good working order and replace its plant over time.

The cost-plus method of pricing manufactured products, which PIC has established, may encourage inefficiency in the parastatal companies and discourage such companies from minimizing their costs of production. Even if it is acceptable as an approach, it is clear that some parastatal companies are not sure whether or not they are maximizing profits. In the case of companies with more than one product line, individual costings and profits are often not calculated, thus making it difficult to know whether one line is subsidizing another. On the other hand, there are cases in which the Government is inadvertently subsidizing the production of some goods. This can occur when a plant with a number of product lines has at least one line whose price is subsidized and therefore may be easier to make a profit; another line, with prices subject to PIC approval, may suffer temporary losses because of delays in authorizing price increases. Such hidden subsidies, where they occur, should not be blamed on individual companies; rather, they may be a short-term method of survival. Their emergence is a reaction to the widespread existence of price distortions, the ultimate cause of which is an over-complex policy on pricing and an institutional mechanism which is incapable of coping with it.

(c) The level of company taxation, which was raised in the 1988 Budget, seems high for a newly-industrializing country. At 40 per cent of profits, especially in situations of tight liquidity and import dependence, the tax rate leaves too little to be set aside for reserves or for rehabilitation. The rate is also higher than in some neighbouring SADCC countries with which Zambia competes for exports of manufactured goods.

(d) The overriding constraint in the **Zambian economy in the short run is shortage of foreign exchange. This shortage affects the ability of manufacturing companies to import. Given the level of import dependence in the Zambian manufacturing sector, the foreign exchange constraint is impeding the import of essential transport and machinery.**

The foreign exchange constraint was described by the management of the plants visited as not being of overriding importance. This can be explained by the fact that the plants in question were either in "sensitive" branches of the agro-related sub-sector, were parastatals, or both. Moreover, all the managers were more satisfied with the FEMAC method of foreign exchange allocations than they had been with the auction system. However, it was clear that it was not so much the system itself as the stability of prices at which

foreign exchange was acquired that was the important reason for their preference. The price itself was not perceived to be a problem. However, given the shortage of foreign exchange it is also clear to the outside observer that the present fixed rate cannot hold for very much longer.

Recommendations

(a) As regards duties on industrial machinery, companies undertaking plant rehabilitation, which is being financed out of their own resources or by bank borrowings, should be exempt from paying duties on machinery essential to the rehabilitation.

(b) Increases in the prices of manufactured products should be synchronized with increases in the prices of inputs. The PIC and MAWD will have to collaborate in approving and implementing price increases. This will call for strengthening the operations of PIC. In turn, such strengthening may necessitate technical assistance from the donor community.

(c) Although the 1986 Investment Act offers incentives and tax rebates to many manufacturers, especially those who export, it would nevertheless be appropriate also to reduce the general level of company taxation. The greater the extent to which companies meet the criteria of substituting domestic for imported inputs, increasing capacity utilization, and producing non-traditional exports, the greater should be the reduction in their tax bills, provided they apply the tax savings to plant rehabilitation. Adequate controls should be imposed to ensure that the money is used appropriately.

(d) With regard to the foreign exchange policy regime, a return to a moving peg system would be preferable to any medium-term fixing. Such a change, which is probably inevitable, will create problems for manufacturing plants in terms of the price at which they will acquire foreign exchange. Liquidity will be tight as the Kwacha cover requirements rise. There will be further pressure to make greater profits in the short run. Of course, in the long run the only solution is to reduce the dependence on imports in Zambian manufacturing. The objectives of Government policy, as presently stated, indicate that the need to reduce import dependence is well understood. The Government and the economic ministries now have to follow through at the level of policy implementation. The international donor community needs to respond with increasing support in the form of foreign exchange and technical assistance.

CHAPTER 7

CONCLUSION AND SUMMARY OF PROJECT CONCEPTS

7.1 Concluding remarks

Zambia's regeneration and rehabilitation efforts can take place only with co-operation and assistance on the part of the international community. Most industrial rehabilitation projects require foreign technical and financial support, particularly in the acquisition of equipment and spare parts. Besides international financial assistance, Zambia will require technical and managerial expertise to assist in selecting and procuring equipment and monitoring the plant rehabilitation.

The benefits of UNIDO's "top-down" approach to rehabilitation will be experienced from the "bottom-up" - from the plant, through the various levels, to the country level at the top:

- First, the immediate beneficiaries of technical co-operation will be the specific enterprises. Through them, however, most small- and medium-scale enterprises in the industry will gain through direct technical co-operation measures.
- The agro-industrial sector will benefit from the analysis of branch problems and suggested methods to tackle these problems. The four diagnoses will serve as a guideline for the rest of the sector.
- Next, the entire industrial sector will benefit through the recommendations relating to the specific needs for training and assistance in the development of local, domestic capacity in rehabilitation.
- Finally, the Government will benefit not only from the direct technical assistance to the enterprise, but also through the project recommendations for macro- and industrial-sector level policy changes to strengthen local and national capacity in industrial rehabilitation.

The rehabilitation surveys serve as a first step - a "pilot project" - in the long process toward ultimate rehabilitation. Full feasibility studies must be conducted as a follow up to provide effective guidelines for subsequent implementation. As our programme is evolving, we would certainly appreciate any comments or suggestions you may have on the usefulness of its approach.

7.2 General project concepts

The following are suggested as future projects to be undertaken toward industrial rehabilitation of the agro-based industries:

(a) General project concepts

- Make a sector-wide study of the potential for viable rehabilitation, in the context of restructuring priorities (UNIDO).
- Provide expertise to redesign tariff structure.

- Investigate reasons for PIC delays in implementing price increases in PIC. Provide expertise to synchronize changes in prices and costs for manufacturers.
- Modify company taxation policy to promote internal financing of rehabilitation.
- Expand the role of INDECO's Economic Evaluation Unit, and further strengthen the role of the Industrial Planning Unit of MCI and the Investment Policy Department of NCDP.
- Technical assistance in planning and design, including contracting and commissioning procedures and specification of equipment (UNIDO).
- Technical assistance in the development of maintenance procedures and training (UNIDO).
- Technical assistance in establishing spare parts production (UNIDO).
- Technical assistance for developing or purchasing standardized equipment, parts and components (UNIDO).
- Assistance in the establishment of provincial maintenance centres, workshops and laboratories (UNIDO).
- Assistance for in-house training of middle-management in manufacturing.
- Arrange study tours for middle-management in manufacturing (UNIDO).

(b) For all enterprises visited

- Install computer systems for routine work such as accounting, purchases and sales, and provide a training programme for users (UNIDO).

SELECTED REFERENCES

- Commonwealth Secretariat (1986a). Zambia INDECO Ltd. - Production assistance to ROP (1975) Ltd. Ndola, London
- _____ (1986b). Zambia, Modernisation of the Mvinilunga Pineapple Cannery, Vol. 1, London
- _____ (1987). Preferential Trade Area for Eastern and Southern African States: Overview of the Cement Industry in the PTA sub-region, London
- Chr. Michelsen Institute (1986). Zambia: Country Study and Norwegian Aid Review, Bergen, Norway
- Colclough, Christopher (1988). "Zambian Adjustment Strategy - With and Without the IMF". IDS Bulletin 1988, vol. 19, no. 1, Institute of Development Studies, Sussex
- Economist Intelligence Unit (1987). Country Profile: Zambia 1987-88, London
- _____ (1988). Country Report Zambia No. 1 1988, London
- Jalakas, Rudolf (1987). Foreign Exchange Zambia, SIDA Evaluation Report 1987/2 SIDA, Stockholm
- Marijnissen, J. and Vingerhoets, J. (1987). Production and export of copper semis in Zambia and South Eastern Africa, Tilburg/Eindhoven
- O'Neill, Helen and others (1987). Transforming a Single-Product Economy: An Examination of the First Stage of Zambia's Economic Reform Programme, 1982-86, Economic Development Institute, IBRD, Washington D.C.
- Republic of Zambia (1987a). New Economic Recovery Programme: Interim National Development Plan, Lusaka
- _____ (1987b). Progress Report No. 1 on the Implementation of the Interim National Development Plan, Lusaka
- _____ (1987c). Budget 1987, Lusaka
- _____ (1987d). Report of the Commission of Enquiry on Tariffs, Vols. 1 and 2, Lusaka
- _____ (1988a). Economic Report 1987. National Commission for Development Planning, Lusaka
- _____ (1988b). Budget 1988, Lusaka
- PTA/UNDP (1987). Mission Report on rehabilitation and identification/promotion of multinational enterprises in Africa (Zambia), n.p., 1987

Id: 1090s

- 44 -

SIDA (1988). Forhandlingar infor nytt samarbetsavtal 1988-89, Zambia.
Stockholm

SADCC/Commonwealth Secretariat (n.d.). Indicative Industrial Development Plan,
n.p.

Young, Robert (1988). Zambia - Adjusting to Poverty. The North-South
Institute, Ottawa